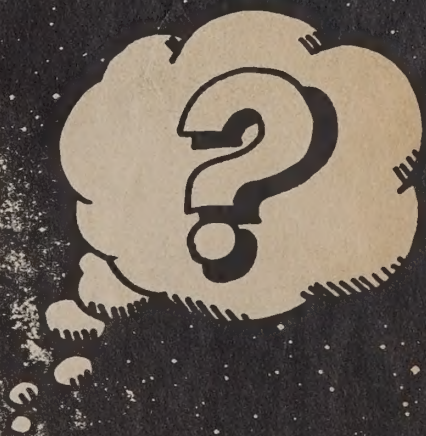


# WHOLE EARTH CATALOG

*access to tools*



Spring 1970

\$3

# FUNCTION

The *WHOLE EARTH CATALOG* functions as an evaluation and access device. With it, the user should know better what is worth getting and where and how to do the getting.

An item is listed in the *CATALOG* if it is deemed:

- 1) Useful as a tool,
- 2) Relevant to independent education,
- 3) High quality or low cost,
- 4) Easily available by mail.

*CATALOG* listings are continually revised according to the experience and suggestions of *CATALOG* users and staff.

# PURPOSE

We are as gods and might as well get good at it. So far remotely done power and glory—as via government, big business, formal education, church—has succeeded to the point where gross defects obscure actual gains. In response to this dilemma and to these gains a realm of intimate, personal power is developing—power of the individual to conduct his own education, find his own inspiration, shape his own environment, and share his adventure with whoever is interested. Tools that aid this process are sought and promoted by the *WHOLE EARTH CATALOG*.

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# CATALOG Procedure



## Ordering from the CATALOG

Address orders to the supplier given with the item (unless you know of a better one; if you do, let us know).

If the price listed is not "postpaid", consult post office or express agency for cost of shipping from supplier's location to yours.

Add state sales tax if transaction is within your state. (California sales tax is 5%.)

Send check or money order with your order.

If the supplier gives you poor service, let us know. That information can be added to his review.

With some indicated items the CATALOG also will ship. There is no price difference with the service; the CATALOG gets the markup instead of the other guy, is all. Our service is fairly fast, especially for west coast orders. Bear in mind there's an inflation on. Prices are subject to rise without notice.

Generally, the closer the supplier is to you, the quicker and cheaper the shipping will be. If the item you're getting is delicate or if you are in a hurry, air express is a good deal. Anything overseas do by air, unless you want to wait a month or so for delivery.

## Suggesting and Reviewing

The validity of the information in the CATALOG is only as good as the transmitted experience of users. What would you add to the current CATALOG?

The CATALOG pays its reviewers \$10 an item for: getting familiar with the item, its usefulness, and its competition; evaluating the item; selecting samples of graphics or text (with page references) for the review; writing a 100-300 word review. Reviewers and first-suggesters of items are credited in the CATALOG.

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Commentary from CATALOG users that is of general interest is published in the \$1 Catalog. Critical comments, new design processes, no-cash techniques, news of specific enterprises, useful fantasies, design student work, time and trouble shortcuts, new uses for common or exotic materials, other realms for the CATALOG to consider, &c., &c.—welcome.

Some tentative item reviews are carried in the \$1 Catalog without payment to the reviewer. If a \$1 Catalog review is later carried in the CATALOG, the reviewer is paid then.

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Portola Institute, Inc. is a tax-exempt, non-profit educational corporation. Donations to Portola or the CATALOG may be deducted. Retaining subscriptions to the CATALOG are \$25 for one year (\$17 tax deductible). Sustaining subscriptions are \$100+ per year (\$92+ tax deductible). Names of retaining and sustaining subscribers are given in the CATALOG.

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## Advertising

has become a nuisance. After this issue we're not carrying any more.

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The CATALOG is under no obligation to suppliers. Users are under no obligation to the CATALOG.

Suppliers (manufacturers, creators, etc.) may not buy their way into the CATALOG. Free samples, etc. are cheerfully accepted by CATALOG researchers; response not predictable. No payment for listing is asked or accepted. We owe accurate information exchange to suppliers, but not favors.

Our obligation is to CATALOG users and to ourselves to be good tools for one another.

## The Cover

The photograph, courtesy Lick Observatory, shows the M-31 Andromeda galaxy, which is considered similar to our own in structure and size. Where the thought balloons originate approximates the position of Earth in this galaxy. The question-mark exclamation-mark sequence is borrowed with thanks from Robert Crumb. "We live one life . . ." is from p. 464 of the extraordinary *Collected Poems of Kenneth Patchen, 1967, 504 pp. \$3.95 from New Directions, J. B. Lippincott Co., East Washington Square, Philadelphia, PA 19105.* The cover was designed with Peter Bailey, San Francisco. Why haven't we seen a photograph of our whole galaxy yet?

This issue of the CATALOG is not complete. Innumerable items that we still esteem (and still stock, if they're available from us) were left out to make room for new material. We will not attempt another comprehensive CATALOG until the final one, Spring 1971.

This CATALOG is 16 pages larger and a dollar cheaper than the last one. We lowered the price because Richard Brautigan suggested it, because we can afford it now, and because inflation is no way to live.

The shifting, whispering staff, at last census, was:

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# CONTENTS

Whole Systems	4
Shelter and Land Use	18
Industry and Craft	42
Community	62
Communications	82
Nomadics	102
Learning	120

# INDEX

\* = new item



- \* AAA Adding Machine Company 74
- \* ABC of Reading 81
- ACTING 69, 133
- Adhesive Products 47
- ADOBE 27
- Adobe Construction Methods 27
- Advance Electrical Sales, Inc. (tapes) 41
- \* Advertising Graphics 78
- Age of Discontinuity 16
- AGRICULTURE 7, 11, 31-34, 36, 37, 39, 61, 86, 96, 100, 130, 131
- Agricultural Publications and Services 36
- \* An Agricultural Testament 33
- \* Aikido and the Dynamic Sphere 135
- Airborne Sales 55
- AIRPLANES 116, 118, 119
- \* Air Travel Bargains 118
- Aladdin Kerosene Lamps 35
- Alasco Rubber & Plastics Corp. 41
- \* Alaska Sleeping Bag Co. 106
- \* Alaskan Mill 25
- Allcraft Tool & Supply 43
- Allied Data Handbook 76
- Allied Electronics for Everyone 76
- Allied Industrial Electronics 76
- Allied Radio 76
- Altered States of Consciousness 137
- \* An Alternative Future for America II 87
- \* Alternatives Directories 88
- American Booksellers Association 79
- American Boys Handy Book 125
- American Cinematographer 68
- American Cinematographer Manual 68
- \* American Indian Medicine 93
- AMERICAN INDIANS 51, 93, 98, 102, 125, 137
- \* America's Knitting Book 49
- \* American Plywood Association 25
- \* Animal Species and Evolution 10
- ANTHROPOLOGY 11-13, 19, 31, 35, 63, 65, 81, 93, 98, 132, 136
- \* Applied World Saving 7
- ARCHITECTURE 4, 18-20, 22, 24-30, 39, 51, 56, 75, 130, 140
- \* Architecture: A Book of Projects for Young Adults 130
- Architectural Design 29
- Architectural Graphic Standards 29
- Architectural Research on Structural Potential of Foam Plastics for Housing in Underdeveloped Areas 40
- \* Arcology: The City in the Image of Man 19
- Armchair Shopper's Guide 96
- Arno Adhesive Tapes, Inc. 41
- Arrowhead Mills, Inc. 82
- ART 8, 19, 43, 46, 50, 62-65, 78, 81, 124
- Art and Illusion 62
- \* The Art of Blacksmithing 45
- \* Art of Organ-Building 51
- \* Artist's Handbook of Materials and Techniques 50
- Arts & Crafts 43
- Ashley Thermostatic Wood Burning Circulator 38
- ASTRONOMY 5, 13, 16, 58, 115, 125, 128, 130
- \* The Attractive Universe 130
- Audel Guides 24, 52
- Audio Cyclopedica 77
- \* Auto Engines and Electrical Systems 113
- AUTO REPAIR 112, 113
- \* Avon Inflatable Boat 114



- Barbour 197
- \* Basic Electricity 77
- \* Basic Electronics 77
- \* Basic Graphics 66
- \* Basic Mathematics for Electronics 77
- \* BD-4 Homebuilt Airplane 116
- L. L. Bean 104
- \* Be Expert with Map and Compass 117
- Behrend's Book 68
- \* Bibliography of Basic Survival 119
- \* A Bicycle Page For You 111
- BICYCLES 111

- \* Bill Boatman & Co. 99
- Birth Control Handbook 92
- Black's 107
- BLACKSMITHING 45
- Blackwell's Books, England 79
- \* Boatbuilding 115
- BOATS 114, 115, 119
- Boffing Equipment 97
- Book of Survival 119
- BOOKMAKING 44, 78, 79, 124
- Bookmaking 79
- BOOKS 78-81, 98, 100, 128
- \* Bottle Cutter 97
- BRAIN 67, 132, 134-38
- \* Brains, Machines and Mathematics 67
- \* Breaking and Training the Stock Horse 110
- Brent Potter's Wheel 46
- Brookstone Tools 54
- \* Buchla Synthesizer 70
- \* Building a Log House 24
- Building Maintenance 29
- BUILDING MATERIALS 26-28, 39-41, 43, 51, 53, 56, 115, 130
- \* Build-it-yourself Science Laboratory 128
- BUSINESS EQUIPMENT 39, 53, 57, 74
- BUYING CHEAP 36, 39, 54-56, 79, 94, 95, 100, 105, 115, 116, 118
- \* Byways in Handweaving 48



- \* Cadco Plastics 53
- H. A. Calahan, Inc. (paints) 41
- Camp and Trail Outfitters 106
- \* Campbell Tools 55
- CAMPING 24, 25, 35, 84, 102-108, 110, 125
- CAMPING EQUIPMENT 35, 82, 93, 104-107, 117, 119
- Camping and Woodcraft 102
- \* Card Weaving Cards 48
- CARPENTRY 22-25, 27, 42-44
- \* Carpentry and Building 24
- \* Cascades 74
- CASTING 43, 47
- \* Catalog for Learning Things 130
- Caulking Compounds 41
- CeCo Co 39
- \* Cement Mason's Manual for Residential Construction 23
- \* Centering 136
- \* Ceramics: Potter's Handbook 46
- \* Ceramic Supplies 47
- CHAIN SAW 25
- \* Chain Saw Parts 25
- \* Challenge for Survival 7
- Champagne Living on a Beer Budget 94
- \* Character of Physical Law 13
- \* Charts 114
- CHEAP TRAVEL 118
- CHEMISTRY 33, 52, 57, 99, 128, 129, 134
- CHILDBIRTH 92, 120
- \* Childcraft 120
- \* Childlife 120
- \* CHILDREN 42, 92, 93, 120-125
- \* Children's Games in Street and Playground 124
- Chow Belt 82
- Classic Guitar Construction 70
- \* Clay and Glazes for the Potter 46
- Clearinghouse for Federal Scientific and Technical Information 59
- \* Climate Near the Ground 39
- \* Colonial Craftsmen 44
- \* Colonial Living 44
- \* Commonsense Childbirth 92
- COMMUNE 18, 19, 35, 39, 83, 86, 88, 89, 98, 104, 110, 126
- Community Playthings 120
- The Complete Walker 102
- \* Composition of Foods 84
- \* Composting 37
- Concrete 41
- Concrete Boatbuilding, Its Technique and Its Future 24
- Concrete Improvements for Farm and Ranch 23
- \* Concise Guide to Library Research 128
- Constantine's Wood Catalog 43
- \* Construction Bargaineer 39
- Consumer Reports 95

- COOKING 82-85, 102, 108
- Cope Plastics 41
- Corona Hand Mill 82
- CORRESPONDENCE SCHOOLS 131
- Cosmic View 5
- COSMOS 4, 5, 12-14, 16, 64, 65, 125, 128, 130
- Craft and Hobby Book Service 51
- \* Craftool 44
- \* Craftsman Wood Service 43
- CRAFT SUPPLIES 43, 44, 46-49
- Creative Playthings 120
- \* Critical Path Method 75
- Cuisenaire Rods 122
- \* Culture is Our Business 81
- \* Cultivator's Handbook of Marijuana 31
- CUM Yarn Samples 49
- \* Current Contents 52
- CYBERNETICS 4, 10, 12, 15, 63, 66, 67, 75, 138



- Dear Dr. Hippocrates 90
- DEATH 12, 16, 89, 91, 119, 121, 132, 133, 137, 139
- Deeds Design Associates (foam) 40
- Defender Industries 115
- \* Del Trading Post 51
- James L. Denier Co. (aluminum fittings) 41
- \* Desert Plants and People 34
- DESIGN 4, 15, 19, 20, 29, 30, 51, 56, 58, 60, 61, 64, 66, 75, 78, 79, 124, 130
- Design and Control of Concrete Mixtures 23
- Design of Design 61
- \* Design and Planning 2 75
- \* Diderot Pictorial Encyclopedia of Trades and Industry 51
- Direct Use of the Sun's Energy 61
- \* Directory of Accredited Private Home Study Schools 131
- \* Directory of Free Schools 88
- \* Directory for Personal Growth 88
- \* Directory of Social Change 88
- DOGS 99, 108, 125
- \* Do-It-Yourself Encyclopedia 24
- \* Domebook One 18
- Dome Cookbook 29
- DOMES 4, 15, 18-22, 29, 30, 40, 41, 98, 106, 130
- \* Domestic Water Supply and Sewage Disposal Guide 24
- Douglas & Sturgess (foam) 40
- DRAWING 43, 62, 68, 78
- \* Dream Psychology 67
- \* Drownproofing 121
- DRUGS 31, 34, 53, 71, 85, 93, 97, 121, 134, 135
- \* Drugs from A to Z: A Dictionary 134
- Duo Fast California (staples) 41
- DYEING 49, 50
- Dye Plants and Dyeing 49
- Dyna Domes 21



- Earth 5, 11, 13, 31, 64, 80, 89, 125, 128
- Earth Flag 89
- Earth from Moon 5
- Earth Photographs from Gemini III, IV and V 5
- Earth Photographs from Gemini VI through XII 5
- Earth Poster 5
- \* Earth Times 8
- \* Eastern Mountain Sports, Inc. 106
- ECOLOGY 6-11, 31-33, 37, 38, 61, 82, 89, 97, 111, 117, 118, 125, 130
- ECONOMICS 4, 6-9, 17, 44, 74, 81, 87, 94
- \* Ecotactics 9
- Eddie Bauer 105
- Edmund Scientific 129
- \* Education of Vision 64
- Educator's Guide to Free Films 127
- EduVision 120
- Elastic Boat Paints 41
- \* Electrical Code for One- and Two-Family Dwellings 24
- \* Electric Guitar Amplifier Handbook 71
- \* Electric Motors 52
- ELECTRICITY 23, 24, 38, 52, 77, 129, 135
- ELECTRONIC MUSIC 70
- ELECTRONICS 53, 70, 71, 76, 77, 112, 135
- Elementary Science Study 129
- \* Elements of Radio 77
- El Molino Mills 82
- Emergency Medical Guide 91
- Encyclopedia of Organic Gardening 32
- \* Encyclopedia of U. S. Government Benefits 101
- ENGINEERING 4, 15, 18, 20, 26, 29, 30, 39, 57, 58, 77, 113, 115, 128, 130
- \* Engineer's Illustrated Thesaurus 56
- \* Enviro 98
- Environment 31
- \* Environmental Handbook 9
- Erewhon Trading Company 82
- \* Estrin Potter's Wheels 46
- EVOLUTION 4, 10-13, 15-17, 61, 64
- \* Evolution and Culture 10
- \* Excreta Disposal for Rural Areas and Small Explorers Trademart Log 117



- Fair Radio Sales Co. 76
- \* Fannie Farmer Cookbook 83
- Federal Domestic Assistance 100
- FERRO-CEMENT 23, 24, 27, 41
- Ferro Fiberglass Corp. 40
- Fiberglass 40
- Fieldbook for Boys and Men 125
- FILM 7, 68, 69, 127
- FIREWORKS 99, 125

- \* A First Abacus 122
- \* First Steps in Winemaking 85
- FISHING 27, 84, 104, 107, 109, 114, 125
- \* Fleming Bottle and Jug Cutter 97
- Flexifirm Products 41
- Flintkote Company (foam) 40
- FLYING 116, 118, 119
- FOAM 40
- Foam Experiments 40
- Foam Information 40
- \* Folk Medicine 93
- Follow Through Project 124
- FOOD 7, 32-34, 36, 82-85, 105-107, 130
- The Food Mill 82
- Foods by Mail 82
- Food Shopping Guide 82
- FORMULAS 52, 57, 99, 128, 129, 134
- \* The Foundation Directory 101
- \* Foundations of Modern Art 63
- \* Fountain of Light 86
- \* Foxfire 45
- \* Friends 71
- \* Frontier Living 44
- Frostline Outdoor Equipment 104
- Full Earth 5
- FULLER, R. Buckminster 4, 18, 20
- Fuller Sun Dome 18
- FUND RAISING 87, 101, 143
- FUTURE 4, 6-9, 12, 16, 17, 19, 31, 38, 61, 64, 87, 98, 131, 139
- Futurist 17
- Futuro 21



- Gaco Western, Inc. (sealants) 41
- GAMES 4, 74, 97, 111, 123, 125, 135
- Geodesics 20
- GEOGRAPHY 4, 11, 19, 31, 58, 61, 98, 117
- GEOMETRY 4, 13, 15, 18, 20, 28-30, 60, 64, 72, 73, 75, 124
- Gestalt Therapy Verbatim 133
- GLASS 28, 50
- Glass Plastics Marine 40
- \* Glénans Sailing Manual 115
- \* Golden Handbooks 125
- \* B. F. Goodrich Chemical Co. 41
- Gourmet Cooking for Free 84
- Government Printing Office 100
- Government Product-News 53
- Government Publications 100
- Graphic Work of M. C. Escher 73
- GRAPHICS 29, 42, 43, 50, 62, 66, 78, 79
- \* Gravelly Tractor 34
- Green Revolution 86
- \* Grow Your Own 33
- G. R. T. L. Co. (Plastics) 41
- Guinness Book of World Records 131
- Guide Book for Rural Cottage and Small and Medium Scale Industries 39
- \* Guide to Filmmaking 69
- \* Guide to Fresh and Salt Water Fishing 125
- \* Guide to the 1968 National Electrical Code 24
- Guinness Book of World Records 131
- GUITAR 70, 71



- \* Hallucinogens 134
- \* Hallway Star Map 5
- \* Handbook for the Alaskan Prospector 108
- Handbook for Building Homes of Earth 27
- Handbook of Chemistry and Physics 57
- Handbook of Mathematical Functions 75
- \* Handbook of Stitches 49
- \* Handbook of Structure 30
- \* Hand Woodworking Tools 42
- Heathkit 76
- \* Henley's 52
- Herter's 106
- \* High Fidelity Systems 77
- HISTORY 11, 17, 19, 31, 44, 63, 65, 117, 124, 130
- HITCH HIKING 118
- \* Hitchhiker's Handbook 118
- \* Holubar 106
- \* Home Appliance Servicing 52
- \* Home Brewing Without Failures 85
- \* Home Canning of Fruits and Vegetables 84
- \* Home Freezing of Fruits and Vegetables 84
- \* Home Tanning and Leather Making Guide 109
- HONG KONG 95
- Horses 110
- \* Horses, Hitches and Rocky Trails 110
- HOT SPRINGS 38, 117
- House Carpentry Simplified 23
- How Children Learn 120
- How Many? 122
- \* How to Build Speaker Enclosures 70
- \* How to Build a Still 85
- How to Grow Vegetables and Fruits by the Organic Method 32
- How to Have a Green Thumb Without an Aching Back 32
- \* How to Improve Your Cycling 111
- \* How to Keep Your Volkswagen Alive 113
- How to Live on Nothing 94
- \* How to Live With Your Special Child 121
- \* How to Parent 120
- \* How to Solve It 131
- \* How to Travel Without Being Rich 118
- \* How to Work With Tools and Wood 42
- \* Hubble Atlas of Galaxies 5
- \* Hughes Co. (instrument kits) 70
- \* Humanitas Curriculum 122
- Humanitas Systems 135
- Human Use of the Earth 11



- Ideas and Integritys 4
- I Know a Place 124
- \* Illustrated Method for Flute 71

- \*The Image 63
- Impoverished Student's Book of Cookery, Drinkery, and Housekeeping 83
- \*In and Out the Garbage Pail 133
- \*Indices Information Retrieval System 74
- Indian Tipi 35
- Index to 16mm Educational Films 127
- INFLATABLE STRUCTURES 28, 30
- Information 66
- Initial Teaching Alphabet 122
- Intelligent Life in the Universe 64
- \*Internal Factors in Evolution 10
- \*Introduction to Caving 109
- \*Introduction to Cybernetics 66
- Introduction to Engineering Design 60
- \*Israel Army Physical Fitness Book 97

## J

### JEWELRY 43, 44, 47

- \*The Job 135
- Joy of Cooking 83
- \*Jug and Bottle Cutter 97
- \*Justice Without Trial 88

## K

- Kaiser Aluminum News 127
- Kama Sutra Oil 97
- Karry-Kit 82
- Kelty Packs 107
- KEROSENE LAMP 35
- \*Kilns 46
- KITCHEN EQUIPMENT 82, 84
- KITS 44, 46, 76, 85, 104, 116, 129, 130
- \*Klepper Folding Boat 114
- \*Kloppenstein Potter's Wheel 46
- \*Knight's Modern Seamanship 115
- KNITTING 49
- \*Knowing Your Trees 31
- \*Koehler Method of Dog Training 99

## L

### LABORATORY EQUIPMENT 53, 57, 74, 76, 85, 90, 128, 129, 134

- \*Laboratory Supplies Co. 53
- Lafayette Radio Electronics 76
- LAND USE 7, 19, 31, 34, 36, 37, 61, 86, 87, 98, 117
- LANGUAGE 64, 65, 78, 123, 135
- Laws of Form 14
- Lee Electric Flour Mills 82
- LETTERING 43, 66, 78
- LIBRARY 36, 51, 52, 57, 59, 79, 80, 88, 98, 100, 101, 128, 129, 131, 136
- \*Liferaft Earth 7
- LIFE Science Library 128
- Life Support Technology, Inc. 119
- Light Weight Camping Equipment and How to Make It 104
- \*Listening Incorporated 70
- LITERATURE 8, 80, 81, 139
- The Lives of Children 121
- LOG HOUSE 24, 25
- Looking and Seeing 124
- \*Love and Will 133
- LOVEMAKING 6, 92, 97
- Low-Cost Wood Homes for Rural America—Construction Manual 27
- Lucis Trust Library 136

## M

### MACHINERY 39, 45, 52-57, 60, 76, 109, 116, 130

- \*The Machinery of the Brain 67
- Machinery's Handbook 57
- Macramé, The Art of Creative Knotting 49
- MAIL ORDER SHOPPING 40, 41, 43, 53-55, 76, 79, 80, 82, 95, 96, 104-107, 112, 114, 115, 116, 120, 129, 131
- \*Mankind 2000 17
- Man-Made Fiber Producers Association 41
- \*Man-Made Object 64
- Man's Presumptuous Brain 136
- Man's Role in Changing the Face of the Earth 31
- Manual of Simple Burial 89
- \*Manual of Ski Mountaineering 103
- MAPS 5, 13, 36, 72, 73, 75, 114, 116-118, 125
- Marine & Construction Products (Rubber) 41
- MASONRY 22, 24, 130
- \*Masons and Builders Guide 24
- \*Master Mechanics Mfg. 55
- Mathematical Models 72
- Mathematical Snapshots 72
- MATHEMATICS 4, 14, 20, 30, 57, 72, 73, 75, 77, 122, 128, 131
- Mathematics, Its Content, Methods and Meaning 73
- \*Matheson Scientific 53
- MEDIA 68, 69, 78, 79, 81, 127, 135
- Media and Methods 127
- MEDICINE 13, 16, 34, 53, 90-93, 97, 119-121, 133, 134, 136, 137
- MEDITATION 14, 15, 87, 98, 103, 136-138
- Meditation Cushions and Mats 136
- \*Meditation in Action 136
- \*Megavitamin Therapy 134
- Membranes 41
- Merck Index 90
- Merck Manual 90
- Metal Techniques for Craftsmen 47
- \*Michelin Maps and Guides 118
- \*Mildred Hatch Loan Library 82
- Miracle Adhesive Corp. (Tapes) 41
- Mobay Chemical Co. (Foam) 40
- Modern Plastics 26

- Modern Plastics Encyclopedia 26
- \*Modern Reading 122
- Modern Utopian 86
- \*Module Proportion Symmetry Rhythm 64
- Moog Synthesizer 70
- \*Morgan's Tarot 65
- \*Mother Earth News 86
- MOTORCYCLES 113
- \*Motorcycle Troubleshooting Guide 113
- \*Motor Cycle World 113
- Motor's Truck Repair Manual 112
- Motor Trend Basic Auto Repair Manual 112
- Mountaineering: The Freedom of the Hills 103
- \*Movement Speakers Bureau 80
- W. E. Mushet Co. (foam) 40
- MUSIC 70, 71
- MUSIC INSTRUMENTS 51, 70, 71
- \*Music Synthesizers 70
- \*MYTH 12, 16, 19, 65, 81, 132, 139

## N

- \*National Camera, Inc. 54
- National Electrical Code 1968 24
- National Fisherman 27
- The Natural Way to Draw 62
- \*Nature and Art of Motion 64
- \*Nature and Man's Fate 10
- \*Netcraft Fishing Tackle 114
- New Age Natural Foods 82
- \*New England Divers 109
- \*The New Gravity 13
- \*New Key to Weaving 48
- New Mathematics Dictionary and Handbook 73
- New Schools Exchange 126
- New Scientist 58
- New Sources of Energy 38
- Nine Chains to the Moon 4
- No More Secondhand God 4
- NOSTALGIA 25, 35, 44, 45, 51, 74, 86, 93, 102, 107, 110, 124, 125

## O

- Observer's Handbook 5
- \*Ocaté Sleeping Bag 104
- \*O'Dome 21
- Olin Plastics (foam) 40
- Olson Electronics 76
- \*Omen 8
- \*On Death and Dying 89
- On Free Money 101
- On Growth and Form 15
- \*Open Classroom 127
- Operating Manual for Spaceship Earth 4
- \*Order in Space 30
- ORGANIC GARDENING 31-34, 36, 37, 83, 84
- Organic Gardening and Farming 32
- ORGANIZATION 4, 9, 12, 15, 60, 61, 63, 64, 66, 75, 88, 89, 98, 126, 127
- Ornyte Fiberglass Panels 41
- Owner-Built Home 22

## P

- \*Pacifica Potter's Wheel 46
- \*Palley's Supply Co. 56
- \*Paprikás-Weiss Gourmet Shop 84
- \*Parable of the Beast 11
- PARAPSYCHOLOGY 16, 64, 65, 67, 78, 86, 132, 134, 136-139
- PARTS 25, 53-56, 68, 77, 111-113, 116, 129
- \*Paxton Lumber 43
- \*Penn State Correspondence School 131
- Perma-Pak 82
- \*The Peter Principle 88
- PHILOSOPHY 4, 7, 8, 12, 14, 15, 33, 65, 72, 73, 87, 139
- PHYSICS 4, 13, 57-59, 77, 128, 129
- \*Piaget and Knowledge: Theoretical Foundations 123
- \*PIC Design Corp. 53
- Pioneer Posters 124
- \*Planecraft 42
- Plans and the Structure of Behavior 138
- \*Plants and Gardens 34
- \*Plants and Man 130
- PLASTIC 26, 40, 41, 50, 53
- Plasticraft, Inc. (plastics) 41
- \*Plastics as an Art Form 50
- \*Plastics for Architects and Builders 26
- PLUMBING 23, 24, 37, 96
- \*Pole, Paddle and Portage 114
- POLITICS 4, 6-12, 14, 16, 17, 31, 80, 81, 86-89, 119, 135, 139
- Poptent 107
- Popular Science 59
- POPULATION 6-11, 17, 31, 92
- The Population Bomb 6
- Population, Evolution, and Birth Control 10
- \*Population, Resources, Environment 6
- \*A Potter's Book 46
- \*Potter's Wheels 46
- Pottery 46
- POTTERY MAKING 43, 46, 47
- Practical Handbook of Plumbing and Heating 23
- Practical Western Training 110
- PRECISION TOOLS 52-54
- Pregnancy, Childbirth and the Newborn, A Manual for Rural Midwives 92
- Harold A. Price & Co., Inc. (sealants) 41
- \*Procion Fiber Reactive Dyes 48
- Product Engineering 58
- \*Professional Guide's Manual 108
- Protective Treatments, Inc. (tapes) 41
- \*Psychological Exercises 132
- PSYCHOLOGY 67, 88, 89, 93, 121-123, 132-134, 136, 137
- \*Psychology of the Child 123
- \*Psychology Today: An Introduction 132
- \*Psychophysics Labs 135
- \*Putney Synthesizer 70
- \*Pyrotechnics 99

## Q

### Quantity Recipes 83

## R

- RADIO 76, 77
- \*The Reader's Adviser 80
- Recreational Equipment, Inc. 105
- RELIGION 5, 8, 11, 12, 14, 16, 65, 136-139
- \*Resources and Man 6
- \*Rise of the West 11
- Rohm & Haas Co. (Plastics) 41
- Rolling Stone 71
- Rural Industry 39

## S

- \*Saga Technical Associates 24
- Sanitation and Health 37
- \*Sanitation Manual for Isolated Regions 37
- Sauna: The Finnish Bath 93
- \*The Savage Mind 132
- Savcote of California (paints) 41
- SCHEDULING 60, 61, 75
- SCHOOL MATERIALS 18, 21, 42-44, 46, 70, 74, 76, 83, 97, 98, 100, 101, 120, 122, 124, 127-130, 134
- SCHOOLS 88, 98, 120, 121, 126, 127, 131
- Abe Schuster Fiberglass 41
- SCIENCE 4-7, 10-13, 15, 53, 57-59, 80, 117, 128-130
- \*Science Books 80
- Science Magazine 59
- Science Materials Catalog 129
- Scientific American 58
- Scientific American Offprints 129
- \*SCR Manual 77
- SCUBA 109
- \*Sculpture in Plastics 50
- Sealants 41
- Sears 41, 96
- Security Parachute Co. 41
- Seeds and Trees by Mail 36
- 700 Science Experiments for Everyone 129
- SEWING 48
- \*Shelter and Society 19
- \*Ship Captain's Medical Guide 91
- \*The Sierra Club Wilderness Handbook 103
- Sierra Designs 105
- SILK SCREEN 50
- Silvo Hardware 54
- \*Simple Working Models of Historic Machines 130
- Simplified Carpentry Estimating 23
- Ski Hut 105
- \*Skills for Taming the Wilds 108
- Skin and Scuba Diving 109
- Skylights 41
- \*Sky Observer's Guide 125
- SLEEPING BAG 104, 105
- \*Small Parts, Inc. 54
- Smilie Company 106
- Snuggli Baby Carrier 93
- SOCIAL CHANGE 8, 12, 13, 16, 19, 71, 80, 86, 88, 89, 98, 101, 119, 121, 126, 133, 135
- \*So Human an Animal 13
- Soil-Cement—Its Use in Building 27
- \*Soil Conservation Service—USDA 34
- Soil Test Kit 33
- SOLAR ENERGY 38, 61, 107, 129
- Solar Stills 38
- Soldner Potter's Wheel 46
- \*Sole-Saver 118
- SOUND EQUIPMENT 51, 70, 71, 77
- \*Sourcebook on the Space Sciences 128
- \*Soybean Cookbook 83
- \*So You'd Like to Buy an Airplane 116
- \*Space Enclosure Systems 30
- Space Grid Structures 20
- \*Spanish Mustang Horse 110
- SPEAKERS 71, 80
- \*Sportsman's Trading Posts of America, Inc. 115
- Standard Products Co. (Neoprene gaskets) 41
- Star Maker 16
- Start Your Own School 126
- Star Maker 16
- \*Starrett Book for Student Machinists 57
- \*Start Your Own School 126
- \*Step-by-Step Jewelry 42
- \*Step-by-Step Macramé 42
- \*Step-by-Step Printmaking 42
- \*Step-by-Step Weaving 42
- Step to Man 12
- Stick and Rudder 116
- Stokes Molded Products (hinges) 41
- \*Stone Shelters 22
- \*Stoneware and Porcelain 46
- \*The Story of Language 65
- STOVES 38, 104-107
- \*Strategy & Tactics 74
- \*The Stress of Life 16
- \*Structural Design in Architecture 20
- \*Structure in Art and in Science 64
- The Subversive Science 7
- \*Successful Sewing 49
- \*Successful Wine Making at Home 85
- \*Superior Bulk Film 68
- Supply and Demand 74
- SURPLUS 39, 54-56, 68, 74, 76, 100, 115
- Surplus Center Equipment Catalogs 54
- Surplus Defense Supply 100
- SURVIVAL 82, 84, 91, 93, 102, 103, 107, 108, 114, 117, 119
- Survival Book 119
- \*Survival Evasion and Escape 119
- Sweet's Files 28
- \*Synergy 98
- Syntercrete Corporation 41

## T

- \*Take One 68
- \*The Tao of Science 15
- Tao Teh King 14
- \*TAP (fiberglass tapes) 41
- Tapes 41
- Teaching as a Subversive Activity 126
- The Teachings of Don Juan 137
- Technicians of the Sacred 65
- \*Technique of Stained Glass 50
- \*Technology and Change 61
- \*Teg's 1994 98
- Tektronix 76
- Tensile Structures 28
- TENT 35, 106
- THEATER 69
- Thermal Springs of the United States and other Countries of the World 117
- \*Things Maps Don't Tell Us 13
- This Magazine is About Schools 126
- Thomas Register of American Manufacturers 57
- \*Thought Forms 78
- \*Threads in Action 49
- 3m Company 41
- \*Three Pillars of Zen 136
- \*Tie and Dye 50
- \*Timelock 4
- TIPI 35
- TOOL CATALOGS 39, 43, 53-56, 68, 76, 84, 96, 107, 112, 115, 116, 129, 130
- \*Tools and Rules for Precision Measuring 52
- \*Towards a Poor Theater 69
- TOYS 43, 44, 76, 99, 120, 122, 125
- TRACTOR 34
- Trade-a-Plane 116
- Transparent Products Corp. (Mylar) 41
- Travaco Laboratories (paints) 41
- TRAVEL 16, 95, 117-119, 134
- Traveler's Directory 118
- Traditional Country Craftsmen 45
- Tri-Wall Containers, Inc. (Laminite cardboard) 41
- \*Two Factor Theory 87

## U

- \*Understanding Foundations 101
- \*Underwater Prospecting Techniques 109
- \*Underwater Work 109
- Unexpected Universe 12
- Unistrut 56
- Unity Buying Service 95
- Untitled Epic of Industrialization 4
- \*Up the Organization 88
- Used Plane Buying Guide 116
- \*U.S. Divers 109
- U.S. General Supply Corp 55
- U.S. G. S. Topographic Maps 117
- U.S. GOVERNMENT STUFF 34, 36, 53, 59, 100, 101, 116, 117, 119
- \*U.S. Plywood Corp. 41
- \*Utopia or Oblivion 4

## V

- \*Valtox Drug Identification Kit 134
- \*Velodur 51
- \*Venison Book 84
- Village Planning in the Primitive World 98
- Village Technology Handbook 39
- \*Vision and Value Series 64
- VITA—USA 39
- Vocations for Social Change 89
- Volkswagen Technical Manual 112

## W

- \*Walden 87
- Walnut Acres 82
- Wards 41, 96
- Warmite Tent 107
- Wasco Skydome 41
- WATER SUPPLY 24, 37-39, 96, 119
- \*Water Supply for Rural Areas and Small Communities 37
- The Way Things Work 60
- WEATHER 31, 39, 115, 116, 125
- \*Weather 125
- WEAVING 48, 49
- \*Weaving is for Anyone 48
- West Point Pepperell (Nylon fabrics) 41
- \*West Products 115
- Western Distributors 113
- \*White Water Handbook for Canoe and Kayak 114
- J. C. Whitney Automotive Accessories and Parts 112
- \*Whole Earth Catalog 80
- Whole Earth Rising 5
- WILD FOOD 34, 84, 93, 102, 108, 109, 114, 119
- The Wilderness Cabin 25
- Windmills 38
- WINE-BEER MAKING 32, 53, 85, 107
- WIRING 23, 24, 76, 77
- Wiring Simplified 23
- Wittenborn and Co. 79
- WOOD 24, 25, 27, 43
- Woodcraft Supply 43
- World of Mathematics 72
- \*Writing and Illuminating and Lettering 78

## Y

- YARN 49
- A Yagui Way of Knowledge 137
- Year 2000 17
- \*Your Future In... 131
- \*Your Handspinning 48
- Yurt 25

# Whole Systems

Buckminster Fuller

The insights of Buckminster Fuller initiated this catalog.

Among his books listed here, **Utopia or Oblivion** is now probably the most direct introduction. It's a collection of his talks and papers from 1964 to 1967, at a bargain price.

An **Operating Manual for Spaceship Earth** is his most recent, and succinct, statement. **Nine Chains to the Moon** is early, and openly metaphysical. **The Untitled Epic of Industrialization** is lyrical and strong. **Ideas and Integrities** is his most autobiographical, and perhaps the most self-contained of his books. **No More Secondhand God** is the most generalized, leading into the geometry of thought.

People who beef about Fuller mainly complain about his repetition—the same ideas again and again, it's embarrassing. It is embarrassing, also illuminating, because the same notions take on different uses when re-approached from different angles or with different contexts. Fuller's lectures have a raga quality of rich nonlinear endless improvisation full of convergent surprises.

Some are put off by his language, which makes demands on your head like suddenly discovering an extra engine in your car—if you don't let it drive you faster, it'll drag you. Fuller won't wait. He spent two years silent after illusory language got him in trouble, and he returned to human communication with a redesigned instrument.



**Ideas and Integrities**  
Buckminster Fuller  
1963; 318 pp.

**\$1.95** postpaid

from:  
Collier Books  
The MacMillan Company  
Order Dept  
Front and Brown Streets  
Riverside, N. J. 08075

or WHOLE EARTH CATALOG

**No More Secondhand God**  
Buckminster Fuller  
1963; 163 pp.

**\$2.25** postpaid

from:  
Southern Illinois University Press  
600 West Grand  
Carbondale, Illinois 62903

or WHOLE EARTH CATALOG

You belong to the universe. The significance of you will forever remain obscure to you, but you may assume that you are fulfilling your significance if you apply yourself to converting all your experiences to highest advantage of others. You and all men are here for the sake of other men.

I define "synergy" as follows: Synergy is the unique behavior of whole systems, unpredicted by behavior of their respective sub-systems' events.

[Ideas and Integrities]

Thinking is a putting-aside, rather than a putting-in discipline, e.g., putting aside the tall grasses in order to isolate the trail into informative viewability. Thinking is FM—frequency modulation—for it results in tuning-out of irrelevancies as a result of definitive resolution of the exclusively tuned-in or accepted feed-back messages' pattern differentiability.

["Omnidirectional Halo" No More Secondhand God]

My recommendations for a curriculum of design science:

- |                                  |                            |
|----------------------------------|----------------------------|
| 1. Synergetics                   | 7. Communications          |
| 2. General systems theory        | 8. Meteorology             |
| 3. Theory of games (Von Neumann) | 9. Geology                 |
| 4. Chemistry and physics         | 10. Biology                |
| 5. Topology, projective geometry | 11. Sciences of energy     |
| 6. Cybernetics                   | 12. Political geography    |
|                                  | 13. Ergonomics             |
|                                  | 14. Production engineering |

Here on Southern Illinois' campus we are going to set up a great computer program. We are going to introduce the many variables now known to be operative in economics. We will store all the basic data in the machine's memory bank; where and how much of each class of the physical resources; where are the people, what are the trends—all kinds of trends of world man?

Next we are going to set up a computer feeding game, called "How Do We Make the World Work?" We will start playing relatively soon. We will bring people from all over the world to play it. There will be competitive teams from all around earth to test their theories on how to make the world work. If a team resorts to political pressures to accelerate their advantages and is not able to wait for the going gestation rates to validate their theory they are apt to be in trouble. When you get into politics you are very liable to get into war. War is the ultimate tool of politics. If war develops the side inducing it loses the game.

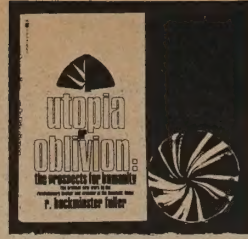
[Utopia or Oblivion]

★  
**Utopia or Oblivion**  
R. Buckminster Fuller  
1969; 366 pp.

**\$1.25** postpaid

from:  
Bantam Books  
666 Fifth Avenue  
New York, N. Y. 10019

or WHOLE EARTH CATALOG



Don't attempt to reform man. An adequately organized environment will permit humanity's original, innate capabilities to become successful. Politics and conventionalized education have sought erroneously to mold or reform humanity, i.e., the collective individual.

[Utopia or Oblivion]

**Operating Manual for Spaceship Earth**

Buckminster Fuller  
1969; 143 pp.

**\$4.25** postpaid

from:  
Southern Illinois University Press  
600 West Grand  
Carbondale, Illinois 62903

or WHOLE EARTH CATALOG

For **\$4.95** you can get a paperback called **Environment and Change** which has an identical "Operating Manual" along with 24 other futuristic articles, including fine pieces by R. G. H. Siu, John R. Platt, Herman Kahn, Robert Theobald, Gunnar Myrdal, David Buzelon, and John Turner.

from:  
University of Indiana Press  
P. O. Box 369  
Bloomington, Indiana 47401

or WHOLE EARTH CATALOG

**Nine Chains to the Moon**

Buckminster Fuller  
1938, 1963; 375 pp.

**\$2.45** postpaid

from:  
Southern Illinois University Press  
600 West Grand  
Carbondale, Illinois 62903

or WHOLE EARTH CATALOG

Common to all such "human" mechanisms—and without which they are imbecile contraptions—is their guidance by a phantom captain.

This phantom captain has neither weight nor sensorial tangibility, as has often been scientifically proven by careful weighing operations at the moment of abandonment of the ship by the phantom captain, i.e., at the instant of "death." He may be likened to the variant of polarity dominance in our bipolar electric world which, when balanced and unit, vanishes as abstract unity 1 or 0. With the phantom captain's departure, the mechanism becomes inoperative and very quickly disintegrates into basic chemical elements.

An illuminating rationalization indicated that captains—being phantom, abstract, infinite, and bound to other captains by a bond of understanding as proven by their recognition of each other's signals and the meaning thereof by reference to a common direction (toward "perfect")—are not only all related, but are one and the same captain. Mathematically, since characteristics of unity exist, they cannot be non-identical.

Since Yogi is a personalized art, the art dies with the person. The abstract power involved remains as real and true, always, but it cannot be made utilizable in increasing continuity for the world in general. Christ and his counterparts realized this and were unique in their refusal to apply this power to self ends. It was this personal limitation of the Yogi art which led the prosaic philosophers to search further. They sought a means of limitless articulation.

[Nine Chains to the Moon]

★  
**Timelock**

42 years ago this prime statement on industrially produced housing apparently fell on deaf ears. Except for the boom in house-trailers (unexpected, unsubsidized, and still harassed by laws), we are still far from realization of this economic and ecological path of least resistance. Americans continue to build fortresses to live in.

[Suggested by Steve Baer]

**Timelock**  
4-D  
1928; 40 pp.

**\$1** postpaid

from:  
Lama/Cookbook Fund  
Box 422  
Corrales, NM 87048

or WHOLE EARTH CATALOG

To begin our position-fixing aboard our Spaceship Earth we must first acknowledge that the abundance of immediately consumable, obviously desirable or utterly essential resources have been sufficient until now to allow us to carry on despite our ignorance. Being eventually exhaustible and spoilable, they have been adequate only up to this critical moment. This cushion-for-error of humanity's survival and growth up to now was apparently provided just as a bird inside of the egg is provided with liquid nutriment to develop it to a certain point. But then by design the nutriment is exhausted at just the time when the chick is large enough to be able to locomote on its own legs. And so as the chick pecks at the shell seeking more nutriment it inadvertently breaks open the shell. Stepping forth from its initial sanctuary, the young bird must now forage on its own legs and wings to discover the next phase of its regenerative sustenance.

Brain deals exclusively with the physical, and mind exclusively with the metaphysical. Wealth is the progressive mastery of matter by mind. . . .

A new, physically uncompromised, metaphysical initiative of unbiased integrity could unify the world. It could and probably will be provided by the utterly impersonal problem solutions of the computers.

Possession is becoming progressively burdensome and wasteful and therefore obsolete.

You and I are inherently different and complementary. Together we average as zero—that is, as eternity.  
[Operating Manual for Spaceship Earth]

**The Untitled Epic of Industrialization**

R. Buckminster Fuller  
1963; 227 pp.

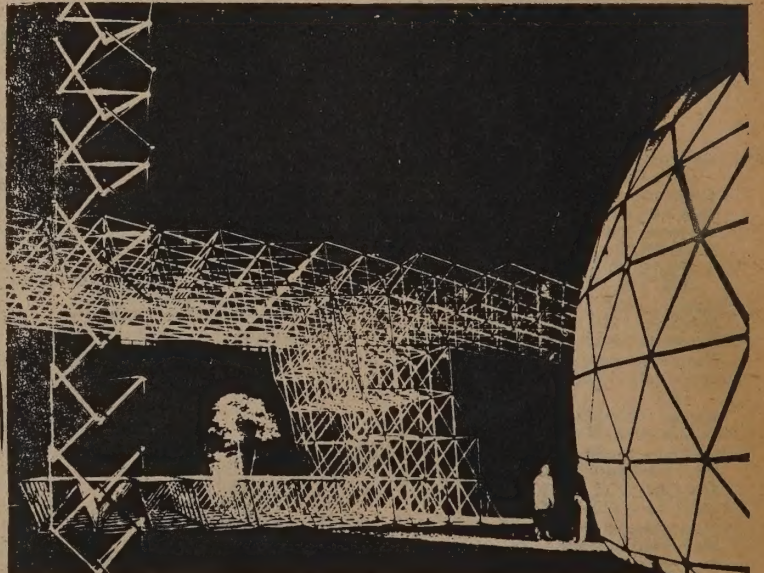
**\$4.50** postpaid

from:  
Small Publishers Company  
276 Park Avenue South  
New York, N. Y. 10010

or WHOLE EARTH CATALOG

However, man unconcernedly sorting mail on an express train, with unuttered faith that the engineer is competent, that the switchmen are not asleep, that the track walkers are doing their job, that the technologists who designed the train and the rails knew their stuff, that the thousands of others whom he may never know by face or name are collecting tariffs, paying for repairs, and so handling assets that he will be paid a week from today and again the week after that, and that all the time his family is safe and in well being without his personal protection constitutes a whole new era of evolution—the first really "new" since the beginning of the spoken word. In fact, out of the understanding innate in the spoken word was Industrialization wrought after milleniums of seemingly whitherless spade work.

[Untitled Epic of Industrialization]



Your greatest artists today are designing for mass production in print, fabric and even radio, etc. Industry makes possible one more dimension in design, fourth dimension. In all design today we use synthetic materials, or recombination of elements, to perform best a given function. A material before it reaches its final lodging, passes through many hands, and over much space, and therefore to be efficient and pleasing, must have no unnecessary weight. When it reaches its destiny, how long will it stay there? For the time limit of its existence. The fourth dimension is time.

WE WILL HAVE ARRIVED AT OUR NEW ARTISTIC ERA OF ARCHITECTURAL EXPRESSION, WHEN OUR BUILDINGS HAVE LOST THEIR LAST TRACE OF FEUDALISTIC OPPRESSIVENESS; WHEN OUR BUILDINGS ARISE IN CONCENTRATED CENTRAL HIDDEN AREA OF COMPRESSION, IN OPPOSITION TO GRAVITY, BY MEANS OF MAST OR CAISON' REACH OUT IN SPACE FROM THE VERTICAL BY TENSION AND COMPRESSION, COMPRESSION DIMINISHING DIRECTLY AS WE RECEDED FROM THE VERTICAL UNTIL THE BUILDING FINALLY FLOWS DOWNWARD IN PURE TENSION.

**Cosmic View**

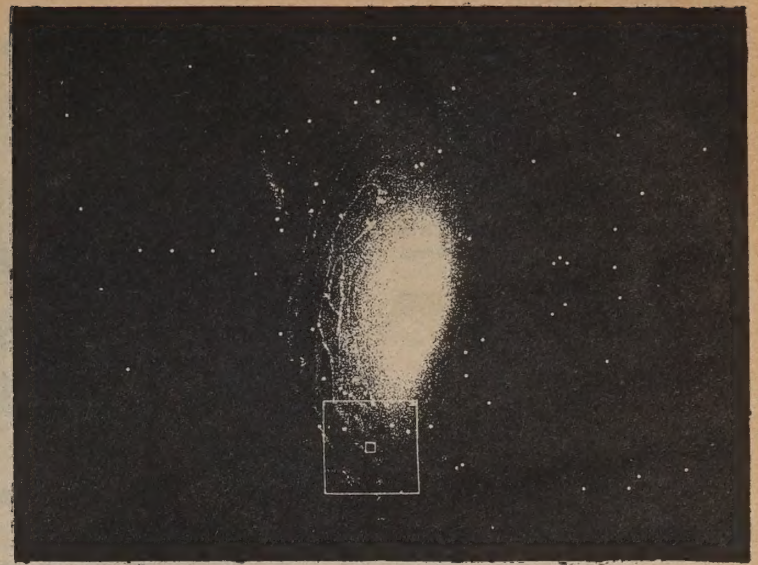
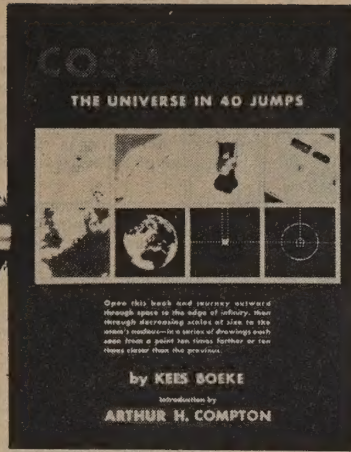
"The Universe in 40 Jumps" is the subtitle of the book. It delivers.

The man who conceived and rendered it, a Dutch schoolmaster named Kees Boeke, gave years of work to perfecting the information in his pictures. The result is one of the simplest, most thorough, inescapable mind blows ever printed. Your mind and you advance in and out through the universe, changing scale by a factor of ten. It very quickly becomes hard to breathe, and you realize how magnitude-bound we've been.

**Cosmic View**  
Kees Boeke  
1957; 48 pp.

**\$4.50** postpaid from:  
The John Day Company  
257 Park Avenue South  
New York, N. Y. 10010

or WHOLE EARTH CATALOG



**Hallwag Star Map**

For two years I've been looking for an inexpensive, accurate, spectacular map of the heavens. This is it, in color. Double and variable stars are indicated, clusters, novae, nebulae, galaxies, and radio sources. Science could have begun with metallurgy, or weather study, or plant breeding. It began with astronomy.



**The Stars**  
48 1/2 x 33"

**\$2.50** postpaid

from:  
Crown Publishers  
419 Park Avenue South  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

**The Hubble Atlas of Galaxies**

This book is a series of superb photographs which is the definition of Edwin Hubble's classification of galaxies. Galaxies come in a variety of shapes from round blurry ones through the familiar spiral in Andromeda to fantastic blazing pinwheels like M101.

Hubble has lined them up in a sequence according to shape. The meaning of this sequence has not yet been determined. It may indicate a series of stages in the life on one galaxy which progresses from blurred youngster to majestic spiral or vice versa. More likely vice versa, since the spirals contain hot young blue stars which we know will burn out in a few million years or so, while the blurry ones contain many ancient red giants. It is also possible that the sequence is not an age sequence at all, but merely reflects conditions at that place in the universe when that galaxy was formed.

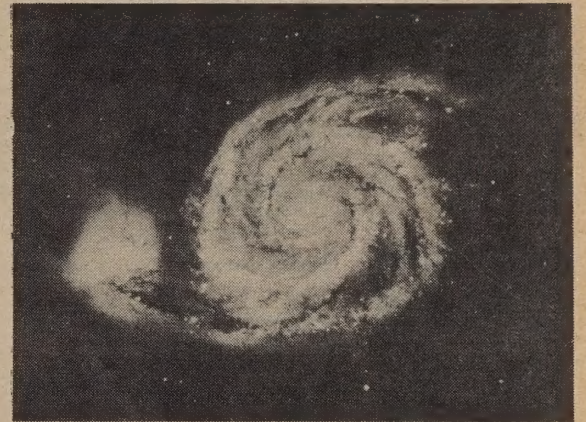
But besides being a tool for scientists, this book is like a guided tour through our own miraculous universe. When this planet gets you down, leaf through the Atlas and feast your spirit on galaxy after galaxy, as beautiful and varied as snow flakes. Some galaxies are so far away that the graininess of the photograph shows in the blow up. Some photographs show small blurred objects in the background which one suddenly realizes are more galaxies.

[Reviewed by Jenny Deupree.  
Suggested by Jordan Belson]

**The Hubble Atlas of Galaxies**  
Allan Sandage  
1961; 50 plates

**\$10.00** postpaid from:  
Carnegie Institution of Washington  
1530 P Street, N.W.  
Washington, D.C. 20005

or WHOLE EARTH CATALOG



**The Observer's Handbook**

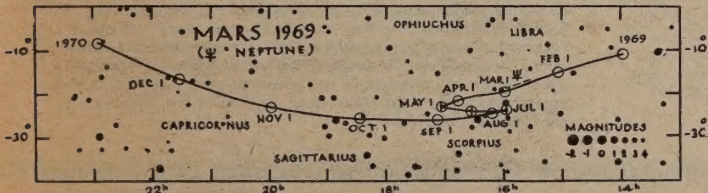
For those who like to stare stars straight in the eye, this is the best amateur astronomer's handbook. Asteroids, clusters, constellations, eclipses, galaxies, planets, nebulae, occultations, radio sources, precession, star maps, sun spots, meteors. Published annually in November. [Suggested by Lee Anderson]



**The Observer's Handbook**  
100 pp.

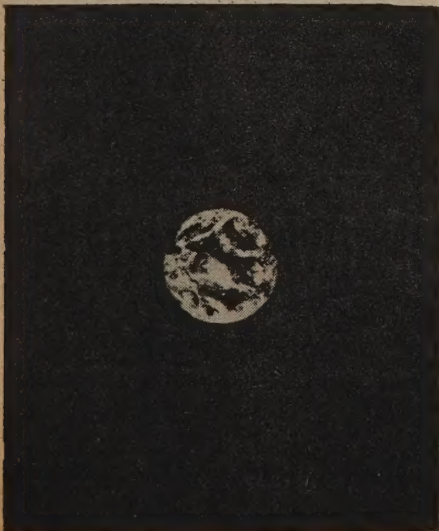
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**Full Earth**

Mandala Earth, the high noon color image shot from a synchronous satellite over South America in November 1967, is available as a poster from WHOLE EARTH CATALOG for \$2 postpaid. It's the same as the cover of the Fall '68 CATALOG, 22" x 27". An order of five or more gets 50% discount.



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There are numerous discoveries in the book. One is that this beautiful place is scarcely inhabited and scarcely inhabitable.

Recently NASA has published a second volume of Gemini pictures. Even better.



**Earth Photographs from Gemini III, IV, and V**  
NASA  
1967; 266 pp.

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**Earth Photographs from Gemini VI through XII**  
NASA  
1968; 327 pp.

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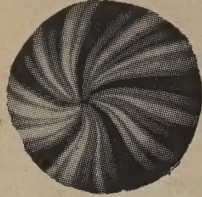
## The Population Bomb

*There's a shit storm coming. Not a nice clean earthquake or satisfying revolution but pain in new dimensions: world pain, sub-continents that starve and sub-continents that eat unable to avoid each other. The consequences will dominate our lives. In the heart of the problem are the solutions, and the sooner we're clear about what's happening the sooner the solutions can work their way out. This book is the best first hard look that's around. The author is a well-regarded young population biologist and ecologist who freaked out of his lab and into the media with the bad news. Besides freaking well he reports well.*

**The Population Bomb**  
Dr. Paul R. Ehrlich  
1968; 223 pp.

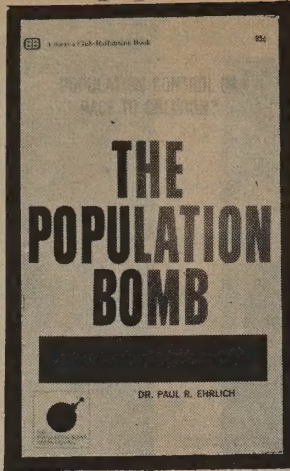
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It is, of course, socially very acceptable to reduce the death rate. Billions of years of evolution have given us all a powerful will to live. Intervening in the birth rate goes against our evolutionary values. During all those centuries of our evolutionary past, the individuals who had the most children passed on their genetic endowment in greater quantities than those who reproduced less. Their genes dominate our heredity today.

The reproductive function of sex must be shown as just one of its functions, and one that must be carefully regulated in relation to the needs of the individual and society. Much emphasis must be placed on sex as an interpersonal relationship, as an important and extremely pleasurable aspect of being human, as mankind's major and most enduring recreation, as a fountainhead of his humor, as a phenomenon that affects every aspect of his being.



"The battle to feed all of humanity is over. In the 1970's the world will undergo famines—hundreds of millions of people are going to starve to death in spite of any crash programs embarked upon now. At this late date nothing can prevent a substantial increase in the world death rate, although many lives could be saved through dramatic programs to 'stretch' the carrying capacity of the earth by increasing food production. But these programs will only provide a stay of execution unless they are accompanied by determined and successful efforts at population control. Population control is the conscious regulation of the numbers of human beings to meet the needs, not just of individual families, but of society as a whole.

Nothing could be more misleading to our children than our present affluent society. They will inherit a totally different world, a world in which the standards, politics, and economics of the 1960's are dead. As the most powerful nation in the world today, and its largest consumer, the United States cannot stand isolated. We are today involved in the events leading to famine; tomorrow we may be destroyed by its consequences.

Remember also that in virtually all underdeveloped countries, people have gotten the word about the better life it is possible to have. They have seen colored pictures in magazines of the miracles of Western technology. They have seen automobiles and airplanes. They have seen American and European movies. Many have seen refrigerators, tractors, and even TV sets. Almost all have heard transistor radios. They know that a better life is possible. They have what we like to call 'rising expectations.' If twice as many people are to be happy, the miracle of doubling what they now have will not be enough. It will only maintain today's standard of living. There will have to be a tripling or better. Needless to say, they are not going to be happy.

A ship has hit the rocks and is sinking. The passengers scream for help. Some jump overboard and are devoured by the circling sharks. A group of distinguished scientists is on board. One of their number suggests that they can help man the pumps. 'Oh, no!' shout the others. 'That might hurt the captain's feelings. Besides, pumping is not our business. It's outside our field of competence.' You can guess what they do. They appoint a committee to study the problem, with subcommittees on marine engineering and navigation. They announce to the passengers that in two or three years the committee will produce a wonderful report which will be acceptable to the passengers, the captain, and the steamship line. Not so passive are the politicians. Some jump up to say that the passengers don't understand the political realities of the situation. Other more progressive politicians grab thimbles and start bailing, stopping every few seconds to accept praise for their valiant efforts.

Careless overuse of DDT has promoted to 'pest' category many species of mites, little insectlike relatives of spiders. The insects which ate the mites were killed by the DDT, and the mites were resistant to DDT. There you have it—instant pests, and more profits for the agricultural chemical industry in fighting these Frankensteins of their own creation. What's more, some of the more potent miticides the chemists have developed with which to do battle seem to be powerful carcinogens—cancer-producing substances.

The old idea that industry could create the mess and then the taxpayers must clean it up has to go. The garbage produced by an industry is the responsibility of that industry.

## Population, Resources, Environment

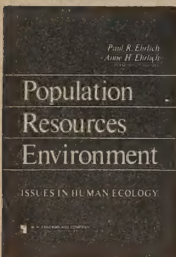
*In Population Bomb Ehrlich spared us the customary statistics and graphs, and he was accused of being no scientist. So here are the statistics and graphs and much besides—a 400-page textbook on the population-ecology crisis. Don't bother taking a course. The lab is the world.*

**Population, Resources, Environment**  
Paul R. Ehrlich, Anne H. Ehrlich  
1970; 400 pp.

**\$.85** postpaid

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W. H. Freeman and Company  
660 Market Street  
San Francisco, CA 94104

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The global polluting and exploiting activities of the DCs are even more serious than their internal problems. Spaceship Earth is now filled to capacity or beyond and is running out of food. And yet the people traveling first class are, without thinking, demolishing the ship's already overstressed life-support systems. The food-producing mechanism is being sabotaged. The devices that maintain the atmosphere are being turned off. The temperature-control system is being altered at random. Thermonuclear bombs, poison gases, and super-germs have been manufactured and stockpiled by people in the few first-class compartments for possible future use against other first-class passengers in their competitive struggles for dwindling resources—or perhaps even against the expectant but weaker masses of humanity in steerage. But, unaware that there is no one at the controls of their ship, many of the passengers ignore the chaos or view it with cheerful optimism, convinced that everything will turn out all right.

1877-1878 *North China*. "Appalling famine raging throughout four provinces [of] North China. Nine million people reported destitute, children daily sold in markets for [raising means to procure] food. . . . Total population of districts affected, 70 millions. . . ." The people's faces are black with hunger; they are dying by thousands upon thousands. Women and girls and boys are openly offered for sale to any chance wayfarer. When I left the country, a respectable married woman could be easily bought for six dollars, and a little girl for two. In cases, however, where it was found impossible to dispose of their children, parents have been known to kill them sooner than witness their prolonged suffering, in many instances throwing themselves afterwards down wells, or committing suicide by arsenic.

All flesh is grass. This simple phrase summarizes a basic principle of biology that is essential to an understanding of the world food problem. The basic source of food for all animal population is green plants—"grass." Human beings and all other animals with which we share this planet obtain the energy and nutrients for growth, development, and sustenance by eating plants directly, by eating other animals that have eaten plants, or by eating animals that have eaten animals that have eaten plants, and so forth.

Because, as indicated in the acknowledgments, the various drafts of our manuscript were thoroughly reviewed by a large number of critics who are competent in the various areas covered, we believe that the factual basis of the book is sound throughout. We do not believe that such minor errors as may be revealed in any of our figures, estimates, or interpretations will change the thrust of our major conclusions. In many areas, of course, it is impossible to determine exactly what has happened, or to know what the significance of certain trends may be. Data are often unreliable or unavailable, and our understanding of the complexities of ecological systems and human behavior is still fragmentary. But in dealing with the population-resource-environment crisis, it is important to recognize that people are going to have to learn to make decisions in the face of such uncertainty. Possible benefits will have to be weighed against possible risks, and a great deal of thought given to possible future events which may seem unlikely but which will be catastrophic if they do occur. It would be a major step forward for mankind if all people could know the general state of the world and could be informed as to just what chances are being taken with their lives and the lives of future generations.

From the almost limitless number of subjects which might have been included in this book, choices of those that were to be treated in detail had to be made. We have tried to emphasize those which seemed to us to be of the most general importance, and we make no apology either for our selection of subjects or for the personal style and approach we have used throughout. We have not attempted to give equal weight to both sides of all controversial issues; where we think one side is correct we have so indicated. We also make no claim to having tried to detail all exceptions to general rules. We hope that this book will provide concerned readers with enough background to enable them to make informed political decisions about environmental issues and to combat what C. P. Snow has referred to as the "excessive unsimplicity" which, in his words, "crops up whenever anyone makes a proposal which opens up a prospect, however distant, of new action. It involves a skill which all conservative functionaries are masters of, as they ingeniously protect the status quo: it is called the 'technique of the intricate defensive.'"

## Resources and Man

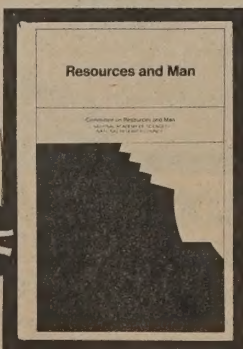
*A fugue of finiteness, this just-published work portrays the true size of our North American yard. How much of the depletables there is, and how long they will last at present or projected rates. Some indications of the levels of exploitation where the "non-depletables" start to give up on regeneration. For what might have been a dry book, the writing has considerable hair on.*

**Resources and Man**  
Cloud, Bates, Chapman, Hendricks, Hubbert, Keyfitz, Lovering, Ricker  
1969; 159 pp.

**\$.295** postpaid

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Peace, population, pollution, and resources are the central interlocking variables whose unsatisfactory management threatens our options.

*That the fossil fuels be conserved for uses which cannot be met by other sources.* The fossil fuels (petroleum, natural gas, coal) are needed for petrochemicals, synthetic polymers, and essential liquid fuels, for which suitable substitutes are as yet unknown. They might also play a part in synthetic or bacterial food production (although such a use is also limited). They should not be spent in the generation of electricity, for heating, and for industrial purposes where substitutes can qualify. The Department of the Interior should be authorized and directed to develop and institute a practicable and effective hydrocarbon conservation program.

"In the West, our desire to conquer nature often means simply that we diminish the probability of small inconveniences at the cost of increasing the probability of very large disasters."

Kenneth E. Boulding

Some of the major fisheries whose take has declined importantly are listed below; the dates indicate (approximately) the beginning of a major slump from which there has been no important recovery as yet:

Antarctic blue whales	1935
East Asian sardine	1945
California sardine	1946
Northwest Pacific salmon	1950
Atlanto-Scandian herring	1961
Berents Sea cod	1962
Antarctic fin whales	1962

Species now showing signs of strain include the Newfoundland cod, North Sea herring, menhaden, British Columbia herring, Bering Sea flatfishes, and yellowfin tuna in the eastern Pacific. Even if these are not yet being fished to the point where sustainable yield has been reduced, there is little prospect of their yield being increased appreciably.

"The optimist proclaims that we live in the best of all possible worlds; and the pessimist fears this is true."

James Branch Cabell

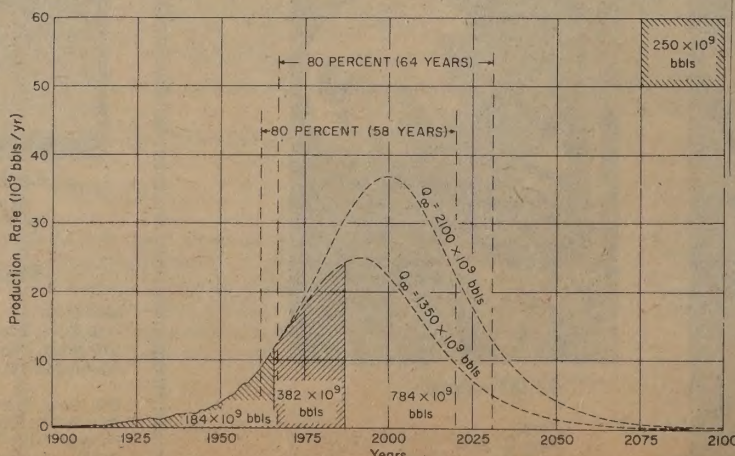


FIGURE 8.23 Complete cycles of world crude-oil production for two values of  $Q_0$ .

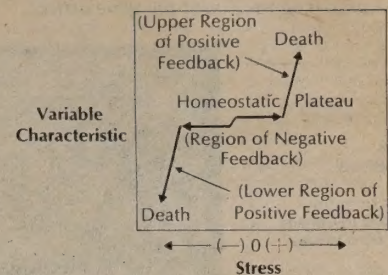
## The Subversive Science

"So God created man in his own image, in the image of God he created him; male and female he created them. And God blessed them, and God said to them, 'Be fruitful and multiply, and fill the earth and subdue it, and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth.'" Genesis 1, 27-28.

*And we have been fruitful, and we have filled the earth and subdued it, and we have dominion over every living thing. And what is subversive about ecology is that we know now we must turn aside from that ancient narrow edict, and live with, and not upon, the earth.*

The Subversive Science is thirty-seven essays on the shape of life. By its very breadth it creates a depth of truth no single point of view could ever make. There is a new world view within this book, a new sense of ourselves and our position on and within this earth. It is rigorous and scientific and yet in its vibrant complexity almost mystic.

[Reviewed by Cary James]



We who were close to the Indians watched the disappearance of boys from public view. Even their father saw them no more. After sometimes a year, sometimes eighteen months, the boys returned—from the underground kivas, from the pathless areas of the Sangre de Cristo range, from the hidden crag where perhaps burns the mystical everlasting fire. Radiant of face, full-rounded and powerful of body, modest, detached: they were men now, keepers of the secrets, houses of the Spirit, reincarnations of the countless generations of their race; with "reconditional reflexes," with emotions organized toward their community, with a connection formed until death between their individual beings and that mythopoeic universe—that cosmic illusion—that real world—as the case may be, which both makes man through its dreams and is made by man's dreams.

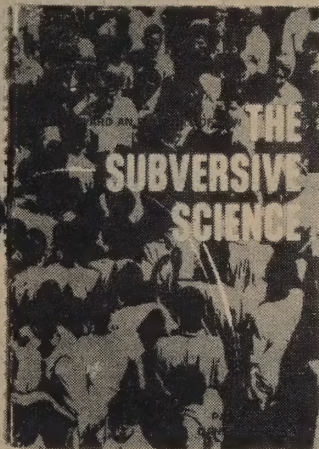
### The Subversive Science— Essays Toward an Ecology of Man

Paul Shepard  
Daniel McKinley, eds.  
1969; 453 pp.

\$5.95 postpaid

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Houghton Mifflin Co.  
Wayside Road  
Burlington, Mass. 01803

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Igloos, tepees, prairie sod-huts, hogans, pueblos—have ecology in their roof-lines.

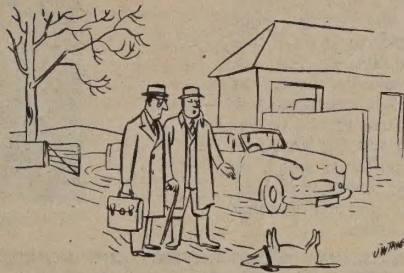
These shelters for families, like such individual protectors as sunbonnets, sombreros, serapis, are oriented to a landscape, to weather, and to local materials.

The desire to maintain absolute constancy in any system must be recognized as deeply pathological. Engineering theory indicates that excessive restraints can produce instability. In psychiatry also, the desire for complete certainty is recognized as a most destructive compulsion. And in the history of nations, attempts to control rigidly all economic variables have uniformly led to chaos. The psychologically healthy human recognizes that fluctuations are unavoidable, that waste is normal, and that one should institute only such explicit controls as are required to keep each system on its homeostatic plateau. We must devise and use such controls as are needed to keep the social system on the homeostatic plateau. On this plateau—but not beyond it—freedom produces stability.

One of the greatest of the technical social inventions of ancient Athens was that of ostracism, which was invented by Cleisthenes. We are told:

Once a year the popular Assembly deliberated on whether any citizen should be required to go into exile for ten years on the grounds that his presence in Athens was a threat to the constitution. If the Assembly voted to hold an ostracism, a second vote was taken. Then, if six thousand citizens wrote the same name on an ostrakon, or potsherd, the man named must leave Athens for ten years. But he did not lose his citizenship, his goods were not confiscated, he did not even suffer disgrace. In fact, it was only the man of great ability who was likely to be ostracized, yet the possibility of ostracism was a constant deterrent to overwhelming political ambition.

Perhaps the most serious obstacle impeding the evolution of a land ethic is the fact that our educational and economic system is headed away from, rather than toward, an intense consciousness of land. Your true modern is separated from the land by many middlemen, and by innumerable physical gadgets. He has no vital relation to it; to him it is the space between cities on which crops grow.



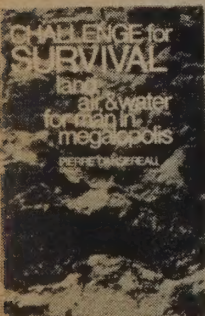
"This is the dog that hit the cat that killed the rat that ate the malt that came from the grain that Jack sprayed." (Reproduced by permission of Punch.)

When we think in terms of systems, we see that a fundamental misconception is embedded in the popular term "side-effects" (as has been pointed out to me by James W. Wiggins). This phrase means roughly "effects which I hadn't foreseen, or don't want to think about." As concerns the basic mechanism, side-effects no more deserve the adjective "side" than does the "principal" effect. It is hard to think in terms of systems, and we eagerly warp our language to protect ourselves from the necessity of doing so.

Whether you will or not  
You are a King, Tristram, for you are one  
Of the time-tested few that leave the world,  
When they are gone, not the same place it was.  
Mark what you leave.

### Challenge for Survival

Jesus, there are a lot of ecological anthologies coming out. This one's value is that it focuses on the devil himself. The city.



Challenge for Survival  
Pierre Dansereau, Ed.  
1970; 235 pp.

\$7.95 postpaid

from:  
Columbia University Press  
440 West 110th Street  
New York, N. Y. 10025

or WHOLE EARTH CATALOG

Long ago, floods were described as Acts of God. Today, these are known quite often to be consequences of the acts of man. As long ago, droughts were thought to be Acts of God, too, but these, it is now known, are exacerbated by the acts of man.

What will be left of the plant world if we allow the basically village culture, founded on a close symbiotic partnership between man and plants, to disappear? For some twelve thousand years, all the higher achievements of civilization have rested on this culture, one devoted to the constructive improvement of the habitat and the loving care of plants—their selection, their nurture, their breeding, their enjoyment. That culture, as Edgar Anderson suggested, originally made some of its best discoveries in breeding by being equally concerned with the color, the odor, the taste, the flower and leaf patterns, the sexual functions, and the nutritive qualities of plants, valuing them not only for food and medicine, but for esthetic delight. There are plenty of people working in scientific laboratories today who, though they may still call themselves biologists, have no knowledge of this culture, except by vague hearsay, and no respect for its achievements. They dream of a world composed mainly of synthetics and plastics, in which no creatures above the rank of algae or yeasts would be encouraged to grow.

Mere survival is not good enough: we must devise a strategy to ensure the further development of plants and men.

### Applied World Saving

For a world-scale journal of ecology, try *Intecol Bulletin* (\$3/yr from Blackwell Scientific Publications Ltd., 5 Alfred Street, Oxford, OX1 4HB). A recent report of what's happening with the new strains of wheat and rice is *Seeds of Change* (Lester R. Brown, 1970, 205 pp; \$6.95 from Frederick A. Praeger, 111 Fourth Avenue, N. Y., N. Y. 10003). For wilder possibilities in food production, see *Food Resources Conventional and Novel* (N. W. Pirie, 1969; 208 pp; \$1.25 from Penguin Books, Inc., 7110 Ambassador Road, Baltimore, Md. 21207).

### Liferaft Earth

Robert Frank's 37-minute 16mm color sound film of the *Hunger Show* staged last October by Portola Institute may be rented for \$30 from WHOLE EARTH CATALOG. "I'm sorry, Leon," said Bonnie Jean, "I'm hungry and I'm crazy."



Although there are several good textbooks of plant ecology, of animal ecology, and a few that attempt to cover both and, almost as an afterthought, to include man, we do not seem to be ready for a total apprehension of the acquisitions of ecology. A formal recognition of a limited number of laws, encompassing the facts and processes of environmental structures and dynamics, is yet to come.

★  
Earth Times

*Just in time, a newspaper for sure-enough world-savers. It has a good wide scope, and intelligence to match its fervor.*

*If the format and art-work looks identical to Rolling Stone, that's because it comes out of the same offices.*

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Stephanie Mills, ed  
\$5.00 /year (monthly)  
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Earth Times  
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KW: It's really incredible that I get a lot of press coverage because of the fact that I come out and make startling pronouncements. The amusing thing is that there isn't even any follow-up to figure out if they're true or not. You would think that the media itself would peel off a reporter, just for fun, to go look at the records and see if what I'm saying is correct. The newspapers don't do this. You know, people go away from my lectures convinced that what I've said is true, but they don't know what it is that I've said—it's the damndest situation, and my feeling is that this is what we've got to work on. We've got to learn how to communicate an idea that sticks.

KW: One of the conclusions that comes out of models of this sort is that most large-scale social systems are counter-intuitive. SM: Counter-intuitive?

KW: Counter-intuitive. That is, the properties of complex modern social systems are such that the intuitively obvious solutions to various problems are typically wrong.

Hitchhiking in Numbers:

If you find someone firmly entrenched in your chosen thumb-site, extend greetings and ask if you can share territory. And, yes, there is safety in joining forces. If there's a gentleman your radar indicates you can trust, stick with him as long as your paths hang together. This has multiple advantages: Next to a single female, the male-female combination attracts the widest range of people. Even little old ladies will pick you up if you look vaguely in love. With the added protection, you get to relax and enjoy the ride. Very few (even horny and male) drivers will molest an accompanied female. Another female is better than no companionship at all, although it's just possible that, however innocently, she may hang you up by agreeing to a side-trip to the beach.

Remember that, as a lady hitchhiker, it's not only your absolute prerogative to be choosy, but absolutely necessary. There's no social convention in the world which says that you can't turn down a ride, or ask to be let out of a car the minute things strike you as potentially uncomfortable. You may also, in certain circumstances, lie like mad about your marital and social status, your health (nobody's going to bug a chick who's just announced that she *may* vomit), your phone number (memorize that of the local police station or SPCA), your address (if he offers to take you home, but you don't want to see him ever again, ask to be let out two or three blocks away). As a matter of fact, if you find your life, your chastity, your peace of mind, or even just your sense of humor in danger, you may tell any story your nimble mind can concoct on short notice.

KW: I think it's going to take economic types of factors to get people to change. One thing that could produce a gigantic change would be hard evidence that we are not going into a recession but a deep depression. The red flags are up. We're not quite sure anymore that this is a recession that we're going to be out of in a little while. We're beginning to think that it's something of a very different order. Basically it's challenging the fundamental idea of modern America, that growth is good and necessary and inevitable.

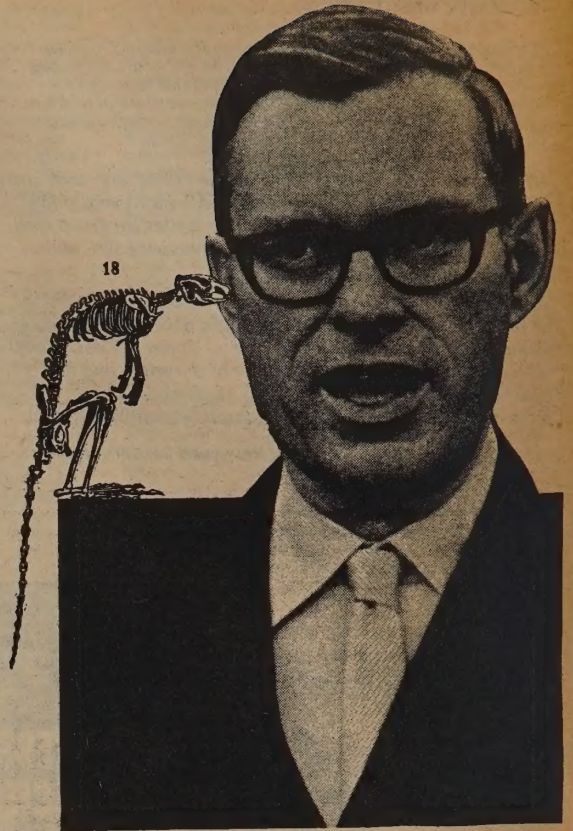
SM: How does a recession relate to uncontrolled growth?

KW: It's showing that the idea that growth is inevitable is a lot of baloney. The stock market is now where it was six years ago. That's not a great big lot of galloping growth. The air lines and airplane manufacturers have been pursuing the idea that bigger and faster is better for some time now, and they're falling on their faces on that one. The jumbo jets and the air buses are going to cream the airlines and the SST will just wipe them out.

KW: The only thing that will get people to change is the severity of the problems. Like at the moment when I say that we're moving into an ice age, most people say, "Hah. That types him—you know, he's nuts." But ten years from now, things will be weird enough that people will be saying, "By God, so that's why it's snowing in May!" The impression I get is that on one hand, everyone is fed up with hearing about the environment, and on the other, we haven't really communicated anything yet. The whole situation just baffles me. Everybody is alerted to the fact that there is a large and obviously educated group frightened stiff. All kinds of people are running around making dire and legitimate projections. But I don't think that the public is really alarmed. An ice age is a six-degree drop in temperature, and we've already got a third of that in New York City, and nobody even notices. I think you have to drop blocks of ice on people before they become aware that the weather's changing.

Let us join together with free wolves and watch them explore the sweet and secret territory of our imagination and their wild homes. Watch the sky change with them in the long slow arctic winter. See them briskly home from the evening's hunt carrying a bellyful of caribou meat for the cubs. Or sleeping in front of the den at noon, resting but mindful of the fresh wind and the scent of the change of seasons. In play, in greeting, exploring the ever new possibilities of being alive and intact in a world still whole. We can have wolves, and they can have us—and we need never meet—except in the silent pact that we make together.

Creatures under a common moon.



Kenneth Watt



Still hunted, poisoned, trapped, captured & polluted, the wild wolf is almost extinct.

★  
Omen

*This here is a big beautiful inexpensive magazine about the religion of ecology. I'm not sure you can get religion from a magazine. Omen does give good annotated access to its sources of inspiration; in fact it stocks them for mail order sale, which is handy.*



Omen  
Walter H. Bowart, Ed  
\$8.00 /year (9 issues)

from:  
Omen Press  
Box 12457  
Tucson, Arizona 85711



The best things cannot be told, the second best are misunderstood. After that comes civilized conversation; after that, mass indoctrination; after that, intercultural exchange. And so, proceeding, we come to the problem of communication: the opening of one's own truth and depth to the depth and truth of another in such a way as to establish an authentic community of existence.

Joseph Campbell  
*The Masks of God, Creative Mythology*

One must admire the Japanese system of education for giving its school children a chance to visit and live on every island of Japan during the summers at government expense.

*Planeta Fresco*, 14, Via Manzoni, 20121 Milano, Italy. Editor: Nando Sottsass Pivano.

This Italian magazine of poetry and art is worth the pictures even if you don't read Italian.

"We live in a metaphysical mediterranean island, plenty of priests, police, fascist and communist congressmen, memories of glorious millenia which no one ever saw, which everyone keeps invoking as a magic alibi.

"We will always send to you all we do and please give us your help with your mags and thoughts. We love you, we love all the world," says *Planeta Fresco*.

When I first encountered the images of *The Tarot for the Aquarian Age* I was immediately struck by their evocative force. Unlike the images of the old Tarot deck, which (to me) had appeared lifeless, these had a kind of direct electric-emotional "charge," and some of them were strongly reminiscent of images found in dreams or under the effects of certain chemicals. I started to "work" with them—that is, I put the ones I was most drawn to up on the wall and began to meditate and reflect on their meanings. Over a period of a few weeks they would become strikingly "familiar"—they would intrude suddenly in my waking thoughts, fragments might appear in dreams or during quiet moments. They appeared to work a kind of subtle transformation of unconscious, prerational "complexes" (to use the Jungian terminology). A fixed image-complex, surrounded by anxious feelings, could, by contact with one of these Tarot images evolve into an enlarging, affirmative, enlightening vision. Then after a time, another one of the series might emerge as an indicator of the "next step."



★  
The Environmental Handbook

The Environmental Handbook as "the bible" of New Conservation. Paul Ehrlich, the others, as prophets predicting the literal end of the world. Ecology Action, the others, as young disciples working zealously to save it. The Survival Walk from Sacramento to L.A. as a modern version of the crusades. The public outcry against pollution as an evangelical call to cast out evil. San Jose State students actually burying a devil alive, in the form of a new Maverick.

While Lynn White Jr. says: "Human ecology is deeply conditioned by beliefs about our nature and destiny—that is, by religion. . . . The victory of Christianity over paganism was the greatest psychic revolution in the history of our culture. . . . We continue today to live, as we have lived for about 1700 years, very largely in a context of Christian axioms. . . . Christianity, in absolute contrast to ancient paganism and Asia's religions . . . not only established a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends. . . . [Christians] are superior to nature, contemptuous of it, willing to use it for our slightest whim."

Conservation asking Christian America to quit being Christian America, America saying can't, I need the money.

Psychic revolution. Beginnings of religious war. Christ a space-age anti-Christ. Battle in the cockpit. Veer left, veer right. 66,000 miles an hour. Off course! Quick! Somebody grab the wheel!

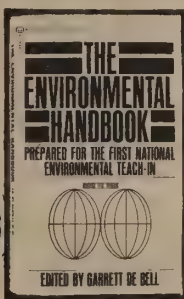
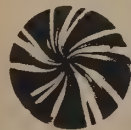
[Reviewed by Gurney Norman]

The Environmental Handbook  
Garrett De Bell, Ed.  
1970; 365 pp.

\$.95 postpaid

from:  
Ballantine Books, Inc.  
101 Fifth Avenue  
New York, N. Y. 10003

or WHOLE EARTH  
CATALOG



The phrase "health of the environment" is not a literary convention. It has a real biological meaning, because the surface of the earth is truly a living organism. Without the countless and immensely varied forms of life that the earth harbors, our planet would be just another fragment of the universe with a surface as drab as that of the moon and an atmosphere inhospitable to man. We human beings exist and enjoy life only by virtue of the conditions created and maintained on the surface of the earth by the microbes, plants, and animals that have converted its inanimate matter into a highly integrated living structure. Any profound disturbance in the ecological equilibrium is a threat to the maintenance of human life as we know it now.

Rene DuBos

★  
Ecotactics

The Sierra Club's new paperback, *Ecotactics*, was published two months after *Friends of the Earth* brought out *The Environmental Handbook*. The difference shows, but not enough to hurt. If *The Handbook* hadn't got there first, *Ecotactics* would be a hot item indeed. It's not quite as punchy as *The Handbook* but it's got a lot of good stuff in it, most of it by ecology writers I hadn't heard of before, which I consider a virtue. I mean, I've heard Paul Ehrlich and Rene DuBos and other big guns who appear prominently in *The Handbook*. I know what they have to say. It's encouraging to see just how many good young writers the whole ecology thing is producing. Since both books cost only 95 cents, the serious ecology revolutionary by all means ought to have copies of each. They complement each other, sort of fill in each other's holes. For example, *The Handbook* contains Gary Snyder's now-famous environmental manifesto, "Four Changes," while *Ecotactics* presents a short article about Snyder himself, as a man, a poet and a naturalist. Both statements deserve wide audiences. So do both the books as wholes.

[Reviewed by Gurney Norman]

To deal with a system of oppression and suppression, which characterizes the environmental violence in this country, the first priority is to deprive the polluters of their unfounded legitimacy. Too often they assume a conservative, patriotic posture when in reality they are radical destroyers of a nation's resources and the most fundamental rights of people. Their power to block or manipulate existing laws permits them, as perpetrators, to keep the burden of proof on the victims. In a country whose people have always valued the "open book," corporate and government polluters crave secrecy and deny citizens access to the records of that which is harming their health and safety.

Youth must develop an investigative approach to the problems of pollution. It is one of the most basic prerequisites. Not only must there be a close analysis of corporate statements, and periodicals, annual reports, patents, correspondence, court records, regulations, technical papers, Congressional hearings and agency reports and transcripts, but there must be a search for the dissenting company engineer, the conscience-stricken house lawyer, the concerned retiree or ex-employee, the knowledgeable worker and the fact-laden supplier of the industry or company under study. They are there somewhere. They must be located.

Ralph Nader

You can imagine hearing someone say, "Remember the subversion that used to be where that orange grove is?" You can see a web of parks throughout the cities replacing the freeways and streets that once dominated. You can see agriculture become diversified again, with a great variety of crops grown together, replacing the old reliance on mass-produced single crop operations that are highly dependent on pesticides, machines, and cheap farm labor. The traditional American values of rural life come back, and many more people grow their own food on smaller holdings and with a better quality of existence for the farm workers—and for everyone else.

More fruits and vegetables have insects on them instead of poisons. They can be brushed off or swallowed accidentally without harm. They are not mutagenic. They eat very little themselves, and because there is no monocrop, they can't wipe it out.

We see an end to some of the contradictions in American life. Where we once burned fossil fuels and polluted the air to provide electricity to run the escalators and other labor-saving devices that fattened us and sent us to the electric exercise machines and calorie-free soft drinks, we can rediscover walking. Where we overheated or over-conditioned our air, we rely again on the human adaptability to stress that shaped us and gave us our physical integrity over a million years of living. Although the small labor-saving devices did not use much power, their aggregate use increased the demand for electricity, and with it the need for more dams, more oxidizing of fossil fuel, and more proliferation of nuclear power plants and their radionuclides. We find that diminishing dependence upon electric devices diminishes the need to build dams on wild rivers, pollute the air and sea with fossil fuels, and poison the ecosphere with dispersing nuclear waste.

With conspicuous consumption eliminated, we have more leisure time and a shorter work week. There are fewer automobiles, less reliance upon wasteful packaging, and less need for the labor saving devices that exploited natural resources in order to save time to spend with little reward in our overdepleted world. We produce what we need and not a surplus. We allocate limited resources. New economists adjust economic sights to accommodate the requirements of our spaceship Earth, limited closed system that it is. The economists rethink about growth and know that "growth for the sake of growth is the ideology of the cancer cell," as Edward Abbey pointed out.

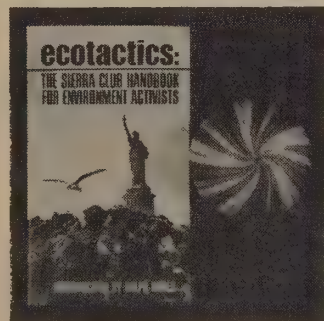
There is less spectator sport and more participating. The American people, once a nation of watchers, are "do-it-yourself people" again. They ski where the snowmobiles took them, walk where trail bikes crudded the wilderness and swim where motorboats droned over lakes they oiled. The people buy less music and make more of their own. There is a world quiet enough to hear it in.

People are healthier. Fewer coronaries strike them because walking and bicycling and swimming keep them fitter. There are fewer people in hospitals because the old murderous automobile-oriented transportation system has been brought under control. Even the former automobile manufacturers, salesmen, and service people live longer, better lives. One major change is that every product we buy includes in its price the cost of its ultimate disposal. The many products that once were cheap because they were dumped at will have become so expensive that they no longer end up cluttering the environment.

Many of the people who were producing automobiles have been shifted into the housing or building industry. Their main job is restructuring the urban wastes to planned cities, restoring land to good agricultural use, building high-quality clustered dwellings at the edges of the good agricultural land, using recycled material from the old buildings. People ride the short distance to their work and have a chance to farm a little in the sun. There are legs and arms and abdomens where the flab was, and the air is once again transparent.

The idea that a steady state works is commonplace. The population is declining slowly toward a balance between man and the other living things upon which his own life depends. The need for, and number of, schools, doctors, highways, roads, public parks, recreational facilities, swimming pools, and other facilities is roughly the same from year to year. People work enough to service equipment and to replace things that wear out. They devote energy to increasing the quality of life rather than to providing more and more possessions. The job of the garbage man and junk man is elevated to the stature of recycling engineer, looping systems in such a way that materials cause no environmental deterioration. Many power plants and dams are dismantled as the amount of energy needed each year declines and people develop sensible ways of living that require much less power, pollution, and environmental disruption. There is decentralization of many basic services. Ecologically sound food stores prosper, offering pesticide-free produce in returnable containers.

Advertising serves to inform, not to overstimulate, and is believable again. Wilderness areas are no longer under attack, and retreat wilderness increases substantially each year; less land is needed for commercial timber production because of effective recycling of wood products, reduction of conspicuous consumption and the lessening of need as the population drops. Poisoning of the ecosystem by the leaded automobile gasoline has ceased because engine redesign eliminates the need for lead additives.



Ecotactics  
1970; 287 pp.

\$.95 postpaid

from:  
Simon and Schuster, Inc.  
630 Fifth Avenue  
New York, N. Y. 10020

or WHOLE EARTH CATALOG

Though the medium may be the message, the event itself is a very crucial part of what's transmitted. So strive for far-out symbolic actions on meaningful, relevant issues that will seize the imagination and commitment of the press and the public. The overall rule of thumb is to localize the greater issues at hand in the ecology movement. Don't just demonstrate against water pollution; pick a nearby polluted stream and wage a cleanup campaign. Everybody knows industry kills; identify which industries. Shine a giant searchlight on belching smokestacks at night. Give DIS-honor awards to polluters. Picket. Have a mock funeral for an internal combustion engine. A simple idea can blossom into a great publicity-getter, and accomplish something in its own right. Pete Seeger set out last summer with songs and a sailing sloop on the befoiled Hudson River and turned on thousands to the problem of water pollution.

John Zeh

Emphysema and lung cancer caused by smog are eliminated and the smog goes. People learn how to garden again, and allow the recovery to take place of the natural forms of "pest" control instead of heavy doses of pesticides.

People are learning progressively more about relying less on gadgets. They have long since refused to buy ten cents worth of food in a T.V. dinner on an aluminum platter that will outlast the food for generations.

Many of the things built in the past in the name of conservation are being unbuilt. The Army Corps of Engineers is spending its time undoing the damage it has done over the past decades. Cities no longer ask the Corps to build a dam to prevent flooding of houses unwisely built on a flood plain. Instead, they ask the Corps to restore the flood plain to a vegetative cover that accommodates floods—good creative work for engineers.

And that technological mistake, the supersonic transport, has long since been a strange delusion, the few that were built having been dismantled and forgotten.

Garrett De Bell

Micronesian "out-islander" in particular—that is, those who live across a hundred miles or more of sea from any neighboring islands, and whose contact with the rest of the world is limited to the few souls who arrive on the eighty foot government boat every six months—simply don't think about infinity, or to put it more accurately, the idea that everything is possible.

In order to survive out there by themselves, they've had to gain a pretty good feeling for pacing the breadfruit production and the coconut eating. In some of those places the highest crime is cutting down a coconut tree without communal permission.

Jerry Mander

Education, particularly higher education, is critically important to solving our ecological crisis. . . . The whole direction and purpose and thrust of our culture is toward greater production, greater exploitation. In many if not in most of our universities, there is little criticism of the basic assumptions and value judgments that underlie our current priorities. The university is quite capable of developing an automated machine to harvest almost any crop, but it is unable to evaluate the long-term social costs of such a development.

Garrett De Bell

By conventional bookkeeping methods, for example, the coal companies strip-mining away the hillsides of Kentucky and West Virginia show a handsome profit. Their ledgers, however, show only a fraction of the true cost of their operations. They take no account of destroyed land which can never bear another crop; of rivers poisoned by mud and seeping acid from the spoil banks; of floods which sweep over farms and towns downstream, because the ravaged slopes can no longer hold the rainfall.

John Fischer

When writing press releases or dealing with reporters, remember the media are always looking for new metaphors and good ideas. Questions such as: What is ecology? Why are you involved in it? What do you hope to accomplish by holding a teach-in? are going to be asked again and again. Be prepared to answer very broad questions like these in one or two sentences which are concise and interesting. The person doing PR should not only be informed and able to handle a variety of rhetoric but should also be interesting or unusual in his own right. Put yourself in the reporter's shoes: what is it about you, your group, and your activities that would make a good story?

Barbara Parker

I personally doubt that disastrous ecologic backlash can be avoided simply by applying to our problems more science and more technology. Our science and technology have grown out of Christian attitudes toward man's relation to nature which are almost universally held not only by Christians and neo-Christians but also by those who fondly regard themselves as post-Christians. Despite Copernicus, all the cosmos rotates around our little globe. Despite Darwin, we are *not*, in our heads, part of the natural process. We are superior to nature, contemptuous of it, willing to use it for our slightest whim.

Lynn White, Jr.

Eco-Pornography of How to Spot an Ecological Phony

1. Is (insert name of company) advertising in this voice to solve a problem or to prolong it?
2. Does a press conference fog up what counts?
3. Does an ad obscure the issue?
4. Does the ad sell pie before it is in the sky?
5. Is the ad really suggesting more dangerous alternatives?

Check it out. If the advertiser fails, tell him and your friends.

Tom Turner

I am interested in the way that a man looks at a given landscape and takes possession of it in his blood and brain. For this happens, I am certain, in the ordinary motion of life. None of us lives apart from the land entirely; such an isolation is unimaginable. We have sooner or later to come to terms with the world around us—and I mean especially the physical world, not only as it is revealed to us immediately through our senses, but also as it is perceived more truly in the long turn of seasons and of years. And we must come to moral terms. There is no alternative, I believe, if we are to realize and maintain our humanity, for our humanity must consist in part in the ethical as well as the practical ideal of preservation. And particularly here and now is that true. We Americans need now more than ever before—and indeed more than we know—to imagine who and what we are with respect to the earth and sky. I am talking about an act of the imagination essentially, and the concept of an American land ethic.

N. Scott Momaday

The great enemy of open space is not the Federal government. It's the local governments. There's no local government in this country that is suited to turn down a new payroll or a new property tax base. Our country's built on a property tax supporting local government. Every impoverished county that has lovely open space, every city that wants to expand is going to permit development. After all, it wasn't the local but the Federal government that got in and stopped the jetport. When you say there was no outpouring for the jetport, what you really mean is there wasn't any sentiment in Florida against the jetport.

Paul McCloskey

**Nature and Man's Fate**

*THE introduction to theoretical and applied evolution. Hardin is further than anyone in blending the insights of evolution and cybernetics into what may be an embryonic science of general development. Still it's a completely earthly book. The specific history of Darwin and his idea. The specific application of evolutionary understanding to human survival now.*

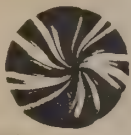
**Nature and Man's Fate**

Garrett Hardin  
1959; 320 pp.

**\$.95** postpaid

from:  
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New York, N. Y. 10019

or **WHOLE EARTH CATALOG**



So we see that the concept of progress, for all its historical importance in sheltering the idea of evolution, is not easily applicable to facts of biology.

*All men are, by nature, unequal*—this is the censored truth of our century. We are as afraid of the consequences of admitting this truth as the Victorians were of the consequences of admitting that men are animals. Yet surely history will ultimately show that, in both instances, the consequences are good and compatible with human decency.

As early as 1920, the philosopher, Bertrand Russell, spelled out the nightmare qualities of the Russian dream in terms that he never needed to revise in the light of later facts. For his pains and his honesty Russell was quietly ousted from his position as the philosophic spokesman of the liberal elements. (Since he was patently unfit to speak for the conservatives either, he was henceforth a philosophic man without a party. This position may not be the most comfortable of all positions, but for a living philosopher it has its advantages.)

As a species becomes increasingly "successful," its struggle for existence ceases to be one of struggle with the physical environment or with other species and comes to be almost exclusively competition with its own kind. We call that species most successful that has made its own kind its worst enemy. Man enjoys this kind of success.

It is one of the few rules of evolution that extreme specialization results in eventual extinction. Environmental changes are inevitable, and the specialist-species is too strongly committed to one way of life to be able rapidly enough to "back up" genetically and take off in another "direction." All the evidence of comparative morphology and paleontology, fragmentary though it is, indicates that each new group of organisms arises from very unspecialized species of the group "below" it, not from the conspicuously specialized ones.

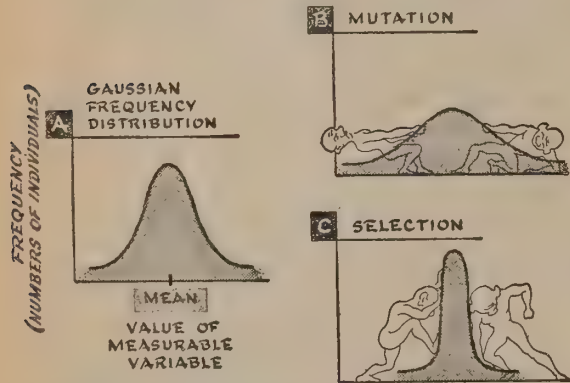


Fig. 7. The effects of mutation and selection on a Gaussian ("normal") distribution curve.

**Population, Evolution, and Birth Control**

*Once you've woken up to the population squeeze and the blindness of most of your fellow men, it's worth looking around. Garrett Hardin has assembled a strong selection of eyes to look around with. Here are the ingredients for understanding. Now, how do we get the mule's attention?*

The closed earth of the future requires economic principles which are somewhat different from those of the open earth of the past. For the sake of picturesqueness, I am tempted to call the open economy the 'cowboy economy,' the cowboy being symbolic of the illimitable plains and also associated with reckless, exploitative, romantic, and violent behavior, which is characteristic of open societies. The closed economy of the future might similarly be called the 'spaceman' economy, in which, therefore, man must find his place in a cyclical ecological system which is capable of continuous reproduction of material form even though it cannot escape having inputs of energy.

Kenneth E. Boulding

It is not easy to define "play" precisely, but whatever it is, it is something that is in some sense non-competitive, non-rational, non-economic. It is also productive of novelty in viewpoints, opening a path to new ways of doing things that would often never be discovered if only direct, completely rational, wholly efficient approaches were employed. Play, for many men, is by no means confined to childhood; it extends into the adult state, only changing its form. Freud has said, "The child has toys; the mature man has art and science." Out of the play called science—which is possible only to a society rich enough to suspend partially the laws of competition—out of the economically non-competitive intellectual play called science there comes, in fact, a competitive weapon of the most powerful sort, technology. Competition has its own dialectic.

*In order to make a perfect and beautiful machine, it is not requisite to know how to make it. Quite so.*

... To Darwinians, Design emerges from blind Waste. "To be an Error and to be cast out is a part of God's Design," said William Blake.

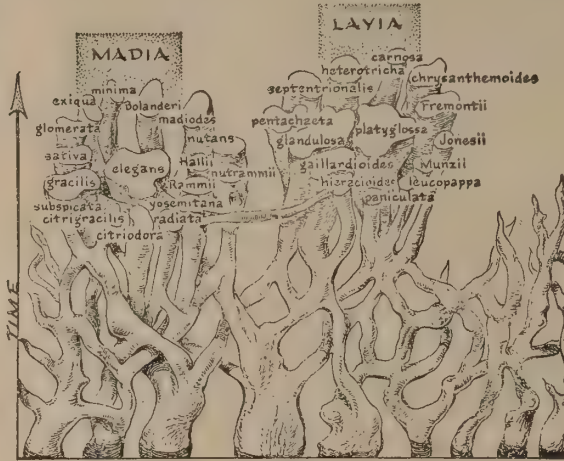


Fig. 12. Evolution, as it has probably occurred in a group of plants: showing how "nature is too disorderly" for those who seek to find clean-cut "phylogenetic trees" and unidirectional evolution everywhere. (From Clausen, *Stages in the Evolution of Plant Species*, Cornell University Press, Ithaca, N. Y.; 1951. By permission.)

**The Competitive Exclusion Principle.** No two organisms that compete in every activity can coexist indefinitely in the same environment. To coexist in time, organisms that are potentially completely competitive must be geographically isolated from each other. Otherwise, the one that is the less efficient yields to the more efficient, no matter how slight the difference. When two competing organisms coexist in the same geographical region, close examination always shows that they are not complete competitors, that one of them draws on a resource of the environment that is not available to the other. The corollary of the principle is that where there is no geographical isolation of genetically and reproductively isolated populations, there must be as many ecological niches as there are populations. The necessary condition for geographical coexistence is ecological specialization.

And concepts themselves occur in various grades of generality, forming a hierarchal complex that has not yet been explicitly described. Language is a wondrously subtle and complicated tool; by far the greater part of it is to be found only in mathematics. That which most men call "language" is only a small part of man's concept-handling machinery, scarcely the ABC's of it.

For more details on organic evolution, see Ernst Mayr's recent classic *Animal Species and Evolution* (1963; 797 pp. \$11.95 postpaid from Harvard University Press, 79 Garden Street, Cambridge, Mass. 02138). The promising, if heretical, hypothesis that evolution may be directly affected by changes within the cells is presented in Lancelot Law Whyte's *Internal Factors in Evolution* (1965; 120 pp. \$4.00 postpaid from George Braziller, Inc., 215 Park Avenue South, New York, N. Y. 10003). For a non-too-satisfactory but still tantalizing look into cultural evolution, see Sahlin's and Service, *Evolution and Culture* (1960; 131 pp. \$3.95 postpaid from The University of Michigan Press, 615 East University, Ann Arbor, Michigan 48106).

Among the impotence principles of socio-biology is surely this: *competition is inescapable.* That species which has succeeded in eliminating all other species as competitors, ends by becoming its own competitor. The world, in spite of comic-strip science, is a limited one. Man, freed of the population-controlling factors of predators and disease organisms, must—willy-nilly, like it or not—control his own numbers by competition with his own kind. By taking thought he can elect the kind of competition he employs; but he cannot escape all kinds. This is not to imply that the election is a trivial matter.

To the biologist it is clear that the best chances for man's long-time survival depend on the fragmentation of the species into well-separated populations. But it would be foolhardy to say what form the separation should take. It might be a matter of nations, as we know them; or some sort of caste system, that would permit genetic isolation with geographic unity; or—far more likely—some new kind of communities that are neither nation nor caste nor anything that has yet been conceived of.

The crowd-diseases—smallpox, cholera, typhoid, plague, etc.—are, by the ecologist, labeled "density-dependent factors," whose effectiveness in reducing population is a power function of the density of the population. No growth of population could get out of hand as long as the crowd-diseases were unconquered, which means that man did not have to sit in judgment on man, to decide who should have a cover at Nature's feast and who should not. With the development of bacteriological medicine, all this has been changed. Now, the feedback control is man himself.

Darwin's life is symbolic. His *Autobiography* clearly and unconsciously reveals two elements that are needed to produce any creative genius: irresponsibility and alienation.

He who is to see what other men have not seen must, in a real sense, become alienated from the crowd. The manner in which this alienation occurs is subject to an infinity of permutations.

The wealthy eccentric is a nearly extinct dodo. The man of wealth is now an other-directed man. He may become a lawyer or a doctor. But not a scientist. He is too much a part of the world to achieve the alienation required to be creative. (What millionaire today would have the nerve to do what Darwin did—retire to a "non-productive" life in the country to think?)

... We can hardly expect a committee to acquiesce in the dethronement of tradition. Only an individual can do that, an individual who is not responsible to the mob. Now that the truly independent man of wealth has disappeared, now that the independence of the academic man is fast disappearing, where are we to find the conditions of partial alienation and irresponsibility needed for the highest creativity?

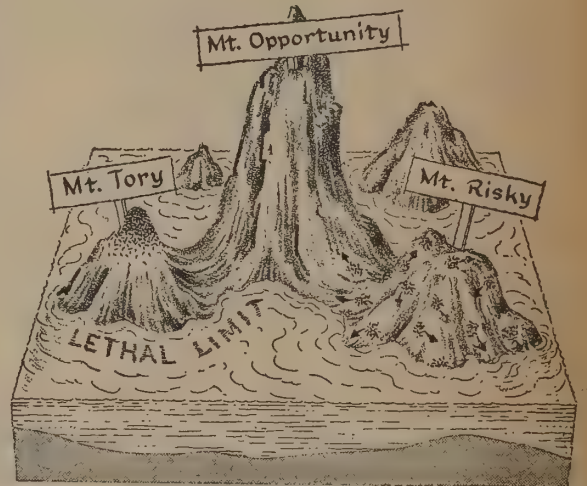


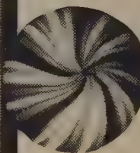
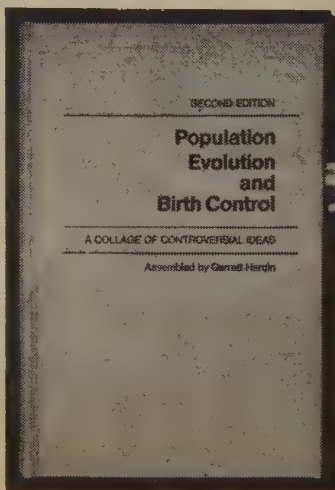
Fig. 25. A large population, which is very sensitive to selection pressure, is narrowly confined to an adaptive peak (Mount Tory). A species broken up into many separate small breeding populations is much less responsive to selection pressures; its populations will wander widely from their adaptive peak (Mount Risky)—some to perish, some, perhaps, to find the way to new adaptive peaks like Mount Opportunity. As before, the water represents the threatening natural selection.

If the food supply is falling short, or a new disease threatens us, inventions to relieve it must be made before famine and pestilence have done their work. Now, we are far nearer to famine and pestilence than we like to think. Let there be an interruption of the water supply of New York for six hours, and it will show in the death rate. Let the usual trains bringing supplies into the city be interrupted for forty-eight hours, and some people will die of hunger. Every engineer who has to deal with the administration of the public facilities of a great city has been struck with terror at the risks which people are willing to undergo and must undergo every day, and at the complacent ignorance of these risks on the part of his charges...

Norbert Wiener

The rest of the night I lay there sleepless, trapped between the quavering human cry in the night and the cold fact that forced me to know I could not save him or the thousands of others whose cries I could not hear. The next morning they came and told us that the beggar was dead.

Gerald Winfield



**Population, Evolution and Birth Control**

Garrett Hardin, ed.  
1964, 1969; 386 pp.

**\$2.95** postpaid

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★  
**Parable of the Beast**

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*he's trying to put instincts back into science and take a little of the speculation out of the name "Homo sapiens", through an introduction to the study of ethology.*

*readable, maybe reliable.*

[Reviewed by J. D. Smith. Suggested by David Schwartz]

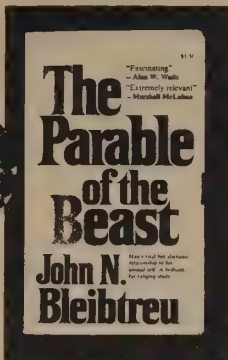
**The Parable of the Beast**

John N. Bleibtreu  
1968; 304 pp.

**\$1.50** postpaid

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Collier Books  
866 Third Avenue  
New York, N. Y. 10022

or WHOLE EARTH CATALOG



There is no longer any doubt whatever that among existing vertebrates anatomical structures are homologous, and that those two bones—the radius and the ulna—are homologous in the wing of a bird, the foreleg of a dog, and the arm of a human. The whole science of ethology is committed to the accumulation of sufficient behavioral data from all animal phyla, so that theoretical models of the evolution of behavior may be constructed.

Our technological control of our environment puts us into an ambiguous relationship with that environment; similar to that odd and destructive relationship that arises between a jailer and his prisoner. It seems as though the more control the jailer exercises, the more a strange kind of perverse love, a love that thrives on injury, grows between him and his charge. As the relationship develops, the prisoner often becomes the stronger of the two, inflicting by his very passivity the greater hurt.

So we, as we control the environment, have gradually become the victims of our own control. The role of cycles in our lives, being natural, should be a joyous source of strength. Generally, however, we do not acknowledge their existence at all, and when we do, we see these cyclical changes in ourselves as impediments to our efficiency.

The act of sharing food with one another seems to be one of the principal bases for creating societies, whether they be of the insect or human variety. It was over this ancient issue of sharing food that human beings in twentieth-century America suddenly found themselves behaving more like insects than like creatures in God's image and endowed (at least by Linnaeus) with sapience.

White Americans did not want to include Negroes within their society, and they understood at some infinitely deep intuitive level that if they went so far as to share food with the Negro, they could no longer effectively exclude him from the societal organism.

In ordinary human affairs, a breakdown in communication is generally considered catastrophic. But from the point of view of the taxonomist something new and different can only begin to occur just at that moment when communications finally do break down for good, when a splinter portion of the population finds itself so alienated from the parent group that it turns away and in upon itself, and in the process develops some new and special characters.

That traces of territorial marking instincts still persist among humans can be established by a wealth of detail. For example the "Kilroy Was Here" drawings of World War II are undoubtedly territorial markings. The keepers of public monuments fight a losing battle against the scrawled, carved, scratched legends that visitors leave. But perhaps the most directly territorial marking by humans is the urinal graffiti. As with animals, it is the male of the human species who is the most ardent marker; and the compulsion to mark insulting legends on the walls of urinals seemingly transects all economic classes and educational levels.

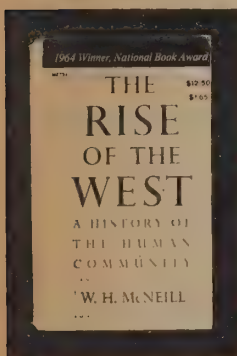
It is as one ascends the ladder of psychological complexity, as one observes animals up through the class of mammals, up through the order of primates, finally reaching man, that one finds what seems to be a progressive blurring of that which is innate, or given by the genetic heritage, and what is the individual response to individual experience.

But "blurring" is a poor metaphor; it seems more like an alternation, or oscillation—an oscillation between the historical past embedded within the very flesh and bone, and the perceived existential present. At each moment of our becoming (becoming older, wiser, other than what we were in the previous moment) we are being acted upon alternately by a pulse of autochthonous existence and a pulse of consciously perceived and intellectually evaluated existence; each alternating pulse modifying the next, so that, as with the sound of a flute, we are conscious, finally, only of the continuum, the thin, beautiful, and resonant sound of the self—the self, alive.

★  
**The Rise of the West**

*One humanity, one history, one fat little book. Some familiarity with world history will not help you to avoid mistakes, but it may help you recognize them and thus move on to more original ones.*

[Suggested by Jib Fowles]



**The Rise of the West**

W. H. McNeill  
1963; 896 pp.

**\$1.65** postpaid

from:  
The New American Library, Inc.  
1301 Avenue of the Americas  
New York, N. Y. 10019

or WHOLE EARTH CATALOG



In the New World, the so-called "classic" period of the Amerindian civilizations continued in full bloom for several centuries after 600 A.D. In Guatemala and adjacent parts of Mexico, classic Mayan cult centers increased in number and complexity. Then, about the middle of the ninth century, Mayan temples began to be abandoned, one by one, and jungle grew back over the vast courtyards, roadways, and steps pyramids. Yet there is no reason to suppose that the Mayan populations abandoned the region. Perhaps raids from the north destroyed the prestige of gods who failed to protect their people from merely human enemies. Or invaders may have captured and sacrificed the corps of ritual experts, thus preventing the continuance of the old elaborate cults, even if the common people still retained full faith in them. But, in view of the absence of any signs of violence at the deserted sites, it is more probably that the priestly specialists simply failed to prevent the spread of a simpler, popular religion that allowed individual farmers to assure the fertility of their maize fields by appropriate private ceremonies, thus rendering the priests' costly ritual services otiose. In the sixteenth century, European intruders found just such a private cult among the Mayan peoples, which (whenever it was introduced) obviously made the elaborate temple centers of an earlier age permanently unnecessary.

The fact that even the best laid plans for directing human affairs still often fail may turn out to be humanity's saving grace.

Once their intellectual curiosity had been aroused, Westerners discovered that the Moslems possessed a sophistication of mind and richness of learning far surpassing that available in Latin. Regular schools of translators therefore set eagerly to work to bring the treasures of Arabic learning to the Latin world. Toledo became the principal seat of this activity; but parallel work was done also in Sicily and, on a smaller scale, at Salerno, Salamanca, and Venice. The translators sought useful knowledge and were little concerned with belles-lettres. Hence they concentrated on works of medicine, mathematics, astronomy, optics, philosophy, and encyclopedic collections of information about the natural and supernatural world.



Men some centuries from now will surely look back upon our time as a golden age of unparalleled technical, intellectual, institutional, and perhaps even of artistic creativity. Life in Demosthenes' Athens, in Confucius' China, and in Mohammed's Arabia was violent, risky, and uncertain; hopes struggled with fears, greatness teetered perilously on the brim of disaster. We belong in this high company and should count ourselves fortunate to live in one of the great ages of the world.

**Human Use of the Earth**

*To get a handle on your future you've got to get outside yourself, because only from outside can you see your space-time environment whole. One way is to identify out into another culture, Indian or whatever (this is Jim Nixon's idea). Another way is to take Philip Wagner's trip into fascinated objectivity about Earthly doings. In this book he merges some of the best of geographical and anthropological perspective into a detailed treatise on the Earth as tool, how it is used and how to understand it better to use it better.*



**THE HUMAN USE OF THE EARTH**

PHILIP WAGNER

An examination of the interaction between man and his physical environment



**The Human Use of the Earth**

Philip Wagner  
1960; 270 pp.

**\$1.95** postpaid

from:  
Free Press  
Macmillan Company  
Front and Brown Streets  
Riverside, N. J. 08075

or WHOLE EARTH CATALOG

As we shall see, one of the strategies by which supplies of goods and services become available for actual use is the movement of the would-be consumers themselves to the sources of goods or services. There are even objects that act as containers of man himself, which move over land, across water or through the air, delivering the individual to the places at which he can obtain goods he desires, or where he will be served as he wishes.

The modern inhabitant of a commercial country does not make his world; he buys it. The material circumstances of his life are not the outcome of his individual encounter with the natural order, but arise out of his relations with the social order.

Ecologically speaking, even very primitive man is an extremely far-ranging creature. Men have migrated far more widely than almost any other animals.

Man has been described as a 'tool-using animal,' but as is well known, many other higher mammals can employ natural objects spontaneously as tools. Tool making, however, is peculiar to man.

Manufacture adds vastly to the wealth upon which men can draw by making more things usable. It confers the status of resources upon things that are of no benefit to any other animal.

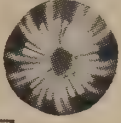
Those same features of the most complex human communities which indicate their ecological advantages also suggest an unusual degree of inherent ecological risk. Such communities are complex and delicately balanced, and depend utterly upon their artificiality. They and the individuals in them are threatened by the same biological penalties that attend any highly specialized system or species. Their very technical perfection may destroy them in time as other high specializations have destroyed many former species of animals and plants.

The individual organism must, on the one hand, be specialized enough in function to exploit some particular conditions in the habitat, so as to occupy a niche that no other organism can contest with it; and it must, on the other hand, possess enough versatility to adapt to any conditions of environment that may impinge upon its life activities. These two requirements may be thought of as polar extremes of a continuous scale, and every species may be placed somewhere along the scale between specialization and versatility. Some of the disadvantages of commitment to either specialization or versatility are overcome by aggregation of organisms into larger groups within the community.

## The Step to Man

*I'll be damned. I thought this was another yessir-things-are-changing technological social treatise thing. No such. It's a manual of strategies for changing the world, if you have a mind to do that. Not heavy stuff about what is terrible or what should happen, but how to remake life and stay alive in the process. Strategies like multiple working hypotheses so you don't get infatuated with your first idea. Like seed operations where one phone call makes the whole thing happen. Like self-stabilizing provisions so a process is safe from its own too-quick successes.*

[Suggested by Steve Baer]



**The Step to Man**  
John R. Platt  
1966; 216 pp.

**\$6.95** postpaid

from:  
John Wiley and Sons Publishing Co.  
1 Wiley Drive  
Somerset, N. J. 08873

Western Distribution:  
1530 South Redwood Road  
Salt Lake City, Utah 84104

or WHOLE EARTH CATALOG

*Strong inference consists of applying the following steps to every problem in science, formally and explicitly and regularly:*

- (1) devising alternative hypotheses;
  - (2) devising a crucial experiment (or several of them), with alternative possible outcomes, each of which will, as nearly as possible, exclude one or more of the hypotheses;
  - (3) carrying out the experiment so as to get a clean result; and
- (1') recycling the procedure, making subhypotheses or sequential hypotheses to refine the possibilities that remain; and so on.

The main reason why our solution of social problems lags so far behind our magnificent technology today may be that we have not yet organized the same deliberate search for ideas to deal with them.

Privacy-indeterminacy is the result of the fact that the nervous system greatly amplifies the tiny light signals or other signals that it detects.

Could it be that there is in cultural dynamics a great need for real physical fuel—say, in the old days, the supply of timber that built the houses and ships and chariots, and fed the evening fires for poetry and analysis? There is some evidence in this direction. The Greeks had mighty pines where only olives grow today; the early Roman legends were forest legends; the old Chinese scrolls show densely wooded landscapes where barren hills are now; the early Egyptian tomb paintings show the kings hunting in forests. And in the last stages of all these cultures, conservation measures for the remaining woodland rise high on the list of laws.

I suspect that at any given time the boundary of a culture where negative feedback set in was determined to a considerable degree by technical considerations, and was where the marginal expense of further expansion against hostile nature or man became too great for the energy and construction supply and the associated organizational technology developed up to that time; and that decadence and retreat may have set in as much because of the dwindling of physical energy supply at the center as because of social factors.

Various personal incentive feedbacks to help solve the population problem have been put forward, but they are often of exactly the wrong kind. In India, some districts now pay men to be sterilized, but this is both hopelessly inadequate and has the worst of effects on individual psychology and public opinion. The same is true of the suggestion of taxing parents for "excess" children, which is a suggestion sometimes heard in the United States.

But if we turn the problem around and think of giving a bonus of one or two hundred dollars a year every year that a couple, of child-bearing age, does not have an additional child, this would be mathematically equivalent in total economic terms, but would be psychologically much more satisfactory and compelling. National and local governments and school districts would soon find the payment of such bonuses far cheaper than the cost of added schools and roads and city services would have been for each additional child. If the parents are saving society money, why not pay them part of it? This puts the cash benefits of reduced population in the right columns on the books.

The Jew said, "God must be very intelligent because he has created all these wonderful things—DNA molecules and fish and professors." The atheist said, "Nonsense. God is very stupid. In the first place, it has taken him six billion years. And in the second place, he has done it by the clumsiest possible method, natural selection, just throwing away everything he couldn't use."

The Hungarian said, "Gentlemen, gentlemen! You don't understand your own question. What I.Q. stands for is Intelligence Quotient. And a quotient is the ratio of two numbers. In this case, it is the ratio of the mental age to the geological age. Now God is almost infinitely wise, but he is also almost infinitely old: and the ratio of these two infinities may be a small finite number!"

It was so transparent that we all fell to laughing and burst out together, "—You mean, about the same as the I.Q. of a smart Hungarian!"

The thermodynamics of the solar system, and our prediction of what may happen in it, is incomplete if it does not provide for the evolution of intelligent men, including Hungarians.

I think we may now be in the time of the most rapid change in the whole evolution of the human race, either past or to come. It is a kind of cultural "shock-front," like the shock-fronts that occur in aerodynamics when the leading edge of an airplane wing moves faster than the speed of sound and generates the sharp pressure wave that causes the well-known sonic boom.

In many ways, it is like a child learning to ride a bicycle. There you were, up until that day, riding on the three-wheeler where you couldn't hurt yourself very much. But then you get the two-wheeler, and it seems terribly scary, and perhaps you fall and skin a knee or an elbow. But you get up again, and your father holds the handlebars running along beside you, and suddenly you are riding alone. At one instant you are incompetent, falling to one side or the other and steering wrong, and the next instant it comes right and you are in control, safe and balanced not because you are fearful and slow but because you are going faster than ever. Wobbling and weaving but nevertheless choosing your own path and balancing safely at every turn. So, I think, in 30 or 40 years, if we survive, the human race will come through this time of wobbling conflict and uncertainty and falling, and will suddenly be riding in its own chosen direction, free, as only a coordinated and confident organism can be.

Beware of the man of one method or one instrument, either experimental or theoretical. He tends to become method-oriented rather than problem-oriented. The method-oriented man is shackled; the problem-oriented man is at least reaching freely toward what is most important. Strong inference redirects a man to problem-orientation, but it requires him to be willing repeatedly to put aside his last methods and teach himself new ones.

In order to carry out any great project, the future good of the group must be anticipated and turned into present and individual good, into a reward for every step that is taken in the right direction.

I am beginning to believe that in any social endeavor, it is the analysis of chain-reacting social processes that will enable us to choose the best course and will indicate the most effective ways for our intelligence to multiply its feeble energies. The future is waiting to respond to a touch, if it is the right touch. It is ingenuity we need, not lamentations. The world's future becomes almost plastic in the light of these possibilities.

We begin to realize that our brains are the most complex and self-determining things in the known universe. After all the measurements of atoms and galaxies are folded into laws in some corner of our networks, there will still be universes of interrelationships in the rest of our networks to be discovered. If this property of complexity could somehow be transformed into visible brightness so that it would stand forth more clearly to our senses, the biological world would become a walking field of light compared to the physical world. The sun with its great eruptions would fade to a pale simplicity compared to a rosebush. An earthworm would be a beacon, a dog would be a city of light, and human beings would stand out like blazing suns of complexity, flashing bursts of meaning to each other through the dull night of the physical world between. We would hurt each other's eyes. Look at the haloed heads of your rare and complex companions. Is it not so?

## The Unexpected Universe

*Loren Eiseley celebrates our grandest ignorances, the places in human experience where if you stare into them, the void stares back. City dumps; the open end of evolution; the unexplored continent in your mind; stars; a Pharaoh's dead gesture; edges of oceans. Strong useful prose from an old guy who knows something clear and bleak about regeneration.*

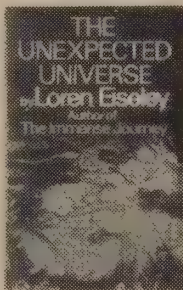
### The Unexpected Universe

Loren Eiseley  
1969; 239 pp.

**\$5.75** postpaid

from:  
Harcourt, Brace & World, Inc.  
757 Third Avenue  
New York, N. Y. 10017

or WHOLE EARTH CATALOG



In the end the sea rejects its offspring. They cannot fight their way home through the surf which casts them repeatedly back upon the shore. The tiny breathing pores of starfish are stuffed with sand. The rising sun shrivels the mucilaginous bodies of the unprotected. The seabeach and its endless war are soundless. Nothing screams but the gulls. . . .

. . . The sun behind me was pressing upward at the horizon's rim—an ominous red glare amidst the tumbling blackness of the clouds. Ahead of me, over the projecting point, a gigantic rainbow of incredible perfection had sprung shimmering into existence. Somewhere toward its foot I discerned a human figure standing, as it seemed to me, within the rainbow, though unconscious of his position. He was gazing fixedly at something in the sand.

Eventually he stooped and flung the object beyond the breaking surf. I labored toward him over a half mile of uncertain footing. By the time I reached him the rainbow had receded ahead of us, but something of its color still ran hastily in many changing lights across his features. He was starting to kneel again.

In a pool of sand and silt a starfish had thrust its arms up stiffly and was holding its body away from the stifling mud.

"It's still alive," I ventured.

"Yes," he said, and with a quick yet gentle movement he picked up the star and spun it over my head and far out into the sea. It sank in a burst of spume, and the waters roared once more.

"It may live," he said, "if the offshore pull is strong enough." He spoke gently, and across his bronzed worn face the light still came and went in subtly altering colors.

"There are not many come this far," I said, groping in a sudden embarrassment for words. "Do you collect?"

"Only like this," he said softly, gesturing amidst the wreckage of the shore. "And only for the living." He stooped again, oblivious of my curiosity, and skipped another star neatly across the water.

"The stars," he said, "throw well. One can help them"

. . . It is as if at our backs, masked and demonic, moved the trickster as I have seen his role performed among the remnant of a savage people long ago. It was that of the joker present at the most devout of ceremonies. This creature never laughed; he never made a sound. Painted in black, he followed silently behind the officiating priest, mimicking, with the added flourish of a little whip, the gestures of the devout one. His timed and stylized posturings conveyed a derision infinitely more formidable than actual laughter. . . .

We had been safe in the enchanted forest only because of our weakness. When the powers of that gloomy region were given to us, immediately, as in a witch's house, things began to fly about unbidden. The tools, if not science itself, were linked intangibly to the subconscious poltergeist aspect of man's nature. The closer man and the natural world drew together, the more erratic became the behavior of each. Huge shadows leaped triumphantly after every blinding illumination. It was a magnified but clearly recognizable version of the black trickster's antics behind the solemn backs of the priesthood. Here, there was one difference. The shadows had passed out of all human semblance; no societal ritual safely contained their posturings, as in the warning dance of the trickster. Instead, unseen by many because it was so gigantically real, the multiplied darkness threatened to submerge the carriers of the light.

. . . Out of the depths of a seemingly empty universe had grown an eye, like the eye in my room, but an eye on a vastly larger scale. It looked out upon what I can only call itself. It searched the skies and it searched the depths of being. In the shape of man it had ascended like a vaporous emanation from the depths of night. The nothing had miraculously gazed upon the nothing and was not content. It was an intrusion into, or a projection out of, nature for which no precedent existed. The act was, in short, an assertion of value arisen from the domain of absolute zero. A little whirlwind of commingling molecules had succeeded in confronting its own universe.

Here, at last, was the rift that lay beyond Darwin's tangled bank. . . .

I picked up a star whose tube feet ventured timidly among my fingers while, like a true star, it cried soundlessly for life. I saw it with an unaccustomed clarity and cast far out. With it, I flung myself as forfeit, for the first time, into some unknown dimension of existence.

Damped men in the gloom dark shapes worked ceaselessly at the arched pines. My eyes were growing accustomed to their light.

"We get it all," the dump philosopher repeated. "Just give it time to travel, we get it all."

Men, unknowingly, and whether for good or ill, appear to be making their last decisions about human destiny. To pursue the biological analogy, it is as though, instead of many adaptive organisms, a single gigantic animal embodied the only organic future of the world.

Every time we walk along a beach some ancient urge disturbs us so that we find ourselves shedding shoes and garments, or scavenging among seaweed and whitened timbers like the homesick refugees of a long war.

It was the failures who had always won, but by the time they won they had come to be called successes. This is the final paradox, which men call evolution.

★ **So Human an Animal**

Dubos has a combined medical and evolutionary perspective that prepares him perfectly to diagnose and prescribe for the new ills of mankind, the macro-maladies of cities and pollution and panic. Unlike other General Systems Practitioners, he supports his thoughts with a wealth of fascinating facts and anecdotes presented with a good cheer that makes health look quite attractive.

As the year 2000 approaches, an epidemic of sinister predictions is spreading all over the world, as happened among Christians during the period preceding the year 1000.

We behave often as if we were the last generation to inhabit the earth.

If the rebellious young succeed in discovering a formula of life as attractive as that of the troubadours, we may witness in the twenty-first century a new departure in civilization as occurred in Europe after it recovered from the fears of the tenth century. To be humanly successful, the new ages will have to overcome the present intoxication with the use of power for the conquest of the cosmos, and to rise above the simple-minded and degrading concept of man as a machine. The first move toward a richer and more human philosophy of life should be to rediscover man's partnership with nature.

The ancient arts and crafts have all but disappeared, in part because the Indians no longer believe in their ancestral gods, but also because they do not find the time to carve and to paint now that they have accepted the efficient ways of technological civilization!

Because of the crucial role that water played in the early history of the Near East, conflicts continuously arose over water rights. Etymologically the word "rivalry" derives from the Latin *rivus*, a stream.

Considered broadly, evolution always involves learning from experience. The learning may take place by storage of genetic information in the chromosomes, by accumulation of knowledge and skills in the individual organism, or by transmission of practices and wisdom in institutions or in society as a whole.

Certain evolutionary changes probably had their primary origin in an exploratory curiosity that made animals discover new ways of sustenance and of life. In Great Britain during the past few years, the birds known as tits have developed the habit of pecking through the cardboard tops of milk bottles delivered in the morning at doorsteps. Apparently, the birds open the bottles to get at the cream. As one tit tends to imitate another, the habit has progressively spread from a few centers in Britain to other parts of Europe.

Under natural conditions, birds learn their song patterns from their parents and from other birds of the same species around them. In the laboratory, newly hatched birds can also learn from playbacks of recorded songs.

Japanese teenagers are now much taller than their parents and differ in behavior from prewar teenagers because the conditions of life in postwar Japan are different from those of the past. This finding is in agreement with the fact that first-generation Nisei children in America approach average American children in their growth and development.

History shows that cultures of a sort can emerge from the most improbable ways of life, provided these last long enough to become integrated into an organic whole. The emergence of a new culture is rarely if ever the result of a conscious choice with a definite goal in mind.

★ **The Character of Physical Law**

If you look larger or smaller than the skinny realm of life, all you see is physics. It is our substratum and superstratum. These famous Feynman lectures introduce the subject as no other book has.

[Suggested by Lyle Burkhead]

**The Character of Physical Law**

Richard Feynman  
1965; 173 pp.

\$2.45 postpaid

from:  
M.I.T. Press  
50 Ames Street, Room 765  
Cambridge, Mass. 02142

or WHOLE EARTH CATALOG



Water pulled partly away from earth by moon

○ Moon



Earth pulled partly away from waters by moon



Dual situation

The water at y is closer to the moon and the water at x is farther from the moon than the rigid earth. The water is pulled more towards the moon at y, and at x is less towards the moon than the earth, so there is a combination of those two pictures that makes a double tide.

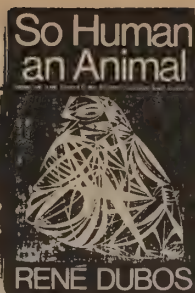
If we take a fundamental particle such as an electron—any different one will give a different number, but to give an idea say electrons—two electrons are two fundamental particles, and they repel each other inversely as the square of the distance due to electricity, and they attract each other inversely as the square of the distance due to gravitation.

**BETWEEN TWO ELECTRONS**

$$\frac{\text{Gravitation Attraction}}{\text{Electrical Repulsion}} = 1/4.17 \cdot 10^{42}$$

Question: What is the ratio of the gravitational force to the electrical force? That is illustrated in figure 7. The ratio of the gravitational attraction to electrical repulsion is given by a number with 42 digits trailing off. Now therein lies a very deep mystery. Where could such a tremendous number come from? If you ever had a theory from which both of these things are to come, how could they come in such disproportion? What equation has a solution which has for two kinds of forces an attraction and repulsion with that fantastic ratio?

People have looked for such a large ratio in other places. They hope, for example, that there is another large number, and if you want a large number why not take the diameter of the Universe to the diameter of a proton—amazingly enough it also is a number with 42 digits. And so an interesting proposal is made that this ratio is the same as the ratio of the size of the Universe to the diameter of a proton. But the Universe is expanding with time and that means that the gravitational constant is changing with time, and although that is a possibility there is no evidence to indicate that it is a fact. There are several partial indications that the gravitational constant has not changed in that way. So this tremendous number remains a mystery.



**So Human an Animal**

René Dubos  
1968; 267 pp.

\$6.95 postpaid

from:  
Charles Scribner's Sons  
597 Fifth Avenue  
New York, N. Y. 10017

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★ **The New Gravity**

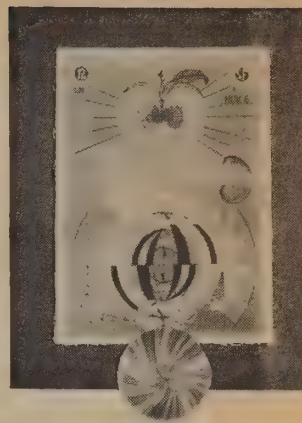
I'm not competent to evaluate this ambitious set of new hypotheses about gravity and time. I can only be delighted that the authors have published in comic book format.

**The New Gravity**

Kent Robertson, Don Donahue,  
Gary Arlington  
1969; 64 pp.

\$1.00 postpaid

from:  
San Francisco Comic Book Co.  
3339 23rd Street  
San Francisco, CA 94110



★ **Things Maps Don't Tell Us**

This seductive book—each page has a big simple illustration and accompanying text—teaches you to see what's happening in a piece of landscape. The mountain range is rising or diminishing. The lakes are lined up because the strata are. The atoll is there because a volcano was, and then sank. Geology cycles slow, but big.

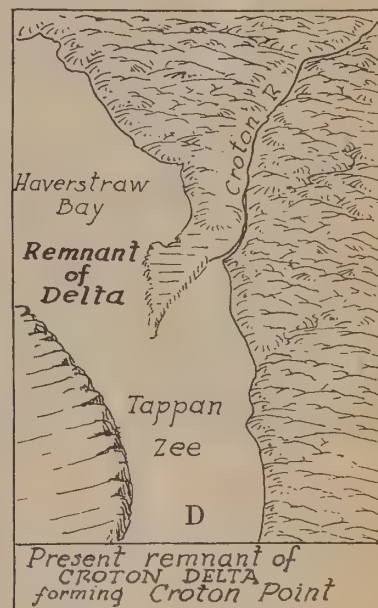
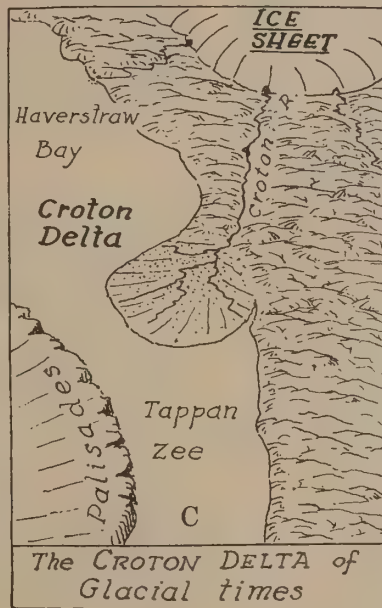
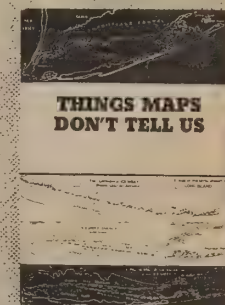
**Things Maps Don't Tell Us**

Armin K. Lobeck  
1956; 160 pp.

\$5.95 postpaid

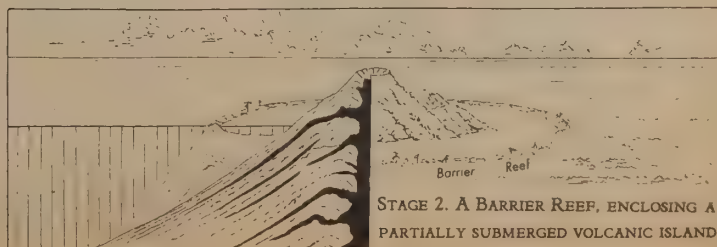
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Riverside, N. J. 08075

or WHOLE EARTH CATALOG



The clue to the origin of Croton Point is the Croton River. During the waning stages of Glacial Time, when this part of the continent stood somewhat lower than it does now, because of the great weight of ice upon it, the Hudson River was about 80 feet deeper in Haverstraw Bay than it is at present. The Croton River, pouring out from the melting ice front, carried great quantities of sand and gravel into Haverstraw Bay and built there a large delta which reached halfway across the river. Like most deltas built into quiet estuaries, the Croton Delta was more or less round in shape, with distributary streams flowing outward in all directions toward its margins.

Following the final disappearance of the ice and the removal of this great weight, the crust of the earth in this part of the United States gradually rose above sea level. In the Croton Delta region the elevation was about 80 feet, with the result that the flat top of Croton Point stands now 80 feet above sea level. An important result of this rising was the invigorating effect it had upon the Croton River. This stream, therefore, flowed more swiftly, and eroded its valley extensively. Much of the delta was removed by the river, so that now only the northern half remains. This is clearly revealed by its present shape.



STAGE 2. A BARRIER REEF, ENCLOSING A PARTIALLY SUBMERGED VOLCANIC ISLAND

Laws of Form

The laws of form have finally been written! With a "Spencer Brown" transistorized power razor (a Twentieth Century model of Occam's razor). G. Spencer Brown cuts smoothly through two millennia of growth of the most prolific and persistent of semantic weeds, presenting us with his superbly written Laws of Form. This Herculean task which now, in retrospect, is of profound simplicity rests on his discovery of the form of laws. Laws are not descriptions, they are commands, injunctions: "Do!" Thus, the first constructive proposition in this book (page 3) is the injunction: "Draw a distinction!" an exhortation to perform the primordial creative act.

After this, practically everything else follows smoothly: a rigorous foundation of arithmetic, of algebra, of logic, of a calculus of indications, intentions and desires; a rigorous development of laws of form, may they be of logical relations, of descriptions of the universe by physicists and cosmologists, or of functions of the nervous system which generates descriptions of the universe of which it is itself a part.

The ancient and primary mystery which still puzzled Ludwig Wittgenstein (Tractatus Logico-Philosophicus, A. J. Ayer (ed), Humanities Press, New York, 1961, 166 pp.), namely that the world we know is constructed in such a way as to be able to see itself, G. Spencer Brown resolves by a most surprising turn of perception. He shows, once and for all, that the appearance of this mystery is unavoidable. But what is unavoidable is, in one sense, no mystery. The fate of all descriptions is "... what is revealed will be concealed, but what is concealed will again be revealed."

At this point, even the most faithful reader may turn suspicious: how can the conception of such a simple injunction as "Draw a distinction!" produce this wealth of insights? It is indeed amazing—but, in fact, it does.

The clue to all this is Spencer Brown's ingenious choice for the notation of an operator  $\lrcorner$  which does several things at one time. This mark is a token for drawing a distinction, say, by drawing a circle on a sheet of paper which creates a distinction between points inside and outside of this circle; by its asymmetry (the concave side being its inside) it provides the possibility of indication; finally, it stands for an instruction to cross the boundary of the first distinction by crossing from the state indicated on the inside of the token to the state indicated by the token (A space with no token indicates the unmarked state). Moreover, these operations may operate on each other, generating a primary arithmetic, an opportunity which is denied us by a faulty notation in conventional arithmetic as pointed out by Karl Menger in "Gulliver in the Land without One, Two, Three" (The Mathematical Gazette, 53, 24-250; 1959).

These operations are defined in the two axioms (no other ones are needed) given on pages 1 and 2. They are:

Axiom 1. The law of calling

The value of a call made again is the value of the call.

That is to say, if a name is called and then is called again, the value indicated by the two calls taken together is the value indicated by one of them.

That is to say, for any name, to recall is to call.

(In notation:  $\lrcorner \lrcorner = \lrcorner$  the "form of condensation".)

Axiom 2. The law of crossing

The value of a crossing made again is not the value of the crossing.

That is to say, if it is intended to cross a boundary and then it is intended to cross it again, the value indicated by the two intentions taken together is the value indicated by none of them.

That is to say, for any boundary, to recross is not to cross.

(In notation:  $\lrcorner \lrcorner =$  the "form of cancellation".)

For instance, take a complex expression

$$E = \lrcorner \lrcorner \lrcorner \lrcorner \lrcorner \lrcorner \lrcorner \lrcorner \lrcorner \lrcorner$$

Then, by the two axioms

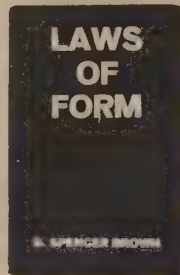
$$E =$$

In the beginning this calculus is developed for finite expressions only (involving a finite number of  $\lrcorner$ ), simply because otherwise any demonstration would take an infinite number of steps, hence would never be accomplished. However, in Chapter 11, Spencer Brown tackles the problem of infinite expressions by allowing an expression to re-enter its own space. This calls for trouble, and one anticipates now the emergence of antinomies. Not so! In his notation the classical clash between a simultaneous Nay and Yea never occurs, the system becomes "bi-stable", flipping from one to the other of the two values as a consequence of previous values, and thus generates time! Amongst the many gems in this book, this may turn out to be the shiniest.

Sometimes the reading gets rough because of Spencer Brown's remarkable gift for parsimony of expression. But the 30 pages of "Notes" following the 12 Chapters of presentation come to the reader's rescue precisely at that moment when he lost his orientation in the lattice of a complex crystal. Consequently, it is advisable to read them almost in parallel with the text, if one can suppress the urge to keep on reading Notes.

In an introductory note Spencer Brown justifies the mathematical approach he has taken in this book: "Unlike more superficial forms of expertise, mathematics is a way of saying less and less about more and more." If this strategy is pushed to its limit, we shall be able to say nothing about all. This is, of course, the state of ultimate wisdom and provides a nucleus for a calculus of love, where distinctions are suspended and all is one. Spencer Brown has made a major step in this direction, and his book should be in the hands of all young people—no lower age limit required.

[Reviewed by Heinz Von Foerster. Suggested by Steve Baer]

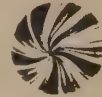


Laws of Form  
G. Spencer Brown  
1969; 141 pp.

\$5.40 postpaid

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Broad Street  
Oxford, ENGLAND

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無名天地之始

CONSTRUCTION

Draw a distinction.

CONTENT

Call it the first distinction.

Call the space in which it is drawn the space severed or cloven by the distinction.

Call the parts of the space shaped by the severance or cleft the sides of the distinction or, alternatively, the spaces, states, or contents distinguished by the distinction.

INTENT

Let any mark, token, or sign be taken in any way with or with regard to the distinction as a signal.

Call the use of any signal its intent.

In all mathematics it becomes apparent, at some stage, that we have for some time been following a rule without being consciously aware of the fact. This might be described as the use of a covert convention. A recognizable aspect of the advancement of mathematics consists in the advancement of the consciousness of what we are doing, whereby the covert becomes overt. Mathematics is in this respect psychedelic.

One of the most beautiful facts emerging from mathematical studies is this very potent relationship between the mathematical process and ordinary language. There seems to be no mathematical idea of any importance or profundity that is not mirrored, with an almost uncanny accuracy, in the common use of words, and this appears especially true when we consider words in their original, and sometimes long forgotten, senses.

The main difficulty in translating from the written to the verbal form comes from the fact that in mathematical writing we are free to mark the two dimensions of the plane, whereas in speech we can mark only the one dimension of time.

Much that is unnecessary and obstructive in mathematics today appears to be vestigial of this limitation of the spoken word.

Any evenly subverted equation of the second degree might be called, alternatively, evenly informed. We can see it over a subversion (turning under) of the surface upon which it is written, or alternatively, as an in-formation (formation within) of what it expresses.

Such an expression is thus informed in the sense of having its own form within it, and at the same time informed in the sense of remembering what has happened to it in the past.

We need not suppose that this is exactly how memory happens in an animal, but there are certainly memories, so-called, constructed this way in electronic computers, and engineers have constructed such in-formed memories with magnetic relays for the greater part of the present century.

We may perhaps look upon such memory, in this simplified information, as a precursor of the more complicated and varied forms of memory and information in man and the higher animals. We can also regard other manifestations of the classical forms of physical or biological science in the same spirit.

There is a tendency, especially today, to regard existence as the source of reality, and thus as a central concept. But as soon as it is formally examined (cf Appendix 2), existence [ex = out, stare = stand. Thus to exist may be considered as to stand outside, to be exiled.] is seen to be highly peripheral and, as such, especially corrupt (in the formal sense) and vulnerable. The concept of truth is more central, although still recognizably peripheral. If the weakness of present-day science is that it centres round existence, the weakness of present-day logic is that it centres round truth.

Throughout the essay, we find no need for the concept of truth, apart from two avoidable appearances (true = open to proof) in the descriptive context. At no point, to say the least, is it a necessary inhabitant of the calculating forms. These forms are thus not only precursors of existence, they are also precursors of truth.

It is, I am afraid, the intellectual block which most of us come up against at the points where, to experience the world clearly, we must abandon existence to truth, truth to indication, indication to form, and form to void, that has so held up the development of logic and its mathematics.

Tao Teh King

Reviewing the Tao is like reviewing the Bible. As soon as you presume, it just giggles and rains on you. Nevermind.

The Tao Teh King is a very old book (500 B.C. is one date) written by a legend named Lao Tzu. It describes how the universe is and makes an excellent case for harmony as the only survival technique that works. This translation by Archie Bahm is straightforward.

(For other translations, see p. 80)

[Suggested by Jack Loeffler]

Tao Teh King  
Lao Tzu; Archie Bahm  
? B.C., 1958; 126 pp.

\$ .85 postpaid

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250 Park Avenue South  
New York, N. Y. 10003

or WHOLE EARTH CATALOG



Everyone says: "Nature is great, yet Nature is simple."

It is great because it is simple.

If it were not simple, long ago it would have come to little.

Nature sustains itself through three precious principles, which one does well to embrace and follow.

These are gentleness, frugality and humility.

When one is gentle, he has no fear of retaliation.

When one is frugal, he can afford to be generous.

When one is humble, no one challenges his leadership.

But when rudeness replaces gentleness,

And extravagance replaces frugality,

And pride replaces humility,

Then one is doomed.

Since a gentle attack arouses little antagonism,

And a gentle defense provokes little anger,

Nature predisposes to gentleness those most suited for survival.

Intelligent control appears as uncontrol or freedom.

And for that reason it is genuinely intelligent control.

Unintelligent control appears as external domination.

And for that reason it is really unintelligent control.

Intelligent control exerts influence without appearing to do so.

Unintelligent control tries to influence by making a show of force.

It is because we single out something and treat it as distinct from other things that we get the idea of its opposite. Beauty, for example, once distinguished, suggests its opposite, ugliness.

And Goodness, when we think of it, is naturally opposed to badness.

In fact, all distinctions naturally appear as opposites. And opposites get their meaning from each other and find their completion only through each other. The meanings of "is" and "is not" arise from our distinguishing between them.

Likewise, "difficult and easy," "long and short," "high and low," "loud and soft," "before and after"—all derive their meanings from each other.

Therefore the intelligent man accepts what is as it is. In seeking to grasp what is, he does not devote himself to the making of distinctions which are then mistaken to be separate existences.

In teaching, he teaches, not by describing and pointing out differences, but by example.

Whatever is exists, and he sees that nothing is gained by representing what fully exists by a description—another lesser, diluted kind of existence.

If something exists which cannot be wholly revealed to him with his viewpoint, he does not demand of it that it be nothing but what it seems to him.

If some one else interprets him, he does not trust that interpretation as being equal to his existence.

If some part of him stands out as if a superior representative of his nature, he will not surrender the rest of his nature to it.

And in not surrendering the whole of his nature to any part of it, he keeps himself intact.

This is how the intelligent man preserves his nature.

We cannot escape the fact that the world we know is constructed in order (and thus in such a way as to be able) to see itself.

This is indeed amazing.

Not so much in view of what it sees, although this may appear fantastic enough, but in respect of the fact that it can see at all.

But in order to do so, evidently it must first cut itself up into at least one state which sees, and at least one other state which is seen. In this severed and mutilated condition, whatever it sees is only partially itself. We may take it that the world undoubtedly is itself (i.e. is indistinct from itself), but, in any attempt to see itself as an object, it must, equally undoubtedly, act so as to make itself distinct from, and therefore false to, itself. In this condition it will always partially elude itself.

To explain, literally to lay out in a plane where particulars can be readily seen. Thus to place or plan in flat land, sacrificing other dimensions for the sake of appearance. Thus to expound or put out at the cost of ignoring the reality or richness of what is so put out. Thus to take a view away from its prime reality or royalty, or to gain knowledge and lose the kingdom.

**On Growth and Form**

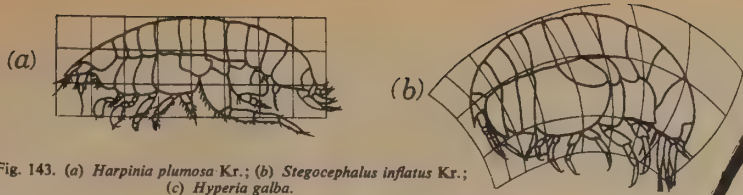


Fig. 143. (a) *Harpinia plumosa* Kr.; (b) *Stegocephalus inflatus* Kr.; (c) *Hyperia galba*.

A paradigm classic. Everyone dealing with growth or form in any manner can use the book. We've seen worn copies on the shelves of artists, inventors, engineers, computer systems designers, biologists. Would one of you do a thorough review of D'Arcy Thompson's venerable book for the CATALOG?

When Plateau made the wire framework of a regular tetrahedron and dipped it in soap-solution, he obtained in an instant a beautifully symmetrical system of six films, meeting three by three in four edges and these four edges running from the corners of the figure to its centre of symmetry. Here they meet, two by two, at the Maraldi angle; and the films meet three by three, to form the re-entrant solid angle which we have called a "Maraldi pyramid" in our account of the architecture of the honeycomb. The very same configuration is easily recognized in the minute siliceous skeleton of *Callimitra*. There are two discrepancies, neither of which need raise any difficulty. The figure is not rectilinear but a spherical tetrahedron, such as might be formed by the boundary edges of a tetrahedral cluster of four co-equal bubbles; and just as Plateau extended his experiment by blowing a small bubble in the centre of his tetrahedral system, so we have a central bubble also here.

This bubble may be of any size; but its situation (if it be present at all) is always the same, and its shape is always such as to give the Maraldi angles at its own four corners. The tension of its own walls, and those of the films by which it is supported or slung, all balance one another. Hence the bubble appears in plane projection as a curvilinear equilateral triangle; and we have only got to convert this plane diagram into the corresponding solid to obtain the spherical tetrahedron we have been seeking to explain.

The geometry of the little inner tetrahedron is not less simple and elegant. Its six edges and four faces are all equal. The films attaching it to the outer skeleton are all planes. Its faces are spherical,

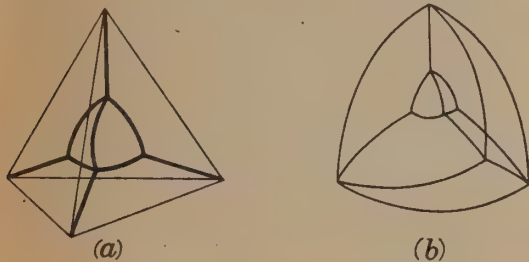


Fig. 63. Diagrammatic construction of *Callimitra*. (a) A bubble suspended within a tetrahedral cage; (b) another bubble within a skeleton of the former bubble.

and each has its centre in the opposite corner. The edges are circular arcs, with cosine  $\frac{1}{3}$ ; each is in a plane perpendicular to the chord of the arc opposite, and each has its centre in the middle of that chord. Along each edge the two intersecting spheres meet each other at an angle of  $120^\circ$ .<sup>1</sup>

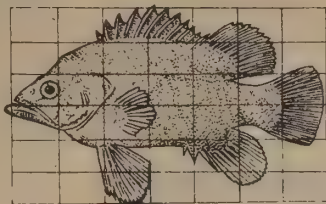


Fig. 150. *Polyprion*.

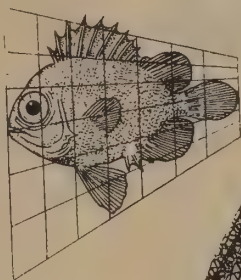


Fig. 151. *Pseudopriacanthus altus*.

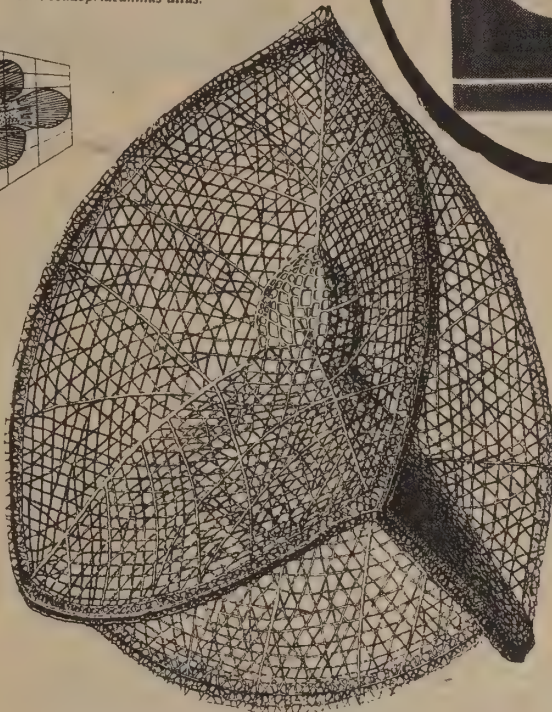
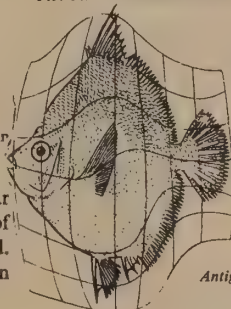


Fig. 62. A Nassellarian skeleton, *Callimitra agnesae* Hkl. (0.15 mm. diameter)



*Antigonia capros*.

The engineer, who had been busy designing a new and powerful crane, saw in a moment that the arrangement of the bony trabeculae was nothing more nor less than a diagram of the lines of stress, or directions of tension and compression, in the loaded structure; in short, that Nature was strengthening the bone in precisely the manner and direction in which strength was required; and he is said to have cried out, "That's my crane!"



**On Growth and Form**  
D'Arcy Wentworth Thompson  
Two volume edition  
1917, 1952

\$27.50 postpaid

Abridged paper edition  
1917, 1961; 346 pp.

\$2.75 postpaid

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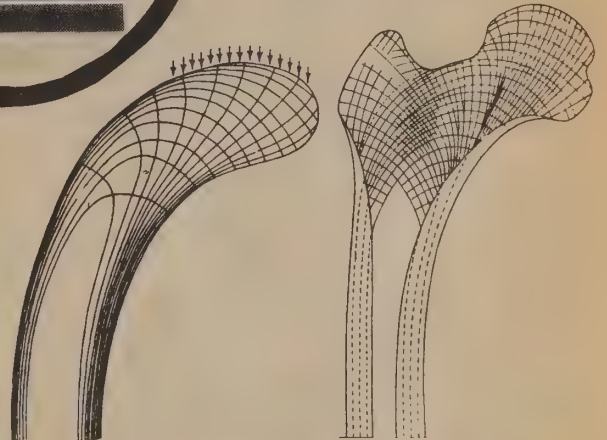
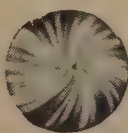
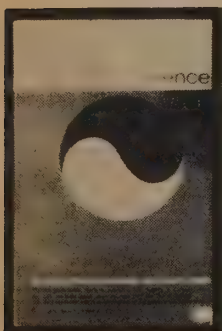


Fig. 101. Crane-head and femur. After Culmann and J. Wolff.



**The Tao of Science**

No high-minded bridging of East and West, this. But a successful director of research showing how valuable an informed and experienced Taoist sense of harmony can be to the conduct of science. It can help balance the scientist, and it offers an avenue to balancing the application of what the scientist learns. Good medicine for over-specialization.



**The Tao of Science**  
R. G. H. Siu  
1957; 180 pp.

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or WHOLE EARTH CATALOG

It is as impossible to appeal to a neutral principle to determine the rationality of competing systems, as it is to invoke a neutral vocabulary to characterize a language. It is in the name of one kind of logic that one rejects the logic of another. Arnold Nash illustrated this "irrational prejudice" of reason very well in the story of a doctoral examination. The candidate, who submitted a study on Mormon history, was asked whether he, being a Mormon, regarded himself sufficiently unprejudiced to write a thesis on Mormon history. The student replied, "Yes, if you, not a Mormon, consider yourself unprejudiced enough to examine it."

An important difference exists between "having-no" knowledge and having "no-knowledge." The former is merely a state of ignorance; the latter is one of ultimate enlightenment and universal sensibilities. To the confirmed rationalist, no-knowledge may appear to be the hugger-muggery of the mystagogue. Nevertheless, it is precisely its ineffability that lends force to its reality. The mysteries of nature appear to be mysteries only to those who refuse to participate in them. . . .

With rational knowledge, the scientist is a spectator of nature. With no-knowledge, he becomes a participant in nature. There is a communion of understandings. He no longer shares that tragic suffering of many individuals, who "fear of finding oneself alone," as André Gide describes it, "and so they don't find themselves at all."

. . . This all-embracing applicability of no-knowledge makes it a valuable tool for the executive. It provides him with a common ground of all situations. It is his means of transcendence over specific experience of which he has not yet tasted. Versed in no-knowledge, he is at home under otherwise strange conditions; he always finds familiar strains in his management of assorted enterprises.

The scientific West adopts the positive method and the Taoist East the negative. In the positive method the item under question is intentionally pointed out and described. In the negative method, it is specifically not discussed. By not dissecting the ineffable  $x$  in question but merely restricting discourse to objects that it is not, the features of the  $x$  are revealed in our dim consciousness.

Not only must the optimum be exhibited in quantity and space but also in time. According to Barnard, the art of executive decisions consists in "not deciding questions that are not now pertinent, in not deciding prematurely, in not making decisions that cannot be made effective, and in not making decisions that others should make."

Relinquishing the intellectual throne for the life of a commoner is a hard chore for science after three hundred years of free ranging and a hundred years of lordship. We can fully appreciate her reluctance to make the sacrifice. Yet she should remember that when Christ asked the rich man to give what he had to the poor, he was not thinking particularly about the poor.

The efficient management of organized research also demands gusto and quickened action. "He who would train in the fortress of contemplation," as the saying of Gregory the Great goes, "must first train in the camp of action." It is only in participation that the final synthesis of knowledge can be embodied in a unitary attitude to life. A faulty execution of a sound plan generates no more beneficial an outcome than a sound execution of a faulty plan. Some executives have even gone so far as to say that nothing is right which does not work. This may be too extreme a pronouncement. Yet, of what service to humanity is a dream entombed? Unless results are effected, the dreamer will continue to share the bewilderment of the March Hare, who was trying to fix the Mad Hatter's watch with butter in *Alice in Wonderland*. All he could say was: "And it was the best butter, too, the best butter."

## ★ The Stress of Life

It has been suggested that this book be reviewed with the thought in mind of its being included in the WEC. Now before going into the criteria for that, it should be stated that the entertainment value, or readability of this book is high. Further note that according to a quoted review of the book "... is very readable. ..." You will experience "... Dr. Selye's persuasive enthusiasm." Yet another (not quoted in the book) says it can be read "... with considerable pleasure." And thus spake (also sprach) the Library Journal: "... orchids upon this ... incomparable exposition. ..."

In the reading—this applies chiefly to the first 4/5ths of the volume—a word of advice is picked up from a review quoted in the book itself and credited to the American Journal of Public Health. The book, happily, does not contain "... a mass of data of questionable relevance ..." but the reader is cautioned to "... maintain balance amid Dr. Selye's persuasive enthusiasm." These words gain weight when one is apprised that they were written for the reviewing journal by Ancel Keys, one of this country's great physiologists.

Now back to the WEC. The WEC states that the criteria for listing something in its pages shall be four in number, videlicet: 1) useful as a tool, 2) relevant to independent education, 3) high quality or low cost, and 4) available by mail. This book immediately meets criteria 3 and 4.

Criterion 2 is a sort of double-barreled one that depends not only upon the nature of the book but also upon what the reader does with it. Dr. Selye epitomizes the relevance to independent education in his dedication: "This book is dedicated to those who are not afraid to enjoy the stress of a full life, nor too naïve to think that they can do so without intellectual effort." So let us now say that criteria 2, 3, and 4 have now been met.

In order to determine if the book meets criterion number one as well, let us first quote the author, "I ... recommend that only physicians, or readers who are at least reasonably familiar with current problems of physiology and medicine, should read this book from cover to cover." He directs the rest of us cats to first read Book V (the volume is divided into Books I-V incl.) in small installments of ... ten to twenty pages at a time. Now it turns out that Book V contains "... the practical implications and applications of the stress concept in everyday life. ..." Hence, criterion number one is going to be met by the contents of Book V—a mere matter of 52 pages—or it is not going to be met at all.

Let us now diverge a bit. "The main purpose of this book is to tell ... what medicine has learned about stress." It should be noted in passing that there is a glossary at book's-end to help out on the technical terms. The main subject of the book is the G.A.S. (general adaptation syndrome) which comes to be called the stress syndrome; and, conversely, the stress syndrome, I suppose, may be said to be a GAS. First, one should mention that a syndrome is merely a collection or constellation of related signs and symptoms which is characteristic of a disease or condition of malfunctioning.

The G.A.S. is the sum-total of all non-specific changes that occur in the body during the time it is being acted upon by a stress-producing agent (stressor). These non-specific changes occur in three stages, 1) alarm, 2) resistance, and 3) exhaustion. Number 3 eventuates, if it continues, in death. Most stresses are only severe enough to produce stages 1 and 2. Going through 1 and 2 repeatedly in one's lifetime constitutes "adapting" to things. Various degrees of failure to adapt, Selye says, result in various disease or degenerative conditions.

## Star Maker

A man's consciousness unwillingly departs his body and his planet. Once in space he accomplishes willed travel in search of Star Maker. His journey takes him into the minds of other planetary beings; a company of these travel together and witness countless civilizations; eventually they participate in a combined consciousness of worlds that in time embraces the stars as well; this leads to galactic and cosmic consciousness and the culminating encounter with Star Maker.

Jordan Belson, who I trust in these matters, asserts that it is a true vision, that Stapledon's whole life pointed at attaining it, and that the book will be used and discussed for centuries.

This Dover edition has an earlier Stapledon story, "Last and First Men," which Jordan considers negligible.

## The Age of Discontinuity

How come Peter Drucker has so much good sense and perspective, and still remains so cheerful? Traditionally considerations such as his—economics, organizations, the future—turn a prophet's soul terrible and dark or at least partially wiggly. The only other intact floater on this ocean I know of is Marshall McLuhan. You sense that both of them have a backyard in their mind that resides somewhere else, some time else. (It would be worth pursuing this. How To Think Big and Stay Sane.)

The Age of Discontinuity takes notice of the remarkable continuity of the last 50 years in building on the technological breakthroughs of the Victorian era. Now, says Drucker, we are in for some hard changes, particularly around new technologies (of information, materials, oceans, megalopolis), global economics, and redistribution of responsibility in large organizations.

Now to get back to the question of criterion number one—the use of the book as a tool. Up to page 258 it is not useful as such to the general reader. Selye says, "All we have said up to now helps to guide treatment on the part of a physician," and "... even dietary treatment must be controlled by a competent physician. All this book can do in this respect is to help the patient understand why his physician prescribes a certain regimen; it could not presume to be an adequate preparation for self-treatment along such purely medical lines." BUT, "... there are many things I have learned from the study of stress, which the physician cannot use but the patient can. I particularly want to share these lessons with you. ..." OK, reader, you are now on your own, and you will indeed find out that criterion number one is met.

[Reviewed by R. D. Chamberlain, M.D.]

### The Stress of Life

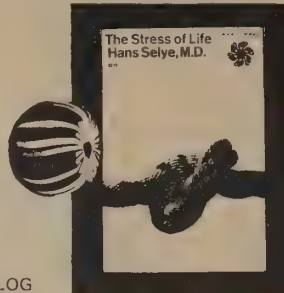
Hans Selye, M.D.  
1956; 324 pp.

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Stress is essentially the rate of all the wear and tear caused by life. It will take a whole book to explain the complex mechanisms through which the body can reduce this type of wear and tear. But let me say here, by way of an introduction, that although we cannot avoid stress as long as we live, we can learn a great deal about how to keep its damaging side-effects to a minimum. For instance, we are just beginning to see that many common diseases are largely due to errors in our adaptive response to stress, rather than to direct damage by germs, poisons, or other external agents. In this sense many nervous and emotional disturbances, high blood pressure, gastric and duodenal ulcers, certain types of rheumatic, allergic, cardiovascular, and renal diseases appear to be essentially diseases of adaptation.

The important difference between the discovery of America by the Indians, by the Norsemen, and by Columbus is that only Columbus succeeded in attaching the American continent to the rest of the world.

It is not to see something first, but to establish solid connections between the previously known and the hitherto unknown that constitutes the essence of scientific discovery.

Paracelsus (whose true, but somewhat bombastic, name was Theophrastus Bombastus von Hohenheim) was a famous Swiss physician who lived during the sixteenth century. In his treatise on "Diseases Which Deprive Man of his Reason," he stated that "the best cure and one which rarely fails is to throw such persons into cold water."

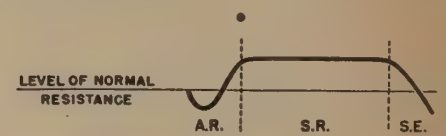
Disease is not mere surrender to disease, but also fight for health; and unless there is fight there is no disease.

What is disease—not any one disease, just disease in general? This question lingered on in my mind, as it undoubtedly has in the minds of most physicians of all nations throughout history. But there was no hope of an early answer, for nature—the source of all knowledge—rarely replies to questions unless they are put to her in the form of experiments to which she can say "yes" or "no." She is not loquacious; she merely nods in the affirmative or in the negative. "What is disease?" is not a question to which one can reply this way.

Occasionally, if we ask, "What would you do if ... ?" or, "What is in such and such a place?" she will silently show you a picture. But she never explains. You have to work things out yourself first, aided only by instinct and the feeble powers of the human brain, until you can ask precise questions, to which nature can answer in her precise but silent sign language of nods and pictures. Understanding grows out of a mosaic of such answers. It is up to the scientist to draw a blueprint of the questions he has to ask before the mosaic makes sense.

Fortunately, it is not so much the existence of things that we do not know, or about which we are too uncertain, that handicaps our research, but the existence of things we do know and about whose interpretation we are quite certain—although they may turn out to be false. Lack of equipment, or even lack of knowledge, is much less of a handicap in original research than an overabundance of useless materials or useless (and sometimes false) information which clutters up our laboratories and our brains.

The term *adaptation energy* has been coined for that which is consumed during continued adaptive work, to indicate that it is something different from the caloric energy we receive from food; but this is only a name, and we still have no precise concept of what this energy might be. Further research along these lines would seem to hold great promise, since here we appear to touch upon the fundamentals of aging.



In the acute phase of the alarm reaction (A.R.), general resistance, to the particular stressor with which the G.A.S. had been elicited, falls way below normal. Then, as adaptation is acquired, in the stage of resistance (S.R.), the capacity to resist rises considerably above normal. But eventually, in the stage of exhaustion (S.E.), resistance drops below normal again.

Adaptability can be well trained to serve a special purpose, but eventually it runs out; its amount is finite.

The fact is that a man can be intoxicated with his own stress hormones. I venture to say that this sort of drunkenness has caused much more harm to society than the other kind.

... It is not easy to tune down when you have reached your stress-quota. Many more people are the helpless slaves of their own stressful activities than of alcohol. Besides, simple rest is no cure-all. Activity and rest must be judiciously balanced, and every person has his own characteristic requirements for rest and activity. To lie motionless in bed all day is no relaxation for an active man.



The sheer beauty of our planet surprised me. It was a huge pearl, set in spangled ebony. It was macrous, it was an opal. No, it was far more lovely than any jewel. Its patterned colouring was more subtle, more ethereal. It displayed the delicacy and brilliance, the intricacy and harmony of a live thing. Strange that in my remoteness I seemed to feel, as never before, the vital presence of Earth as of a creature alive but tranced and obscurely yearning to wake.

### Star Maker

Olaf Stapledon  
1937; 188 pp.

\$2.50 postpaid

from:  
Dover Publications, Inc.  
180 Varick Street  
New York, N. Y. 10014

or WHOLE EARTH CATALOG

The sport of disembodied flight among the stars must surely be the most exhilarating of all athletic exercises. It was not without danger; but its danger, as we soon discovered, was psychological, not physical. In our bodiless state, collision with celestial objects mattered little. Sometimes, in the early stages of our adventure, we plunged by accident headlong into a star. Its interior would, of course, be inconceivably hot, but we experienced merely brilliance.

The psychological dangers of the sport were grave. We soon discovered that disheartenment, mental fatigue, fear, all tended to reduce our powers of movement. More than once we found ourselves immobile in space, like a derelict ship on the ocean; and such was the fear roused by this plight that there was no possibility of moving till, having experienced the whole gamut of despair, we passed through indifference and on into philosophic calm.

Almost certainly, the star's whole physical behaviour is normally experienced as a blissful, an ecstatic, an ever successful pursuit of formal beauty. This the minded worlds were able to discover through their own most formalistic aesthetic experience. In fact it was through this experience that they first made contact with stellar mind.

I said, "It is enough, and far more than enough, to be the creature of so dread and lovely a spirit, whose potency is infinite, whose nature passes the comprehension even of a minded cosmos. It is enough to have been created, to have embodied for a moment the infinite and tumultuously creative spirit. It is infinitely more than enough to have been used, to have been the rough sketch for some perfected creation."

Yet though IBM is now shipping computers at a rate of a thousand a month, we do not have the equivalent of Edison's light bulb. What we are lacking is not a piece of hardware like the light bulb. What we still have to create is the conceptual understanding of information. As long as we have to translate laboriously every set of data into a separate "program," we do not understand information. We have to be capable of classifying information according to its characteristics. We have to have a "notation," comparable to the one St. Ambrose invented 1,600 years ago to record music, that can express words and thoughts in symbols appropriate to electronic pulses rather than in the clumsy computer language of today. Then each person could, with very little training, store his own data within a general system, that is, in what the computer engineers call a "routine." Then we shall have true "information systems."

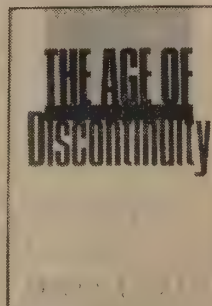
### The Age of Discontinuity

Peter F. Drucker  
1969; 401 pp.

\$7.95 postpaid

from:  
Harper & Row  
49 East 33rd Street  
New York, N. Y. 10016

or WHOLE EARTH CATALOG



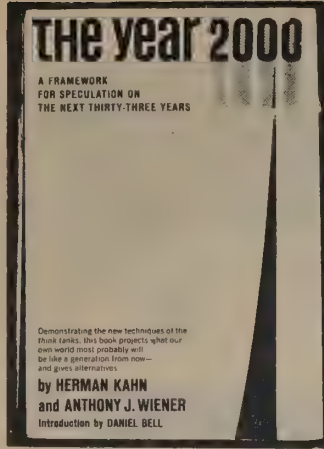
Since the computer first appeared in the late 1940's the information industry has been a certainty. But we do not have it yet. We still do not have the effective means to build an "information system." This is where the work is going on, however. The tools to create information systems may already exist: the communications satellite and other means of transmitting information, microfilm and the TV tube to display and store it, rapid printers to reduce it to permanent record, and so on. There is no technical reason why someone like Sears Roebuck should not come out tomorrow with an appliance selling for less than a TV set, capable of being plugged in wherever there is electricity, and giving immediate access to all the information needed for schoolwork from first grade through college.

**The Year 2000**

Is Herman Kahn the bad guy (as liberal opinion would have it) or a good guy (as in some informed opinion)? Kahn will hang you on that question and while you're hanging jam information and scalding notions into your ambivalence. He does this best with a live audience, but this book is a fine collection of the information he uses.

Here is most of the now-basic methodology of future study—multi-fold trends, surprise-free projections, scenarios, etc. And here are their results. It's the best future-book of the several that are out.

In my opinion, it is not particularly an accurate picture of the future but the most thorough picture we have of the present—the present statistics, present fantasies, present expectations that we're planning with. We are what we think our future is.



**The Year 2000**  
Herman Kahn and Anthony J. Wiener  
1967; 431 pp.

**\$9.95** postpaid

from:  
The Macmillan Company  
Front and Brown Streets  
Riverside, Burlington County  
New Jersey 08075

or **WHOLE EARTH CATALOG**

**TABLE IX**

The Postindustrial (or Post-Mass Consumption) Society

1. Per capita income about fifty times the preindustrial
2. Most "economic" activities are tertiary and quaternary (service-oriented), rather than primary or secondary (production-oriented)
3. Business firms no longer the major source of innovation
4. There may be more "consentives" (vs. "marketives")
5. Effective floor on income and welfare
6. Efficiency no longer primary
7. Market plays diminished role compared to public sector and "social accounts"
8. Widespread "cybernation"
9. "Small world"
10. Typical "doubling time" between three and thirty years
11. Learning society
12. Rapid improvement in educational institutions and techniques.
13. Erosion (in middle class) of work-oriented, achievement-oriented, advancement-oriented values
14. Erosion of "national interest" values
15. Sensate, secular, humanist, perhaps self-indulgent criteria become central

**The Futurist**

In part because the Future is a new field of methodic study this is a lively newsletter. It reports bi-monthly on new books and programs having anything to do with social forecasting. Future study is like education: everybody thinks they're good at it. The newsletter has some of that diluted flavor, but it doesn't matter. Useful pointing at useful activities done here.

Maslow's Hierarchy of Needs

Abraham Maslow, a Brandeis University psychologist, has postulated that all men share certain basic needs which can be arranged in a hierarchy of five levels, from the most fundamental physiological needs to the needs of intellectual and spiritual fulfillment. The five levels are:

1. **Physiological needs:** To survive, man needs food, clothing, shelter, rest. As the imperative requirements for staying alive, these represent the most elemental needs.
2. **Safety or security needs:** When physiological needs are satisfied, man wants to keep and protect what he has. He starts to try to stabilize his environment for the future.
3. **Social needs:** As his environment becomes more stable, he seeks to be part of something larger than himself. He has social needs for belonging, for sharing and association, for giving and receiving friendship and love.
4. **Ego needs:** These are the needs that relate to one's self-esteem (needs for self-confidence, independence, achievement, competence, knowledge) and one's reputation (needs for status, recognition, appreciation, deserved respect of one's peers)
5. **Self-fulfillment needs:** Finally comes the need for growth, self-development, self-actualization. As the capstone of all his other needs, man wants to realize the full range of his individual potential as a human being.

At each level, needs determine values and patterns of behavior. At the survival level, for instance, man values food, clothing and shelter most highly. It is important to note that a satisfied need is not a motivator of behavior. (Once hunger has been satisfied, it no longer has much motivating force.) Furthermore, higher level needs operate only when lower level needs continue to be met.

**The Futurist**

**\$5.00** for one year (bi-monthly)

from:  
World Future Society  
P. O. Box 19285  
20th Street Station  
Washington, D.C. 20036



A Generation Looking for "Munich" May Be Followed by a Generation Looking for "Vietnam"

There was, once upon a time, a generation whose consciousness was formed by Munich, and that generation has been walking around looking for Munich ever since. Among them are the guys who got us into this crazy disaster in Vietnam, because they were looking for Munich and they thought they had found another one.

Try to think what it is going to mean to have millions of Americans looking for Vietnam the rest of their lives. That is: the first thing they say about an American President is: "He is probably lying to us." Not the last thing. Not the thing you come to through great suffering. But the first thing you say is: "That son-of-a-bitch is probably lying, because every American President I can ever remember has been lying to us."

That is going to cut very deep, because if you are living in a society in which a big chunk just doesn't believe the government is legitimate, or thinks it probably isn't, and you've got to prove to them with great labor that it is, that is a very strange event in American history.

—Arthur I. Waskow

Changes in value systems will be the major determinant of social, political and economic developments on the domestic scene.

It may well be that identifying value changes will become the single most important element of environmental forecasting. For, if these changes can be identified and analyzed, then it will be that much more feasible to predict the course of the major currents in our society.

Profile of Significant Value-System Changes: 1969-1980 as seen by General Electric's Business Environment section

	1969	1980	
War (military might)	High	Low	Peace (economic development)
Nationalism	High	Low	Internationalism
Federal Government	High	Low	State/local government
Public enterprise	High	Low	Private enterprise
Organization	High	Low	Individual
Uniformity-Conformity	High	Low	Pluralism
Independence	High	Low	Interdependence
Sociability	High	Low	Privacy
Materialism	High	Low	Quality of life
Status quo permanence routine	High	Low	Change flexibility innovation
Future planning	High	Low	Immediacy
Work	High	Low	Leisure
Authority	High	Low	Participation
Centralization	High	Low	Decentralization
Ideology Dogma	High	Low	Pragmatism, rationality
Moral Absolutes	High	Low	Situation ethics
Economic efficiency	High	Low	"Social justice"
Means (especially technology)	High	Low	Ends (goals)

One way of anticipating probable changes in values, attitudes and behavior is to view them as the consequences of a progression, on a national scale, up Maslow's hierarchy of needs. Since man is a creature of seemingly endless needs, we can predict that, when one has been satisfied, another will appear in its place. Furthermore, when one level of needs has been satisfied, he will proceed to the next level. The levels are progressively less essential in terms of sheer survival, and more important in terms of living at one's fullest human potential (which seems to be the ultimate level of aspiration).

**Mankind 2000**

Politicians seldom invent things. They respond to pressures by reaching into the current social invention bag and finding whatever looks like the most promising program for this day our daily conflict.

So who makes the inventions? A motley crew is who. Political aids, academes, business entrepreneurs, artists, liberal scientists, and occasionally a grass root and friends. Some of their thoughts get published; some purely happen.

Whether you're an inventor or a piece of the pressure, you may want to know what's in the bag so far for the rest of this century. This book has a good range of the published ideas and expectable pressures, some lovely, some harrowing, all impinging on your very own personal world to come.

**Mankind 2000**

Robert Jungk, Johan Galtung, Ed.  
1969; 368 pp.

**\$14.90** postpaid

from:  
Universitetsforlaget  
P. O. Box 142  
Boston, Mass. 02113

or **WHOLE EARTH CATALOG**

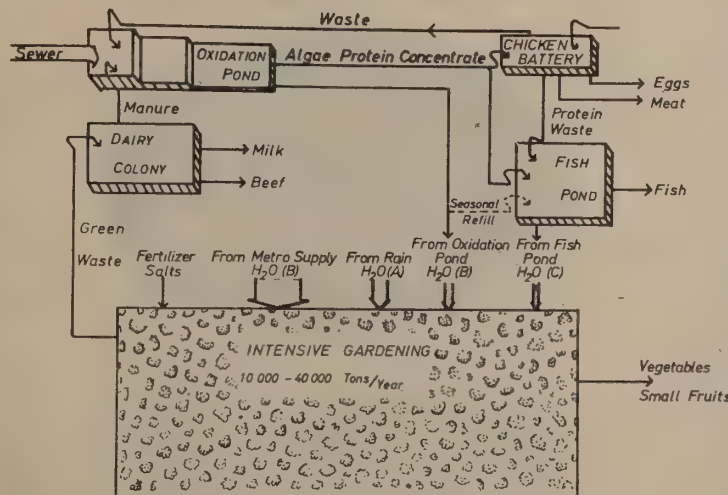


Fig. 3. Production of perishable foods in urban village (Population up to 35,000 persons)

The neatest case is the sit-ins, where the civil rights movement said, "Our desirable-achievable future is that we want to be able to eat in integrated restaurants. We will not petition legislatures to require integration, we will not petition the owners of the restaurants to integrate, we will simply create the future. This is, we will integrate the restaurants, and it will rest upon those who have the power of law and the power of ownership in their hands, to decide how to respond to that creation. So we will build now what it is we want to exist in the future, and society will have to react to that. It will have to let us build it, or it will have to punish us for building it. If it punishes us for building it, we believe we can build support around that vision of the future, and can, therefore, mobilize people into action to achieve that future."

Arthur I. Waskow

We might be able to create "future gaming" centers which could offer experience in "living" alternative futures to people who are fed up with the present but have no feel for a workable or desirable society.

Arthur I. Waskow

Sewage-produced algae would be fed to chickens and fish (cattle do not need the protein) according to minor modifications of existing art in these forms of husbandry (Fig. 3).

Altogether, about two thirds or more of the weight and at least a quarter of the caloric intake of the urban diet can very likely be produced economically inside the city itself using present knowledge.

Richard L. Meier

Even in advanced countries, futurology is not necessarily identical and, moreover, can be roughly divided into three groups:

- European type
- US-Soviet type
- Japanese type

Yujiro Hayashi

In the times of Antipatro the Macedonian, the first water-driven mills made people exclaim, "The Golden Age is returning!"

Silvio Ceccato

# Shelter and Land Use

Edited by Lloyd Kahn

## \* Domebook One

A book (the first) for domebuilders, with detailed step-by-step instructions on building 7 different type domes, most of them geodesic.

A portion of the book describes domes built as part of the curriculum at an experimental high school, several of the structures built almost entirely by 15-17 year olds.

There are both simple and detailed explanations of geodesic geometry, exterior photos of the different domes, interior fisheye photos, and sketches of details.

Geodesic chord factors (constants that allow you to calculate strut lengths for different size domes) are published here for the first time—up to 6 frequency for "alternate breakdown," to 8 frequency for "triacon breakdown."

The nature of the dome designs is experimental; the purpose of the book is to communicate the builders' experience; the hope of the writers is to initiate individual dome building, innovations, & prototypes.

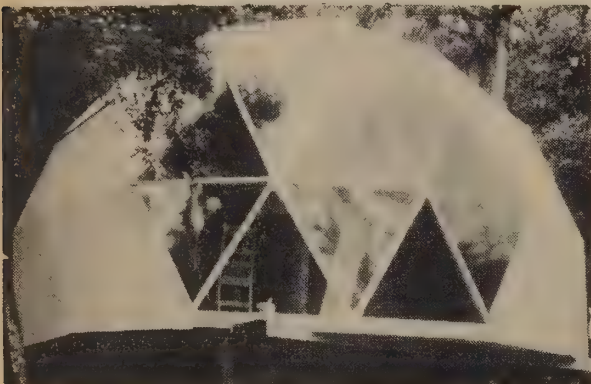
[The above is Lloyd trying to review his own book. He's hopelessly modest. If you're doming, the book is simply necessary. —SB]

### Plywood Domes

We have built seven domes like this in about three months' time. Most of those on our building crew were 15-17 years old.

We used pipe-section hubs and stainless steel straps for the framework—a method first used by Fletcher Pence in the Virgin Islands about ten years ago. The skeleton framework is first strapped into place, a membrane is then attached, and joints are waterproofed.

We used 2 x 3's for the skeleton, 3/8" Duraply plywood for skin, clear ultra-violet resistant vinyl in geometric patterns for light, polyurethane caulk for sealing joints, and other ingredients listed below. The entire dome—struts and skin—will fit in a 3/4 ton pickup truck.



### VITAL STATISTICS—Pacific Dome

Geometry: 3-frequency geodesic, 5/8 sphere, icosahedron alternate breakdown, vertex zenith

Diameter: 24'

Weight (not including floor) 2050 lbs

Volume: about 4400 cubic feet

Floor area: (not including lofts) 452 sq ft

Note: volume is a far better measure of living space, especially in a dome, as you'll not be confined to the floor area.

### DOMe INGREDIENTS

- 12 pieces 4' x 7' plywood for small triangles
- 24 pieces 4' x 8' plywood for large triangles
- 6 pieces 4' x 9' plywood for extra-large triangles
- about 750 lineal feet 2 x 3's for struts (of 8' and 10' lengths). Figure the proper number of each to order.
- 61 hubs, cut from sections of pipe
- about 500' stainless steel strap, about 400 stainless steel buckles
- about 20 lbs 4d or 6d hot dip galvanized nails
- quantity of window material up to you
- 12 tubes of caulk
- 2½ gallons primer, 2½ gallons finish coat paint
- misc. materials for vent, door etc.
- floor materials not included

Total Cost: \$929.00



Table of struts: make a large, clear copy of this and post by the saw

Strut	Number to cut	Length, using 3/8" diameter hubs*	Axial Angle both ends	Angle at which you set radial saw
A	30	46 11/16"	90°	10°
B	56	54 5/8"	79°	12° Check skip zone
C	80	56 7/8"	79°	12°

\*Strut lengths here are based upon 3 1/2" diameter hubs. If you use different size hubs, calculate strut length from chord factors on page and subtract hub diameter



Angle: use an adjustable protractor to double check the saw's gauge. Hold it against fence, pull blade out and check to see that blade parallels protractor.

Length: tape measures are made to hook over a piece of wood. For greater accuracy use the 1" line on the tape measure and line it up with inside of saw blade. Add 1" to total measurement when setting stop. V-mark stop and table and check the stop for slipping periodically while sawing.

Make sure table and fence are made of clear straight wood. Close one eye and sight down the fence.



Domebook One  
1970; 56 pp.

\$3.00 postpaid

5 or more \$2.25 each

from:  
Pacific Domes  
Box 1692  
Los Gatos, CA 95030

or **WHOLE EARTH CATALOG**  
(except quantity orders)

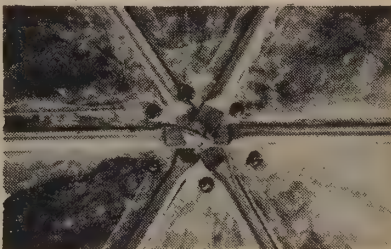
### Tube Frame Domes

#### THE FRAME

Any suitably strong tubing can be used, but the cheapest and easiest to get is "EMT" electrical conduit. It is easy to work with and is plated, so painting isn't necessary. 1/2" is not suitable for any domes that will be subjected to heavy weather conditions, but it is useful for indoor structures and small (up to 14 feet diameter) domes. 1/2" conduit will bend if climbed on. 3/4" is best for most uses. It wholesales for about 9¢/ft. Using the chord factors, you can use 3/4" conduit in triangles whose sides are up to 4½ feet long. 4 feet is maximum where there will be snow loads. This will result in about a 24 foot maximum diameter in 3-frequency. For larger domes you will need bigger tubes or a higher frequency. Bigger tubes are hard to squash! Think first.

#### Cutting

The tubes should be cut according to the chord factors *plus 1½"*. The chord factor gives the "center-of-hole to center-of-hole" length, and there must be about 3/8" beyond the holes. Conduit comes in ten foot lengths. You get two struts from each length for making domes up to about 24 feet diameter.



#### Squashing

Flatten the tube tips 2¼" from the ends, by squeezing them in a vise. A big vise. Small "home workshop" vises will break.



### Miscellaneous Ideas

Completely transparent dome with pop-in insulating panels. Adjust dome to the season, change light patterns to block or admit sunlight, view different parts of landscape.

Hang a swing in your dome for quick passage from one side to another.

Aluminum and galvanized steel can be used as skins for domes. Aluminum doesn't have to be painted, will last about 25 years (near the ocean it should be anodized), and is soft. Galvanized steel has to be painted and is stiff.

You can use thin metal if you spray the inside of the dome with foam. The panels should be sprayed from the inside with automobile undercoating or something like it to keep the dome from booming.

With a metal skin and a wood frame the panels can be shingled. Cut the panels an inch or two larger than the actual size of the triangles (Then when the panels are attached to the frame they overlap. See metal tube domes.). For sealing you put a strip of vinyl foam or tape caulk over the struts before attaching the panels. The panels can be stapled to the frame. You should use a staple gun that makes the staples curve outward. For thick metal you can rent an air stapler.

Models are essential. Don't try to build a dome without first making and studying models. However, don't get so involved with models that you never try a real structure.

### STRUT MODELS

These are models of the structural framework of a dome, made with 1/8" dowels and "D-Stix" rubber connectors. You can get the connectors from Edmund Scientific Co., 100 Edscorp Building, Barrington, N. J. 08007. Dowels can be obtained at a hobby shop (they are used by model airplane hobbyists) or you can buy one of the D-Stix kits from Edmund, with colored dowels.

#### Making a 3-Frequency Sphere

Your first model should be a sphere, since a dome is a portion of a sphere. You can then determine where to cut it off, how to orient it to the earth, and see the relationship of a geodesic sphere to the icosahedron.

Important note: when figuring the length of model struts, be sure you subtract for the length of the connector. In the following table, this has been done.

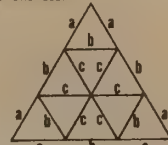
Here are calculations for a 3-frequency sphere. Check these out yourself before cutting, using chord factors below. For ease in multiplying chord factors, the metric system is preferable. Remember to adjust for connector.

Strut	Chord Factor	Length of Strut	Color Code	Make this Many
A	.3486	3 23/32"	Red	60
B	.4035	4 13/32"	Blue	90
C	.4124	4 1/2"	Yellow	120

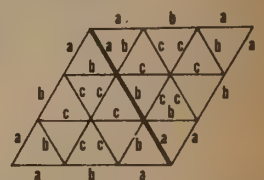
#### Putting it Together

You are actually making a spherical icosahedron, with its 20 faces subdivided into smaller triangles. Red struts outline vertices of icos faces.

Put together one face:



Then add another:



and continue until you have 20 of these subdivided triangles. It will be clearer with colors than it looks above.

Lay out 4 x 8 panels on the floor plan of your intended dome in a pattern that makes sense. Remember if you are using 1 1/8" plywood to keep the tongue and grooves meshing properly. See if you can do it in a way that the cut off plywood ends can be overturned and used upside down at the other side of the dome to fill in the empty spaces. Also, if possible, arrange things so a whole 4 x 8 will bridge the beam nest over the center pier, as shown. Scrap A is turned over and used at B, locating edge P as shown in Fig. 1. For a 20' dome this can mean that you can make the platform from only 11 sheets! (see drawing). Also, space the plywood so that the edges arrive over beams in the strongest manner. If it all works out well, you will save wood and piers.

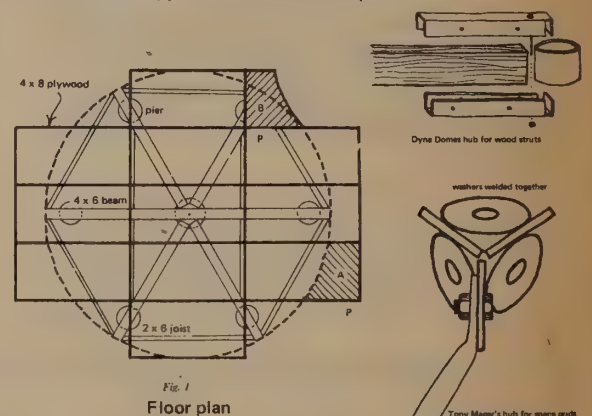


Fig. 1  
Floor plan

Insulation is 1 1/8" polystyrene ("styrofoam"). This is the white you see on the interiors of the plywood domes. You must get fire resistant foam, as fires are going to burn very efficiently in domes.

The foam is pure white, granular, and combined with the wood struts, gives the dome a half-timbered look. It feels more wooden than plastic.

It's put in with three small nails per triangle.

### Fuller Sun Dome

Blueprints for a 3-frequency geodesic dome. The \$5 includes construction license. Designed for swimming pool covers, dome plans specify wood strips and cheap polyethylene skin. However, you can modify to build domes of other materials, such as plywood, parachutes, or car tops. A simple system: two triangles make the dome; can be used up to about 35' diameter.

[Suggested by Ken Babbs.]

### Geodesic Sun Dome

1966

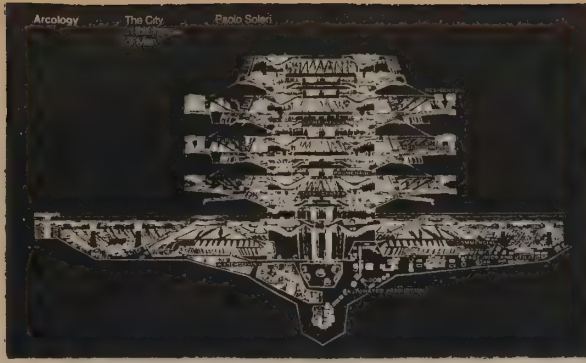
\$5.00 postpaid

from:  
Sun Dome  
Popular Science Monthly  
355 Lexington Avenue  
New York, N. Y. 10017

★  
Arcology

If I get it right [and getting it at all is something: it takes either lots of work or none at all] Soleri sees the next step in evolution as man's job. He sees that step manifested in an organism and that organism is the city. Soleri says that the first part of his book is the most important. But on seeing the second part it's very difficult to muster much time for the first part. It pays though, nicely. Soleri refers to Teilhard de Chardin in approaching the understanding of man as a cosmic problem by ascending from physics, chemistry, biology and geology. Western man must rise from his technology and one (I think) way is by being aware (of it) but ignoring it at the same time. The manifestation of a process like this is, I think, a series of drawings like that of the second part of the book. These drawings are like doorways, they're of fantastic cities, wholly improbable but obviously, cosmically, possible. In fact, they are made real just by their presence in one place (the book) and by the interrelatedness of one project to the next, page to page, with seminal sketches appearing in the corners here and there. What's most fascinating is the next obvious steps: the Cosanti buildings in Arizona and Arcosanti, about to begin. He's not starting all at once, big money style but the way cities have always started: little by little. Like Nieuw Amsterdam on the tip of Manhattan Island or whatever city began at whatever river crossing or natural harbor, Soleri is beginning at a crossing of cosmic consciousness.

[Reviewed by Ron Williams]



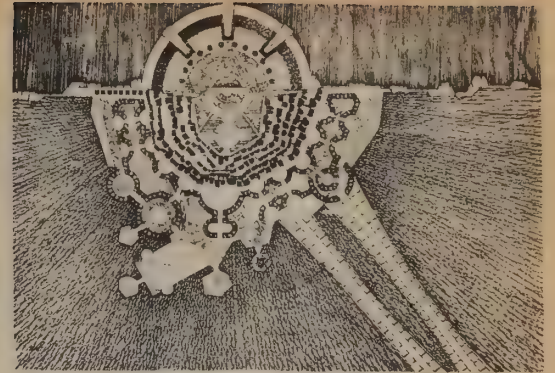
Arcology: The City in the Image of Man  
Paolo Soleri  
1969; 121 pp.

\$25.00 postpaid

from:  
Cosanti Foundation  
6433 East Doubletree Ranch Road  
Scottsdale, Arizona

or  
The MIT Press  
50 Ames Street, Room 765  
Cambridge, Mass. 02142

or WHOLE EARTH CATALOG

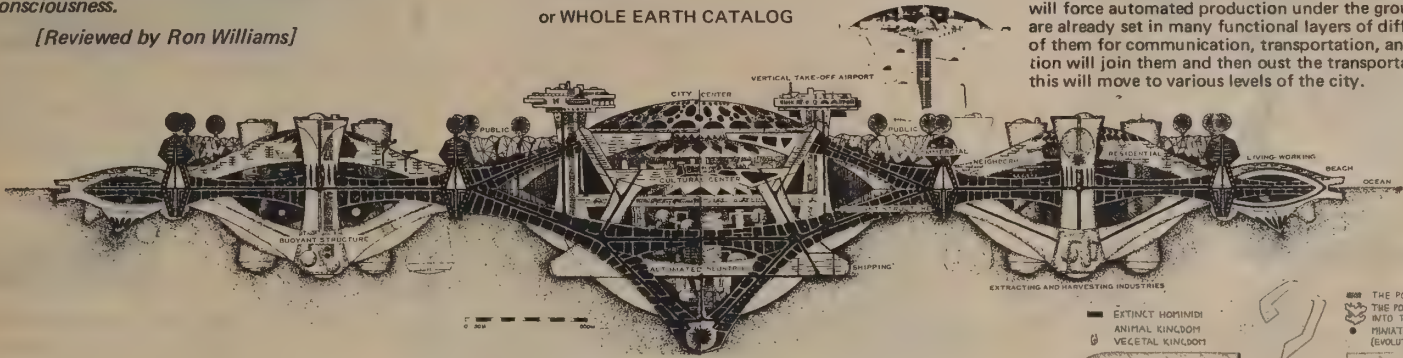


Plan of Arcodiga (dam site)

To introduce living and working into the masonry of the dam means to transform a monolithic, noncellular system into one that is articulated and cellular. For equal mass the cellular system, not randomly given but structurally conceived, is stronger because it allows selectivity of orientation and dimensionality.

If one then considers the 1:7 ratio of redundancy in the safety coefficient in the dams built in the United States, one can see the wealth of schemes that can effectively and magnificently transform the blind mass into a singing environment

Of all man's activities, it is automated production that will move inside the earth's crust. Efficiency, safety, compactness (miniaturization), and the use of the surface of the earth for other things will force automated production under the ground. Large systems are already set in many functional layers of different kinds, most of them for communication, transportation, and storage. Production will join them and then out the transportation system, as this will move to various levels of the city.



Novo Noah I - Floating city for 400,000

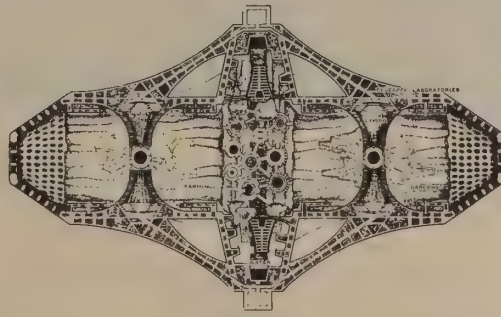
Structure comes before performance.

There is then a profitable ground for learning about the cities of today by reflecting on the hypothetical and as-yet-unreal city-asteroid. For it the conditions are harsher, the problems more packaged, the survival-success story more elemental, and the hypothesis slightly less human than one might desire. However, what is built in is not so much the fraud of simulation as the frugality of investigation.

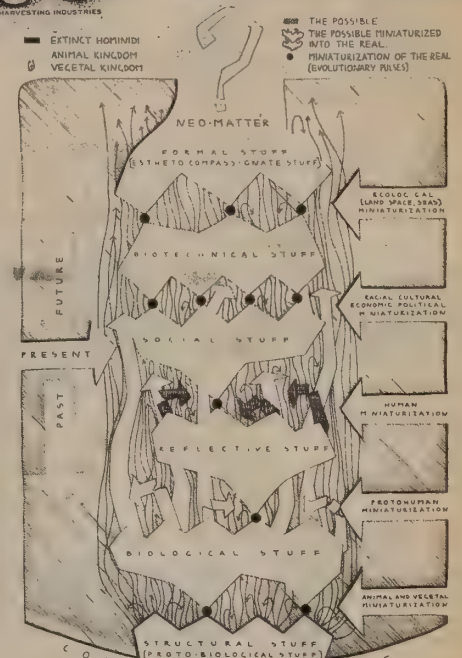
Lunacy is part of man's burden. Thus, while man dies on earth through hunger and malice, he works feverishly at the encounter with the black naught of space. He will need out there a real machine for living. Man and his earthly morphological confinement is a dead duck in space. He will be stuffed into a superlung, wrapped by superdigestive tracts, governed by superchemical brains. He will not look into the crystal ball; he will be inside it. Life will be interiorized, not psychologically but physically: the life inside, not the life on (the earth). The center or the axis of the machine will be the center of gravity. Man's head will point at it, not his feet.

Should man take with him out there, beside his biological condition, anything else that has a biological flavor? He may have to, while nurturing his expectation for a non-biological self. He may have to for his physical and mental health. Miniaturization is the password to the fantastic voyage. For a long time symbolism will be the real context of space life, the testing of events to come and not necessarily of space events but of more pressing earthly problems—the miniaturization of the performance of the human race on the space ship earth.

Asteromo is an asteroid for a population of about 70,000 people. It is basically a double-skin cylinder kept inflated by pressurization and rotation on its main axis. The inner skin is the ground on which man walks. It is lined with vegetation for food and the carbon dioxide-oxygen cycle. (Unknowingly I arrived at somewhere between 10 and 20 square meters of garden per person, the same order of magnitude considered by the Russian space scientists.)



Asteromo



Miniaturization

★  
Shelter and Society

Almost all the books you ever see on architecture are concerned with monumental building, a result of the relationship between architects and wealthy patrons. Seldom do you see anything on buildings by the people, of local materials and in simple harmony with the surrounding landscape.

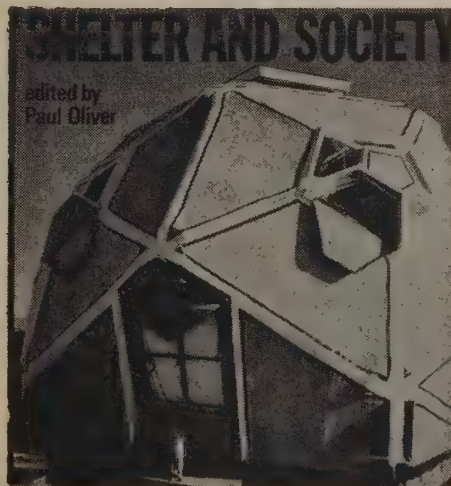
Here's an exception. On the cover is what at first glance appears to be a primitive Portuguese fisherman's house. On closer inspection, it's a picture of one of Drop City's domes, colorful, funky, having sprung from the trash of "... a wasteful society."

10 types of dwellings are covered, by different writers. A comparison of the pueblo and the hogan, the walled city of Old Delhi, the Norwegian Laftehaus, Villages on the Black Volta, and a fine article by Bill Voyd on funk architecture at Drop City. Many of the photographs are too dark, but you won't find them elsewhere.

It's more of a book on the functions of the buildings than on the external aesthetics.

"All is as it should be", says one of the beings.  
"Nothing is complete," returns the other; "look at those creatures below this mountain, whom we see assembling, then disbanding, looking about, and betaking themselves to shelter."

From the Prologue to *The Habitations of Man in All Ages* by Viollet-le-Duc, translated by Benjamin Bucknall, Architect. 1876.



Shelter and Society  
Paul Oliver, ed.  
1969; 167 pp.

\$10.00 postpaid

from:  
Frederick A. Praeger, Publisher  
111 Fourth Avenue  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

\$7.36 from Blackwell's (see p. 79)

To the Egyptians, shelter for the dead was more important than shelter for the living; our factories, he argued, suggest that shelter for machines is better served today than that for men or gods: "Shelter seems, indeed, to have been a minor consideration in many of the early cultures."

For the very congruity and harmony which is so frequently a source of admiration and comment in architectural writings on vernacular shelter is evidence of the integration of the building in the life of the community as a whole.

The close link between dwelling and land expressed in the resemblance of the pueblo to a land-form seems to reflect the overall harmony of man and nature. The house is sacred, and so is the whole landscape and everything in it. Corn was more than a food, it was a symbol of life, and corn growing was regarded as a religious activity. Among the Tewa, for example, the greater part of religion centres around corn and, by extension, around agriculture in general. This attitude must influence the form of the pueblo and particularly its siting and relationship to the land; it helps to explain why the pueblo seems such an inevitable part of its surroundings.

Sun movements and solstices are extremely important, being related to ceremonial cycles. The pueblo is carefully orientated: it is related both to mountains ("Life comes from the mountains") and to the six cardinal points and the sacred directions of East and North.

**Geodesics**

*This is the first book wholly devoted to geodesics. Good text, clear drawings, introductory text on the basic principles of Fuller's geodesic domes.*

*Shown are domes of wood, metal and plastic, most of them produced industrially; along with the various domes are detailed sections of hubs, construction methods, and assembly sequences.*

*The brief text discusses*

- polyhedra
- orientation
- breakdown
- frequency
- base truncation
- chord factors (the constants necessary for calculation of different diameter domes).

*Some designer Steve Baer adds:*

*The illustrations are beautiful. They are good for a designer's brain—they will show a final form and then also the form's childhood by pinpointing pts. of symmetry from which patterns grow.*

[Suggested by ONYX]

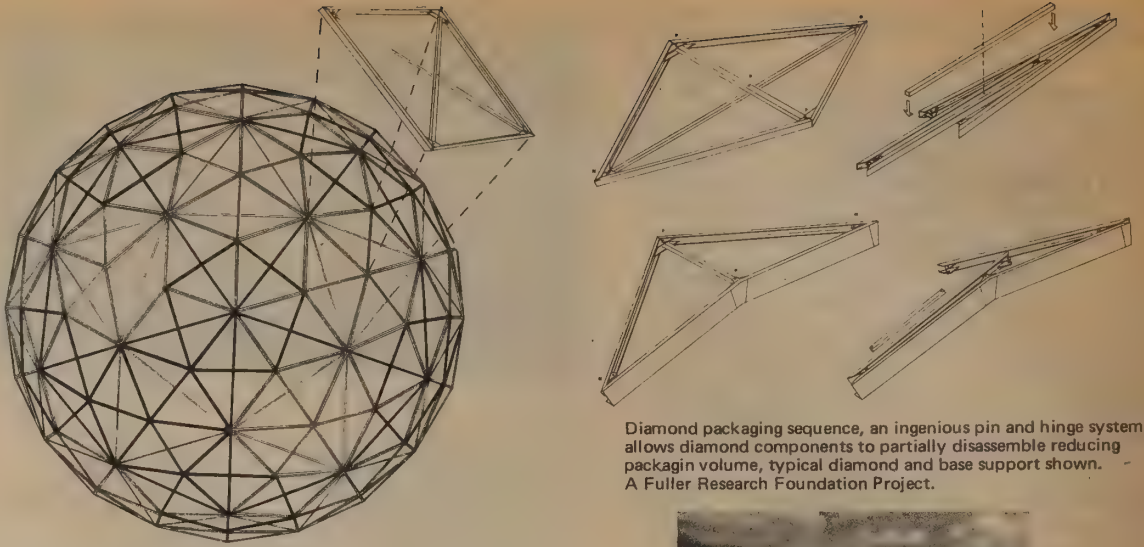


**Geodesics**  
Edward Popko  
1968; 124 pp.

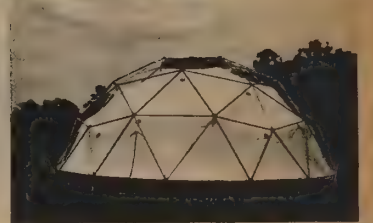
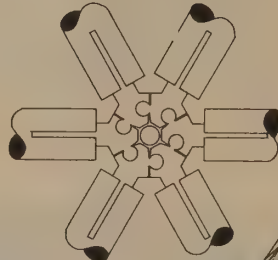
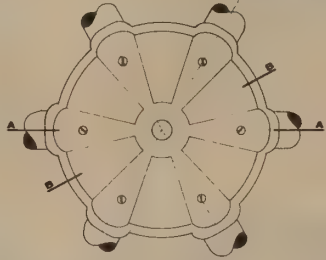
**\$4.00** postpaid

from:  
University of Detroit Press  
4001 West McNichols Road  
Detroit, Mich. 48221

or WHOLE EARTH CATALOG



Diamond packaging sequence, an ingenious pin and hinge system allows diamond components to partially disassemble reducing packaging volume, typical diamond and base support shown. A Fuller Research Foundation Project.

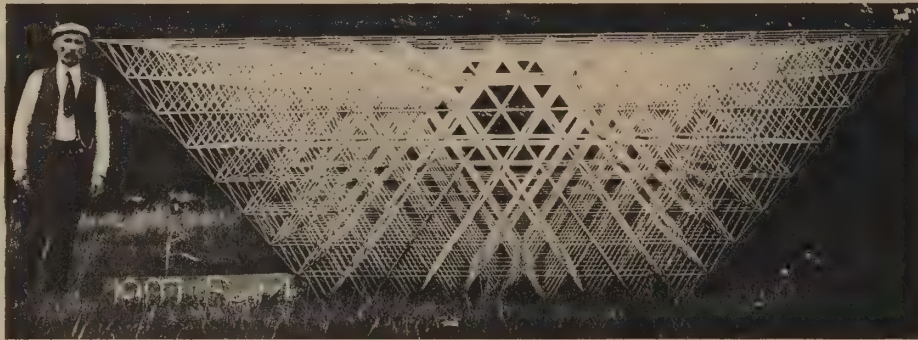


**Space Grid Structures**

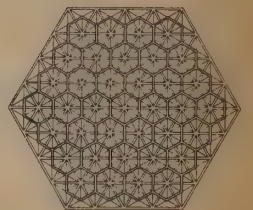
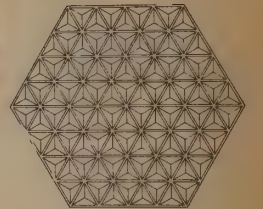
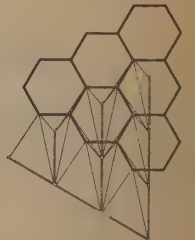
*A space grid is a means of spanning great distances with little weight, and a few intermediate supports. Buckminster Fuller's Octettruss at the Museum of Modern Art in 1959 was 35' wide and spanned 60' one way, 40' another from one column of supports. It was fabricated of 2" pipe.*

*Space grids consist of two parallel planes, forming a floor and ceiling; "web" members in between connect them in such a way that external loads are distributed in all directions.*

*This book is "... an exchange of information about what has been done recently in the development of flat space grid structures." There are photos, drawings, models of structures and joints. The three sections of the book deal with flat double-layer space grid structures, stressed-skin space grids, and fine clear drawings of space grid geometries. Also an extensive bibliography. Very little text; it's not needed as the drawings and photos are excellent.*



Project by Alexander Graham Bell. Bell concerned himself with space structures based on the tetrahedron. He developed space frames having combinations of axially loaded members by themselves and in combination with stressed-skin systems. Shown is a three-way space frame constructed of metal rods and connectors.



**Space Grid Structures**  
John Borrego  
1968; 200 pp.



**\$12.50** postpaid

from:  
The M. I. T. Press  
Room 765  
50 Ames Street  
Cambridge, Mass. 02142

or WHOLE EARTH CATALOG

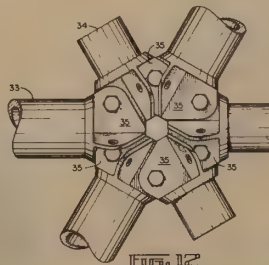
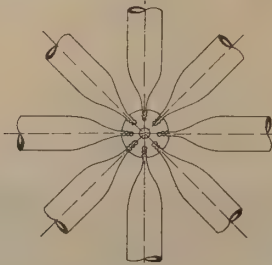


FIG. 12

**★ Structural Design in Architecture**

*Scope: Load determination, material characteristics, design of beams, frames, cables, arches, plates, thin shells, membranes, space frames.*

*This is a book of tested formulas that give back-of-the-envelope solutions that are good to within a few percent. Nothing revolutionary. Just very well done. The book is set up in useable fashion—derivations that give a good feel for what's going on, relevant formulas, and realistic examples. Salvadori is a real-world man: he knows where precision is required and where it is not, and that most architects and builders can only handle algebra and trig, maybe a little calculus. So he makes the right simplifying assumptions on complex problems, to produce a book that architects can USE: many structures can be completely designed, and larger, more complex structures can be checked for feasibility.*

[Suggested and reviewed by Charles Tilford]



**Structural Design in Architecture**  
Mario Salvadori and Matthis Levy  
1967; 457 pp.

**\$16.65** postpaid

from:  
Prentice-Hall, Inc.  
Englewood Cliffs, N. J. 07632

or WHOLE EARTH CATALOG

A balloon built by means of two flat, identical spherical sectors with a radius of 160 ft and an opening angle of 30°, supports a live load  $q = 30$  psf and is to be prestressed with a safety factor of 4/3.

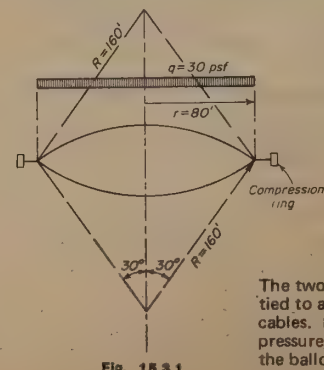


Fig. 15.3.1

The two halves of the balloon are tied to a compression ring by radial cables. Determine the prestressing pressure, the maximum tension in the balloon and the compression in the ring, neglecting the dead load of the balloon.

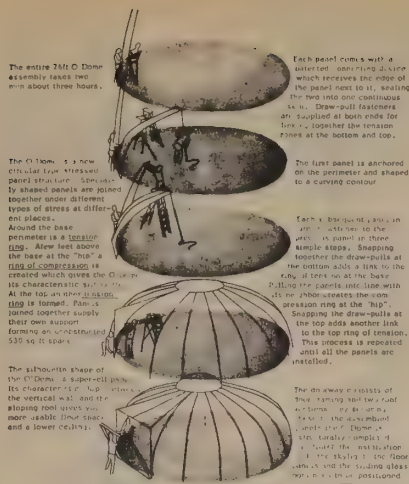
★  
O'Dome

The O'Dome is a lightweight circular structure that can be transported in a station wagon and erected in three hours. Even though the manufacturer seems to be aiming it at Playboy readers for beach cabanas—"instant vacation house"—it looks like a low cost highly portable, well designed unit that could easily be trucked into the woods for quick shelter.

It is of stress panel design (the bend-over sections are the framework as well as the membrane), and modular, meaning you can connect one to another. Tension rings top and bottom hold the panels together.

Different color panels, different sizes, options as to amount of glass.

I assume it's waterproof.



The entire 36ft O'Dome assembly takes two men about three hours.

The O'Dome is a new circular low stress panel structure. Sixteen shaped panels are joined together under different types of stress at different places.

Around the base perimeter is a tension ring. A few feet above the base at the "hip" a ring of compression is created which gives the O'Dome its characteristic shape.

At the top, an inner tension ring is formed. Panels are joined together firmly forming an unobstructed 53 sq. ft. space.

The silhouette shape of the O'Dome is a super-elliptical. Its characteristic "hip" gives the vertical wall and the sloping roof space a more usable floor space and a lower ceiling.

Each panel comes with a patented connecting device which receives the edge of the panel next to it, sealing the two into one continuous unit. Draw-cord fasteners are supplied at both ends for latching the tension rings at the bottom and top.

The first panel is anchored on the perimeter and shaped to a curved contour.

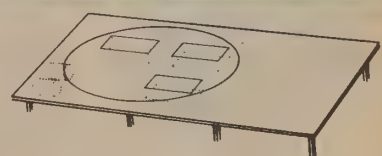
Each subsequent panel is attached to the unit in panel in three simple steps. Snapping together the draw-cords at the bottom adds a link to the ring at the top. At the base pulling the panels into line with the ring creates the compression ring at the "hip". Snapping the draw-cords at the top adds another link to the top ring of tension. This process is repeated until all the panels are installed.

The drawing consists of the spring and road screws. By an extra \$1.50, the assembled unit can be used as a portable structure. Draw-cord fasteners complete the installation of the shell. The floor panels and the sliding glass door are then positioned.

**O'DOME**  
A PRODUCT OF TENSION STRUCTURES, INC. 419 EAST MAIN STREET MILAN, MICH. 48160

15' diameter	\$1200
20' diameter	\$2000
25' diameter	\$2500-3500, depending on amount of glass

from:  
Tension Structures, Inc.  
419 East Main Street  
Milan, Mich. 48160



Put a trap door storage box in your deck.

Dyna Domes

There are about a dozen Dyna Domes on the outskirts of Phoenix. Each new one built gets a little closer to the city limits, and it's the hope of domebuilder Bill Woods to have the city fathers wake up one morning, find themselves surrounded by domes, and admit the new creatures under the wings of the building codes.



These are good quality, low cost plywood domes, with fiberglass exterior, and polyurethane foam insulation sprayed on the inside. Wood struts are put together with patented metal connectors, seams are filled with high-strength caulk, then taped with fiberglass.

You have the choice of having a dome erected (within 500 miles of Phoenix), buying a kit, or purchasing just the connectors with plans.

Woods has been experimenting for some time with foam-fiberglass buildings, has built a machine that produces the sandwich panels, and is about to market a foam dome.



Complete dome, erected on concrete floor within 500 miles of Phoenix: approx. \$4.00 per sq. ft. floor space.

Complete kit with instructions for erection: approx. \$2.00 per sq. ft. floor space.

Hub connectors, with plans for building it yourself: \$2.00 per strut.

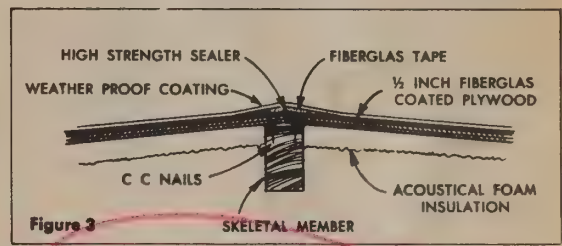
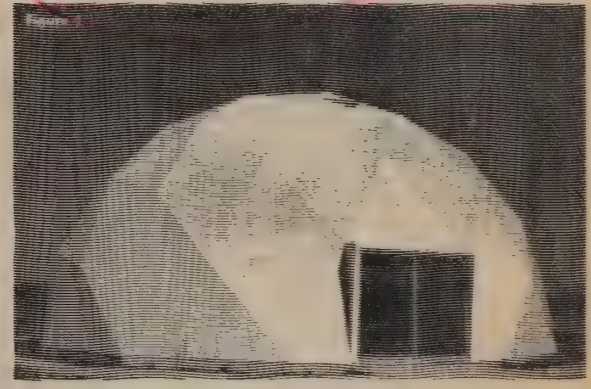


Figure 3  
SKELETAL MEMBER

Brochure free from:  
Dyna Dome  
22226 North 23rd Avenue  
Phoenix, Arizona 85027



Futuro

Finland, famed for its forests, and finely-crafted wooden structures, has produced the first well-detailed, commercially available foam fiberglass dwelling.

Now being manufactured in the U. S., the Futuro—a shiny elliptical pod—looks like it just landed. It can be dropped in by helicopter (expensive though) and requires no site preparation. It's structurally strong, well insulated, and has retractable stairs. Interior looks plastic and shiny and badly needs some madras bedspreads and non-plastic human touches.



Futuro House  
\$10,000 for shell  
\$14,000 for completely equipped house  
F. O. B. Philadelphia

from:  
Futuro Corporation  
1900 Rittenhouse Square  
Philadelphia, PA 19103

The Futuro House is now on display at 20th and Parkway, Philadelphia.

FUTURO FACTS

- 100% insulated 2" polyurethane foam—heats from -22 to 72 F. in 30 minutes.
- Positive pressure ventilation system—air conditioning available.
- Complete kitchen facilities.
- Bathroom facilities with shower and either chemical or standard water closet.
- Internal partitions can be modified to sleep up to eight people in one unit or can be divided into two double bed motel units, or supplied bare, except for water closet. Furnishings include 6 convertible chaise/beds, lighted arm rests, center table, barbecue, fireplace, carpets, partitions, shelves, etc.
- Interior and exterior are made of fiberglass, including furnishing (except for carpeting). Estimated life span in excess of 30 years.
- Almost completely maintenance free for life of unit.
- Exterior colors available: Pale blue, pine forest green, pale pink, lemon yellow. Interior decor complements exterior.
- Snow load in excess of 10 feet; wind load over 100 miles per hour, sealed against all water, dust or air infiltration.
- Gross weight about 800 pounds; diameter 26 feet; internal height at center—11 feet; effective area at window height—500 square feet; volume—5000 cubic feet; supporting structure—steel tubing with legs proportioned for 0 to 20 site slope.

11. No site preparation whatsoever, except for concrete piers to bolt down legs (plus utilities to site). Special independently operated utilities for more remote areas.
12. Designed for maximum security when stairs are retracted.
13. Twenty double acrylic windows—optionally operable. Viewable windows can be placed in either lower or upper hemisphere.
14. Portable (assembled) by helicopter or barge.
15. Portable (disassembled) by truck or rail.

ZONING AND BUILDING CODES—Futuro is available for Class I or II Fire Ratings and will be suitable for sparsely developed areas, or those conforming to National Building Codes.

TYPICAL SHIPPING COSTS—(f.o.b. Philadelphia)—Helicopter assembled about \$1000 per 100 miles. Car or Truckload disassembled varies. West Indies—Barge and Helicopter at Island \$3,000 assembled.



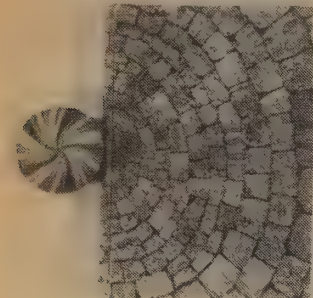
**★ Stone Shelters**

This is an utterly beautiful book, a study of the people, history, geography, and vernacular architecture in a small area in southern Italy known as the Murgia of Trulli.

The several different types of stone shelters of the region are covered extensively, including cave dwellings hewn from solid stone, unmortared stone domes called trulli, and arches and vaults built with "ragbag patchwork technique" by the masons of Cisternino.

The book is primarily concerned with how the architectural forms came into being and how the building techniques derived from the needs of the builders.

Descriptions and text are clear, photos superb.



**Stone Shelters**  
Edward Allen  
1969; 199 pp.

**\$13.50** postpaid

from:  
The M.I.T. Press  
50 Ames Street, Room 765  
Cambridge, Massachusetts 02142

or **WHOLE EARTH CATALOG**

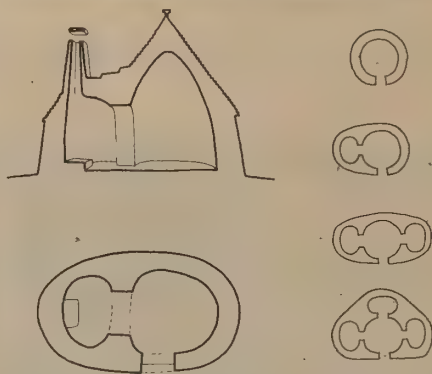


The raw material for a *trullo* could come from several possible sources. Loose stones from the field were one; quarried stone another. Often a large rainwater cistern or wine tank would be excavated in the rock beneath a *trullo*-to-be, and would yield a large quantity of good building stone. In later times especially, agricultural transformations were carried out, with great expenditure of labor, to make previously untillable land suitable for crops. The thin topsoil would be carefully removed and piled to one side, laying bare the limestone bedrock beneath. Then the limestone would be broken out in chunks to a depth of two or three feet. The best stones would be saved for construction, and the rest replaced over the still unbroken strata of the limestone, with the coarsest pieces on the bottom and the finest on the top. Following this back-breaking procedure, red *bolo* soil from a nearby depression would be carried to the field in baskets and tamped over the loose layers of broken limestone to a depth of fifteen or twenty inches. Finally, the original topsoil would be spread back over the *bolo*, and the land would be ready for cultivation. The heavy but sometimes infrequent rainfalls would be absorbed eagerly by the shallow topsoil and thick cushion of *bolo*, and once these soils had reached saturation the excess water would filter into the loose bed of broken rock beneath, from which, retained by the impervious bedrock, it could be slowly reabsorbed by the soil and roots above when needed. This continuous bed of limestone fragments, in addition to acting as an underground reservoir, served to furnish continual chemical fertilization to the soil from beneath, to complement the organic fertilizer added from above.

Sewage was distributed over the fields, working with the natural lime to increase the yield of the crops.



The making of a cave is the antithesis of the usual construction process. A cave is space produced directly by the subtraction of a relatively small amount of solid material from a very large mass. A more conventional shelter, whether it be a *trullo*, a vaulted stone townhouse, or the reader's own dwelling, is space produced indirectly by its enclosure with pieces of solid material added together.



A transitional form of *trullo* field shelter, nonrectilinear in plan. A main space is joined to a smaller one housing a fireplace. Such shelters are often found with two or three smaller spaces attached to the main space, as illustrated in the small sketches. (Plan and section courtesy *Byggkunst*, redrawn by the author.)

*Tufa* is a marvelous material. It is dense enough and hard enough to have served as both exterior and interior finishes, yet soft and fine-grained enough to have been cut into almost any shape for any purpose. Because of the immense height, length, and thickness of the *tufa* cliffs, great freedom of planning was possible.

**The Owner-Built Home**

Ken Kern makes a unique offer to anyone thinking about building his own home: for \$10 he furnishes a preliminary house design, as well as a copy of *The Owner-Built Home*, which is about the most useful book on building available.

For the design, send him a sketch of your building site, along with space requirements and personal likes and dislikes; or you may prefer to get the book first and read the first chapter on 'Site and Climate' before sending in the information.

The book is sound advice on the best low-cost building techniques from around the world: Africa, India, Israel: countries that cannot afford U.S.-style waste. Much of it is not in print elsewhere.

A 1" concrete floor with loading stresses of 450 lbs per sq ft; houses built of earth, woven bamboo and bottles, as well as of conventional materials. How to hook up your plumbing in a simple central core.

Good dope on concrete-proportions, additives such as sawdust or emulsified asphalt for 'comfort cushion' floor. Details on wood framing, how stud wall houses are overbuilt, the strength of threaded nails.

There is much good data on building with rock and earth; how to make a sliding form for rammed earth and a discussion of the strength of rammed earth and soil cement. Why don't you hear anything these days about earth wall buildings?

Inasmuch as there is nothing in bare earth to sell, no commercial group can be found to extol its merits.

Lots more, with a bibliography at the end of each chapter for further research.

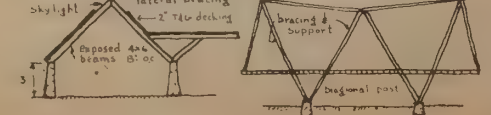
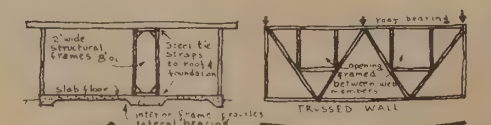
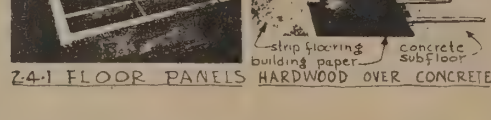
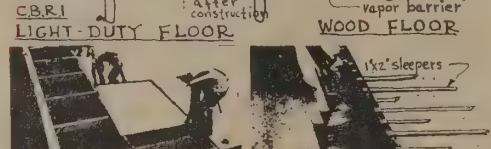
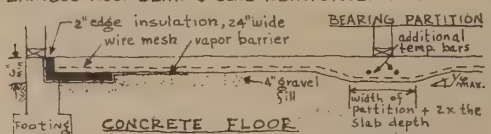
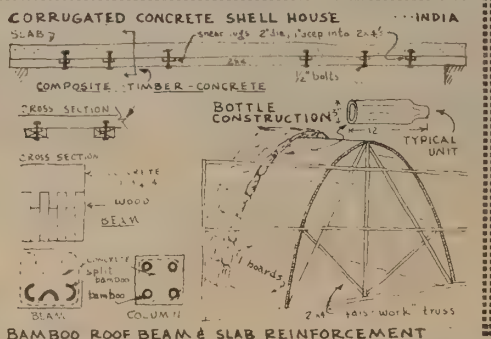
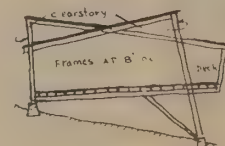
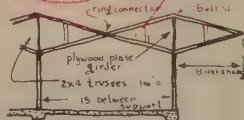


**The Owner-Built Home and preliminary house design** (send sketch, etc.)

Ken Kern  
1961; 300 pp.

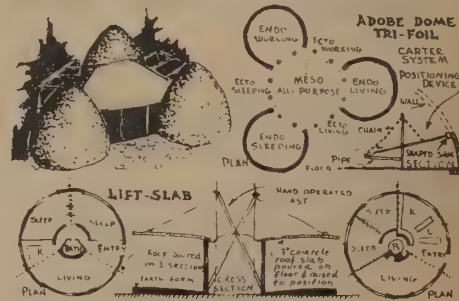
**\$10.00** postpaid

from:  
Ken Kern Drafting  
Sierra Route  
Oakhurst, CA 93644



**SOME RATIONAL FRAMING SYSTEMS**

The masons of Cisternino were men of exceptional ingenuity. They sometimes laid up walls of regular stone blocks, but in other cases made walls by compacting irregular stones and mortar between wood forms. Their combinations of arches and vaults were often graceful and correct, but more often were brutally expedient, and were most often full-blooded, lusty, folk-art inventions that made some charmingly naive concessions to grace and correctness. Nothing was sacred to the masons but the sheer physical stability of what they built. A half-arch could support a stair, a tilted barrel vault could cover it. A round barrel vault could be intersected by pointed-vault dormers. A triangular piece of vaulting could support a diagonal balcony front if held at its vertex on a projecting stone bracket. A buttress to a building across the street could resist the excessive thrust of a roof vault, or of a too-ambitiously cantilevered balcony. An irregular room shape was easily covered with a skewed vault. Almost anything could be supported or spanned by cutting, twisting, tilting, truncating, or combining the standard forms of vaulting in non-standard ways.



**Insulation**

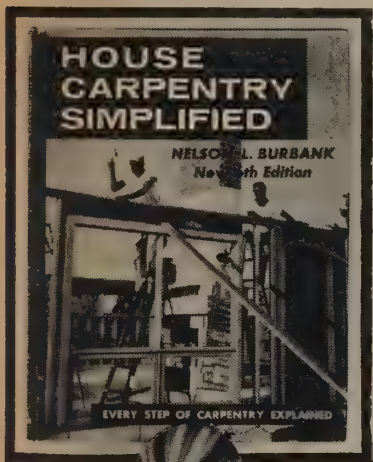
Although air is a very poor conductor of heat, the insulating value of an ordinary air space is rather small, on account of the large transfer of heat by convection and radiation. Radiation is largely responsible for the ineffectiveness of air spaces bounded by ordinary building materials, such as are found in frame or other hollow walls. The low insulating value is often erroneously attributed to convection; but, as a matter of fact, from 50 to 80 per cent of the heat transfer across air spaces of ordinary sizes takes place by radiation. If the air spaces were bounded by bright metallic surfaces, the transfer of heat by radiation would be greatly diminished, since clean metallic surfaces are much poorer radiators than non-metallic surfaces, such as brick, stone, glass, wood, paper, etc.

Reflective metal foil (copper, aluminum, or steel) costs less than 3 cents a square foot and can be easily installed. One should remember to keep the shiny side out (or up) and leave a ventilated air space inside (or below), and at least 1/4-inch between the foil and the surface it faces.

About 70% of the sun's heat rays can be reflected from the house by installing a white or light-colored roof. A thin layer of quartz gravel or marble chip, backed by aluminum foil on a built-up tar-and-felt roof is by far the best type of surface for regions suffering a high incidence of summer heat.

**House Carpentry Simplified**

Clear how-to-do-it instructions on rectilinear house building. Reasonably current but not overly detailed, with a good section on fundamental tools and a glossary.

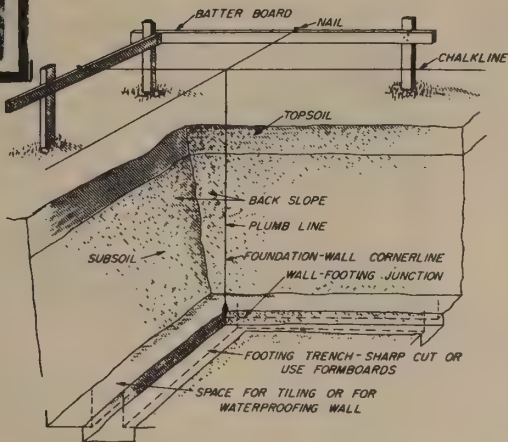
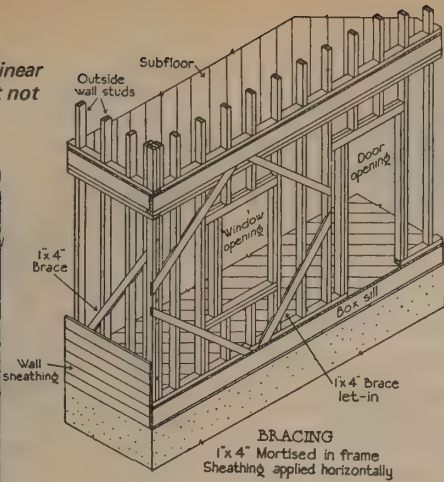


House Carpentry Simplified  
Nelson L. Burbank  
1958; 252 pp.

\$8.95 postpaid

from:  
Simmons-Boardman Books  
30 Church Street  
New York, N. Y. 10007

or WHOLE EARTH CATALOG

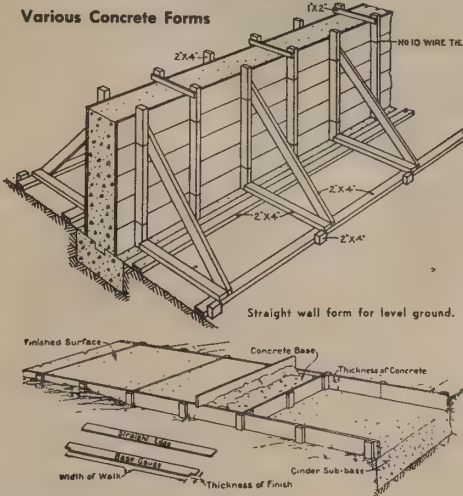


**Simplified Carpentry Estimating**

When building, you'll do well to pre-calculate all materials and ask local lumber yards for competitive bids. This handbook, with short-cut tables, helps you quickly estimate all materials for conventional buildings: concrete, lumber, hardware, as well as labor hours.

Simplified Carpentry Estimating  
J. Douglas Wilson and Clell M. Rogers  
1962; 320 pp.

\$5.95 postpaid from:  
Simmons-Boardman Books  
30 Church Street  
New York, N. Y. 10007  
or WHOLE EARTH CATALOG



**4. CEMENT CONTRACTORS' METHODS**  
A practical method used by cement contractors will give quite accurate results. This rule automatically allows for shrinkage.

- Proceed as follows:  
 Rule: a. Find cubic feet contents of footings, walls and piers.  
 b. Divide the cubic footage by 15. Result equals tonnage of concrete aggregate (sand and rock combined). Material dealers will furnish concrete aggregate in several proportions, such as 50-50 or 40-60, etc.  
 c. To find sacks of cement multiply tonnage of aggregate by a constant selected from table III.

TABLE III  
AGGREGATE TABLE

Mix	Aggregate Mix	Constant
1-2-3	1-5	4
1-2-4	1-6	3 1/2
1-3-4	1-7	3
1-3-5	1-8	2 1/2

**How-To-Do-It Plumbing and Wiring Books**

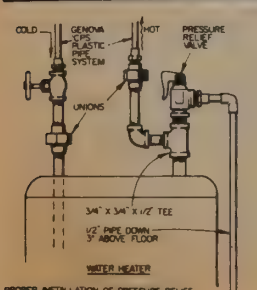
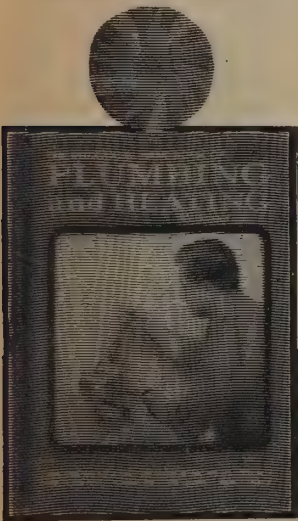
Most plumbing and wiring books are either too old, or too detailed for use by a novice home builder. However, these two books give you enough basics to be your own plumber or electrician. The plumbing book explains the use of plastic and "no-hub" pipe—both systems avoid the difficult process of melting lead for cast-iron drain pipe connections. The wiring book is a fine introduction to the subject, with sections on service entrances, romex, modernizing old wiring, farm wiring, etc.

The Practical Handbook of Plumbing and Heating  
Richard Day  
1969; 130 pp.

\$4.95 postpaid

from:  
Arco Publishing Company, Inc.  
219 Park Avenue South  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

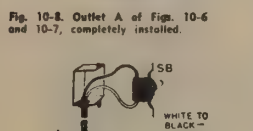
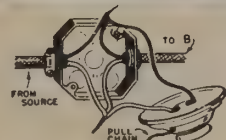
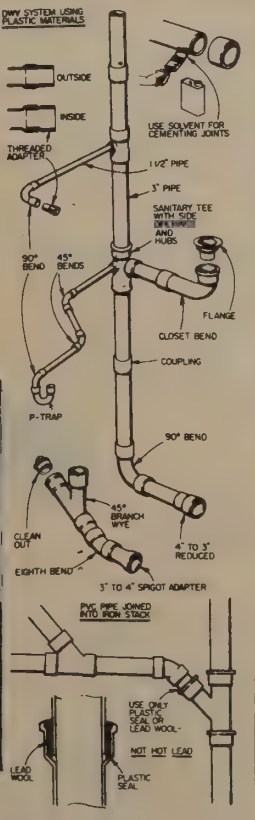
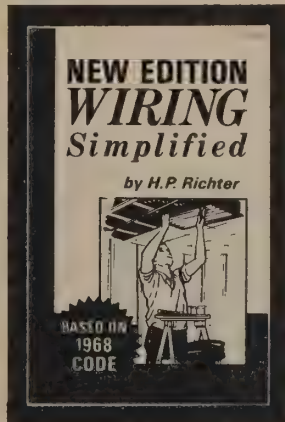


**Wiring Simplified**

H. P. Richter  
29th Edition, 1968; 144 pp.

\$1.00 postpaid

from:  
Park Publishing, Inc.  
P. O. Box 5527 (Lake St. Sta.)  
Minneapolis, Minn. 55408.



It should be noted that farm animals are much less able to withstand shocks, than are human beings. Many cattle have been killed by shocks that would be only uncomfortable to a man.

**Concrete Manuals**

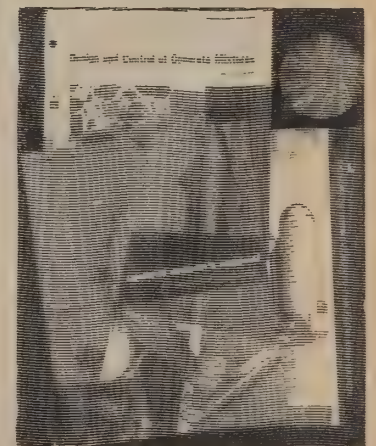
Three informative pamphlets on concrete from the Portland Cement Association:

**Cement Mason's Manual for Residential Construction** is primarily for home patios and walkways, with fundamentals on use of the transit, and instructions on finishing.

**Concrete Improvements for Farm and Ranch** is a good basic instruction manual, with details on many rural applications; how to build forms, tilt-up construction, water troughs, floors, etc.

**Design and Control of Concrete Mixtures** is an engineering bulletin, very detailed, on all aspects of quality control of concrete mixtures.

[Suggested by Fred Richardson]



All three

free

from:  
Portland Cement Association  
Old Orchard Road  
Skokie, Ill. 60076

**HARDENED STATE OF LIGHTWEIGHT CONCRETE**

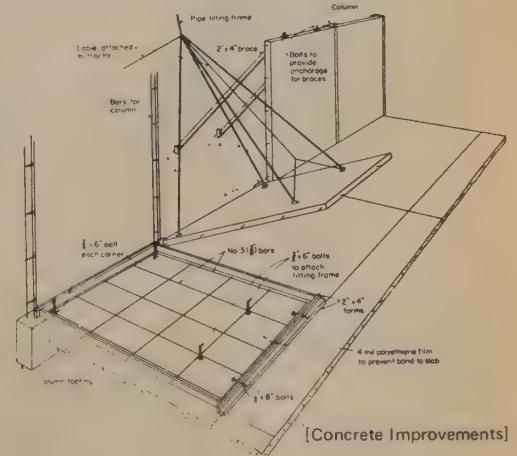
**Compressive Strength**

Lightweight concrete with 28-day compressive strengths of 3,000 to 4,500 psi can generally be produced in the laboratory with cement contents of 425 to 800 lb. per cubic yard, depending on the particular lightweight aggregate being used. Certain lightweight aggregates can be used to make concretes with strengths of 7,000 to 9,000 psi and with cement contents of 565 to 940 lb. per cubic yard. The rate of strength development for lightweight concrete is approximately the same as that for normal-weight concrete.

[Design and Control of Concrete Mixtures]

Tilt-up concrete construction is accomplished by casting wall panels on a concrete floor or other relatively smooth bed and then tilting them to a vertical position. To prevent bond with the wall panel, the floor slab is covered with plastic film or a sprayed-on chemical. Wall panels are usually tilted by a tractor or other lifting equipment. The panels are braced and reinforced concrete columns are cast at the panel junctures to tie them together.

[Concrete Improvements]



[Concrete Improvements]

**Power Joint Cutter**

Another method of cutting joints in concrete slabs is with an electric or gasoline-driven saw fitted with a shatterproof abrasive or diamond blade. A power cutter produces a narrow joint that minimizes the possibilities of spalling at the joint due to traffic. The joint is cut in the concrete surface 4 to 12 hours after the concrete has hardened or as soon as the concrete surface will not be torn or damaged by the saw.

[Cement Mason's Manual]

**Audel Guides**

*I've just read a dozen or so Audel Guides, and these are some I felt were particularly useful. Some of the Audel books are quite obsolete, but much to my surprise, many have been written within the last ten years. Several have poor indexes, and some completely lack an index. The books are usually written by experts in the areas or trades described. The information in general seems to be very good.*

*If you are working with more or less typical American water and sewage systems, either maintaining or building, Domestic Water Supply and Sewage Disposal Guide should be a rather useful book. Wells, springs, tanks, pumps (including hydraulic rams!), treatment, septic tanks, water heaters, it's all here, including many useful tables. The book is weak on the sewage end and has incomplete information on things such as hand dug, jetted and driven wells. Get the WHO book for that.*

*Vol. I of Masons and Builders Guide deals with clays, brick making, mortar, tools, brick laying, bonding, corners and rectangular openings. Vol. II covers arches and anchors, foundations, chimneys, fireplaces, repairs, estimation, and tile work.*

*These seem very good if you want to get into traditional brick work. The chapters on fireplaces and chimneys seem particularly useful to me. I never could get behind brick work for new construction, though.*

*Carpentry and Building fascinated me. Written in question and answer style, it covers many problems encountered in construction and remodeling work. Seems that these are questions that the author has received while acting as an engineering consultant for a trades magazine. Excellent sections on insulation and vapor barriers, acoustics, noise transmission and sound resistant partitions, and a beautiful miscellaneous section dealing with things like the pressures in grain bins. Good index.*

*Building Maintenance is intended for maintenance men in office etc. buildings. Looks like it would be very good for them, less useful for the home handyman. Information is included on painting, plumbing, concrete, carpentry, roofing, glazing, sheet metal, heating and air conditioning. Gives good, brief, and simple directions and assumes that the reader has at least some sense and native intelligence.*

*No special knowledge is required to use the two-volume set, Do-It-Yourself Encyclopedia. If you can get around the projects (!!) in questionable style (style?), there is a lot of good stuff relating to home improvement and home maintenance. A little hard to find your way around in until the second time through, it is actually fairly well organized. Far-out 1950's pictures.*

[Reviewed by Fred Richardson]



**Domestic Water Supply and Sewage Disposal Guide**

Edwin P. Anderson  
1960; 440 pp.

**\$4.50** postpaid †

**Masons and Builders Guide, Vols. I & II**

Frank D. Graham  
1924; approx. 300 pp. each

**\$4.00** each, postpaid †

**Do-It-Yourself Encyclopedia (2 vols.)**

1968; 1012 pp.

**\$9.00** /set, postpaid †

from:  
Theodore Audel & Co.  
A Division of Bobbs-Merrill  
4300 West 62nd Street  
Indianapolis, Indiana 46206  
or WHOLE EARTH CATALOG

†Audel's Books are cheaper from U.S. General (see p. 55) or Silvo (see p. 54).

**Carpentry and Building**

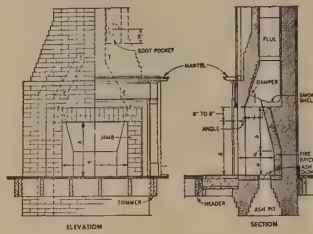
Harry F. Ulrey  
1966; 434 pp.

**\$5.95** postpaid †

**Building Maintenance**

Jules Oravetz, Sr.  
1966; 437 pp.

**\$5.50** postpaid †



Expert foresters . . . advise that, although the hickory is a sturdy and persistent grower, a tree which has grown and matured under forest conditions cannot tolerate a disturbance of its root system; also, there may be danger of injuring the tree described if the roots are cut closer than approximately 25 feet along one side. Normally, from a circle immediately outside the crown, the main feeder roots extend outward and downward at an angle of approximately 45 degrees, and sometimes these roots go very deep. In addition, a system of very shallow roots, approximately 12 to 24 inches beneath the surface of the ground, extends outward in all directions. These roots also carry water to the trunk of the tree, and serve to anchor the tree upright in the soil. These are the roots that will be injured by digging for the foundations of the house.

Actually, there is no way to accurately foretell the reaction of the trees. Stay away from the trees as far as possible. The disturbed trees should be supplied with plenty of water and heavy feedings of fertilizer for some time to enable them to regain the loss of strength occasioned by disturbing the roots in the affected areas of the root system.

Carpentry and Building

Domestic Water Supply

*Water Dowsing.*—Although numerous persons consider the forked stick method of locating underground water as a mere "fanciful illusion" the fact still remains that extractable water has been found by this simple method throughout the ages.

Water dowsing consists essentially of the carrying of a forked twig of peach, apple, or maple over the area where the search for water is to be made. The process is performed essentially as follows:

Grasp the ends of the twig (one in each hand) with palms upward. When commencing to walk, the butt of the stick should be pointed upward. As moving water is approached, the butt end of the stick begins to dip downward until the moving water is intercepted at which location the butt end points straight down. At this particular time the forked twig has turned through an arc of 180 degrees. The stick will in some instances break under the grip as the butt dips downward. Pliable twigs will bend down despite the effort to hold them straight.

Most dowers believe this unique ability or power comes to a person with birth. They also believe that this occult faculty can be developed and its use expanded by constant study and practice. It is, of course, a fact that many people have this ability without knowing it, never having had the reason for the experiment. Some students of the matter believe about one person in a thousand has some dowsing ability, although perhaps only about ten per cent of these latter have the ability to become good dowers.

It cannot be too strongly emphasized that no scientific explanation exists for the location of extractable underground water by means of dowsing. The proof exists however, in thousands of usable wells which actually have been discovered by this uncanny method.

A well designed and properly installed damper is regarded as essential, particularly in cold climates. When no damper is used the throat opening J, should be 4 inches for fireplaces not exceeding 4 feet in height.

Placing the throat well forward has another advantage, namely that of forming a smoke shelf at the damper level. This shelf aids in stopping the down drafts which will almost invariably occur if the back of the fireplace be made to rise vertically in the same plane as the back of the flue.

The opening above the smoke shelf should be "gathered" or contracted to the size of the flue by corbelling, this being done with the least height practicable. Up to the level of the clay flue lining, the brickwork should not be less than 8 inches thick, because the space immediately above the damper is the hottest place of the chimney.

In small fireplaces, a depth of 12 inches will permit good draft if the throat be properly constructed, but a minimum depth of 16 to 18 inches is advised to lessen the danger of brands falling out on the floor.

In construction of a fireplace the following essentials should be attained. They are:

1. That the flue have the proper area.
2. That the throat be correctly designed and have a suitable damper.
3. That the chimney be high enough for good draft.
4. That the shape of the fireplace be such as to direct the maximum amount of radiated heat into the room.
5. That a properly constructed smoke chamber be provided.

Masons & Builders Guide

**National Electrical Code 1968**

- ★ Guide to the 1968 National Electrical Code
- ★ Electrical Code for One- and Two-Family Dwellings

*The Code is not law, except as adopted by local ordinances, but its requirements should certainly be met as a minimum in all wiring. Check with your local building department for their code or revisions, and permit information if you want your wiring to be legal. In any case, use the Code as a minimum.*

*The regulations set up seem to me to be quite reasonable and based mostly on safety. It is somewhat hard to use as a reference because it has a poorly organized index. The index is very complete if you can get into its system.*

*Following the Code strictly will produce a safe installation. Producing one that is convenient, efficient, practical, and allows plenty of room for expansion requires planning and study of wiring books such as Sears and Wards electric wiring books (50d), or Wiring Simplified (see page 23).*

*The Audel Guide to the 1968 National Electrical Code is a non-official interpretation and clarification of the NEC. It is not intended to replace the NEC, but in most cases it would be usable by itself. Its greatest handicap is that it has no index.*

*For people working only in residences, the new Electrical Code for One- and Two-Family Dwellings is much easier to use than the NEC, from which it is excerpted.*

[Suggested and reviewed by Fred Richardson]

**National Electrical Code 1968**

1968; 466 pp.

**\$2.00** postpaid

**Electrical Code for One- and Two-Family Dwellings**

1969; 133 pp.

**\$1.75** postpaid

both from:  
National Fire Protection Association  
60 Battery March Street  
Boston, Mass. 02110

or WHOLE EARTH CATALOG

**Guide to the 1968 National Electrical Code**

Robert E. Palmquist  
1968; 461 pp.

**\$6.95** postpaid (cheaper from Silvo or U. S. General)

from:  
Bobbs-Merrill Company  
4300 West 62nd Street  
Indianapolis, Indiana 46206

or WHOLE EARTH CATALOG

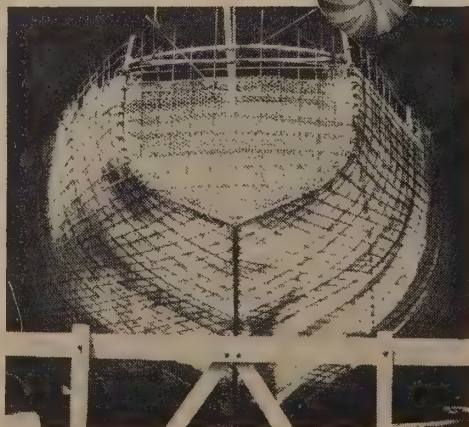
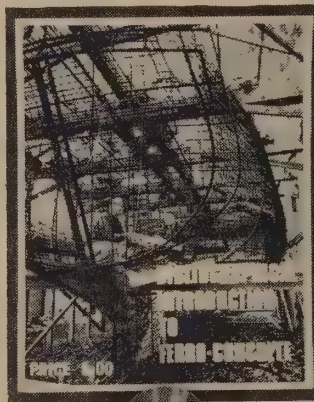
**Saga Technical Associates**

*Some very detailed manuals on ferrocement are available from Saga Technical Associates, yacht designers and engineers in Toronto. They also have slides, photo essays, and several new publications under way.*

Information from:  
Saga Technical Associates  
P. O. Box 733  
Terminal Q  
Toronto, Ontario, CANADA

*Good basic ferro cement information in a special reprint, \$1.00, from:*

National Fisherman  
22 Main Street  
Camden, Maine 04843



36' ferro-concrete ketch hull basket with interior mesh, suspended hull method. By Saga Technical Associates.

**Concrete Boatbuilding, Its Techniques and its Future**

*Ferro cement is a super-strong 3/4" thick fireproof material used for boat hulls, consisting of a mixture of sand & cement plastered over a wire framework. It is cheaper & easier than conventional boat-building techniques and very few special tools are needed. This is a textbook on building a ferro cement boat where the authors share details of their considerable experience. There is a fine concise section on how to build, and chapters on reinforcing, mortar mixing, and finish work.*

*Ferro cement should work well on land . . . let us know if you hear of any F. C. domes.*

**Concrete Boatbuilding Its Technique and Its Future**

Gainor W. Jackson  
W. Morley Sutherland

**\$7.95**

postpaid

from:  
John de Graff, Inc.  
34 Oak Street  
Tuckahoe, N. Y. 10707

or WHOLE EARTH CATALOG



**Building a Log House**

*A 25¢ pamphlet from Alaska that tells you how to build shelters (& furniture) of logs. It's obviously written by people that have built log cabins.*

[Suggested by Russ Cahill]

**Building a Log House**

1914, . . . 1965; 43 pp.

**\$ .25** postpaid

from:  
Cooperative Extension Service  
University of Alaska  
Box 1109  
Juneau, Alaska 99801

or WHOLE EARTH CATALOG

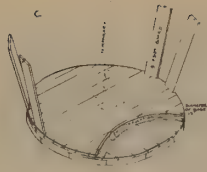


**Yurt**

A friend of ours got interested in the yurts used by nomadic people of Central Asia. Yurts are round buildings (tents) made out of a lattice work of sticks covered with sheets of felt. The roof is a truncated cone. The opening serves as skylight and smoke hole.

After building a number of yurts similar to the Mongolian ones out of different materials, Bill decided that he would like to build one out of milled lumber. I helped him construct one similar to the one in the plan. It is not difficult and certainly cheap. I do not know how easy it will be for someone who knows nothing about yurts and carpentry to build one, but Bill usually answers letters and I am sure he will be able to answer specific questions about the construction. He is currently revising and up-dating the plan, incorporating what he's learned in the past year.

[Suggested and reviewed by Jur Bekker]



**Yurt Construction Plan**

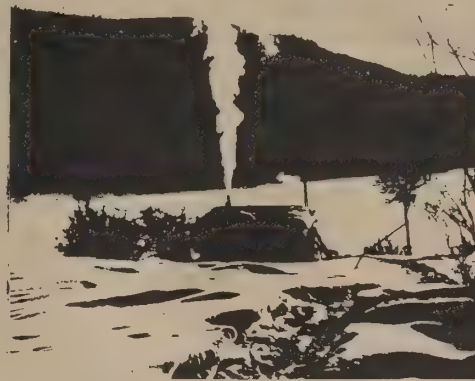
**\$3.00** postpaid

from:  
Bill Coperthwaite  
Bucks Harbor, Maine



**The Wilderness Cabin**

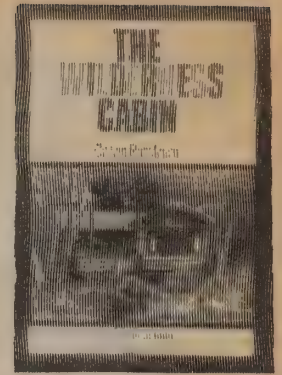
Not many log cabins are still being built. For one thing, it uses a lot of wood. However, it's a way for a man to go into the woods and with very few tools, erect a shelter. Maybe you've got to clear trees for a building site, or thin out an overgrown forest, or there is no road to your land. If so, here are diagrammed instructions on selecting a site, use of tools, and building a log cabin. Details are not extensive, but common sense will fill the gaps.



Cabin on the Yukon River at 50 degrees below zero.

But an even better and more direct method than personal search is to go to the county seat in the county where you want to build. Ask the county auditor for a list of tax-delinquent properties, and the descriptions and plats of each location. During your first free weekend, examine the sites. If you find something you like, pay the back taxes.

When the original owner has failed to pay the taxes for a certain number of years—in many states the period is five years—and you pay the back taxes, you can get what is called a 'tax assignment' from the county. Your final ownership paper is about equivalent to a quit-claim deed. This is good enough while you personally own the site. Should you finally sell the property, it is best to have an attorney obtain a Torrens title for you, or procure a warranty deed through legal formality.



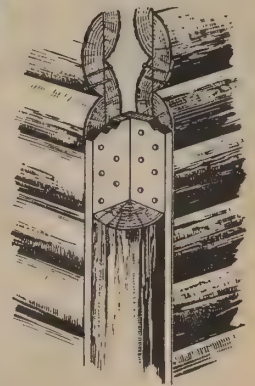
**The Wilderness Cabin**  
Calvin Rutstrum  
1961; 169 pp.

**\$5.95** postpaid

from:  
The MacMillan Company  
Front and Brown Streets  
Riverside, N.J. 08075

from:

or **WHOLE EARTH CATALOG**



The V-Plank Corner

**★ Chain saw parts**

Low-cost chains and parts for chain saws.

They also have plastic wedges—you don't wreck the chain if you hit the wedge.

[Suggested by Tom Duckworth]

**Catalog free**  
from:  
Zip-Penn, Inc.  
Eastern Division  
P. O. Box 179  
Erie, PA 16512

Southern Division  
P. O. Box 1791  
Tallahassee, Fla 32300  
Western Division  
P. O. Box 876  
Bellingham, Wash. 98225

**★ Alaskan Mill**

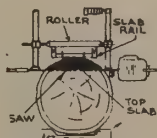
This is a roller attachment for a chain saw that enables you to make boards from trees. You need a minimum of 6 horsepower and a 16"-24" bar to power the one-man mills, and we're told that 12-15 h/p is needed for cutting any quantity of lumber.

There are two one-man attachments, and three two-man models.

[Suggested by Elias Velonis]

Granberg Alaskan Chainsaw attachment (one-man)  
No. G-758: \$71.50 FOB Richmond  
Two man models: \$287.00-350.00

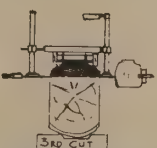
from:  
Granberg Industries  
201 Nevin  
Richmond, CA 94801



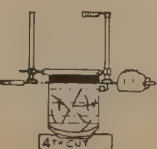
HERE IS HOW TO MAKE LUMBER. First Cut—Attach 2"x12" plank for use as a sliding rail. Adjust roller to lower blade and remove TOP SLAB.



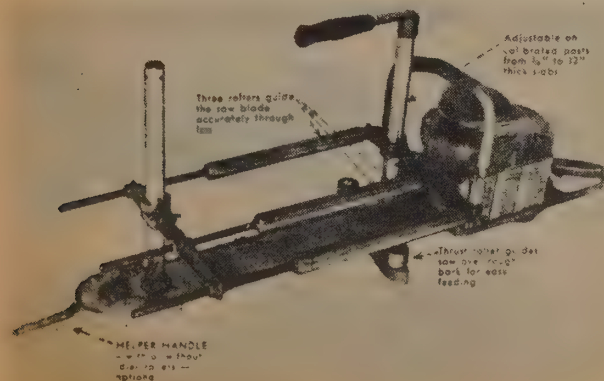
Second Cut—Use sawn surface as roller guide. Raise roller assembly and remove BOTTOM SLAB.



Third Cut—Turn log 90 degrees. Use slab rail squares to sides and remove THIRD SLAB.



Now you are ready to make lumber. Adjust roller to any thickness as needed, and mill. Then make fully-dimensioned boards to any width.



**★ American Plywood Association**

What makes plywood such a desirable building material is its extremely favorable cost/strength ratio. Also, it's quick to install, as each piece you nail down covers 32 square feet.

The American Plywood Association has hundreds of pamphlets available on different uses of plywood: roofs, walls, floors; cabin plans, pole buildings, barns.

Write, asking for lists of publications:

- Residential Construction Literature Index
- Agricultural Literature Index
- General Construction Literature Index
- Industrial Literature Index
- Consumer and Do-It-Yourself Literature Index

**free**

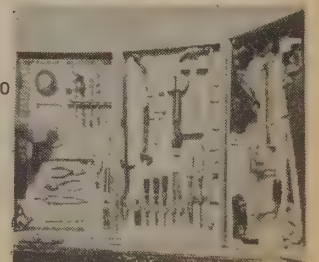
from:  
American Plywood Association  
1119 A Street  
Tacoma, Washington 98401



- Concrete Forms
- Guide to Plywood for Concrete Forms (Sweet's insert)
- Curved Panels
- Nailed Plywood Box Beams
- Plywood Truss Designs (Describes new plans for King-Post and W-type trusses on spans 20' to 32'-8")
- Floors
- 2-4-1 Tongue and Groove Plywood
- Guide to Plywood for Underlayment (Sweet's insert)
- Umbrella Structure (22' wide shelter)
- Plywood and Poles for Farm Buildings (Data sheet)
- A-Type Hog House (6' x 6' portable units)

Form No.

- \$69-90
- F67-1020
- 62-180
- 64-650
- 60-40
- S68-50
- 63-80
- 67-126
- 61-430



Tamap Tool Box Plans 630540 10¢

★ **Plastics for Architects and Builders**

Whereas architects and builders are comfortably familiar with the "classic" building materials that come more or less directly from nature, plastics, with so many complicated names and such complex manufacturing processes, have not been as readily understood.

Most books on plastics are by and for specialists. Here, however, is a primer on plastics, clear and orderly, that gives the builder, designer, or architect enough basic knowledge to begin thinking of design with the new sophisticated materials.

It begins with a simple description of the molecular structure of plastics—one of the principal keys to their behavior. Once the designer understands this, he is ready to begin exploring the array of materials available.

Then there is basic information, pictures, many drawings on the properties, end-use applications, composites, and manufacturing processes. The designer can then begin to understand what plastics can & cannot do.



**Plastics for Architects and Builders**

Albert G. H. Dietz  
1969; 129 pp.

**\$7.95** postpaid

from:  
The M. I. T. Press  
50 Ames Street, Room 765  
Cambridge, Mass. 02142

or **WHOLE EARTH CATALOG**

There is no escaping the conclusion that design with plastics is design at a sophisticated level.

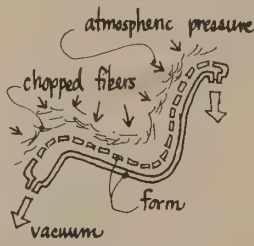
**Light Transmission:** Thin structural plastics can transmit a high percentage of incident light, thus providing structure, enclosure, and illumination—a combination unique among structural materials.



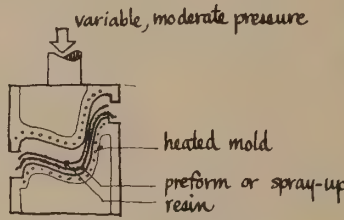
Hand layup.



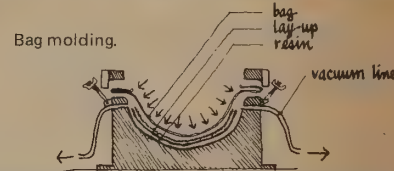
Sprayup



Preform.

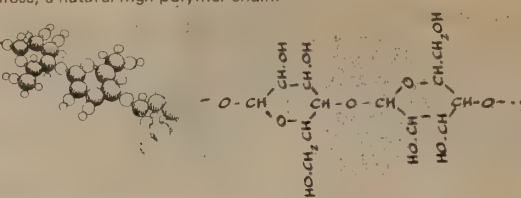


Matched die molding.

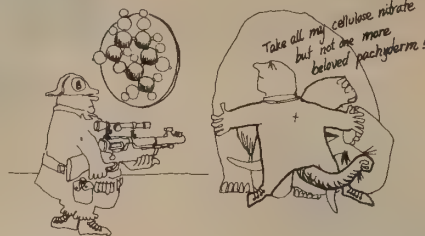


Bag molding.

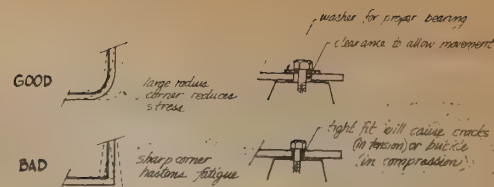
**Celluloses:** One class of chain polymers is made by modifying cellulose, a natural high-polymer chain:



Various acids will react at the OH points of the cellulose to give a series of "esters" (the organic analogue of salts in inorganic chemistry). The oldest is cellulose nitrate, often thought of as originating the plastics industry when first proposed for billiard balls to save the African elephants from decimation for their ivory.



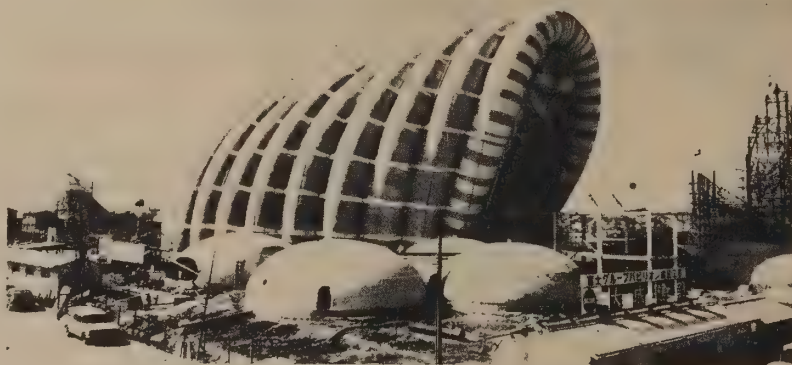
**Stabilizers:** Plain plastics, such as polyethylene pipe or polyvinyl chloride sheet, may degrade when exposed to some environments such as sunlight. They must therefore be fortified by stabilizers, such as ultraviolet absorbers and antioxidants. Carbon black, for example, converts polyethylene from a quickly degrading material to one that stands up extremely well to sunlight and general weathering. Other stabilizers accomplish their purpose without necessarily coloring or making the plastic opaque. Care should be exercised to select a properly stabilized plastic for a particular purpose unless it is inherently stable. The subject is far too complex to be treated here. The architect should insist upon assurance that the plastic will have the necessary life for his application.



**Thermal Response**

**Expansion and Contraction:** Like all building materials, plastics expand and contract with rising and falling temperatures, but for many plastics the extent of change is appreciably larger than for many other building materials. Allowances in design must therefore be made for these dimensional changes, either by accommodating them in the shape of the component or by providing expansion joints. A curved section, for example, may bulge or flatten slightly without affecting its usefulness. Framing around glazing should allow room for expansion and contraction, and the sealants employed should accommodate such motion.

**Design:** Expansion and contraction can lead to severe stresses at sharp bends or at points of restraint, such as tight bolts and pins. Repeated stresses caused by temperature changes can lead to fatigue, cracking, and failure. Generous radii and fillets should therefore be provided, and holes for fastenings should be large enough to allow for movement with changing temperatures. Restrained flat surfaces may wrinkle upon expanding and in extreme cases may crack or tear upon contracting. Curved or folded surfaces, properly designed, overcome these problems.



PVC film provides airtight lining for the inflated Fuji pavilion.

**Giant polyester balloon**

Construction will soon start on a 34 million-cu. ft. balloon that will require more than 13 acres—well over a half-million sq. ft.—of 1/8-mil polyester film.

Dacron polyester threads, bonded to the film (Du Pont's Mylar), reinforce it to make the balloon capable of lifting a 7-ton instrument payload. A foot-wide section of the reinforced film is said to be able to support a 1000-lb. load. Fabricating the balloon will require that some 37 miles of seams be sealed with a thermoplastic adhesive.

The balloon will be constructed by G.T. Schjeldahl Co., Northfield, Minn., under a \$400,000 NASA contract. It will be sent aloft by the U.S. Air Force in New Mexico next fall, and will supply a stable support for cosmic ray detection equipment and monitoring devices at a constant altitude of approximately 20 miles.



**Pocket-sized tent**

Folding your tent and stealing away in the night is a simple maneuver with a new one-man shelter that uses no poles, stakes or ropes. Called Inflat-A-Tent, the all-film tent has sealed-off sections that form supporting ribs when inflated by mouth. It weighs 28 oz., forms a shelter 7 ft. long and 40 in. wide with a full floor. Deflated, it is easily rolled up and stowed. Produced by Ute Mountain Corp., Englewood, Colo., to retail at \$9.95, the tent is heat-sealed with film made of Union Carbide's high-impact copolymer resin, DQDA-1824.

**New honeycomb construction panels**

A new RP sandwich panel for curtain walls and other interior and exterior applications is produced with a choice of paper or aluminum honeycombs. Called Glamoursdale Unicomb by its producer, Dimensional Plastics Corp., Hialeah, Fla., the lightweight panels are 5/8 in. thick, with both surfaces simulating cleft slate.

Standard sheet size for the panels is 4 by 10 ft. They are available in a variety of colors and veining.

**Prefabricated plumbing wall.** A conceptual "wet plumbing wall" of modular design (John A. Stahl, B. F. Goodrich Chemical Co.) incorporates rigid PVC piping, rigid urethane foam, glass/polyester faces, rigid and flexible PVC extrusions, and vinyl-jacketed electrical wiring. Fundamental is the concept that all plumbing connections are made into the pipe-bearing wall.

The likelihood of an anti-air-pollution ban on lead additives in gasoline at some time in the 1970's could drastically affect the demand for and the supply and price of propylene, an important feedstock for making polypropylene and a variety of other plastics. The additional propylene would be required in gasoline to replace lead additives.

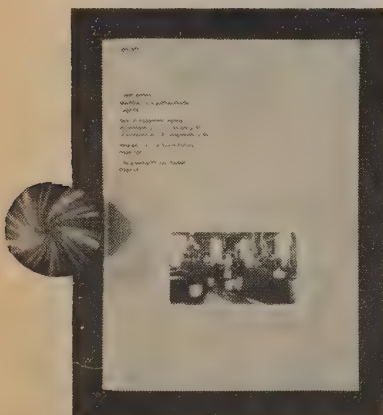
**Modern Plastics**

Once you've read *Plastics for Architects and Builders*, you'll be somewhat prepared for *Modern Plastics* magazine.

Issued monthly and technically oriented, it covers the latest plastic products, manufacturing, and engineering. It's full of ads, and there is a free product literature card at the back of the magazine: you circle the appropriate number and the manufacturer mails you information.

Included in your subscription is the annual *Modern Plastics Encyclopedia*, the most comprehensive text available on plastics. It is mailed out each October & consists of a summary of the year's trends in plastics, information on polymer science, a textbook of fundamental plastics, a directory of 3600 companies, & reference data on plastic properties & characteristics. The *Encyclopedia* also has free product literature cards.

[Suggested by Michael Rosenthal]



**Modern Plastics**  
(Magazine & Encyclopedia)

**\$10.00** /yr. (monthly)



from:  
Modern Plastics  
Fulfillment Manager  
P. O. Box 430  
Hightstown, N. J. 08520

## Earth Homes

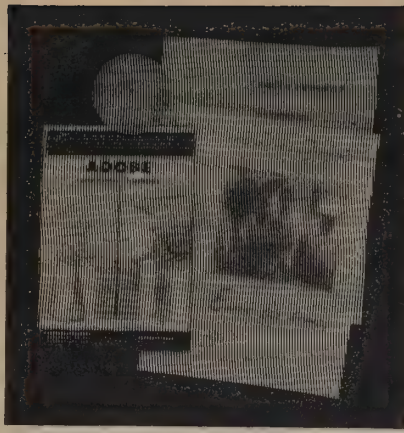
*Dirt—the cheapest and most abundant building material—has for ages been used to construct shelters. These three pamphlets offer current information on soil as a construction material.*

**Adobe Construction Methods** gives details on laying bricks, fireplaces and pictorial and cross section views of foundations, floors, and walls.

**Handbook for Building Homes of Earth** is a non-technical account of field experiences, with formulas and procedures for different types of earth buildings.

[Suggested by Charlie Tilford]

**Soil-Cement—Its Use in Building** is a well-detailed booklet on the stabilization of earth with cement, and describes all aspects of using the Cinva-Ram earth moulder.



## Handbook for Building Homes of Earth

No. PB 179 327

\$3.00 postpaid

from:  
U. S. Department of Commerce  
Clearinghouse for Federal  
Scientific and Technical Information  
Springfield, VA 22151

Rammed earth walls are made by tamping moist earth into forms. The walls are rammed directly upon the foundations and in sections. The forms are similar to those used for concrete except they must be stronger.

One distinct advantage of rammed earth construction claimed by its proponents is that the earth used to make the walls requires less handling than is required by any other form of earth construction. Many believe that this advantage more than offsets the disadvantage of the heavy and relatively complex form which must be periodically moved and carefully levelled as the work progresses.

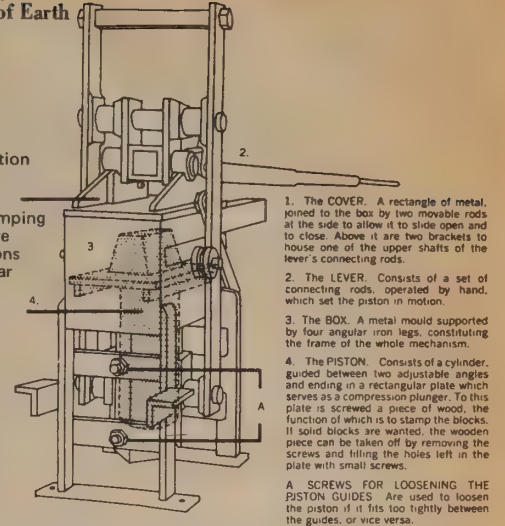


Fig. 36 CINVA-RAM moulder for the production of soil cement blocks: explanatory sketch.

## Adobe Construction Methods

L. W. Neubauer  
1964; 35 pp.

\$ .25

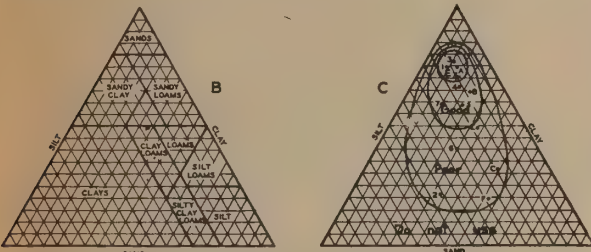
from:  
Agricultural Publications  
207 University Hall  
University of California  
Berkeley, CA 94720

Oily, waterproofing agents, especially emulsified asphalt, are being widely and successfully used as stabilizers. A fractional volume of a water emulsion of asphalt, added to the earth-and-water mix, provides an internal waterproofing that permanently protects adobe bricks.

## Making Bricks

Manual labor is, of course, the historical method of brick making... Make rectangular forms of wood or metal. Lay them on the ground, on a smooth area, and place mud in the forms by shovel or bucket. Spade the adobe carefully, and tamp it into all corners of the forms, to insure well-shaped bricks. Strike the top off level, then lift the forms, leaving the bricks in place... Not too wet, or the mud will run after you remove the forms, or may shrink and crack excessively upon drying. Cover bricks with paper to slow down the initial drying. After lifting the form, wash excess mud off its inner faces with water, and repeat the molding process. Allow the bricks to lie flat for one to three days, until they are sufficiently strong to hold their shapes when turned. At that time, set bricks on edge, so air may circulate freely on both sides. This will promote uniform drying and help prevent warping and cracking. After a few more days of drying in this position, stack the bricks in loose piles for a few weeks, to complete their drying and curing.

When you build with adobe, you get covered with it.



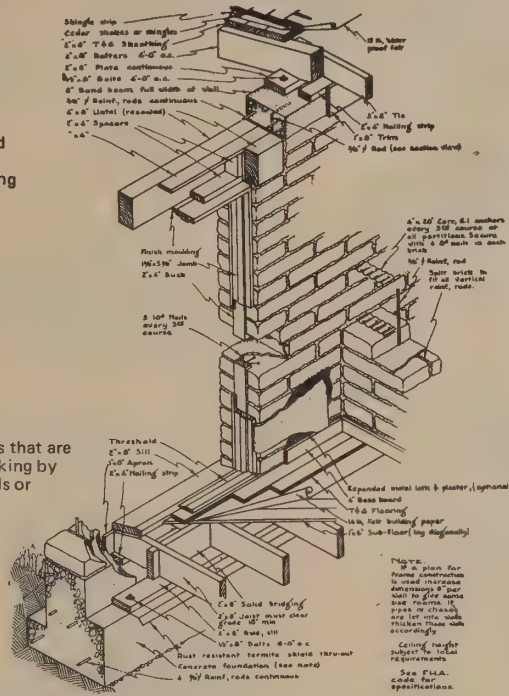
A, Bar graph illustrating the soil texture classification as used by the USDA Bureau of Soils. B, Soil classes based on the relative amounts of clay, silt, and sand. C, Results of certain soil tests. The contours indicate suitability for earth construction. Note that the best mixes contain large percentages of sand.

## Stabilization

You can often improve soils that are unsatisfactory for brick making by mixing them with other soils or minerals.

Course sand or even some types of gravel, may often be added to good advantage. Generally, clay in the soil adds strength, while sand and gravel aid in reducing shrinkage.

Portland cement increases the strength of soil, and makes it water resistant.



PICTORIAL VIEW showing construction details, including wooden floor.

## Soil-Cement—Its Use in Building

1964; 85 pp.; 93 illustrations

\$1.50 postpaid from:

United Nations  
Sales Section  
New York, N. Y. 10017

## FORMS IN WHICH SOIL IS USED

Soil is used in construction in the following forms:

- In the form of rubble, cut from the surface of the earth, in pieces or blocks of soil.
- As bricks, made in wooden forms or moulds with soil moistened to the required degree.
- Moistened soil compacted *in situ* in suitable rigid frames to form monolithic walling (rammed earth).
- As stabilized soil, by combining it with an agent in order to improve its constructive properties.

## Soil-cement roofing

If it is desired to use soil-cement as roofing for a house, the following methods may be used: (a) laths or reeds are laid on the roof truss or joists and nailed down; a plastic mortar of cement and (sandy) soil in the proportions of 1:7 by volume, with vegetable fibres 3 cm in length added as a reinforcement in the proportion of one part to four parts of mortar, is spread over the laths or reeds. The layer of mortar should be 3 cm deep, duly compacted, and its surface should be smoothed with a trowel. After the material has had time to dry and harden, two or three coats of bituminous material are brushed over the surface in order to make the roofing waterproof.

## Low-Cost Wood Homes

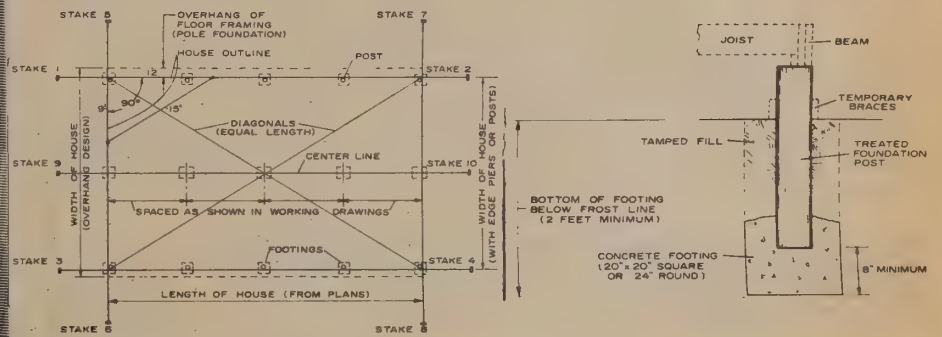
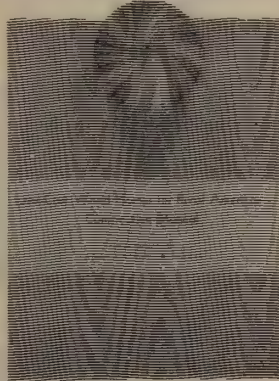
An excellent manual, with 100's of good drawings, on wood house construction. Details on pole house construction, and all aspects of wood frame buildings.

## Low-Cost Wood Homes for Rural America—Construction Manual

L. O. Anderson  
1969; 112 pp.

\$1.00 postpaid

from:  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, D.C. 20402



## The National Fisherman

A monthly newspaper from Maine on fishing, boat building, sailing, ocean pollution and sea news in general. They have published a great deal of information on ferro cement, and many of the boat-building techniques described are useful to the shelter designer working on land.

[Suggested by Paul Wingate]

## The National Fisherman

\$4.00 for one year

from:  
The National Fisherman  
22 Main Street  
Camden, Maine 04843

- SAIL & POWER
- WOOD & STEEL
- ALUMINUM
- FIBERGLASS
- FERRO-CEMENT

PHONE 206  
322-4808



STUDY PRINT BOOKLET  
3RD EDITION. \$5.00

JAY R. BENFORD/NA  
2017 FAIRVIEW AVE. E.  
HOUSEBOAT L  
SEATTLE, WA. 98102

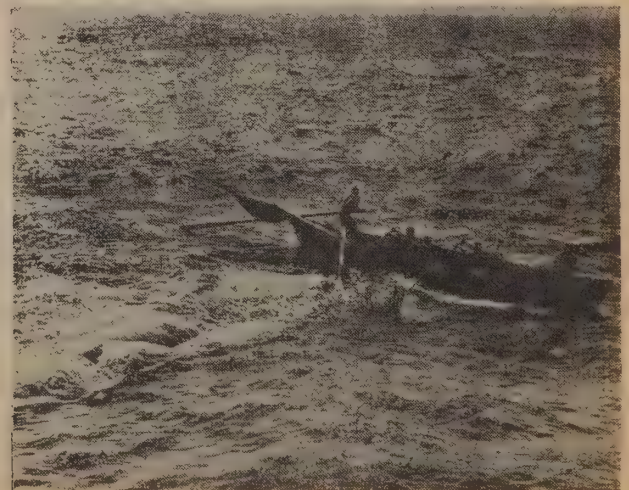
# SEACRETE

## DOWNEAST 36 AND 43

LLOYD'S-APPROVED, MAINTENANCE-FREE  
RUGGED HULLS FOR WORK AND PLEASURE

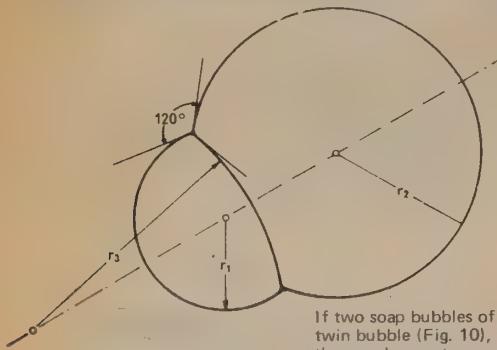
WORLD LEADERS IN FERRO-CEMENT

MARINECRETE  
INCORPORATED  
48 Deering St., Portland, Me.  
207-772-5000

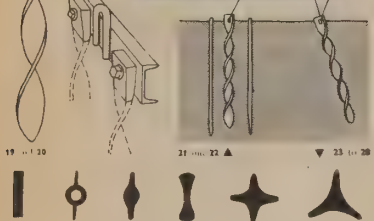
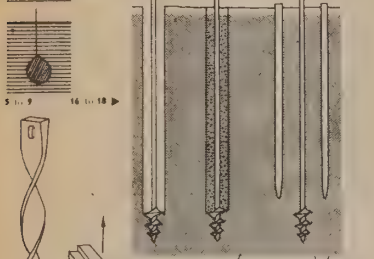
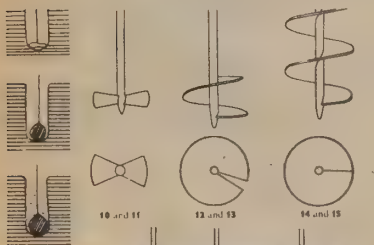


**Tensile Structures, Volume One**

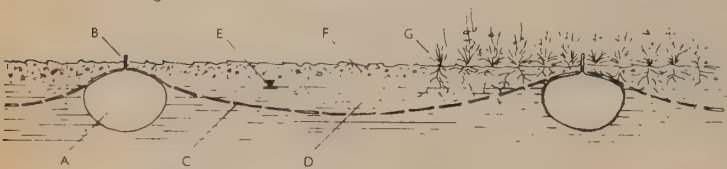
The only pavilion of Expo 67 more beautiful than Fuller's U.S. Dome was the West German tent, designed by Frei Otto. He is currently the master of structures whose flexible skin is the prime structural element. Volume One of his 2-volume work is devoted to Pneumatic Structures—air houses plus. Every designer we know who's seen this book has commenced to giggle and point, jump up and down, and launch into enthusiastic endorsement of Otto, design, being a designer, and look at this here. The book is comprehensive in its field, technically thorough, beautifully presented.



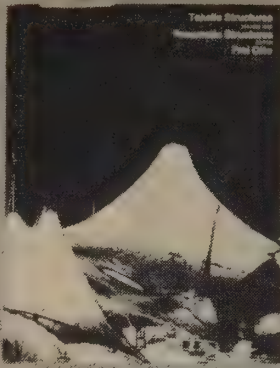
If two soap bubbles of different diameters form a twin bubble (Fig. 10), the diaphragm is curved. If the membrane stresses are equal, the gas pressure  $p$  in the smaller bubble is higher than that in the larger bubble. The relationship between the radii  $r_1, r_2, r_3$ , is given by:

$$\frac{p_1 r_1}{2} = \frac{p_2 r_2}{2} = \frac{(p_1 - p_2) r_3}{2}$$


The humus layer thus forms a simple anchoring weight. The floor membrane simultaneously permits moisture control of the soil. The roofing of such cultivations by pneumatically tensed membranes with internal drainage is seen from the side in Fig. 10. A net of small open mesh floats on the water and carries the humus layer; it is supported both by inflated balloons and by the roof membrane itself which spans the floating fields and is immersed to a depth of approximately 15 cm at the edges.



Small floating balloons may carry fertile soil in nets or perforated foils.



**Tensile Structures, Vol. Two**  
Cables, Nets and Membranes  
Frei Otto  
1969; 171 pp.

**\$12.50** postpaid  
**Tensile Structures, Vol. One**  
Pneumatic Structures  
Frei Otto  
1967; 320 pp.  
1660 illustrations

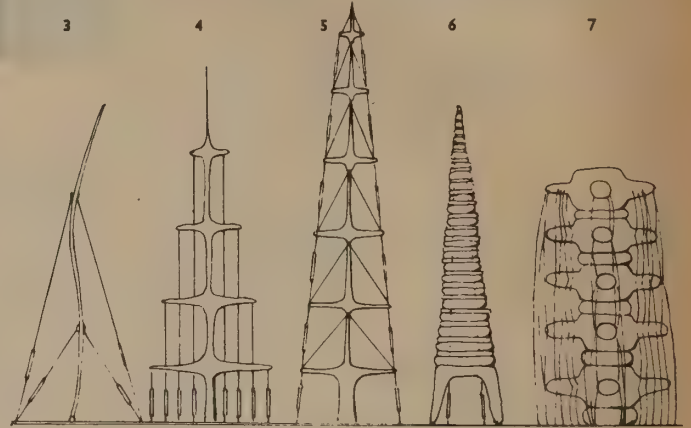
**\$22.50** postpaid  
both from:  
The M. I. T. Press  
50 Ames Street  
Cambridge, Mass. 02142

or WHOLE EARTH CATALOG

**Tensile Structures, Volume Two**

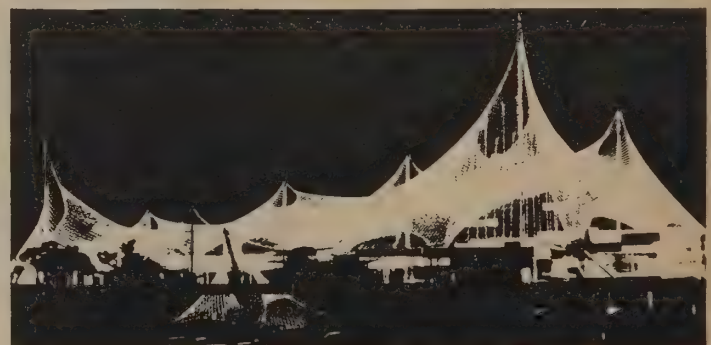
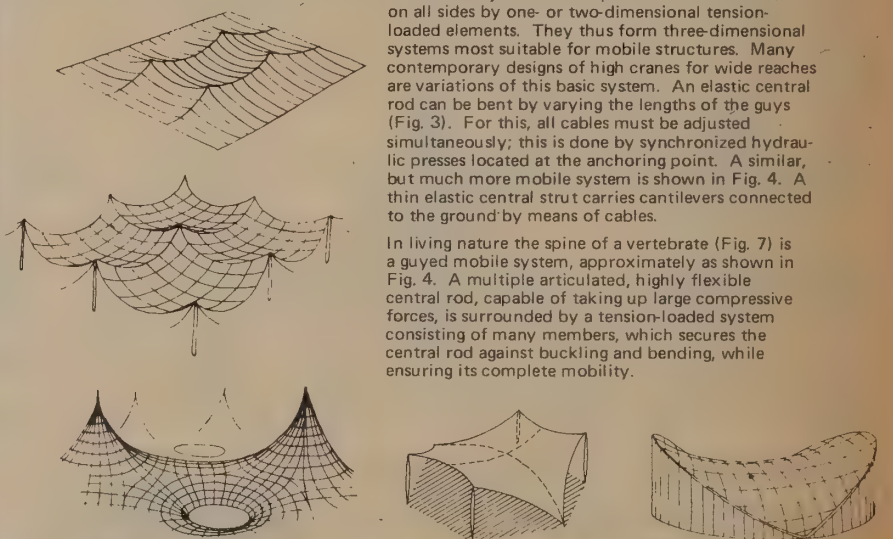
Tensile Structures is the complete story on tents and cable nets and like volume one the entire subject is covered in minute detail. The book is intended to show where the thinking and practice on the subject is at this time in history. There is an overview of the whole field, then specifics on cable, net and membrane structures. Each is thoroughly discussed and illustrated with photographs and drawings although graphics here are not as intriguing as in volume one. The last third of the book contains calculations on load-bearing abilities and design. For many readers this will be too technical to understand, much less use. But tensile structures are very exciting at this time, and the book is great for getting people started on experiments and construction. Canvas is a cheap building material. There's a lot to learn here. The forms are very organic, and coverage is complete.

[Reviewed by Jay Baldwin]



Guyed masts consist of one-dimensional central elements subjected to compression and surrounded on all sides by one- or two-dimensional tension-loaded elements. They thus form three-dimensional systems most suitable for mobile structures. Many contemporary designs of high cranes for wide reaches are variations of this basic system. An elastic central rod can be bent by varying the lengths of the guys (Fig. 3). For this, all cables must be adjusted simultaneously; this is done by synchronized hydraulic presses located at the anchoring point. A similar, but much more mobile system is shown in Fig. 4. A thin elastic central strut carries cantilevers connected to the ground by means of cables.

In living nature the spine of a vertebrate (Fig. 7) is a guyed mobile system, approximately as shown in Fig. 4. A multiple articulated, highly flexible central rod, capable of taking up large compressive forces, is surrounded by a tension-loaded system consisting of many members, which secures the central rod against buckling and bending, while ensuring its complete mobility.

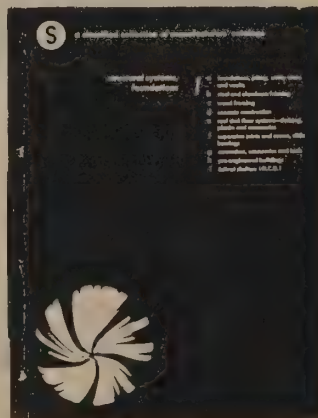


**Sweet's Files**

It's a shame some of the best tools are the hardest to get to. Though Sweet's are free, they are given only to Public Libraries in cities of more than 250,000 people and to the 10,000 most active architectural firms in the U. S. It's often possible to talk a local architect out of last year's edition if you speak for it early. They do not become obsolete just because they are a year or two old.

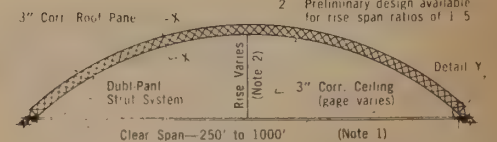
Sweet's is essentially a catalog of catalogs, a filing system in a yard of volumes which binds, lists and cross-references catalogs of manufacturers. It covers six areas that I know of: Industrial, Residential and Commercial Construction and Product, Interior and Plant Design. Each file in these areas is a separate entity. The commercial construction file is the one most architects have and for any one building, it is the most useful. It is very helpful when improvising details for it provides a full spectrum of what is already available for the ready made answers to most problems. Manufacturers usually do a pretty good job with the material they include in the files so there's not much left to question as to how their product works. If there is any question, the manufacturer's representative is usually listed, with his phone number and address. He'll usually bend over backwards to help you if you say you saw it in Sweet's.

[Suggested and reviewed by ONYX]

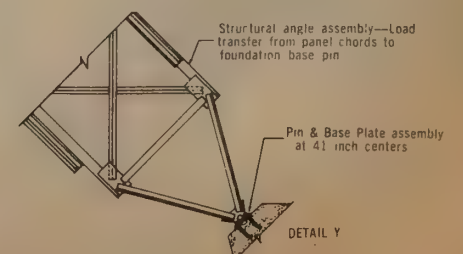


**Sweet's Files**  
Sweet's Construction Division  
McGraw-Hill Information Systems Company  
330 West 42nd Street  
New York, N. Y. 10036

NOTES 1. Economic minimum only relative to flat roof Dubai Panel  
2. Preliminary design available for rise span ratios of 1:5



**TWO HINGED CIRCULAR ARCH**



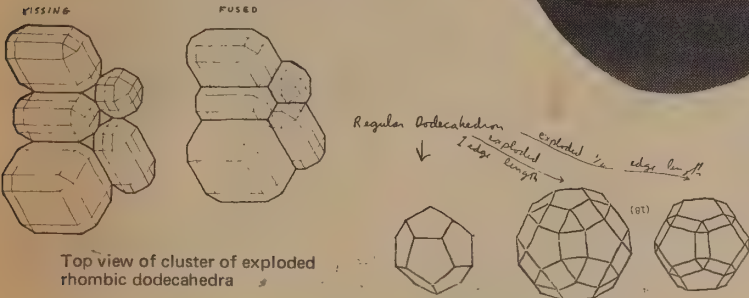
**BASE DETAIL**

## Dome Cookbook

A new art form is evolving in the southwest desert. Multi-colored cartop domes, put together with whatever's lying around. Free heat from the sun. Behind much of the innovating stands Steve Baer, a young inventor who generates enough energy to get others moving too.

This tabloid contains the crystallographic theory and junkyard practice behind Baer's domes: from how to distort a polyhedron without affecting connector angles to how to chop the top out of a car without losing your foot. From all we can determine, Baer's theory is unique in architecture. So is his practice; instead of dying of dissertation dry rot, his notions stand around in the world bugging the citizens.

The Dome Cookbook, now in its third printing, is published by Lama Foundation, an experimental community in New Mexico.

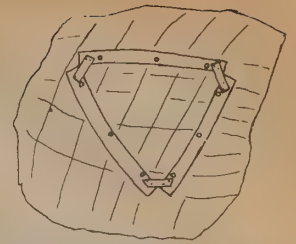


**Dome Cookbook**  
Steve Baer  
1968; 40 pp.

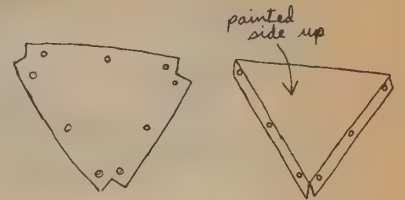
**\$1.00** postpaid from:  
Lama/Cookbook Fund  
P. O. Box 422  
Corrales, N. M. 87048  
or WHOLE EARTH CATALOG

When you are putting up a dome panel by panel you often have to use poles to support the wobbly sides as they close in toward the center. When we were putting up the second to last panel in the shop dome we had three poles in strategic spots to hold the wobbly overhanging panels from collapsing. The poles were nailed at the top so they wouldn't fall away if during a moment's strain the load were lifted up and off of them. The panel was an 8' by 19' and extremely heavy. We put it up with an inadequate crew, two men and two women. We struggled for an entire afternoon the last few inches Albert Maher pushed from on top of a spool resting on top of the cab of his pickup which we had driven into the dome. It was touch and go, a clamp might slip, Albert might collapse, the poles might buckle. Each one of many failures seemed equally as probable as getting the monster joined to the neighboring panels. A huge shove, some quick work with the crow bar and clamps—Albert eased off and it still held, I took a few more turns on one clamp and added another one—it was a sure thing, we had it in place!

It felt as if the panel had been lifted into place by some incredible wave we had created that now washed back as we put down tools and Albert got down off the cab. But there was one last thing to check—the poles, were they dangerously bowed under this new load. The entire sensation in my head began for a moment to turn inside out when Holly yelled "look at them" but then I saw what it was—the dome was finding its shape, it had lifted all three heavy poles off the floor, they were hanging from where they had been toe nailed at their tops, swaying slowly. Three important pillars transformed in one moment into three dangling slow swinging pendulums.



flexible plywood pattern on car top



panel cut and drilled

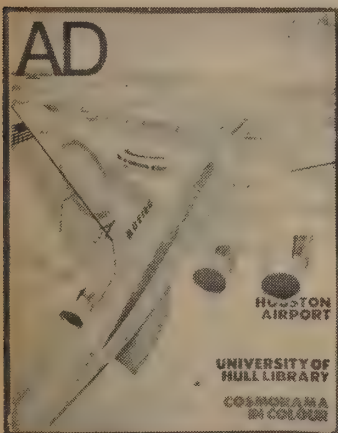
panel, cut, drilled and broken



## Architectural Design

This is the only architectural magazine we've seen that consistently carries substantial new information, as distinct from the stylistic eyewash characteristic of most architecture journals.

After a year of watching and using AD, it's clear that this is much more than an architectural magazine. It prints lots of news of American creative doings months before any U. S. publication. Its coverage of developments in cybernetics, structure systems, philosophy, use trends (e.g., communes), etc. is extraordinary.



### Architectural Design

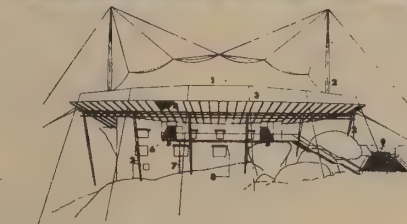
**\$13.50** postpaid for one year (monthly)

from:  
Architectural Design  
26 Bloomsbury Way  
London W.C. 1

## SUSPENDED

The seventy-year-old open air theatre at Wunsiedl, used for the annual Luisenburg Festival, has recently been dramatically extended by the addition of an amphitheatre, partly supported on old granite walling, partly on steel props, the whole to be covered with an elegant light-weight roof of pvc coated fabric suspended from two masts.

The designer is Frei Otto, working in association with Hans Habermann, John Koch, Gernot Minke and Bernd-Friedrich Romberg.



Key to rear elevation:

- 1 roof
- 2 mast
- 3 windshield
- 4 steel joists
- 5 stair
- 6 access gallery
- 7 steel supports
- 8 concrete lintols
- 9 side approach

In a World War II blimp hanger at Santa Ana, California, a large shimmering hemisphere has been erected that is to serve as the Pepsi-Cola Co. pavilion at Expo '70, Osaka. The dome (90ft. diameter, 55ft. high) is a single-skin



air-supported structure made of aluminized nylon.

Its simplicity as a structure is almost secondary to its actual performance. For the dome is a vast 210 degree, concave mirror, that shoots back unbelievable visual images and sounds to anyone inside it.

Russian scientists are working with a team of physicists and electronics engineers to develop a system in which machines can be controlled by the simple act of thinking about them. A research team is investigating this fantastic use of the human mind. Before it moves the muscles of the body, the human will is no more than an electric signal conducted along a nerve path. These electric signals can be intercepted and transferred into electric circuitry, switched through a special control panel and straight into the works of a machine. Refinement and improvement of this system could enable man to operate machine controls without even twitching a finger, simply by thinking about it—real soul engineering.

The Russians also claim to have two women who have already mastered this wish-control system. One of them, a female demonstrator at the Polytechnic Museum in Moscow, by clenching and unclenching her fists and with ESP, creates nerve signals that are picked up by a toy train radio control unit. From a distance of several feet the girl makes the train start, stop or go backwards. Another woman directs her thought impulses into controlling an electric clock, making it go faster, slower, or stop.

## Architectural Graphic Standards

If Sweet's is a kind of magic lamp in many architects' and builders' libraries, the genie might well be 'Graphic Standards'. This volume has been around for years; its latest edition is its fifth. Whenever the office expert hasn't got the answer, 'Graphic Standards' usually does. It is the how-do-do-it book of construction. It doesn't cover domes but if there's anything else you have in mind, it's probably in there. Older construction techniques (stone masonry, etc.) are covered as well as relatively newer techniques; it's very useful in remodeling and repair work. Everything is done with a minimum of verbiage and a maximum of illustrations and very useable charts and graphs. 'Graphic Standards' is so taken for granted by any architecture student or office that it's almost become a challenge to stay away from it; ultimately, however, there's seldom a building built without reference to it in the U. S. today. TOOL.

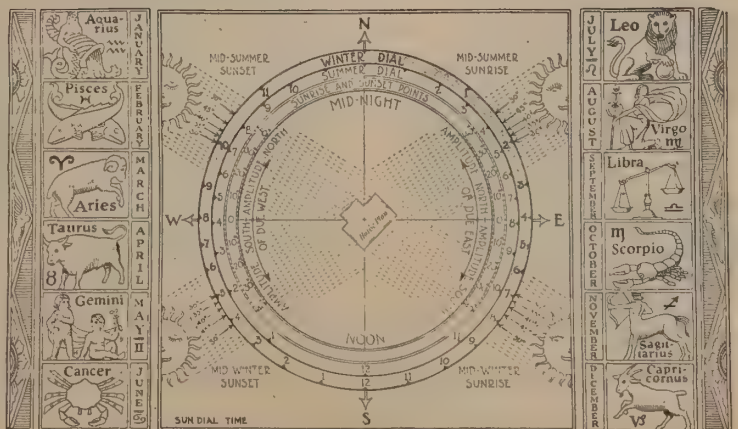
[Suggested and reviewed by ONYX]

**Architectural Graphic Standards for Architects, Engineers, Decorators, Builders, Draftsmen and Students**  
Charles G. Ramsey and Harold R. Sleeper  
1932 . . . 1956; 757 pp.

**\$22.50** postpaid

from:  
John Wiley and Sons  
Publishing Co.  
1 Wiley Drive  
Somerset, N. J. 08873

Western Distribution:  
1530 South Redwood Rd.  
Salt Lake City, Utah 84104



Orientation Chart

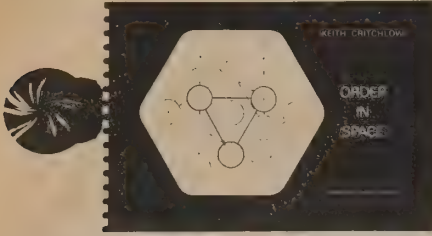
Directions for use:  
Pin cut-out of small scale plan of center and revolve same until sun strikes at desired angles.  
Outer dial indicates midwinter and black indicates darkness.  
Second dial indicates summer and grey indicates darkness.  
Third dial shows degrees North and South of due East and West, for locating rising and setting sun.  
Degree markings at end of arcs pointing to outer perimeter indicate corrections for latitudes other than 40° of North latitude for which chart is made; this is line through Philadelphia, Denver and Reno.



★ **Order in Space**

A new book by an experimental mathematician on order in space. "... space defining, distribution patterns, space filling properties, packing & stacking, economy grids and communication linkages."

There are exciting insights into structure in nature, and exploratory diagrams of the functions possible in space.



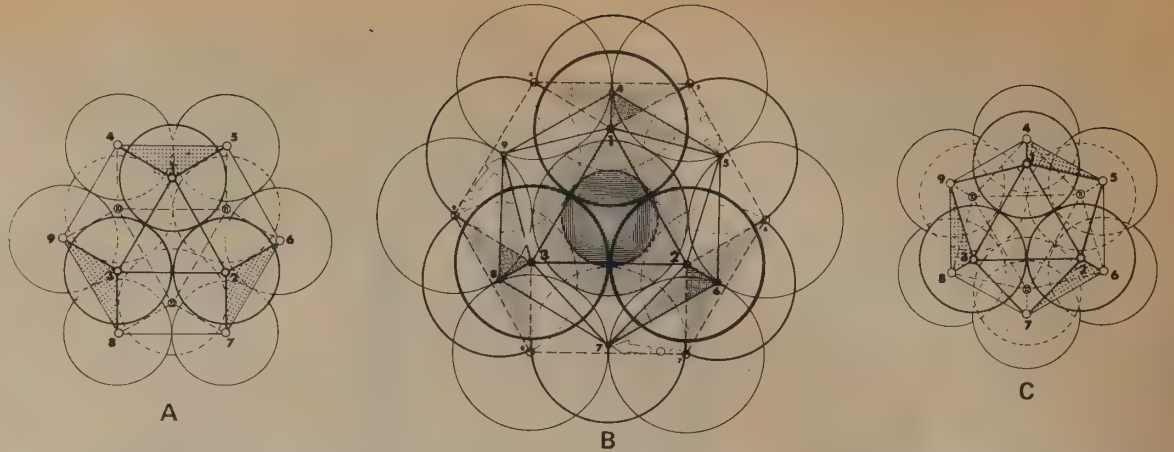
**Order in Space**  
Keith Critchlow  
1969; 120 pp.

**\$7.50** postpaid

from:  
The Viking Press  
625 Madison Avenue  
New York, N. Y. 10022

or WHOLE EARTH CATALOG

\$5.04 from Blackwell's (see p. 79)



These drawings show the change from a cuboctahedral pattern (twelve spheres around an equal and similar nucleus) to an icosahedral pattern (twelve spheres without an equal nuclear sphere). The variation in size of possible nuclear spheres is shown in the middle drawing, with the maximum size lightly shaded and the minimum darkly shaded.

The *cuboctahedron* or *dymaxion* in figure A, with its points numbered 1-12, is viewed centrally in its 3-fold axis.

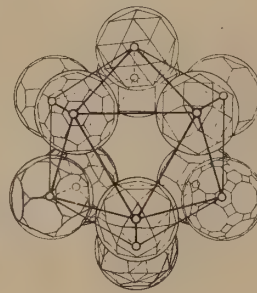
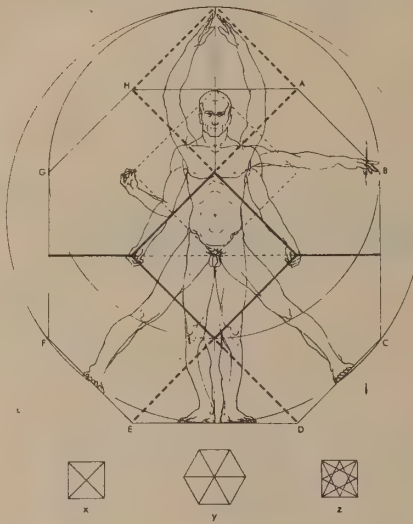
The central figure, B, still viewed in a 3-fold axis, shows the change to the *icosahedron*. The position of points 1, 2 and 3 (and the corresponding 10, 11 and 12, which are not shown) does not change in this view; but the position of points 4, 5, 6,

7, 8 and 9 does change, and each of these is shown in two positions, smaller numbers being used for the first, larger ones for the final position. Of the eight triangular faces of the initial figure, the two directly central, above and below, remain in the same rotational position, although they close in towards each other; the remaining six triangles, three above the meridian and three below, rotate to close in. A tone has been put on the three upper triangles to show the nature of this rotation, in both positions, with arrows following the direction of movement. In this way it is possible to see how the square faces close across their diagonals to create two equilateral triangles for each original square. The final icosahedral position, C, is structurally stable as it is a totally triangulated configuration.

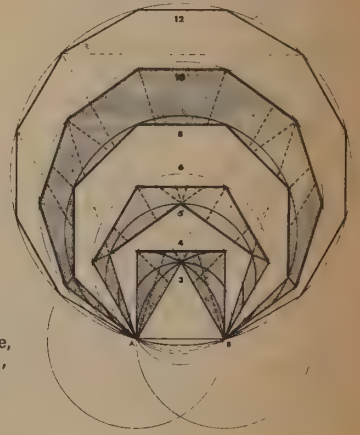
The work presented here represents certain direct relationships in space and the principles underlying them. As Einstein said: "We only know energy when it is exteriorized." Here we are dealing with exteriorized functions of space.

The book is designed for the visually orientated. It is a manual of space functions. It aims to show experimental ways in which related division is possible in space—by a process of economy or least effort between elements. For example, if one holds up the index finger of each hand, the tips of those fingers cannot be reduced to less than a point each and the relationship between them a line.

Mechanisms, architecture, applied science and all technologies imply designers. These designers need to know the basic "freedoms" of their constructions—space. A command of the functions possible in space becomes progressively more necessary in a shrinking planet, which points to the real problems; between man and man, man and his universe and man's continued existence. They are matters of the assessment of essentials. One of these is that human existence is never less than multi-dimensional. In a unified world spherical thinking is a prime requisite for both accuracy and understanding. In the macrocosm, "nations" are no longer "flat" but an integral part of a curved surface dependent for their existence on identical curves meeting at the boundaries. In the microcosm each of us begins life as a sphere—even the eyes that read these words are basically spherical.



THE GENERATION OF THE BASIC POLYGONS  
Pattern of unfolding or degrees of order in space



Right: The triangle is the prime polygon and only structural shape, followed by the square, pentagon, hexagon, octagon, decagon and dodecagon. The broken lines indicate relationships of concord between the polygons.

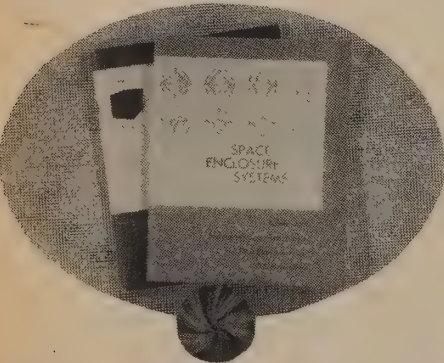
★ **Space Enclosure Systems**

subtitled "identification and documentation of cell geometries", wood's book presents both tabulated and graphic analysis of twenty-three volumetric geometrical forms, or, as he more effectively describes them, "space enclosure systems". the result is a beautiful, clear cut little TOOL that can liberate the designer, architect, educator, sculptor, mathematician, and ambitious spirit.

wood has taken this presentation just far enough. his information is formal, clear, simple, good and useful. what stimulates appreciation for what he has presented is what he has omitted. the book is void of the cliché "author's sketches" of possible futuristic applications that too often infringe or undermine the user's imaginative potential. wood allows the application of his data to be the reader/user's choice and opportunity.

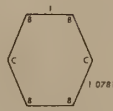
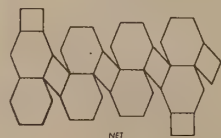
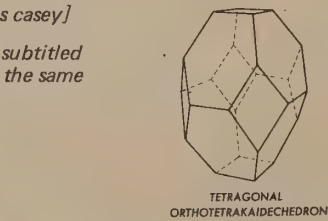
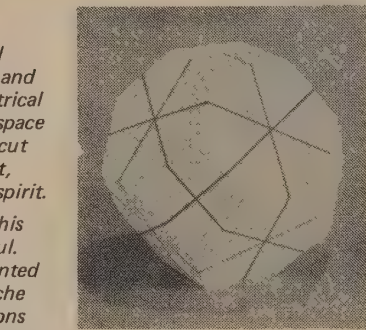
[Reviewed by thomas casey]

Wood has written a second volume (OSU No. 205) subtitled "The variables of packing cell design", which does the same thing with a whole new set of solids.



**Space Enclosure Systems (No. 203)**  
Donald G. Wood  
1968; 52 pp.

**\$3.50** postpaid



A = 90°  
B = 112° 30'  
C = 135°  
D = 63° 26'  
E = 114° 34'  
VERTICES — 24  
EDGES — 36  
DIHEDRAL ANGLES — 114° 18'  
131° 26'  
130° 8'  
99° 44'

★ **Handbook of Structure**

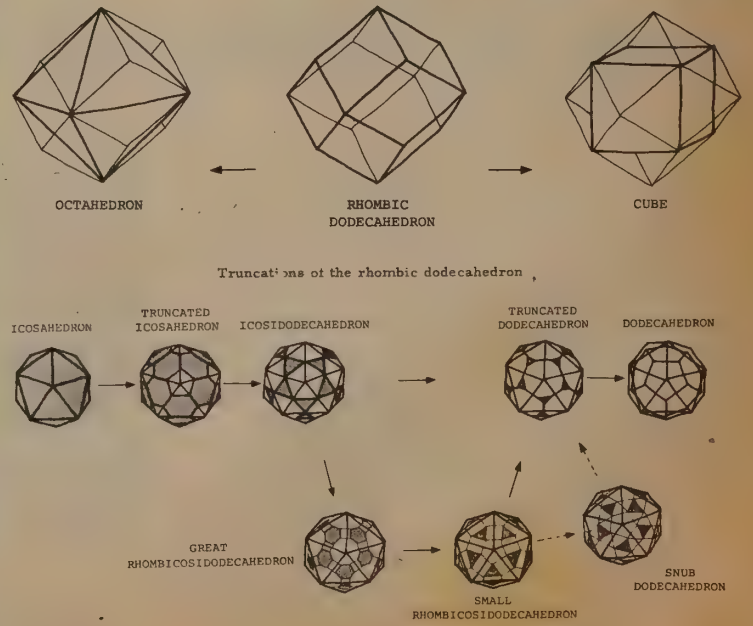
The best book about regular geometric shapes. Has a drawing & information for the regular, facially-regular & vertically-regular polyhedra & a good section on packing polyhedra.

[Reviewed by Jonathan Kanter]

**Handbook of Structure**  
Part I: Polyhedra & Spheres  
Robert Edward Williams  
1968; 153 pp.

free

from:  
Douglas Advanced Research Laboratories  
5251 Bolsa Avenue  
Huntington Beach, CA 92646



Truncations of polyhedra in the 5:3:2 symmetry family

★  
**The Cultivator's Handbook of Marijuana**

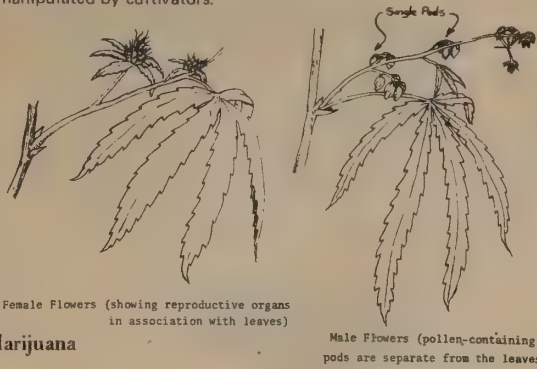
"We thought through a lot of alternative ways of dealing with all this information on the natural aspects of grass and its cultivation. If parts of this book sound like heavy biological rap, it's because science is a life trip as well as a machine trip, and can be full of understanding.

"Growing grass is easy enough. You can just plant seeds and let them grow or not, on their own. But grass is a plant in very delicate balance with its environment, for all its apparent strength. As with people, whether or not a plant merely survives is not a real issue. Harmony and balance should be created between the vital forces in the plant and the beneficial aspects of the environment if its life is to have high quality.

"We'll talk about two things in the course of this book—how to grow grass, and why grass grows."

... and right on.

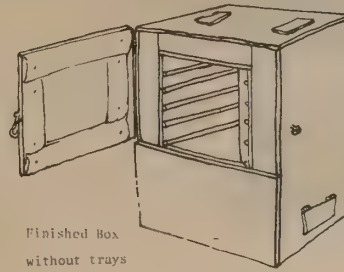
Acapulco Gold, Panama Red and other strains of grass are reputed to be particularly potent because of a fortuitous combination of climate and soils. Actually, soil has nothing to do with potency, except that it contributes to the plant's health, and certain mineral deficiencies do cut down on resin potency (see page 31). Climate has a similar relationship with potency. It is the genetic properties of grass which determine potency, and these genetic properties vary from strain to strain, but can be easily manipulated by cultivators.



Another common source of death and destruction among indoor Cannabis plants is tobacco smoke. It is with a heavy heart, my fellow Americans, that I announce tonight that the smoking lamp is not lighted during grass cultivation. If smokers are using the same air supply which the plants must breathe, you must try to filter the air somehow or take great risks with the plants' survival up until the third week, and with their health beyond that.



Male Flower  
 (Open to show detail)



Finished Box  
 without trays

If the seedlings are to be transplanted at any point, it will be helpful to germinate them in containers making transfer to the planting soil easy and non-traumatic. Germinating the seeds in ice-cube trays or similar devices allows easy transfer of the seedlings in their original soil. The ball of soil can either be popped out at transplant time; or each depression in the tray can be lined with foil or plastic before the germinating soil is added, making transplantation a matter of lifting out the ball of soil intact and placing it in the receiving soil equally undisturbed. The foil or plastic film can be removed easily prior to placing the seedling in its new home.

**The Cultivator's Handbook of Marijuana**

Bill Drake  
 1970; 88 pp.

**\$2.50** postpaid

from:  
 The Augur Publishing Company  
 Room 202  
 115 E. 11th  
 Eugene, Oregon 97401

or WHOLE EARTH CATALOG

Many writers have picked up on a piece of misinformation which holds male plants to be useless for drug purposes. It is substantially true that males have a much lower potency than females, but that is not the reason that they are pulled up and destroyed by professional growers. They are pulled primarily because if the male is allowed to go to maturity and pollenate the female, she will lose considerable potency because much of her energy will then be turned to nourishing the fertilized seed. What might be gained, then, in terms of overall bulk at harvest time by keeping the male plants will be lost in per-unit potency of female plants. So it becomes a trade-off situation where you have the option of lots of leaves (both male and female plants harvested) with lowered potency per unit of yield, or less yield (destroy the males and keep only females) with a higher per-unit potency. It is up to the individual cultivator to make the decision.



★  
**Knowing Your Trees**

The encyclopedia of trees in America, with descriptions and illustrations. There are photos of leaves, seed pods, bark, and the natural range of each type tree. Lovingly presented, in print for over 30 years.

[Suggested by Rodger Reid]



**Knowing Your Trees**

G. H. Collingwood & Warren D. Brush  
 Rev. & Ed. by Devereux Butcher  
 1937, 1964; 349 pp.

**\$7.50** postpaid

from:  
 The American Forestry Association  
 919 Seventeenth Street, N. W.  
 Washington, D. C. 20006

or WHOLE EARTH CATALOG



Alpine Fir

SILVER FIR or Pacific silver fir, as it is also called, is so named for the striking silvery white appearance of the under side of its needles. Another name applied to it is lovely fir—implied by *amabilis*—because of its beautiful pyramidal or spire-like form in comparison with the usually dome-like crown of noble fir and lowland white fir, with which it is often associated. The pleasing form of silver fir shows to best advantage in open situations where it is densely clothed to the ground with comparatively short branches. These branches sweep downward and outward in graceful curves.



Fan-shaped leaf of Ginkgo tree is found in no other plant.

The redwood and its close Sierra relative, the giant sequoia, *Sequoia gigantea*, are the largest, and almost the oldest, life forms in North America, if not in the world.

Accurate ring counts cannot be secured without destroying the tree, but it is assumed that redwoods 300 feet high and twenty feet or more in diameter may approach an age of 2,000 years. Most of the redwoods cut in commercial operations are from 400 to 800 years old. These are from three to ten feet in diameter, and 200 to 275 feet tall.



Seed pods of Black Locust.

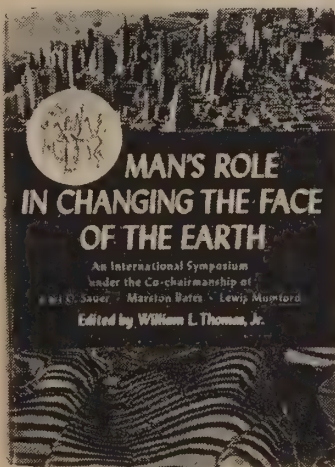
**Man's Role in Changing the Face of the Earth**

This book of almost 1200 pages is the result of a major conference held in 1955, sponsored by the Wenner Gren Foundation for Anthropological Research. More than 50 scholars submitted papers, covering almost every imaginable point of view related to man's capacity to transform his physical environment. Though first presented nearly 15 years ago, the facts and insights are richly rewarding today. In my opinion in fact, it is an unsurpassed achievement in assembling pertinent, insightful information of interest not only to serious students of the planet Earth, but to non-trained readers as well.

The three sections of the book are: I. "Retrospect", an historical background; II. "Process", methods and agencies involved in man's interactions with the land; and III. "Prospect", the effects and future implications of man's habitation of the Earth. Some typical subjects covered within these sections include: fire as the great force employed by man; origins and decline of woodlands; man and grass (sic); ecology of peasant life; harvests of the seas; ports channels and coastlines; and sewerage (don't belittle sewerage—society is structured around it).

This book rewards a reader like me because of its minimum of moralizing and its abundant substance. Edgar Anderson, director of the Missouri Botanical Garden in St. Louis and without whom such a book as this would be certainly incomplete, pointed out that the average thoughtful person has little inkling of how man has reclothed the world. Even professional biologists have been tardy in recognizing that a significant portion of the plants and animals surrounding us are of our own making. For example, neither Kentucky bluegrass nor Canada bluegrass is native to those places, but came from Europe. The corn belt is a very obviously man-dominated landscape, but the casual observer might never realize that even the grass covered and oak-dotted stretches of what looks like indigenous California vegetation came uninvited from the Old World along with the Spaniards.

[Reviewed by Richard Raymond]



**Man's Role in Changing the Face of the Earth**

William L. Thomas, ed.  
 1956; 1193 pp.

**\$15.00** postpaid

from:  
 University of Chicago Press  
 11030 South Langley Avenue  
 Chicago, Illinois 60628

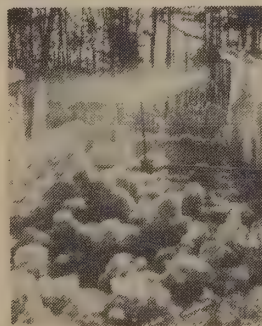
or WHOLE EARTH CATALOG

**Environment**

There's a growing horror that we may have reached the "point of no return" in planetary pollution. This is a monthly magazine with factual reports of current ecological trends. Much information on insecticides, oil and nuclear contamination, and good reviews of books on the environmental sciences. "Who will care how many battles with Nature man wins if Nature wins the war?"

[Suggested by Barry Kast]

The study revealed that sewage waste water can take the place of both commercial fertilizer and the usual irrigation water.



Can this be sewage? Winter irrigation with the treated sewage effluent in this forested area produced a fairyland of ice. Because effluent is produced year round, some special distribution techniques had to be developed for operating the system during sub-freezing temperatures. Several methods were tried including open trenches, perforated pipes, and revolving sprinklers. But the best performance was obtained using a stationary deflecting sprinkler-head developed specially for the project. Although the new sprinklers operated continuously under all conditions, the distribution pattern was not completely satisfactory, and research is continuing to try to improve them.

**Environment**

**\$8.50** /yr. (monthly)

from:  
 Committee for Environment Information  
 438 North Skinker Boulevard  
 Saint Louis, MO 63130

By designing automobiles so that they could be easily and economically reclaimed and establishing a national system for returning them to manufacturers, energy requirements for the steel in automobiles could be cut dramatically and one of the nation's worst waste-disposal problems could be solved at the same time.

The plastic industry's world production capacity will triple in the next ten years, according to "Chemical Week." "Disposal of plastics will present 'a real problem'—but it will be only a small part of the total industrial solids-disposal problem. No advance in the development of 'biodegradable' plastics is likely in the near future," according to D. G. Owens, Deputy Chairman of the Plastics Division of ICI, an international fiber manufacturer.

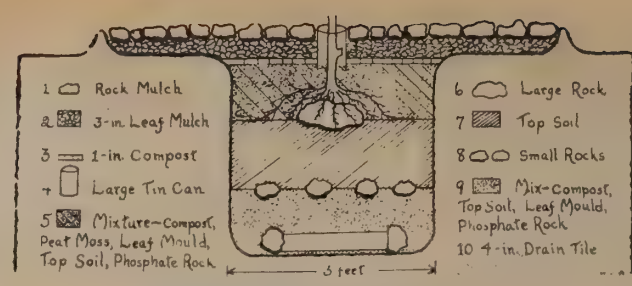




**How to Grow Vegetables and Fruits by the Organic Method**  
 ed. J. I. Rodale and Staff  
 1961, 926 pp

**\$10.19** postpaid from:  
 Rodale Books, Inc  
 33 East Minor Street  
 Emmaus, PA 18049

or WHOLE EARTH CATALOG



Several "secrets" are involved in this diagram. In addition to digging an outside hole and using the large center stone, you also mulch with rocks and leaves and install adequate drainage.

**A Tier-Shelf Bed for Mushrooms**



**The Organic Gardening Books**

When I first started gardening three seasons ago, I considered *How to Grow Vegetables and Fruits by the Organic Method* as the first and last word on raising your own food. And I still believe that if you intend to own only one gardening book, that's the one to have. In addition to all the facts you need about soil, compost, mulch, and most domestic fruits and vegetables grown in North America, the book contains beautiful statements by individual gardeners, and by the editors themselves, that add up to an eloquent testimony in behalf of the organic idea. It is these statements, these images of gardeners as people trying to make their very lives organic, that gives the book its strength and true distinction. It's a book to turn a person on to the organic idea in the first place, and then go on to show him in precise detail ways to put that idea into practice. The book is an indispensable guide for the beginning organic gardener.

The thing I have discovered through further reading and continued gardening, however, is that, as good as it is, *How to Grow Vegetables and Fruits* is neither the first or the last word on the subject. There's a new book out now called *Grow Your Own*, by Jeanie Darlington, that to my mind comes closer to being the first word. And two other sources, *The Encyclopedia of Organic Gardening* and all of Ruth Stout's work in general, strike me as being closer to final statements.

All I mean by "first" and "last" is that *Grow Your Own* is for gardeners who are absolutely just beginning, and not only beginning, but beginning in a city at that, right up there on the very front lines where conditions come closest to impossible; while the other sources I mentioned are for people who have had gardening experience and are out to improve upon, rather than discover, their individual methods.

*Grow Your Own* is by a young Berkeley, California woman who did the whole organic trip in a plot ten feet by ten feet outside her home, paid close attention to what was going on, did careful homework, and then turned it all into a lovely little paperback book. It's an extremely personal book, sort of like a letter to close friends, charming and informational. (Of ladybugs, Jeanie says: "Imagine Volkswagens humping. That's what ladybugs look like when they mate"). The first audience for *Grow Your Own* is other beginning gardeners in the San Francisco Bay region, because much of the information on soil, weather and sources of organic supplies are of a local nature. But it is by no means a purely "local" book. It's a community book, but the community Jeanie is speaking to, and for, is scattered everywhere, and geography will not greatly diminish the book's practical usefulness. As the book serves the community with facts, it also helps create it in spirit. It establishes Jeanie as a kind of hero, in that by effort she has gained the experience of a professional without sacrificing the joyous spirit of the amateur. She's a freak, but she's a competent freak, and competent freaks just may be the most important people in the entire culture at this nervous point in its development. *Grow Your Own* is a solid achievement that everybody in the community can not only benefit from, but feel proud of.

A lot of experienced gardeners find the *Encyclopedia of Organic Gardening* more useful than *How to Grow Vegetables and Fruits*, and this is understandable. Once you're deep into gardening, past the point of needing to be convinced and wanting only to get on with the work at hand, the *Encyclopedia* does stand as a handier, more efficient tool. There's no table of contents. The subjects are not laid out in categories. It's all there in alphabetical order, crabapple followed by crabgrass; tobacco followed by tomato; lima beans, lime,



**A Big 11 Dollars' Worth**

For \$11, Dick built a lot of plant-starter for Natalie. The whole structure resembles a big box except for the peak roof, and measures 6 by 8 feet, with 6-foot side walls. The frame is rough 1-by-4 pine that runs from the 3 uprights on each side to the rafters that form the peak. There is no overhang on the rafters, which are flush with the walls. So the plastic cover can be tacked to the foundation on one side, then run over the top of the roof, and nailed to the foundation on the other side.

Dick used heavy plastic that comes in three-foot-wide rolls, and since the rafters and sides of the framework are on 3-foot centers it works perfectly. He fastened the plastic to the framework with lath or cardboard strips nailed on with cardboard. The foundation is made of old planks.

The starter is set flush against the south side of the house, right outside a bedroom window, that can be opened to let heat from the house into the greenhouse when the temperature outside gets too cold. The Schieds also ran an electric cord through the window to a heat bulb to furnish additional heat when necessary.

The plastic to cover the building costs \$3, and lasts for one season. After the plants have been planted in the garden, the framework can be moved and stored until the next season.

If you love watermelons but don't have much garden space, grow *sugar baby* on trellises. The fruit grows to about half a foot in diameter and is as sweet and juicy as any variety.

I grew the *sugar baby* miniatures easily and successfully on a wire trellis that runs along the south wall of my home in Raymond, Nebraska.

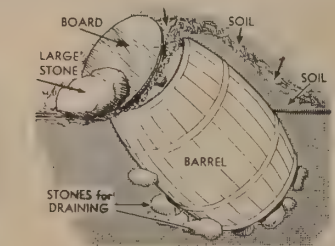
To ready the soil, I tilled deep, working in a little compost, leaves and vegetable peelings, but adding no fertilizer. Next, I raked up a mound about two feet wide and planted seeds about a foot and a half apart just under the wire. Between each "hill" I sank tin cans, open at both ends, to hold water and make it more accessible to the roots. Later, after the plants were established, corn husks were applied as mulch.

... Naturally, "melons on a trellis" were a conversation piece. But, the real rewards came when it was just a matter of stepping out into the yard for a sweet piece of melon.

**Organic Gardening & Farming**

**\$5.85** for one year, monthly  
**\$ .60** per copy

from:  
 Rodale Books, Inc.  
 33 East Minor Street  
 Emmaus, PA 18049



A BARREL ROOT CELLAR can store all or most garden produce in a fresh state over the winter. A strong, well-made barrel should be used and cleaned carefully before being set in trench.

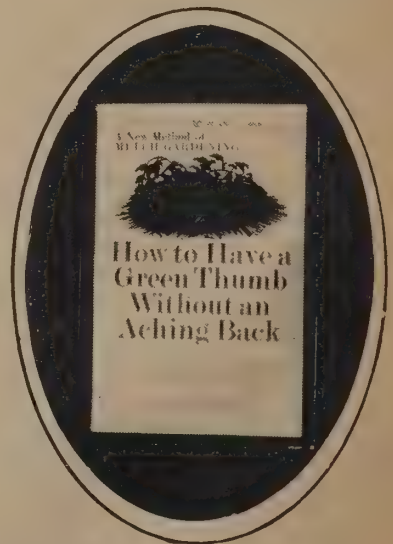
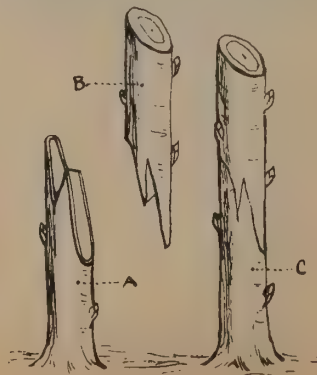
**The Encyclopedia of Organic Gardening**  
 J. I. Rodale & Staff  
 1968; 1145 pp.

**\$10.19** postpaid

from:  
 Rodale Books, Inc.  
 33 East Minor Street  
 Emmaus, PA 18049

or WHOLE EARTH CATALOG

**WHIP OR TONGUE GRAFT:** This appears to be the best method where the stock and scion are close to the same thickness. When the stock that is to be grafted is greater than 3/4-inch in diameter, it is best to use some other form of grafting because it would be very difficult to make the proper cuts with the grafting tools.



**How to Have a Green Thumb Without an Aching Back**  
 Ruth Stout  
 1955; 160 pp. (dk. green text)

**\$1.45** postpaid

from:  
 Cornerstone Library Publications  
 Simon & Schuster, Inc.  
 630 Fifth Avenue  
 New York, N. Y. 10020

or WHOLE EARTH CATALOG

lime tree, limonium, linaria and linden. Virtually any question you'd like to ask a master gardener is anticipated and answered here, and beyond that, a lot of questions that wouldn't have occurred to you are asked on your behalf and then answered. You wind up with a lot of accidental knowledge, browsing in this volume, and that's always fun and frequently immediately useful. I can best sum up my feelings about the Encyclopedia by simply saying that after three seasons as a gardener, I'm about to buy a copy, instead of borrowing any more, out of an impulse to acquire literature on gardening to match my own level of competence and curiosity.

If you were to chart a course from *Grow Your Own*, through *How to Grow Vegetables and Fruits*, on into the Encyclopedia, you'd wind up, of course, in Ruth Stout's garden watching her ignore practically everything you just learned from all those books as she grows stuff twice as good and ten times as easily as you do. Well, not really ignoring it. Just seeming to, in the same way that your grandmother ignores the printed recipe as she sort of unconsciously mixes a lot of stuff together and throws it in a coal stove oven to make the best Sunday dinner you ever sat down to. Ruth Stout is a master gardener who's been refining her procedures for decades now. She's sort of like an elderly Zen priest, an old roshi who after years of work and study has distilled a large burden of "knowledge" into a single gem of wisdom which he renders in a single haiku. Just at the point that I felt like I was really catching on to making compost and feeling kind of proud, I found out that Mrs. Stout doesn't fool with compost anymore. Too much trouble. Doesn't fool with tools much either. Doesn't fool with anything much, actually, except mulch. Just spreads a lot of hay around, plants by poking a hole in the ground with her finger, and when it is time, goes out and picks the produce and eats it. I'm confident that if I were to do everything in my garden that she does in hers, mine would still fail while hers would flourish, simply because I'm too young and foolish to get along without some rules. It's the difference between wisdom and knowledge, between having correct information and knowing the truth. I'll be needing "the facts" for a long time to come, but Mrs. Stout assimilated all of that long ago. She just... does it, and her accounts of doing it are among the very best statements on organic gardening that you're likely to come across.

The thing to remember about organic gardening is that it's a movement, a national energy that since its beginnings early in the 1940's has grown into a force so potent by now that it contains serious political implications. The books I have mentioned are landmark documents. But more central to organic gardening as a movement is a monthly magazine published by the same Rodales who brought out the Encyclopedia and *How to Grow Vegetables and Fruits*, called *Organic Gardening and Farming*. It has occurred to me that if I were a dictator determined to control the national press, *Organic Gardening* would be the first publication I'd squash, because it is the most subversive. The whole organic movement is exquisitely subversive. I believe that organic gardeners are in the forefront of a serious effort to save the world by changing man's orientation to it, to move away from the collective, centrist, super-industrial state, toward a simpler, realer one-to-one relationship with the earth itself. Most of the current talk about "ecology" in America is simply the noise that accompanies all fads. It's obviously doomed to go the way of hula-hoops and the fifty-mile hike. The thing I like to remember is that even when all the froth has blown away, and the rhetoric of pop-ecology has drifted off to join the other forms of pollution in the sky, the gardeners are going to still be gardening. They're going to quietly go on composting and tilling and planting, and then reaping all the good things they have sown.

[Reviewed by Gurney Norman]

## Soil Test Kit

A soil test kit enables you to test your garden soil for acidity/alkalinity, nitrogen, phosphorus, and potash. A test will show what is present and what is lacking. There are test tubes, chemicals, and a color chart to gauge results. Be sure to ask for "The Organic Supplement" prepared by *Organic Gardening* magazine in case... you have decided to work with Nature's own methods of fertilization." Feed the soil, not the plant.



Sudbury Soil Test Kit  
Send for descriptive literature

Kits: \$5.95-\$39.95

from:  
Sudbury Laboratory, Inc.  
Sudbury, Mass. 01776



**Grow Your Own**  
Jeanie Darlington  
1970; 87 pp.

\$1.75 postpaid

from:  
The Bookworks  
1611 San Pablo Avenue  
Berkeley, CA 94702

or WHOLE EARTH CATALOG

## Flowers

Of course you can buy seedlings in the nursery and even the super-market. That's good for hard-to-grow seeds such as petunias. But seed is cheap and fun. Easy flowers to grow include:

Sunflowers. Harvest the seeds for you and your friends and for the birds.

Strawflowers are fun and they can be dried.

African daisies, calendula, and California poppies are good for hot sunny places.

California soil has a high clay content and needs a lot of organic matter (leaves, manure, compost) added to it to break it down and lighten it up. This helps in the release of soil nutrients and allows good root growth.

Birds are good friends to the organic gardener. If you feed them seed this winter, they'll stick around and eat their share of bug kingdom baddies next summer.

Sweet Peas. The climbing variety, 5-7 feet, is great for hiding a wall or making a screen. Use trellis netting.

Nasturtiums. Great for hot, dry, poor soil areas. The leaves, which are peppery and high in Vitamin C, taste great in salads or cream cheese sandwiches. The flowers are good to eat too, and the green seed pods can be pickled in vinegar with a touch of mace, allspice, 1 clove and salt. They resemble capers.

Old Fashioned Garden is a wonderful surprise packet.

## An Agricultural Testament

The first "organic gardener" I ever ran into was a man who ended all his sentences "thus saith the Lord." The Lord, it turned out, had been in the habit of speaking in a very conversational manner to this fellow, and had given him all manner of helpful hints on gardening—among other things, a recipe for fertilizer. I noticed that the Lord's side of the conversation tended to be most flattering to my new acquaintance, and most decidedly threatening to all the neighbors—a gang of villains, who were going to die of cancer because of such sins as listening to the wrong prophets, and cooking with aluminum pots.

Now I would be the last to deny the possibility that a man might receive the word from on high and speak beyond the usual powers of his head. But I am exceedingly mistrustful of a man who depends on divine revelation to show him what is obvious about the ground under his feet. This man deservedly belongs in "the lunatic fringe" of a discipline that demands respect and attention not because it is far out or esoteric or mystical, but because it makes good sense.

The principles of organic agriculture are not derived from mystical insight or revelation, but are based upon observation. They have been established in our part of the world in our time by men who were excellent observers, and who were moreover accomplished and respectable scientists. The scientific respectability of organic methods has been obscured for us both by those who have insisted upon making a cult of the obvious and by the affluence and glamor of technological agriculture—the agriculture of chemicals and corporations.

The pioneer book of organic agriculture in modern times is King's *Farmers of Forty Centuries*, which proposed no innovation, but only provided new access to the ancient tradition of organic practice in the Orient. King was no cultist or food faddist. He was a professor of agriculture, an eminently practical and observant man, well enough trained that he fully understood what he saw, in terms of the history and culture of Asia, and in terms of its potential usefulness to the West. King's is one of the most important books I have ever read. If it is allowed to remain out of print I believe that will be a tragedy and a great loss, for it can provide indispensable insights into the causes and the possible remedies of our environmental crisis.

King's most famous reader and follower was probably Sir Albert Howard, who in thirty years of research and experimentation established scientifically the soundness of the ancient methods. Howard's *An Agricultural Testament* is another extremely important book. Howard's work is based upon the premise that good agricultural practice is based upon the observation and the use of natural processes. King's book, Howard thought, demonstrated that an agriculture based upon natural processes could thrive for an unlimited time, whereas an agriculture that contradicts or ignores natural processes can only exhaust the land, and in its failure assures the failure of the society.

Howard's thinking proceeds from one cardinal fact: "The forest manures itself." He later elaborates this observation in an agricultural metaphor:

The main characteristic of Nature's farming can therefore be summed up in a few words. Mother earth never attempts to farm without live stock; she always raises mixed crops; great pains are taken to preserve the soil and to prevent erosion; the mixed vegetable and animal wastes are converted into humus; there is no waste; the processes of growth and the processes of decay balance one another; ample provision is made to maintain large reserves of fertility; the greatest care is taken to store the rainfall; both plants and animals are left to protect themselves against disease.

And so the task Howard set himself was first to understand those processes and interrelationships by which the natural world sustains and renews itself, and then to work out methods by which people could use the land in cooperation with nature. He realized—and I think it would be hard to overestimate the importance of this—that the specialized analytical approach of "scientific" agriculture was creating more problems than it solved:

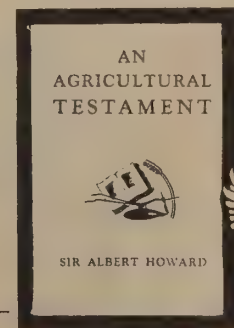
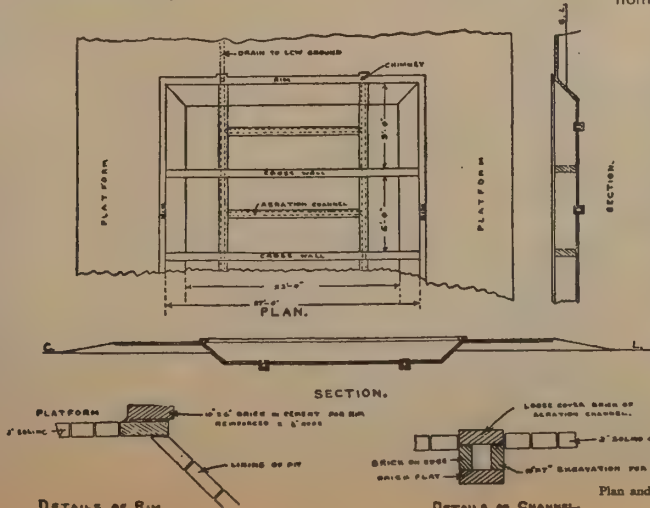
Instead of breaking up the subject into fragments and studying agriculture in piecemeal fashion by the analytical methods of science, appropriate only to the discovery of new facts, we must adopt a synthetic approach and look at the wheel of life as one great subject and not as if it were a patchwork of unrelated things.

He insisted that quality was a more important evaluative standard than quantity. He saw that the soil was more a process than a substance, that its life was more important than its analyzable contents, that its health was not a matter of inert proportions but a balance of live forces, and that therefore "the correct relation between the processes of growth and the processes of decay is the first principle of successful farming."

Howard's discoveries and methods and their implications are given in detail in *An Agricultural Testament*. They are of enormous usefulness to gardeners and farmers, and to anyone else who may be interested in the history and the problems of land use. But aside from its practical worth, Howard's book is valuable for his ability to place his facts and insights within the perspectives of history. This book is a critique of civilizations, judging them not by their artifacts and victories but by their response to "the sacred duty of handing over unimpaired to the next generation the heritage of a fertile soil."

A matter of considerable interest to me is that, written within the context of more knowledge and from the perspective of a more urgent time, *An Agricultural Testament* can be read as a confirmation and elaboration of Jefferson's belief in the supreme importance of the small farmer—the man devoted in final terms to his own piece of his homeland, who makes of the life of the land a human way of life.

[Reviewed by Wendell Berry]



**An Agricultural Testament**  
Sir Albert Howard  
1940; 253 pp.

\$4.00 postpaid

from:  
Oxford University Press  
200 Madison Avenue  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

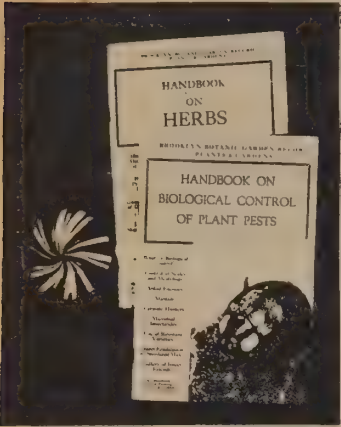
\$3.00 from Blackwell's (see p. 79)

Plan and working details of composting pits at Tollygunge, Calcutta.

★ **Plants & Gardens**

The Brooklyn Botanic Garden publishes reprints from its quarterly magazine, *Plants & Gardens*, in booklet form. They call them "the world's best illustrated garden & horticultural books," and they may well be.

There are 40-50 manuals on a variety of garden subjects, each full of excellent photos and sound advice.

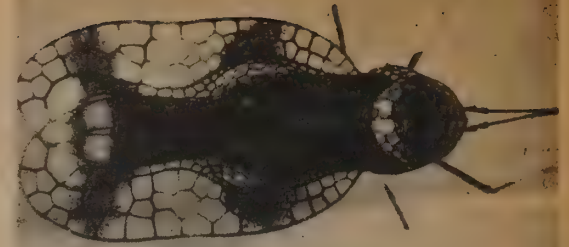


**Plants & Gardens**  
**\$2.00** /year (quarterly)  
**\$1.00** /reprint, postpaid

from:  
 The Brooklyn Botanic Garden  
 Brooklyn, N. Y. 11225

**Use of insecticides.** On any crop most of the potential pests are held under control by natural enemies. Those which are not so controlled may require chemical treatment. In so doing it is probable that the natural enemies of the minor, or potential, pests will be eliminated so that their hosts will assume pest proportions in the absence of natural checks. This has been demonstrated in California on avocados which enjoy excellent biological pest control; growers have found that a little insect damage from no chemical treatment is preferable to opening Pandora's box of added problems by the ill-advised use of insecticides.

*Biological Control of Plant Pests*



**Sweet Marjoram (*Majorana hortensis*)**

One of the most fragrant and popular of all herbs. It is low and spreading, reaching about 8 to 12 inches in height, with small, oval, gray-green leaves that are velvety to the touch.

**Use:** The fresh or dried leaves are widely used as a flavoring in cooking. Oil is used in perfumery.

**Horticultural Use:** Gray color of foliage contrasts well with brighter greens. Can be used in borders.

**Culture:** Easily grown from seed or cuttings. In the North it is best treated as an annual or kept over winter as a pot plant. In the South it is perennial.

**Harvesting:** Use fresh at any time; cut leafy stems at flowering time and dry for future use.

*Herbs*

The value of the useful mints lies in volatile oils produced on their leaves and stems. These oils are found in tiny glands which can be seen with a magnifying glass. If a hand is brushed against the plant some of the oil is released and clings to the skin.

*Herbs*



Blue crown passion flower.

★ **Desert Plants and People**

The best book I know of on the useful plants of the arid regions of northern Mexico and southwestern United States. It tells of plants used for food, medicine, construction, crafts, livestock fodder, etc. Lots of pictures. Also many interesting stories of Mexican "curados" (herb doctors).

[Suggested and reviewed by Paul Bandy]

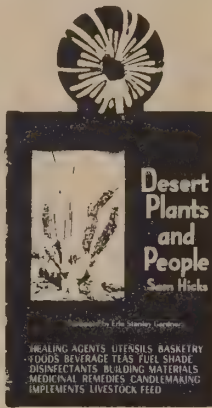
**Desert Plants and People**

Sam Hicks  
 1966; 75 pp.

**\$5.95** postpaid

from:  
 The Naylor Company, Publishers  
 1015 Culebra  
 San Antonio, Texas 78201

or **WHOLE EARTH CATALOG**



The *ocotillo*, also known as coachwhip, Jacob's-staff, and vine-cactus, is found in desert areas from the western part of Texas to the southern part of California and south into Mexico. The plant usually has several slender, spiny branches and may grow as high as twenty feet. It is used as a hedge plant at times. Fences may be built of it, and it has also been used in combination with adobe mud as a building material.

**Sycamore Bark, or *Cáscara de Aliso*, Tea.** A pleasant beverage, this tea is similar to sassafras in both color and taste. The bark is chipped from the trunk near ground level, or from the roots slightly below the surface. The bark requires several minutes of brisk boiling to make a flavorful, red tea. *Cáscara de aliso* tea is widely used in Mexico as a coffee substitute. Sections of orange or grapefruit peel are frequently cooked with the tea to add to its flavor. Young Indian women of the southern California tribes used to drink *té de aliso* as an aid to childbirth.

In Mexico an extract made from crushed elderberry leaves soaked in alcohol is taken in the proportion of ten drops to a glass of water for halting diarrhea, and tea cooked from its leaves is used for the treatment of drowsy.



The best life saving plants are the cacti. Not only are the fruits of them eatable, palatable, and contain much nourishment, but the plant is also. The round species that grow on the ground are the best. The top is cut off by inserting the knife blade into the side, a couple of inches from the top, then making a horizontal cut around it. The top is lifted off, chunks of the center are cut out and chewed. It is surprising how refreshing and pleasant the juice is. What is in the juice not only ends your craving for water, it also replaces some food value to your body. The pulp of the cacti is only chewed, but the fruit that many of the cacti have are eaten, and from them you get the best food value. The young, tender blades of the prickly pear cactus are eatable, raw or toasted over a fire. The cabbage-like head of the sotol, when put into a hot fire and toasted, makes a good meal.



**Elderberry:** Teas of varying strengths cooked from the flowers are taken by expectant mothers for morning sickness and given to tiny babies for colic. In Mexico, two glasses of *flor de salico* tea are still a standard dosage for breaking the fever of children suffering from measles. It is a soothing antacid tonic which, as a matter of custom, is sloshed liberally into burning stomachs the "morning after" by the participating members of gala southwestern fiestas. Hot tea is taken as a reliable cold and flu medicine, and *flor de salico* is also boiled in milk to make a medicated cough syrup.

Much can be learned from watching and studying the animals and birds in the arid regions of the border country. Notice the species of cacti that animals have gnawed into to get needed moisture. Some may have been rodents, skunks, foxes, coyotes, and deer. The specie that they select is the best one for you. The best way to locate where water can be found is to watch the doves. When you see numbers of them flying in the same direction towards a canyon or a draw in the mountains, follow their course, and you will find a spring or a *tinaja*. Animals' trails will also lead you to water. Wild life make good teachers, you can learn much from them and in a rough country to make it easier you cannot learn too much.

★ **Gravelly Tractor**

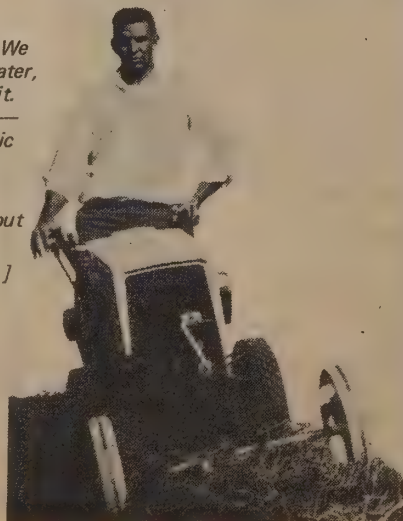
I own an old one—and my 5 acres is more like 35. We mow, plow, cultivate, cut brush, saw wood, pump water, plow and blow deep snow, clear ice, haul, etc., with it. No belts and plenty of power. (Don't try to help it—it's stronger than you are.) Rotary plow turns organic debris under and leaves a ready-to-plant seed bed in one operation.

How did you miss it so long? Not cheap, first cost, but it will outlast them all and does a better job easier.

[Reviewed by George D. James, Jr.]

Brochure from:  
 Gravelly Corporation  
 Gravelly Lane  
 Clemons, N. C. 27012

2 wheel tractors \$500-910.  
 Rotary plow \$136.00  
 Rotary mower \$144.00  
 4-wheel tractors \$1135-1767.



★ **Soil Conservation Service—USDA**

Most rural areas of the US are incorporated into Agricultural Conservation Districts. This situation offers two services you should be aware of.

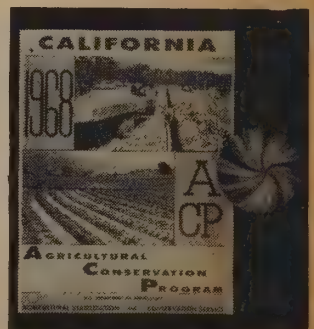
**1. Soil conservationist & engineers—**

The services of these people are available to you through your local district office. If you need a livestock pond or watering sites for wild game, they'll do the engineering for you. They can also help out if your basement floods, your soil is blowing away or the creek is eating away the bank under your pad.

**2. Agricultural Credit & Production—**

ACP, as this program is referred to, is a cost sharing program for land owners or users sponsored by the US Dept. of Agriculture. If you are located within a conservation district, you may be eligible for government money to help you develop springs, seed pasture, build fences or stabilize stream banks.

[Reviewed by Ed Johnson]



For information, write:

In California:  
 California ASCS State Office  
 2020 Milvia Street  
 Berkeley, CA 94704

Other states:  
 look in phone book under U. S. Govt. . . . Agriculture, Dept. of, Soil Conservation District.

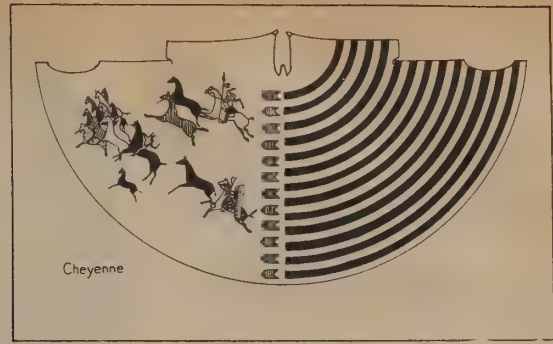
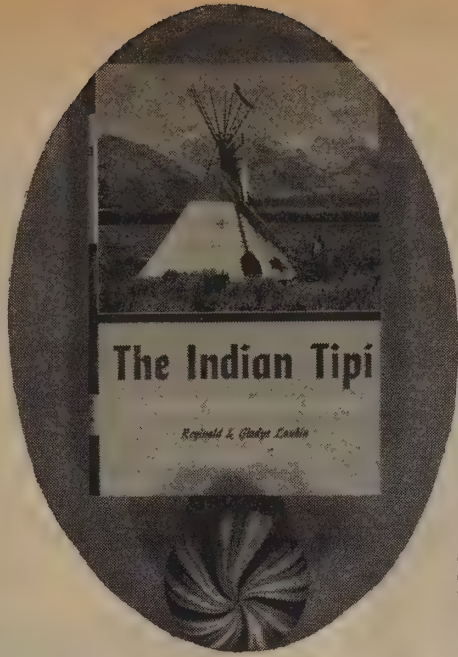
## The Indian Tipi

*Tipis are cheap and portable. To live in one involves intimate familiarity with fire, earth, sky, and roundness. The canvas is a shadow-play of branches by day, people by night. Depending on your body's attitude about weather, a tipi as dwelling is either a delight or a nuisance. Whichever, you can appreciate the elegant design, of a tipi and the completeness of the culture that produced it.*

*The Laubin's book is the only one on tipis, but it is very good. All the information you need, technical or traditional, is here, and the Laubins are interesting people.*

Later we discovered that the idea of a ventilating pipe underground to the fireplace is the very best way of insuring a clear lodge and the most heat.

It is a joy to be alive on days like this, and when we come back to the tipi, after a long ride or a hike in the mountains, the little fire is more cozy and cheerful than ever. The moon rides high in the late fall nights, and when it is full, shines right down through the smoke hole. Its pale white light on the tipi furnishings, added to the rosy glow of the dying fire, is beautiful beyond description.



Indians had definite rules of etiquette for life in the tipi. If the door was open, friends usually walked right in. If the door was closed, they called out or rattled the door covering and awaited an invitation to enter. A shy person might just cough to let those inside know he was waiting. If two sticks were crossed over the door, it meant that the owners either were away or desired no company. If they went away, they first closed the smoke flaps by lapping or crossing them over the smoke hole. The door cover was tied down securely and two sticks were crossed over it. The door was thus "locked," and as safe in Indian society as the most strongly bolted door would be in our civilization today.

The Indian way of attaching peg loops, as illustrated, is not only ingenious but easy and sturdy—far better than either sewn or stamped grommets. Insert a pebble about 3/4 of an inch in size on the under side of the cover about six inches above the edge, at a seam wherever possible, and around this pebble tie a piece of 3/16-inch cord. Double the cord, tie it in either a square knot or a clove hitch about the pebble, then join the free ends in a square knot. Marbles will do if you cannot find smooth round pebbles.

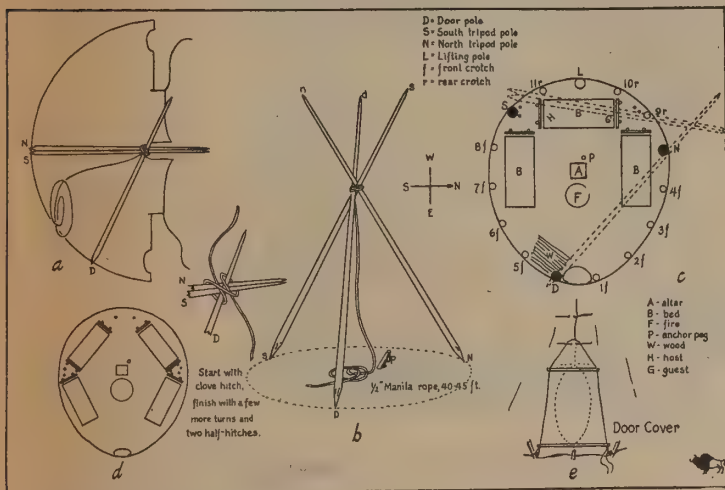


FIG. 3. Erecting the Sioux Tipi.

**The Indian Tipi**  
Reginald and Gladys Laubin  
1957; 208 pp.

**\$4.95** postpaid

from:  
University of Oklahoma Press  
Sales Office  
Faculty Exchange  
Norman, Okla. 73069

or **WHOLE EARTH CATALOG**

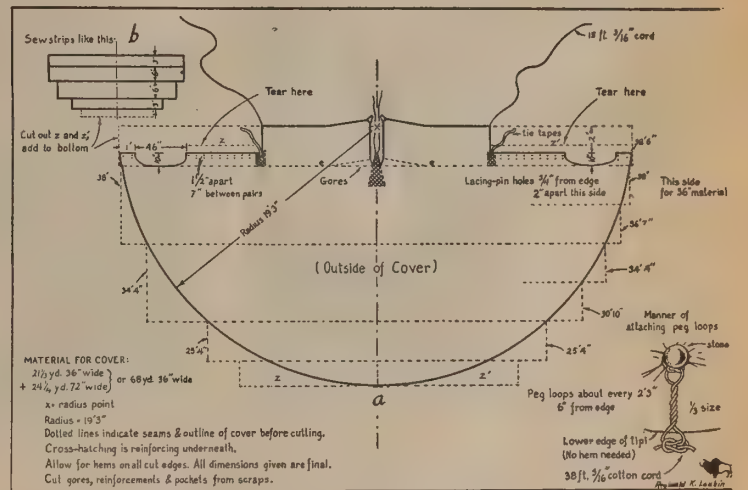


FIG. 1. Pattern for Sioux Tipi (18-foot).

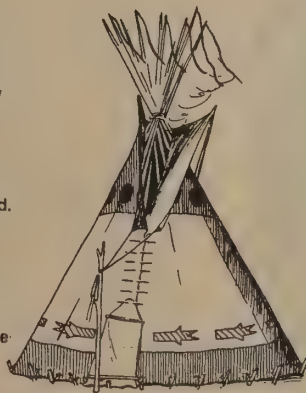
## Tipis

*We have word about three sources in the U.S. of ready-made tipis, and so far Goodwin-Cole is still the best—best construction, lowest cost. They also have tipi liners, which you will need if weather is wet or cold.*

For the following, shipping weights are undetermined. Inquire, or have the item sent shipping cost C.O.D.

10-foot is suitable for nomadic couple; 14-foot for small family. 20-foot for extended family or occasions. Flame-treated is unpleasant; law requires it in some places. Tipis of green, blue, orange, red, or yellow drill are available. Poles are available if you're that lazy.

from:  
Goodwin-Cole Company  
1315 Alhambra Blvd.  
Sacramento, California 95816 or **WHOLE EARTH CATALOG**



TIPISIZE	FLAME RESISTANT CALIFORNIA CODE					PAINTED DESIGNS AROUND BASE	TIPISLINER 5' HIGH 10 OZ. S.F.
	10 OZ. S.F. DUCK NATURAL	12 OZ. S.F. DUCK NATURAL	6 1/2 OZ. DRILL BLUE-ORAN. RED-YELLO.	10 OZ. ARMY DUCK WHITE	WOOD POLES 14/SET UNPAINTED		
10'	\$60	\$64	\$85	\$90	\$40	10 @ \$25	\$28
12'	\$69	\$73	\$94	\$112	\$45	12 @ \$27	\$31
14'	\$77	\$84	\$113	\$129	\$50	14 @ \$29	\$35
16'	\$88	\$94	\$133	\$155	\$53	16 @ \$31	\$38
18'	\$97	\$107	\$150	\$172	\$57	18 @ \$33	\$42
20'	\$107	\$119	\$174	\$202	\$60	20 @ \$35	\$45
22'	\$117	\$134	\$197	\$236	\$63	22 @ \$37	\$52
24'	\$137	\$154	\$233	\$285	\$68	24 @ \$39	\$62

Door Cover . . . \$8.50  
Two Designs . . . add \$10  
8' Front Pole . . . \$3  
40' of 1/2" Rope . . . \$4  
**TERMS OF SALE**  
Prices subject to change without notice. Prices are F.O.B. our Sacramento plant. All orders subject to acceptance by Home Office, Sacramento. New customers are asked to send check with order. One-half deposit required on C.O.D. orders.

## Aladdin Kerosene Lamps

*Coleman lamps are terrible—they hiss and clank and blind you, just like civilization.*

*Aladdin is the answer if you need good light and 117ac isn't around. It is bright, silent, and requires no pumping. (It does require some babying to keep the mantle from smoking up; it's like not burning toast.)*

*British made and efficiently designed, the lamps are available in this country from:*

Aladdin Industries, Inc.  
Kerosene Lamp Division  
Nashville, Tennessee 37210

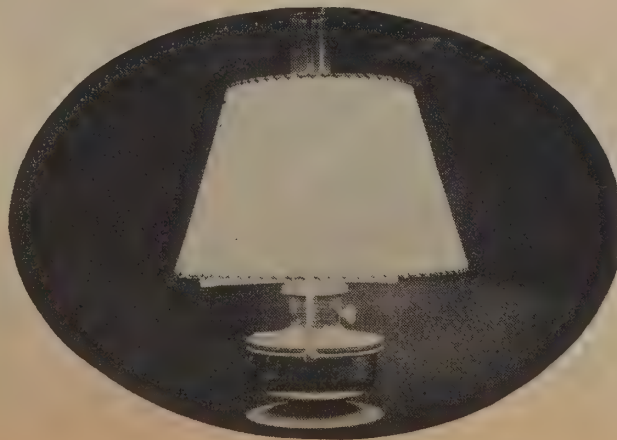
or **WHOLE EARTH CATALOG**

Some of the Aladdins are rather ornamental. The simplest designs are:

- B-165 Font Lamp (aluminum, w/o base) **\$22.95** shipping weight 2.5 lbs
- B-140 Table Lamps (with base) **\$23.95** shipping weight 2.7 lbs
- and B-223 Hanging Lamp **\$28.95** shipping weight 3.5 lbs, shade extra



- N-6400 White shade **\$3.95**
- N-103 Chimney **\$2.40**
- N-150 Mantle **\$.98**
- N-198 Wick **\$.98**



**Seeds and Trees by Mail**

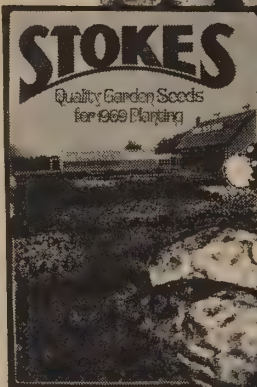
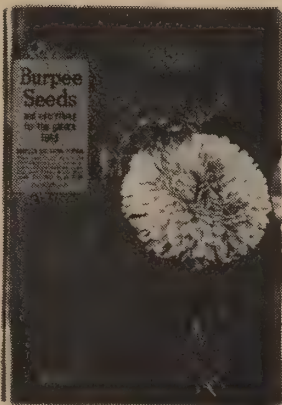
Seeds are exquisitely designed instruction capsules for an orderly rearrangement of the elements. The gardener plays only a small role in the process—the seed tells the soil nutrients, air and water to organize into exactly what is described on the seed packet. Automation—and an example of what we've been given to work with on our planet. Write for brochures.

Vegetables and flower seeds. Organic fertilizers and insecticides. from: Natural Development Company, Bainbridge, PA 17502. Tri-excel DS, a non-poisonous plant protectant for flowers, vegetables, berries, trees. It's made of ground-up flowers, resins, etc., and it works. The best all-around seed source.

Organic Seeds. "Untreated, natural, old-fashioned, unhybridized, uncrossed." Several gardeners report that these seeds have not germinated as well as hybrid types. from: Vita Green Farms, P.O. Box 878, Vista, CA 92803.

Dwarf, semi-dwarf and regular fruit trees by mail. This is a 3,000 acre nursery, over 150 years old. from: Stark Brothers' Nurseries & Orchards, Louisiana, MO 63353.

Davis Headquarters Forest Nursery, Rte. 1, Box 1410, Davis, California 95616. The state of California's distribution center for trees for reforestation, erosion, windbreaks. A long form of course, but they mail pines, cypress, fir, redwoods, eucalyptus in quantities of 100-1,000 or more. One year old bare-root trees (4-10" height) are as little as \$10 per 500.



Not organic, but about the most complete vegetable and flower seed catalogue. Very fast and efficient service. from: W. Atlee Burpee Co., Riverside, CA 92502.

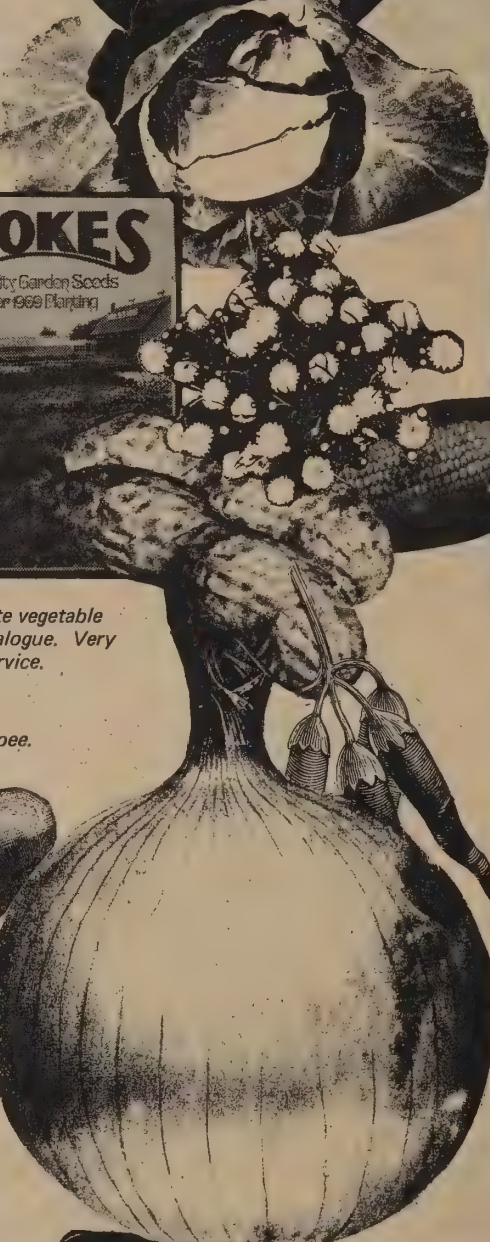
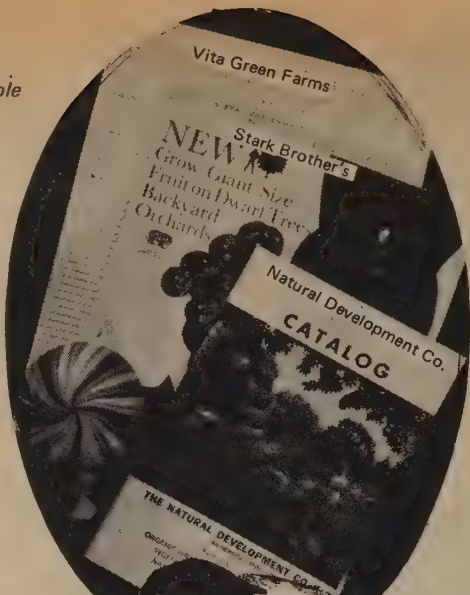
Large complete catalogue, similar to Burpee. from: Stokes Seeds, Inc., Box 15, Ellicott St. Station, Buffalo, N. Y. 14205.

Wildflower & Wild Tree Seeds. Gardeners and food growers—and maybe hunters and gatherers too—should check out Clyde Robin's seed catalog. It offers not only wildflowers, which grow easily without too much attention, but also many weird and unusual seeds of flowers, trees, shrubs, herbs, and vegetables, plus occasional information on their culture, appearance, uses, etc.

The Special Roadside Mixture grows in places where you thought only weeds would, and makes a really gaudy show in early Summer. After it has bloomed you cut it all down to the ground and the California poppies grow back and flower again. Grow catnip and turn your cats on—it grows easily from seed but you have to start the seedlings inside a small protective wire cage (which the plants will grow up through and out of) otherwise those dope-crazed cats rub out the young plants entirely.

\$1.50 from: Clyde Robin, P. O. Box 2091, Castro Valley, CA 94546.

[Suggested and reviewed by David Noton]



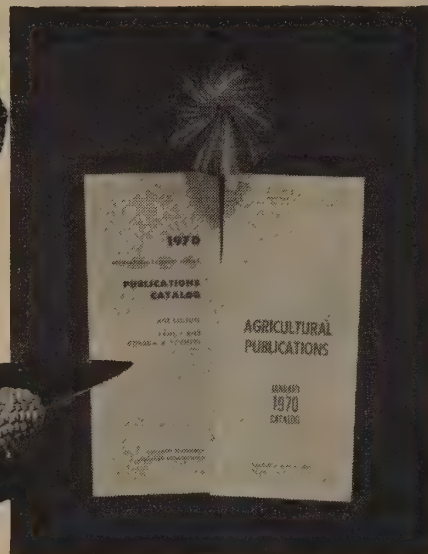
**Agricultural Publications & Services**

Free information on farming, livestock, forestry, soil science, etc. On general requests not more than one copy each of 10 publications is sent. Justification is required if you want more.

- Grass. (Yearbook.) \$2.00. \*YB 1948
- Grass for conservation in the southern Great Plains. 1955. F 2093
- Grass makes its own food for growth, for forage, for good land use and for soil conservation. 1960. AB 223
- Loans for forestry purposes. 1964. PA 624
- Loans for water development and soil conservation. 1965. PA 554
- Loans to cooperatives serving rural families with low incomes. 1965. PA 662
- Loans to family farmers for recreation enterprises. 1963. PA 563
- Loans to rural groups. 1963. PA 560
- Growing pumpkins and squashes. 1963. F 2086
- Growing table beets. 1965. L 360
- Growing the Jerusalem artichoke. 1959. L 116
- Growing watercress. 1959. L 448
- Lettuce and its production. 1962. AH 221



List of Available Publications \$1.40 from: U. S. Department of Agriculture, Washington, D. C. 02050



Agricultural Publications free

from: local county office or, by mail: Agricultural Publications, 207 University Hall, University of California, Berkeley, CA 94720

Each of the 50 states provides agricultural advice and services through county or area offices of their Agricultural Extension Service. These services are twofold:

1. Farm Advisors, extension agents, or county agents—depending on which state you live in, staff personnel under one of the above names are available for consultation or house calls in any area of agriculture or related fields such as turf care, home gardening, livestock, pest or rodent control and soil & water conservation to name a few. Most staffs usually also have a home economist.
2. Publications—a wide range of publications are also available through the AES or the U. S. Dept. of Agriculture. Some are for sale, but most are free. They are non-scientific & are written for the lay person. These publications cover a wide range of subjects of interest in commercial agriculture, home gardening or homemaking. Most states will have a catalog of their publications, such as the two shown from the University of Calif. You may either order publications by mail or pick them up directly at the county office. If you have specific questions, it is often best to pick up brochures at the county office so that you may consult the farm adviser at the same time. Agricultural Extension Offices are normally listed in the phone book under the county listings.

[Reviewed by Ed Johnson]

Sample publications from the Univ. of California:

- Leaf. AXT-116 A Septic Tank For the Farm
- Leaf. OSA-114 Simple Water Heating Systems
- Leaf. OSA-175 Control of Erosion on Banks and Slopes Around the Home
- Leaf. C-467 Small Earth Dams
- Leaf. OSA-221 Pruning and Training Young Fruit Trees

**Sanitation and Health**

The World Health Organization publishes three excellent books on water supply and waste systems.

**Excreta Disposal for Rural Areas and Small Communities** is 189 pages of privies, latrines, and septic tanks. It's a book for health officials, and gives good information on outhouse-type waste disposal, as well as water-carried methods (5 gallons each flush).

The most complete information we've seen on building a methane generator is in the book **Composting**, which devotes a whole chapter to the subject. Manure and shit are placed in a sealed tank, and the anaerobic decomposition produces methane gas, which can be used for heating, cooking, lighting, and to power small engines.

The book deals with the reclamation and recycling of wastes, explains the decomposition of organic matter, and stresses the importance of sanitation in the process.

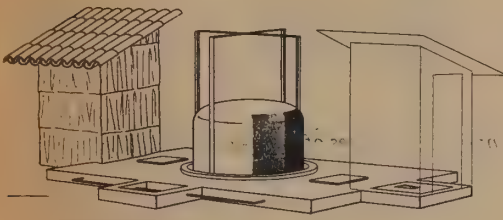
[Suggested by Craige Schensted]

A few years ago, I spent some time looking for a good book on water systems and couldn't find one. **Water Supply for Rural Areas and Small Communities** was just what I was looking for. Excellent information on wells, pumps, distribution systems, developed springs, and treatment.

The World Health Organization publishes this book and apparently directs it toward underdeveloped areas. Some of their reasons for not recommending certain methods and equipment for outlying areas seem to me to be applicable to developed areas. For instance, treatment is recommended only as a last resort because of the necessity for trained operators and often expensive equipment. They have found many cases of impure water in communities where treatment was supposedly taking place, but for one reason or another, wasn't happening. Often, no one worries about water pollution if the water is being treated.

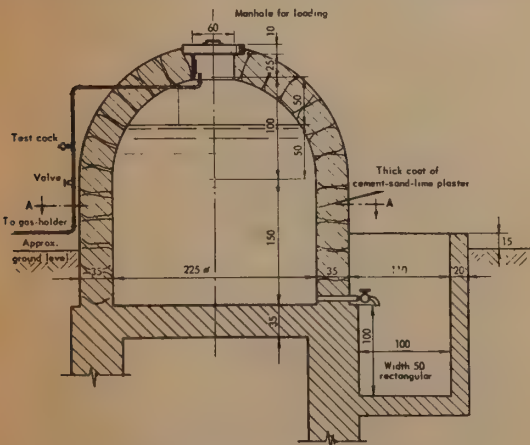
Many of the methods and equipment described are not much used in the U. S. There is very good information on low cost wells. Hand dug, drive point, and jetted. Also information on hand pumps.

[Reviewed by Fred Richardson]



SKETCH OF MANURE GAS PLANT WITH LATRINES

The use of anaerobic digestion of organic waste materials, such as farm manure, litter, garbage, and night-soil, accompanied by the recovery of methane fuel, has been an important development in rural sanitation during the past 10 to 15 years. This development is basically an extension of the anaerobic process for sludge digestion used in municipal sewage treatment to small digestion-tank installations on farms. These farm plants comprise one or more small digesters and a gas-holder. Manure and other wastes are placed in a tank which is sealed from atmospheric oxygen, and are permitted to digest anaerobically. The methane gas, which is produced during the anaerobic decomposition of the carbonaceous materials, is collected in the gas-holder for use as fuel for cooking, lighting, refrigeration, and heating, and for other domestic or agricultural purposes, such as providing power for small engines.



CROSS-SECTION OF INDIVIDUAL DIGESTER UNIT

Either single or multiple family installations can be provided, the choice depending on whether the single family has sufficient manure and other wastes to operate a unit. A minimum single family installation would normally include a digester tank of about 4-5 m<sup>3</sup> capacity and a gas-holder of at least 2 m<sup>3</sup> capacity. Two or more digesters are desirable so that there will not be an interruption of gas production and so that one tank may be loaded while the other is digesting. A single gas-holder can serve more than one digester unit. If two or more families living in adjacent compounds have not more than one farm animal each, it may be advantageous to combine their wastes in one digester installation from which the gas could be distributed to each dwelling.

Composting

Attention: Communes, extended families, groups, tribes, families, loners

**PEOPLE**

Subject: Health & Sanitation or Sanitation & Health

It is rapidly becoming clear that if we do not pay attention to some basic facts about health & its relation to sanitation we are going to have some problems. These problems will not/cannot & won't go away. Neither can we. There is no where to go. People thru out time/space have all ways had to deal with these problems.

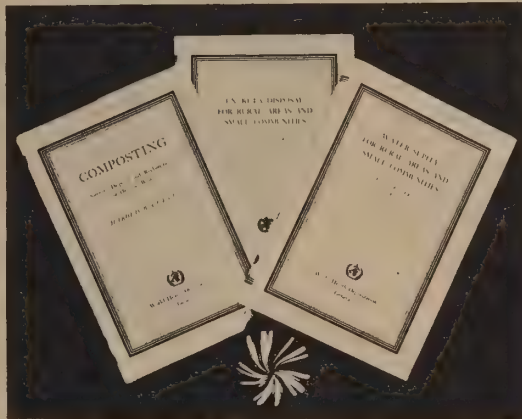
SO

People eat food which maintains body which rejects what it can't use as waste.

What to do with it OR How to get rid of it

The easiest way is to leave it where you laid it. Problem: someone else-has to cope. Don't pass your load on. We are all one. What's yours is mine. An other easy is to put it in the river/stream/ditch. You're still passing on your load. Remember water equals life. Who wants to drink water with yr. load in it. There is a good solution: put it in the ground. Give it back to mother nature; she can use it (Nitrogen, etc.).

[Part of a notice from Lama Foundation by Steve Durkee]



**★ Composting**

Harold B. Gotaas  
1956; 205 pp.

\$5.00 postpaid

**★ Excreta Disposal for Rural Areas and Small Communities**

E. G. Wagner & J. N. Lanoix  
1958; 187 pp.

\$5.00 postpaid

**★ Water Supply for Rural Areas and Small Communities**

E. G. Wagner & J. N. Lanoix  
1959; 340 pp.

\$6.75 postpaid

all three from:  
The American Public Health Association  
1740 Broadway  
New York, N. Y. 10019

or WHOLE EARTH CATALOG

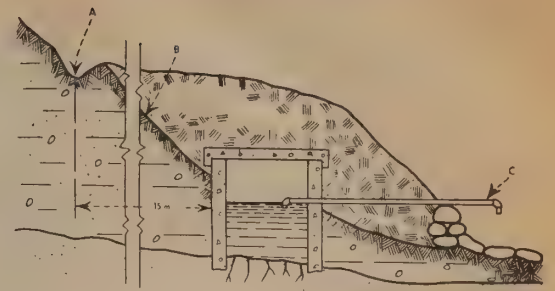
A reasonably safe way for a villager to prepare excreta for use as fertilizer is for him to compost it in a privy pit. After the required period of composting, the pit can be emptied, thus eliminating the handling of the raw excreta. . . .

1. Dig a pit of required size, the bottom of which should always be above ground-water level.
2. Before the slab is placed, cover the bottom 50 cm (20 in.) of the pit with grass cuttings, fine leaves, garbage, paper, etc.; but allow no rubbish such as metal cans, glass bottles, or similar materials to be deposited therein.
3. Place slab, and complete superstructure, keeping in mind that they will both be moved periodically to another site.
4. In addition to depositing human excrement, throw the daily garbage into the pit, along with cow, horse, sheep, chicken, and pig manure, as well as urine-soaked earth or straw. The latter materials are important, as urine is rich in nitrogen, an essential plant nutrient.
5. About once a week throw a few kilograms of grass clippings and fine-texture leaves into the pit. After some experimentation, one can arrive at a pit mixture which will provide a good fertilizer.
6. When the pit's contents reach a level of 50 cm (20 in.) below ground, a new pit is dug 1.50-2 m (5-6.5 ft) away (more if desired), and the superstructure and slab are moved over it. The first pit is leveled, finally, with 15 cm (6 in.) of grass clippings and leaves, and the top 35 cm (14 in.) with well-tamped earth.
7. When the second pit is filled as indicated above, the first pit is uncovered and the compost removed. It should be stable, and will provide a good fertilizer which can be applied immediately to the fields or stored. . . .

Before applying or recommending this method in a rural area where it is not familiar, it is desirable to try it first on a pilot scale under adequate control in order to determine the proper operating schedule and materials suitable and available in the area under consideration. The collaboration of agricultural officials and of local leaders among the farmers of the area is necessary.

Excreta Disposal

Fig. 33. PROPERLY PROTECTED SPRING (I)



A Protective drainage ditch to keep drainage water a safe distance from spring  
B Original slope and ground line  
C Screened outlet pipe: can discharge freely or be piped to village or residence  
Springs can offer an economical and safe source of water. A thorough search should be made for signs of ground-water outcropping. Springs that can be piped to the user by gravity offer an excellent solution. Rainfall variation may influence the yield, so dry-weather flow should be checked.

Hand-dug wells naturally have certain limitations. While successful wells have been sunk in special circumstances to depths of over 120 m (400 ft), half that distance is usually considered the limit of practical sinking.

The first consideration, then, in designing a well is its diameter; neglecting for the moment large-diameter wells built for special purposes, the size of a completed well represents a compromise between economic and practical considerations. It has been found that the cost of a lined well varies almost exactly with its diameter, taking into account the increased thickness of lining necessary in a larger well. The minimum diameter is limited by the room available for a man or men to work; experiments show that a diameter of about 1 m (3 1/4 ft) is necessary for one man and about 1.3 m (4 1/4 ft) for two men. It has been found that the efficiency of two sinkers working together is more than twice that of a single man, and consequently a 1.3-m (4 1/4-ft) diameter is a convenient standard size. Other considerations affecting this decision are the greater natural ventilation of the larger hole, the more efficient size of the kibles (hoisting buckets) and other equipment which can be used in it, the additional room for concreting operations and insertion of caisson rings, and the possibility of using orange-peel grabs if desired. On the other hand, an increase in diameter beyond 1.3 m (4 1/4 ft) does not appear to give any great constructional advantages.

The quantity of water from a spring can very often be substantially increased by digging out the area around the spring down to an impervious layer to remove silt, decomposed rock, and other rock fragments and mineral matter (usually calcium carbonate) sometimes deposited by the emerging ground water. In doing this, particular care should be taken, especially in fissured limestone areas, to avoid disturbing underground formations to the extent that the spring is deflected in another direction or into other fissures.

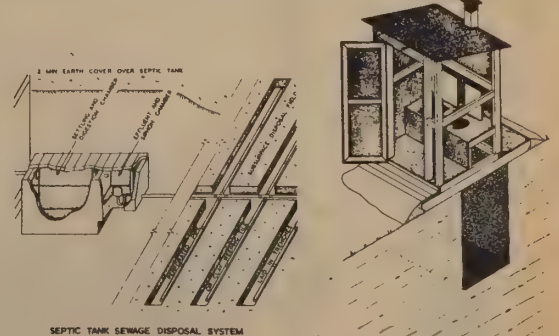
Energy which Nature has provided, such as the wind, should be taken advantage of whenever possible. In many Northern European and Western Hemisphere countries, wind energy is used for pumping water for farms, homes, and small communities. This method is excellent for obtaining a steady flow of water from a well at a very low cost.

For proper operation, the following conditions must be met:

- (1) winds of more than 8 km per hour during at least 60% of the time;
- (2) available windmill equipment;
- (3) wells that can be pumped for many hours' duration each day;
- (4) storage capacity of three days' supply (or more) to take advantage of long pumping periods and to provide for calm periods when there is no wind;
- (5) clear sweep of wind to the windmill. This can be obtained by the use of a tower to raise the windmill 4.5-6 m (15-20 ft) or more above the surrounding obstacles.

Water Supply

The Canadian Department of National Health and Welfare puts out a free simple book on sanitation, intended for remote northern areas. It has good clear diagrams of septic tanks, privies, and chemical toilets. There is also information on heating, lighting, water supply, and sanitation. Funky.



**★ Sanitation Manual for Isolated Regions**

1967; 64 pp.

free

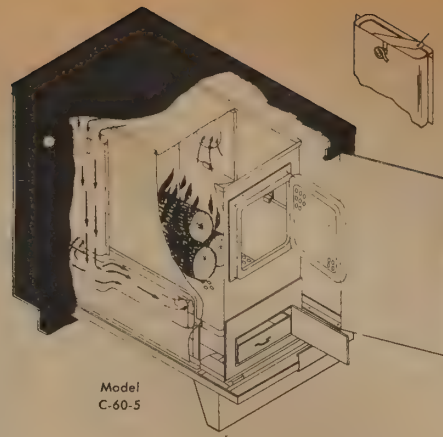
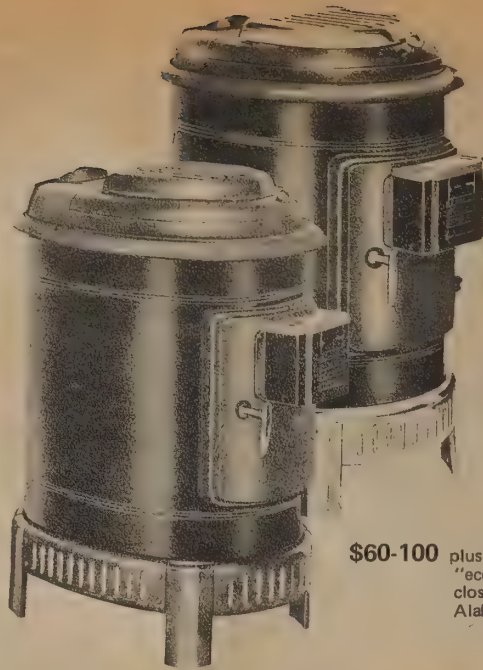
from:  
Department of National Health and Welfare  
Ottawa, Ontario, CANADA

**Ashley Thermostatic Wood Burning Circulator**

This is a unique wood burning stove. It has a thermostat which controls air intake, thereby burns much less wood than an ordinary stove. Will go up to 12 hours without refueling. In cold climates people build just one fire a season, adding wood 2-3 times a day. It takes any type wood, up to two feet long.

One kept us warm when we lived in a chicken coop with cold concrete floors and now an Ashley is the only heat we have in a 900 sq. ft. house with high ceilings.

The firebox is airtight and there is a lever on the air intake you can set for the desired temperature. A temperature-sensitive device (bi-metal helix coil) then automatically regulates air flow to keep heat at the setting you've chosen.



Model C-60-5

Firebox and ash doors are airtight. The only air admitted to primary combustion area of firebox enters at top (2) of downdraft stack, is preheated as it is drawn down stack, then is distributed evenly through air intake manifold (3) to bottom of firebox along its entire length, assuring even, more complete combustion, and eliminating hot spots (which also assures longer life of all firebox components). Thermostatic control (1) consists of damper (A) in top of downdraft stack activated by a bi-metal helix coil (B) which is temperature sensitive, opening and closing damper just enough to admit precisely the amount of combustion air necessary to maintain the level of comfort you have selected.

Please note that the Ashley introduces combustion air at FRONT of firebox (not at one end) so flow to flue is ACROSS the fire - not across one end or corner of it, as in other heaters. This promotes even, efficient burning along entire length of firebox.

\$60-100 plus shipping for different sizes of "economy line" (Prices lower the closer you are to the factory in Alabama)

from Ashley Automatic Heater Co. P.O. Box 730 Sheffield, Ala. 35660

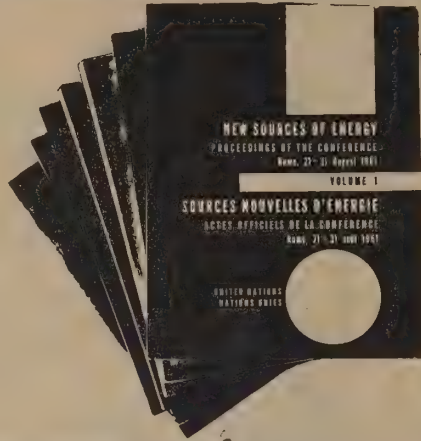
OR Ashley Spark Distributors, Inc. 710 N.W. 14th Ave. Portland, Ore. 97209 or WHOLE EARTH CATALOG

**New Sources of Energy**

Well, they aren't new sources; they're the oldest: sun, wind, earth heat (geothermal). But OK, to us they're new, and indeed they're exciting. The prospect of truly self-contained habitable energy systems is romantic country. There you are with your friends on your hill putting sun and wind through useful changes that are not only apparent to you but an integral part of your living.

Michael Rosenthal first tipped us to this remarkable set of U.N. documents which arose from a conference in Rome in 1961. If you're deeply into solar or wind energy there's lots of stuff here unfindable elsewhere. Japanese solar pillows—simple elegant water heaters up on the roofs, thoroughly described in Vol. 5. Traditional Dutch drainage windmills with suggested adaptations for other early-technology applications in Vol. 7. And so on. A trove.

[Suggested by Michael Rosenthal]



Proceedings of the United Nations Conference on New Sources of Energy

Vol. 1	General Sessions	—	\$2.50
Vol. 2	Geothermal I	—	\$5.00
Vol. 3	Geothermal II	—	\$5.50
Vol. 4	Solar Energy I	—	\$7.50
Vol. 5	Solar Energy II	—	\$4.50
Vol. 6	Solar Energy III	—	\$5.00
Vol. 7	Wind Power	—	\$3.50

from: Sales Section, United Nations, New York, N. Y. 10017

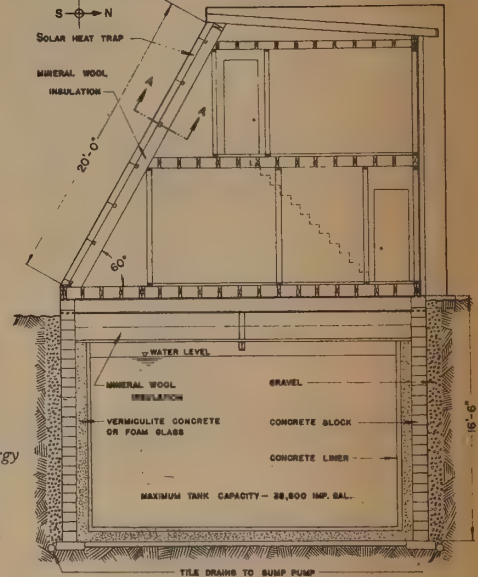


Figure 1. Cross-section of solar heated house

A two-bladed turbine of 3.6 metres diameter can equal the human output of power with moderate winds of 4 1/2 metres per second and is well suited to drive the type of centrifugal pump shown in figure 5. Based on one of the oldest registered Dutch patents, this comprises a rotating bucket lifting the water through a hole in the bottom by centrifugal force. At sufficient revolutions per second, water is ejected from the bucket at the top. Every particle of fluid gets as much static energy during lifting as it obtains energy of velocity, so that the ideal efficiency is limited to 50 percent.

**Windmills**

Even though the Sears Catalog no longer lists them, windmills are still manufactured, and still the cheapest pumping power available. Aermotor claims to have 800,000 windmills in operation, and will also supply basic information on submersibles, jets, shallow well pumps and others. Dempster Industries also makes windmills, as well as hand-operated cistern pumps.

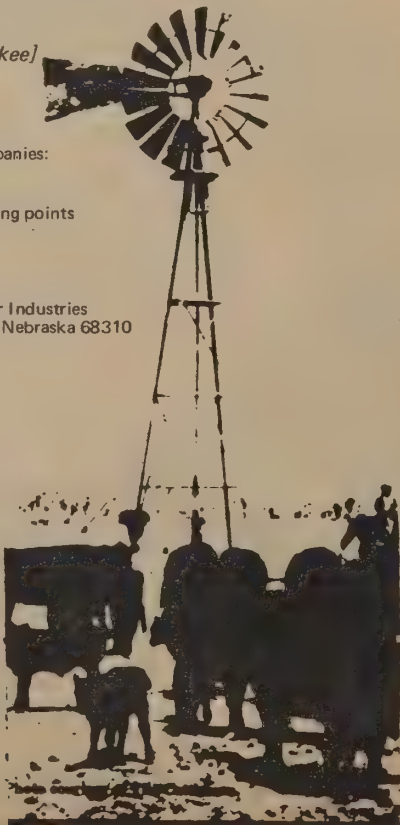
[Suggested by Steve Durkee]

Prices are about the same for both companies:

Size	Price
6'	\$215.00 F.O.B. shipping points
8'	295.00
10'	465.00

Free literature from:  
Aermotor  
2500 W. Roosevelt Road  
Chicago, Ill. 60608

Dempster Industries  
Beatrice, Nebraska 68310



38

Model 2 Pitcher Spout

433.50

**Solar Stills**

Solar stills purify seawater, hard or brackish water using heat from the sun. Sunwater Co. has done extensive work in Baja California, in one case providing drinking water for a home 200 miles from the nearest source of fresh water.

The Solarstil is a small unit, primarily designed as a boat water purifier.

Sunwater

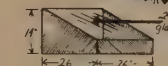
Solarstil

It consists of one or more shallow, insulated, glass-covered pans. A feed inlet admits water into one end of each pan, while an outlet tube at the other end maintains a shallow water level, and permits some overflow each night to flush out salts. Sunlight passes through the glass cover and warms the water in the pan. Vapor rises, condenses on the glass cover, and runs down into a collection trough.

from: Sunwater Company  
10404 San Diego Mission Road  
San Diego, CA 92129



**NOW! YOU CAN PRODUCE DAILY A HALF GALLON OF FRESH WATER RIGHT ON BOARD WITH SOLARSTIL**



The SOLARSTIL was developed in cooperation with University of California Salt Water Conversion Laboratory. It produces the freshest, purest water from salt water, brackish water or sewage, under any climatic condition.

DATE	TEMP	CLAR	CONDENSED
July 6	76°F	CLEAR	3/4
Sept 11	63°F	PALELY CLOUDY	1/3
Sept 30	63°F	PALELY CLOUDY	1/3
Jan 3	53°F	CLOUDY	1/3

- \* CONVERTS SALT WATER TO FRESH WATER!
- \* LOW COST DE-SALINIZATION!
- \* NEEDS ONLY THE SUN'S ENERGY!
- \* COSTS NOTHING AFTER INITIAL INVESTMENT!
- \* NO MOVING PARTS OR MACHINERY!
- \* PRODUCES 100% PURE SALT AND MINERAL-FREE WATER!!

\* Every boater, camper, contractor should have one!  
\* No survival kit complete without one!

MANUFACTURED AND DISTRIBUTED BY  
**PELAFOAM, inc.**  
432 So First St., Richmond, Calif 94804/phone (415)233-5929

## The Climate Near the Ground

This appears to be the definitive text on microclimatology: the climatic conditions within 6 feet or so of the earth's surface. The climate in this narrow stratum differs significantly from the overall climate, and the book analyzes, in some detail, the relation of soil, water, vegetation, topography, man and animals to the microclimate.

[Suggested by Steve Baer]

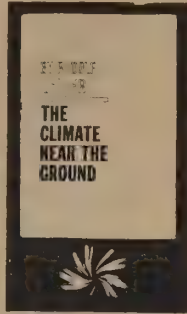
### The Climate Near the Ground

Rudolf Geiger  
1966; 611 pp.

\$11.50 postpaid

from:  
Harvard University Press  
79 Garden Street  
Cambridge, Mass. 02138

or WHOLE EARTH CATALOG



The overturning on a grand scale of superheated layers of air close to the ground is an exceptional occurrence, accompanied by dust devils and sand devils. The upward swirling of the air drags with it dust, sand, leaves, twigs, paper, and so forth, and therefore becomes visible. Wandering off, usually slowly, it sucks other overheated layers into its orbit and so maintains itself. In arid zones of the earth, dust devils are a regular feature of the hot hours of the afternoon.

As a last example of the small-scale effect of sunshine, we shall take the compass plants, which have been studied in detail by H. Schanderl. These plants have an inherited ability to place their leaves in any desired plane by rotating them. The wild lettuce (*Lactuca scariola*) protects itself against the strong reflected radiation from the wall in front of which it is growing by placing its leaves in the "transverse compass position." All leaves are so positioned as to receive a minimum of reflected radiation.

Men are also forever creating new kinds of microclimate. Every building constructed displaces the original climate of its site creating a warm, sunny, and dry climate with a southern exposure on the one hand, and a shady, cold, and damp northern climate on the other. Industrial works are shrouded with thick haze which alters the whole radiation economy.

## Rural Industry

This guide catalogs several hundred tools, all manufactured or distributed by CeCoCo (Central Commercial Co.), and all applicable to what they term "cottage industry". In quaint English translation CeCoCo editors spell out the small scale cottage industry concept:

Small-Scale Cottage Industry belies its name by providing a large proportion of all industrial employment and accounting for the great majority of all industrial establishments. However, it is often asked whether such industry can survive and perform a useful function in the highly industrialized regions of the world, and what its place should be in the economic plans of developing countries. Analysis of the exact nature of the problems facing small-scale industry and of the way in which it is adapting itself to meet them. Far from being moribund, small-scale industry is a dynamic force with a valuable role to play in the modern economy of both highly industrialized regions and developing countries.

In almost all developing countries in the world, there are determined efforts to achieve material economic progress and emphasis is being carried out to induce a shift in the structural pattern of the economy from one basically agricultural to one that is agro-industrial in character to assure an increasing level of national production within the framework of economic and social stability which does not require much of foreign exchange to insure its growth. That is very important to select such industries which do not need foreign exchange in obtaining raw materials.

The high cost of living in the urban areas, nevertheless reduces the workers' real income. Money incomes in the rural areas is lower than those in cities but the cost of living is equally lower compared with urban living. The full development of cottage industry in the rural areas, can provide additional forms of incomes on the part of rural families, which could reduce the influx of population to cities in quest for employment. This ultimately would minimize social problem in urban centers.

The tools listed in this catalog are absolutely fascinating. One spends hours studying specifications, diagrams and photos of CeCoCo "making" machines. (In the Wire Products section, for instance, one finds Paper Pin Making Machine, Staple Pin Making Machine, Hair Pin Making Machine, Safety Pin Making Machine, Snap Button Making Machine, Nail Making Machine, Barbed Wire Making Machine, Chain Making Machine, Zip-Fastener Making Machine, Etc.)

CeCoCo was established in 1916, but refers to an association with a manufacturer of animal-drawn farming implements since 1863. They maintain an exhibition and demonstration farm center at Ibaraki. On the back cover of their guide book one sees photos of dignitaries from all countries of the world visiting CeCoCo center.

[Suggested and reviewed by Ken Kern]

The risk of bringing about a deterioration of climate by human intervention depends on the type of climate, and is greatest where plant life is fighting for its existence because of a shortage of water or heat. It is possible for very limited intervention into the water balance to produce far-reaching results in the bordering regions of arid zones. Great "regeneration areas" have been laid out around the town of Broken Hill in Australia, the great mining center for silver, lead, and zinc, situated in the middle of arid desert land. Wise foresight indicating that the original sparse vegetation in the area would have to be removed by the inhabitants, a comparatively luxuriant type of vegetation was grown in surrounding fenced-in and irrigated areas, improving the climate of the town, providing recreation spaces, and offering protection against dust storms in summer.

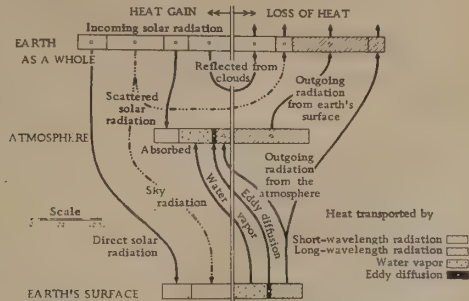
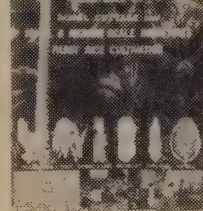


Fig. 117. Annual balance of the planet Earth, of the atmosphere, and of the earth's surface.

Irrigation has a double purpose: to further the optimum growth of plants by giving them the supplies of water they need, and to increase air humidity during the hottest hours of the day in a dry period; this has the effect of reducing, as far as possible, the passive transpiration of the plant, which is its method of protecting itself against high temperatures, but which makes unnecessary demands on energy. The first of these aims is achieved by watering at night, the second by watering during the day with as fine a spray as possible. The period of watering, its duration, the quantity and temperature of the water must all be adjusted to suit the type and age of the fruit to be protected, and the weather at the time. Irrigation techniques must therefore go hand in hand with microclimatology.

The microclimate of greenhouses is also influenced by the way they are built and used. Those built in an E-W direction have been shown to be superior to those lying N-S in the winter and in the transitional seasons of European climate. Steep glass roofs are also better in winter than flat ones. The position and number of the parts of the framework that cast shadows are also of importance. The gardening glass, with its ability to scatter light, is preferable to window glass, since it reduces the sharp contrast of light and shadow from the roof struts. Double glazing should be considered for purposes of heat insulation in winter.

### Guide Book for Rural Cottage and Small and Medium Scale Industries



158 pp.  
\$7.00 seairmail  
\$10.00 airmail

from:  
CeCoCo  
Ibaraki City  
Osaka Pref.  
Japan

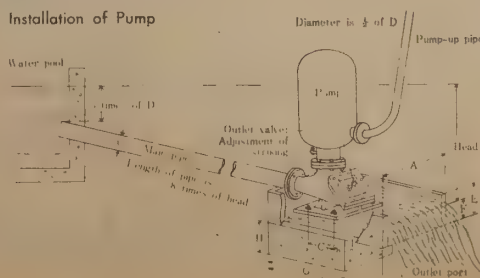
### "CECOCO" MOTORLESS HYDRO-HI-LIFT PUMP

This particular pump will raise water by the power caused by means of declivity of water-flow-up to the height 30 times of water head and operates automatically without any motive power such as gasoline, other fuel oils and electricity and no attendance for operation is necessary. It is extensively used in Japan for water supply at home, and field for irrigation, spraying and water reservoir on the top of mountain and hill.

**PRINCIPLE:** In order to raise the water automatically by multiplied power of (1) the water hammer pressure leading pipe installed with a slight inclination and (2) the specific gravity with effectivity of the air in the delivery pipe taken in by the negative pressure (Vacuum) caused by the reactional flow of the water hammer pressure.

**HOW TO INSTALL:** Although it is motorless, it has to have a flow of water as the source of power to operate the pump and the "head" is absolutely necessary. During operation, proportionate amount of water to be delivered, therefore it must have drainage. The gist of such parts are:

- (1) Head 0.5-4 meter for small type and 1-8 meter for large type is considered to be the best for practical use.
- (2) Leading Water Pipe: The length of leading pipe is, for practical use, approximately 8 times of the Water Head and the pipe must be kept straight. It tends to be hard, therefore it is advisable to use steel pipe.
- (3) Delivery Pipe: The size of the delivery pipe is half in diameter of the leading pipe.
- (4) Drain Well: In order to cause counter current at the moment Drain Valve opens, it is necessary to install Drain Well. Also, in order to take the air, make the water level of drain well equal to red line marked on discharging mouth.
- (5) Discharging Water: It may be drained out into well or culvert or any other suitable equipment.



## Village Technology

VITA (Volunteers for International Technical Assistance) is the only source of specific practical information on small-group technology that we've found. But what a source. They have prepared the "Village Technology Handbook" for overseas use by the U. S. Agency for International Development that is ideal for rural intentional communities.

VITA has a series of specific papers that cost very little (e.g. 30¢). Titles include "Low Cost Development of Small Water-Power Sites," "How to Salt Fish," "Making Building Blocks with CINVA-Ram," "Solar Cooker Construction Manual."

VITA also has a domestic program called VITA-USA that provides free technical assistance to individuals and groups working in or with low-income communities and individuals.

[Suggested and Reviewed by Keith R. Prior]

### Village Technology Handbook

1970; 400 pp.

\$5.95 postpaid

from:  
VITA  
College Campus  
Schenectady, N. Y. 12308



Who may apply for VITA aid

Requests for assistance are encouraged from any individual, or from any private, community, or government sponsored, anti-poverty enterprise. Inquiries are welcome from community-action agencies, neighborhood councils, members of VISTA, small businessmen, model cities programs, and other self-help developments, urban or rural, public or private.

How to Apply

Please follow these directions in your letter of request for aid,

1. Describe your project in detail. Include rough sketches when helpful.
2. List any special requirements, or limitations that apply.
3. Indicate deadline for action; also urgency of project.
4. If project requires an on-the-spot consultation, please add reasons; also estimated days required, and most convenient dates for visit.
5. Describe results and benefits expected.

Be sure your letter shows complete address, zip code and telephone number. Indicate your affiliation with an agency or business, if any.

Mail your request to:

VITA-USA  
College Campus  
Schenectady, N. Y. 12308  
Telephone: 518-372-5696

## The Construction Bargaineer

The Construction Bargaineer lists surplus and used contractor's equipment. Here is where you can get used military trucks, bulldozers, tires, cable, wire, and just about anything you can imagine a contractor using. The prices seem good to me. Personally, I'd beware of tying up a lot of money in equipment unless you need (rather than want) it, though there are many things in this catalog that could be useful to a commune.

[Reviewed by J. Baldwin]

### Catalog

\$4.00/year (24 issues)

from:  
The Construction Bargaineer  
P. O. Box 1061  
St. Paul, Minn. 55105

### WIRE ROPE SNATCH BLOCKS

Block Size	Sale Price
4" .....	\$ 9.75
6" .....	14.50
8" .....	24.50
10" .....	32.90

### EXCELLENT! HYDRAULIC Hi-Lift

• 4 Man Platform

• 5 Ton-6x6

• 60' Reach

\$12,500

### 3/8" LOAD BINDERS

NEW! - Made in U.S.A.

16,200 lb. Cap. - Weight: 7 lbs. Each

\$5.95 Ea. 6 For \$34.00

ARMORED CAR  
Armor Plate - 4x4  
Bullet Proof

\$750.00



39

# Sundry Materials

We're going to attempt an information exchange on materials for builders, designers and dreamers. The fall-out from the space program is finally getting close to our fingertips; we can help each other with access information. So let us know if you've anything to add.

## Foam Experiments

Plastic foams are entering the building industry. Shot from guns, poured into molds, or vacuum formed, foam is produced by mixing two liquids which expand to form the cellular structure.

Recent technological advances with urethane foams in application, fabrication, and product control have led to the current wave of experimentation. Designers such as Douglas Deeds and Felix Drury are working on structural applications of foam, hoping to achieve free-form buildings.

Equipment for spraying is expensive: a foam rig is \$1,500-7,000, and foam itself runs about 10¢ per board foot (1" x 12", one inch thick) if you're doing your own application, and buying bulk materials. Its biggest applications now are in roofing and as insulation.

This book describes a government sponsored project to determine the potential use of foam for housing in underdeveloped areas. It may well be that building codes, unions, lumber lobby interests, etc., will hold up foam development in the U. S., and that the real advances will be made in other countries. Details are given here on several years of testing various structural applications of polystyrene and polyurethane foams. There are pictures, construction details, drawings, graphs and charts on test results. Since this work was done several years ago, recent improvements in foams may have superceded some of the conclusions.

[Suggested by Ron Brooks & Ron Swenson]

Although techniques have played a major role in the research program, this report is intended to be primarily a discussion of ideas rather than techniques.

It is clearly to the interest of the plastic industry in the United States to enter the housing field on such a global scale. As the section on marketing aspects brings out, the industry is caught in a squeeze between steadily increasing surplus production capacities and a falling price curve for the basic chemicals. Housing looms as a most attractive mass market—chemicals would be bought by the ton, not just by the pound—but attempts to penetrate the housing field in the United States have been frustrated because of local building code restrictions and the opposition of established interests in the conventional way of building. In entering the housing field, the plastics producers will find better opportunities for success if initially they turn to the emerging countries where the building codes are less restrictive (if indeed any exist at all) and where there is consequently more freedom to develop a new kind of building industry.

**Foam inflation:** a double walled bag, tailored in such a way that when foam components are placed in the bag they expand and inflate the structures. These bags can be made from polypropylene and milar films, tightly woven nylon fabrics, vinyl-impregnated fabrics...

All the shells were coated with liquid elastomer before being exposed to the weather. Two approaches were used. One was the use of two coats system, neoprene and Hypalon, and the other the use of two coats of Hypalon.

The shells were moved to the site by rolling each one like a giant wheel.

The shell was suspended and loaded with 20 lb sand bags to simulate uniform loading.

Petroleum is becoming increasingly the raw material for plastics intermediates.



Office room transformed into grotto by designer Douglas Deeds, San Diego. Deeds built foam up in layers, as coils of clay are used to form a pot.

Closed cell foam plastics offer excellent thermal insulation (with K-factors usually varying from 0.12 to 0.30) low water absorption and low moisture permeability.

Plastic materials, particularly the foam plastics, unquestionably have a high potential for housing use in the developing areas of the world.

Spray techniques have good possibilities for the construction of total structures using either air-inflated structures or lightweight armatures as form work; the present crude appearance of sprayed foam products can be overcome by mechanizing the spray gun or by using extremely skilled operators.

**Vacuum forming:** ABS foam, marketed by U.S. Rubber Co. under the name "Expanded Royalite"...in sheet form is clamped in a stationary frame, heated, and then drawn into a female mold by vacuum....

The fewer the joints, the fewer are the problems the structure will have to face...lightness in structures can lead to some special problems of anchorage.

The cellular plastics admittedly have certain technical limitations. For instance, they have a low moduli of elasticity and high creep characteristics. These properties definitely restrict the way they can be formed or shaped, if they are to be used as independent structural materials.

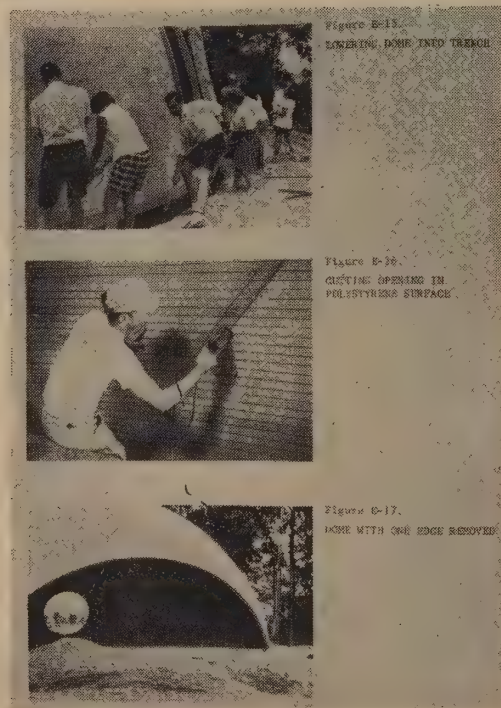
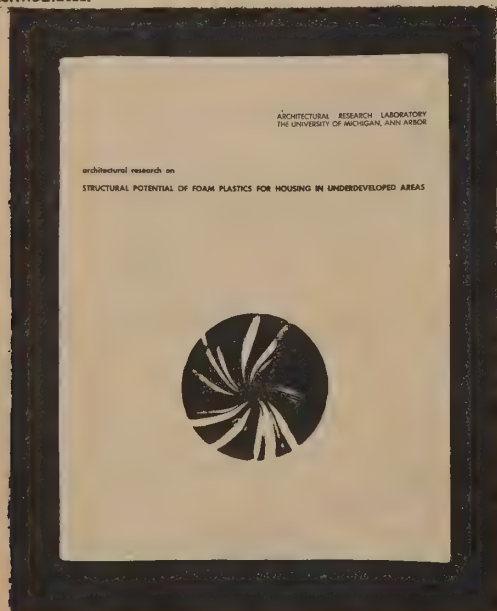


Figure 8-15. POURING CONCRETE INTO FORM.

Figure 8-16. CUTTING OPENING IN POLYSTYRENE SURFACE.

Figure 8-17. WORK WITH ONE EDGE REMOVED.



Architectural Research on Structural Potential of Foam Plastics for Housing in Underdeveloped Areas  
Architectural Research Lab.  
1966; 224 pp.

\$5.00 plus postage from:  
Publication Distribution Service  
University of Michigan  
615 East University  
Ann Arbor, Michigan 48106

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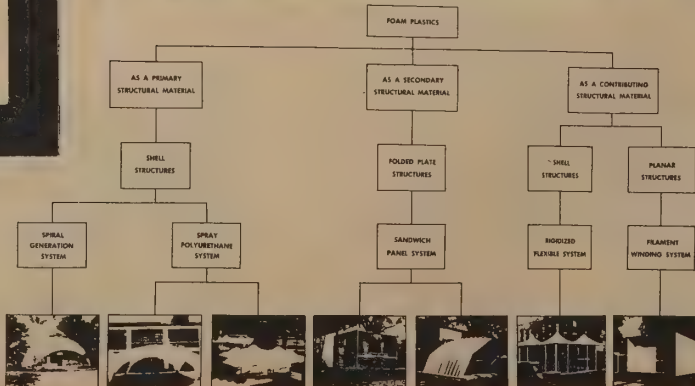
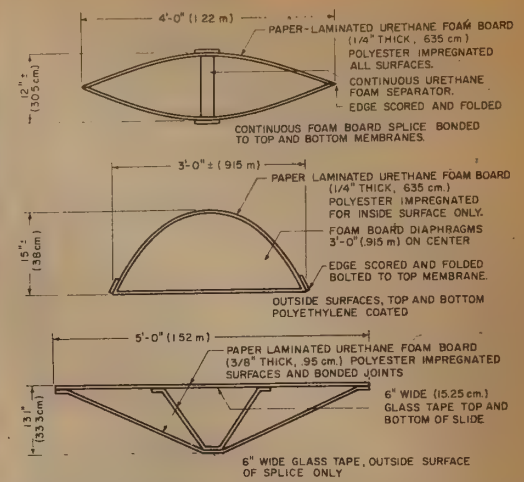


Figure P-2. INITIAL TEST STRUCTURES UTILIZING PAPER-LAMINATED POLYURETHANE FOAM BOARD

NOTE PAPER-LAMINATED FOAM BOARD IS 2.5 LB/FT<sup>3</sup> (40 kg/m<sup>3</sup>)  
NOMINAL CORE DENSITY 69 LB KRAFT FIBER  
LINER BOARD SKINS



## Other Foam Information

### Home Foam

Rigid fire retardant 2 pound polyurethane foam can be poured by mixing two liquids. Best source for low cost foam and good advice on proper technique:

Lloyd Fox  
Douglas & Sturgess  
730 Bryant Street  
San Francisco, CA 94103

### Foam Guns

Guns & pumping systems for epoxy, urethane foam, elastomers and silicones. Information from:



W. E. Mushet Co.  
725 Bryant Street  
San Francisco, CA 94107

FP-10 \$57.75  
10 Cubic Feet, 120 Board Feet  
—Consists of:  
1—Twin Pak carton container  
2—Pressurized Component  
Tanks (A and B)  
6—Mixer Nozzles (3 rd, 3 fan)  
2—5' Lengths 3/4" I.D. Hose  
w/1/4" 20 Connections  
1—Gun type dispenser w/Valve  
Protectors  
1 Carton—Ship. Wt. 27 lbs.

Low-cost, small-job home foam dispensers.

### Foam Design

Deeds Design Associates  
1706 West Arbor Drive  
San Diego, CA 92103

### Misc. Foam Literature

A pile of current and excellent information on foam: The John A. Hartsack Papers, and Olin bulletins GD1 005, 008, 009, 011, 012A, 013A, and 015.

from:  
Richard W. Gaetjen  
Technical Sales Representative  
Olin Plastics  
Benicia Industrial Park  
P. O. Box 847  
Benicia, CA 94510

Specific Foam systems applications, formulations and techniques:

William R. White  
Flintkote Company  
Sealzit Division  
4075 Main Street  
Riverside, CA 92501

Free Brochure, "The Use of Rigid Urethane Foam as a Structural Insulant"

from:  
Mobay Chemical Co.  
Penn Lincoln Parkway West  
Pittsburgh, PA 15205  
Attn: Mr. Byron E. Beard

General foam info. from:

Yellow pages, your phonebook for local foam applicators.

## Fiberglass

Portable spray-up systems for spraying fiberglass. Information from:

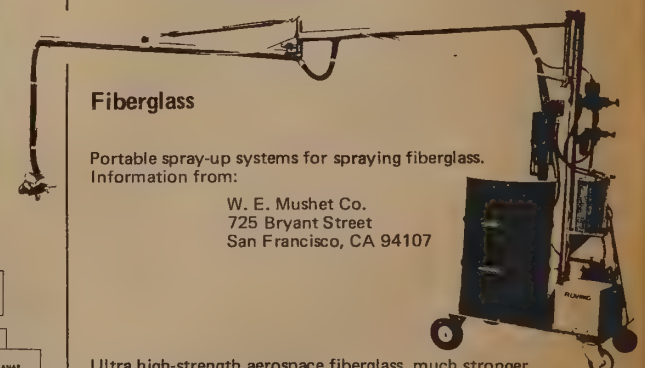
W. E. Mushet Co.  
725 Bryant Street  
San Francisco, CA 94107

Ultra high-strength aerospace fiberglass, much stronger than conventional fiberglass

Technical Bulletin Ferro S-1014 from:  
Ferro Fiberglass Corp.  
Fiber Glass Road  
Nashville, Tenn. 37211

Boat builders' fiberglass products—epoxy putty, glass tape, resin, etc. from:

Glass Plastics Marine  
200 Sayre Street  
Rockford, Ill. 61101



## Concrete

### Dry Pour Concrete

Syntercrete is a new process where concrete is mixed in forms while dry, water added later. Result is good mold definition and high strength, due to low amount of water. Information from:

Syntercrete Corporation  
1300 Sansome Street  
San Francisco, CA 94111

## Membranes

Weather proof mylar, with ultraviolet resistant. Said to last two to five years outside exposure. About 19¢ per square foot.

from:  
Sears farm catalog

"Spooky Mylar"—aluminized on one surface. If used as a window you see your reflection and at the same time the trees outside. Not ultraviolet resistant.

from:  
Transparent Products Corp.  
P. O. Box 15924  
Los Angeles, CA 90015  
Attn.: A. Robert Suba

Clear Vinyl, about 6¢/sq. ft.

from:  
Wards Farm Catalog  
(Nearest Wards Branch)

Brochure "Dial-A-Spec Coated Fabrics"

from:  
Flexifirm Products  
2300 North Chico Avenue  
El Monte, CA 91733

Coated fabrics (ripstop nylon, vinyl coated fiberglass, silicone rubber coated dacron, etc.) Brochure, "Coated Fabrics for Industry"

from:  
3M Company  
Film & Allied Products Division  
1601 South Shamrock Avenue  
Monrovia, CA 91016

Coated Nylon Fabrics. Brochures "Protective Cover Fabrics" and "Engineered Fabrics for Industry"

from:  
West Point Pepperell  
Industrial Fabrics Division  
111 West 40th Street  
New York, N. Y. 10018

Parachutes: 24 ft. diameter canopies, white and in good condition. \$22.50 plus postage and tax

from:  
Security Parachute Co.  
P. O. Box 3096  
San Leandro, CA 94578

Acetate, Rayon, Nylon, Saran, Chromspun etc., info. List of manufacturers and basic principles of manufacturing and use. Brochures, "Man-Made Fiber Fact Book" and "Guide to Man-Made Fibers"

from:  
Man-Made Fiber Producers Association  
350 Fifth Avenue  
New York, N. Y. 10001

## Plastics

Plastic sheets, thermopresses, rods, tubes for model making. Catalog from:

Cope Plastics  
2222 West Delmar Avenue  
Godfrey, Ill. 62035

Glass reinforced thermoplastic sheets (Azel) that can be formed on conventional metal stamping equipment. Fact sheet from:

Gary Wagerson  
G. R. T. L. Co.  
No. 1 Gateway Center  
Pittsburgh, PA 15222

Acrylic Plastic sheet, resistant to ultraviolet, can be adhered with heat and pressure alone. Technical data from:

Rohm & Haas Co.  
Independence Mall West  
Philadelphia, PA 19015

or

2150 Franklin Street  
Oakland, CA 94612  
Attn.: Keith P. Mitchell, Plastics Dept.

Plexiglas information. Beautiful color brochures, as well as data on plexiglas sheet forming. Solar control series plexiglas is produced in five densities. From:

Rohm & Haas (see above)

Korad acrylic film, can be used to surface metals, plywood, etc. Information from:

Rohm & Haas (see above)

Rigid Geon vinyl is a hard, tough thermoplastic material. Self-extinguishing, immune to corrosion, can be used for rods, extrusions, sheets, molded shapes. Cover of the brochure B.F. Goodrich sends is of the material. Rigid vinyl sheets can be heat welded. Brochure on Rigid (& Flexible) Geon Vinyl from:

B. F. Goodrich Chemical Co.  
3135 Euclid Avenue  
Cleveland, Ohio 44115

Teflon, plexiglas, fiberglass, mylar, vinyl, foam guns, etc. A complete catalog of plastic materials and prices.

from:  
Plasticraft, Inc.  
2800 North Speer  
Denver, Colo. 80211

Factory seconds of clear acrylic; complete line of plastics. Abe makes deals.

from:  
Abe Schuster Fiberglass  
6211 Telegraph Avenue  
Oakland, CA 94609

Tedlar-coated Fiberglass Panels

from:  
Ornyte Fiberglass Panels  
711 Olympic Boulevard  
Santa Monica, CA 90401

## Sealants—Caulking Compounds

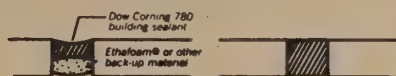
This company deals with all major manufacturers so they don't have to push one product. They have an incredible amount of information on caulks. We're using their polyurethane caulk for our dome seams; it's reportedly as good as silicon and half the price. About \$2.00 per tube. Information from:

Harold A. Price & Co., Inc.  
P. O. Box 1389  
Richmond, CA 94802

"VULKEM 230 (125) Meets Specification TT-S-230 GUN GRADE, NON-SAG

"VULKEM 230 not only meets the Federal Specifications, but also provides the very high resiliency required for successfully bonding working joints. Bonding precast concrete members and bonding masonry to aluminum are typical proven applications. This product also is suitable for bonding metal to metal as in the production of campers and in assembling galvanized air conditioning ducts. VULKEM 230 never loses bond, even in horizontal joints which remain wet for a long time. Available in white, gray, aluminum and brown."

### JOINT DESIGNS



**GOOD**  
Note width-depth ratio, concave surfaces, and non-adhering back-up material.

**POOR**  
Too deep, poor shape. Sealant adheres to bottom side.

The depth of the sealant should never exceed one-half its width, and preferably should be less than one-half the width.

Minimum recommended *width* for joints is 1/16 inch. Maximum recommended *depth* is 1/2 inch for joints greater than 1 inch. Sealant beds deeper than 1/2 inch are not only too deep for good performance, but too slow to cure. Deeper joints should be built up or packed to within 1/2 inch of the surface.

From the Harold A. Price & Co. Catalog

Uniroyal Rubber surfaces. Information from:

Marine & Construction Products  
312 North Hill Street  
Mishawaka, Indiana 46544

Gacoflex elastomeric waterproofing membrane and liquid roofing systems. Information from:

Gaco Western, Inc.  
P. O. Box 698  
Tukwila Station  
Seattle, Washington 98168

## Tapes

Fab-Dek: 35 mil Hypalon impregnated with neoprene 3" wide roll, 11¢ per lin. ft. Adhesive \$4.50 per gallon. F. O. B. plant.

from:  
Miracle Adhesive Corp.  
27279 Industrial Blvd.  
Hayward, CA 94545  
or  
250 Pettit Avenue  
Bellmore, L.I., N. Y. 11710

Fiberglass tape with isophthalic resin. Brochure from:

TAP  
1710 E. 12th Street  
Oakland, CA 94606

Over 100 various pressure-sensitive tapes. Brochure "Tapes for Industry" from:

3M Company  
320 Shaw Avenue  
South San Francisco, CA 94080

Mylar, teflon, vinyl, polypropylene, tedlar, many other tapes. Brochure from:

Advance Electrical Sales, Inc.  
850 Montgomery Lane  
San Carlos, CA 94070

Sealant tapes (used in expo dome) PTI 606 architectural tape sealant:

from:  
Protective Treatments, Inc.  
4401 West North Avenue  
Chicago, Illinois 60639

Catalog of pressure-sensitive tapes. Vinyl, polyethylene, double faced tapes, electrical tape, etc. From:

Arno Adhesive Tapes, Inc.  
Michigan City, Indiana 46360

# Sundry Materials

## Three Elastic Boat Paints

—super products, super expensive

1. This paint will stretch with surface movement, and keep water out. Brochure "Liquid Seaprene" from:

H. A. Calahan, Inc.  
859 Mamaroneck Avenue  
Mamaroneck, N. Y. 10543

2. 10 mil thick epoxy sealer, can be applied to damp surface, eliminates need for fiberglass. Fact sheet, "Gluvit" from:

Travaco Laboratories  
345 Eastern Avenue  
Chelsea, Mass. 02150

3. Several types plastic coating, caulks, putties. Brochure, "Sav-Cote" from:

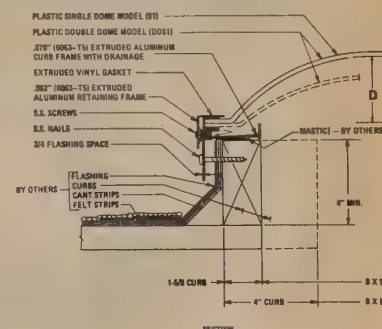
Savcote of California  
5409 West Adams Boulevard  
Los Angeles, CA 90016

## Miscellaneous

### Skylights

Clear or opaque, these acrylic skylights are reasonably priced if you buy just the plastic part without the frame. A 30" circular bubble is about \$20. Brochure, "Wasco Skydomes" from:

Wasco Skydome  
P. O. Box 479  
Los Altos, CA



### Best Plywood for Domes

Durably flat panel siding is exterior Douglas Fir plywood with phenolic resin-fiber surface, designed for severe weather exposure. Guaranteed against delamination for life of building. Brochure from:

U. S. Plywood Corp.  
777 Third Avenue  
New York, N. Y. 10017

or yellow pages for nearest dealer.

### Neoprene Gaskets

Stanlock structural neoprene gaskets. Catalog from:

The Standard Products Co.  
Stanlock Dept.  
Port Clinton, Ohio 43452

### Aluminum fittings

Adjustable slip fittings. Brochure from:

James L. Denier Co.  
P. O. Box 56  
Cincinnati, Ohio 45239



### Staples

Rust-proof Monel staples, staple guns:

Duo Fast California  
1465 Third Street  
San Francisco, CA  
or  
3702 North River Road  
Franklin Park, Illinois  
or yellow pages: staples

### Plastic Hinges

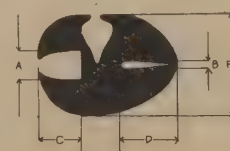
This tough hinge was flexed 1,000,000 times without breaking. Comes in rolls, about 30¢ per foot. Fact sheet "Polyhinge" from:



Stokes Molded Products  
75 Taylor Street  
Trenton, N. J. 08604

### Lock and Key Extrusion

A simple way to install glass or plastic windows in wood or metal panels. Information from:



Alasco Rubber & Plastics Corp.  
839 Malcolm Road  
Burlingame, CA

### Laminite Cardboard

Unbelievably tough, fire-retardant, and light. Samples from:

Laminite Division  
Tri-Wall Containers, Inc.  
One Dupont Street  
Plainview, N. Y. 11803

# Industry and Craft

## \* How to Work with Tools and Wood

Famous for years when it was published by Stanley Tools, this comprehensive introduction is now a pocket book bargain.

[Suggested by Al Ching]

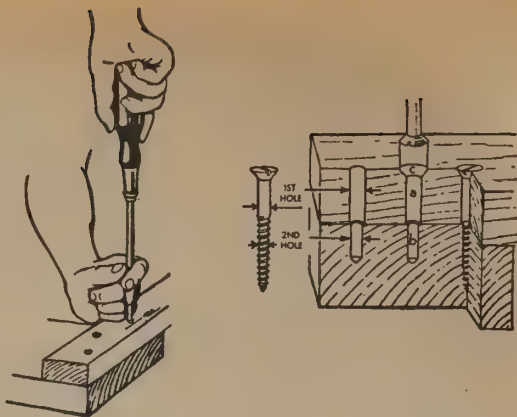
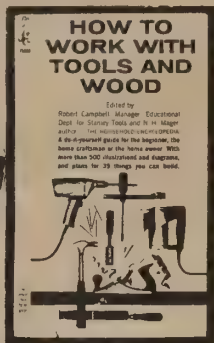
### How to Work with Tools and Wood

Robert Campbell  
1952, 1955, 1965; 488 pp.

\$ .75 postpaid

from:  
Pocket Books  
A Division of Simon & Schuster, Inc.  
630 Fifth Avenue  
New York, N. Y. 10020

or WHOLE EARTH CATALOG

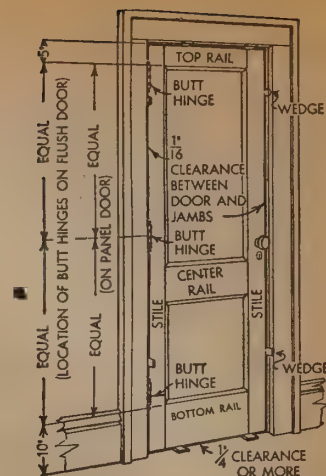


Use the longest screwdriver convenient for the work. More power can be applied to a long screwdriver than a short one, with less danger of its slipping out of the slot.

Hold the handle firmly in the palm of the right hand with the thumb and forefinger grasping the handle near the ferrule. With the left hand, steady the tip and keep it pressed into the slot while renewing the grip on the handle for a new turn.

If no hole is bored for the threaded part of the screw the wood is often split or the screw is twisted off. If a screw turns too hard, back it out and enlarge the hole.

A little soap on the threads of the screw makes it easier to drive.



How To Hang A Door:

1. Saw off lugs (the projecting ends of the stiles) at top and bottom of door.
2. Plane the butt stile to fit side jamb. Plane to the correct width of the opening at top and bottom after subtracting  $\frac{1}{8}$  inch for clearance, or  $\frac{1}{16}$  inch for clearance for each side. The lock stile should be beveled slightly.
3. Plane door to fit at the top, then scribe and plane the bottom, allowing  $\frac{1}{16}$  inch for clearance at the top and  $\frac{1}{4}$  inch or more at the bottom, for rugs.
4. Wedge the door in place and mark the position of the butt hinges on the door and the jamb at the same time with a knife.
5. Remove the door and square lines with the butt gauge for the length of the butt hinge, or gain. Gauge the width of the gain and the depth of the gain with the butt gauge. Repeat on the jamb.
6. Chisel the gains as illustrated on page 372.

## \* Hand Woodworking Tools

Best book on hand woodworking tools I have seen. Detailed information on care and maintenance, including sharpness, for each tool covered. Goes into individual tools much more thoroughly than more general books like the Stanley book (above). Has a very clear section on transit-levels and builders' levels.

[Suggested and reviewed by Fred Richardson]

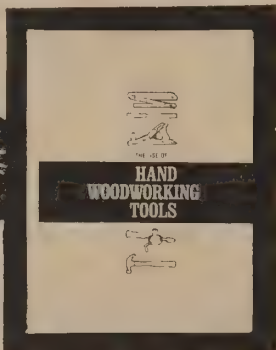
### Hand Woodworking Tools

Leo P. McDonnell  
1962; 294 pp.

\$5.00 postpaid

from:  
Delmar Publishers, Inc.  
Box 5087  
Albany, N. Y. 12205

or WHOLE EARTH CATALOG



### How to Sharpen the Cutters on an Auger Bit

1. Select an auger bit file. A good "second cut" half round or three cornered file may also be used providing its size fits the surfaces to be reduced.
2. Rest the bit on a board with the screw down. Tilt the bit so that the cutter can be sharpened (see Fig. 10-14).
3. Apply the flat serrated side of the file to the under side of the lips, the side toward the shank. Never file the side toward the screw. Use forward strokes to produce the filing action. File well back into the throat. Do not leave the edge too blunt, the ideal to seek is a gradual taper from a keen edge.
4. Reposition the bit and file the opposite cutting edge in a like manner. Both edges should be filed to the same level to produce chips of equal thickness.

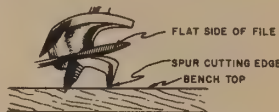
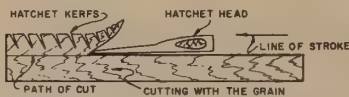


FIG. 10-14 SHARPENING A CUTTING LIP



2. When the mortise is cut out completely with a series of chisel cuts, follow the cutting sequence illustrated in Figs. 9-35, 9-36.

NOTE: Force is applied with a mallet for the roughing out operation. Use a chisel which is  $\frac{1}{8}$ " less in width than the finished mortise width. Finishing to size is accomplished with a series of paring cuts.



## \* Planecraft

If you work with planes and enjoy woodworking, Planecraft is a book to read. It gets into hand planes, their uses, care, and sharpening in a depth I didn't know was possible.

The book teaches methods for hand making joints I thought were practical only with machines. These methods are relatively simple and fast, but require skill.

[Suggested and reviewed by Fred Richardson]

### Planecraft

C. W. Hampton, E. Clifford  
1934 . . . 1959; 255 pp.

\$2.90

from:  
Woodcraft Supply  
313 Montvale Avenue  
Woburn, Massachusetts 01801



**Sharpening for Plastics.** Plastics, Perspex, Formica, plywood having resin type cements and so on are notorious for their quick blunting of plane blades. Where only small amounts are to be planed, or when this type of work occurs only infrequently, the ordinary sharpening can be used, the quicker blunting of the blade being accepted as a necessary nuisance. If the work comes frequently, however, it is worth while keeping a blade specially for that work, grinding and sharpening it at a blunt angle somewhere near  $80^{\circ}$ - $85^{\circ}$ . An edge of this type will last sharp longer than a normally sharpened one. Special steels have been tried for the work but they are relatively expensive and cannot ordinarily be sharpened by the user, and hence have been ruled out. Instead of sharpening all the angle from one side, one user at least has been very successful using a blade sharpened at the normal angle, and then a grinding taken off the face side of the blade, thus making a cutting angle approximating to the one recommended above.



Fig. 207.

To the cabinet-maker, the Circular Plane is of great service in the making of circular frames and serpentine work; and to the carpenter in making circular frames for windows and doors. To the wheelwright, of course, it is indispensable.

## \* Step-by-Step Craft Series

A fine, low-priced series of introductory craft books. Each one has a thorough list of relevant periodicals, books, material suppliers, and schools which give courses in the subject. It's an intelligent way to begin—light, quick, and real.

[Suggested by Jan McClain]

### Step-by-Step Jewelry

Thomas Gentile  
1968; 96 pp.

\$1.95 postpaid

### Step-by-Step Weaving

Nell Znamierowski  
1967; 96 pp.

\$1.95 postpaid

### Step-by-Step Macramé

Mary Walker Phillips  
1970; 80 pp.

\$2.50 postpaid

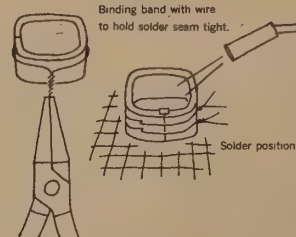
### Step-by-Step Printmaking

Erwin Schachner  
1970; 80 pp.

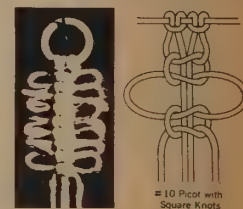
\$2.50 postpaid

from:  
Golden Press Division  
Western Publishing Co., Inc.  
850 Third Avenue  
New York, N. Y. 10022

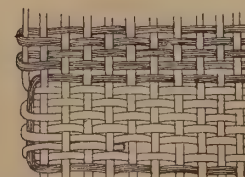
or WHOLE EARTH CATALOG



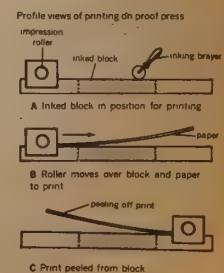
Jewelry



Macramé



Weaving

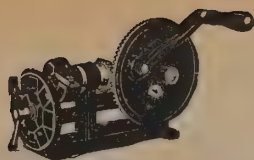


Printmaking

**Craftsman Wood Service**

Much the same stuff as Constantine's Wood Catalog. Some things cost less, others more. Craftsman has some things Constantine doesn't, and vice versa. If you use one of them, you really need both. Craftsman has almost anything you could think of for fine woodworking, from the wood itself to books telling you how, and including tools, cabinet hardware (more kinds of hinges, for example, than you could imagine), and upholstery supplies. If you would like to try your hand at making a violin, they can provide you with an instruction book and all the materials (no ready-to-assemble kit, praises be).

[Suggested and reviewed by Edwin L. Powers]



**Dowel and Rod Turning Machine**

Cuts dowels of various sizes and lengths to perfect dimensions. It can be used to form rods of practically any length. The crank can be adjusted for a long or short throw to give power or speed as desired. One Cutter Head complete for making dowels or rods 3/4" in diameter is furnished with each. Additional Cutter Heads with cutters 1/4, 3/8, 1/2, 3/4, and 1" can be furnished. No. 77. Weight 15 lbs. List Price \$35.00 **\$28.95** Extra Cutter Heads, List Price \$5.50 each **3.98**

**ROSAN WOOD INSERT**



Put a steel thread in wood with the New Rosan Knife Thread Insert. Easy to install. Just drill a hole and drive with screwdriver. Available in three sizes for 1/4", 3/8" or 1/2" common stove bolts. Weight approximately 2 lbs. per 1000.

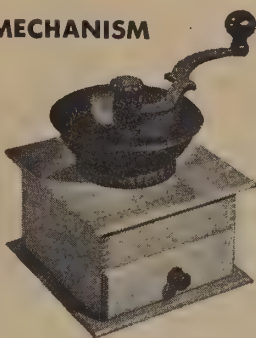
	Price	Each	10	100
R106. 1/4".....		<b>\$0.16</b>	<b>\$1.28</b>	<b>\$10.95</b>
R107. 3/8".....		<b>.22</b>	<b>1.94</b>	<b>16.95</b>
R108. 1/2".....		<b>.22</b>	<b>1.94</b>	<b>16.95</b>

Catalog  
**\$ .35**

Craftsman Wood Service Company  
2727 South Mary Street  
Chicago, Illinois 60608

**OLD THOMPSON COFFEE MILL MECHANISM**

For Finer Flavour—Grind It Fresh!



The coffee grinding mechanism has been produced to cater to the woodworker who is looking for a new project plus the desire to enjoy tantalizing flavor of coffee at its best. This beautifully executed replica of the old fashioned coffee mill used in grandmother's day has a vastly improved all-steel grinding mechanism, that is fully adjustable to any desired grind. What tastes better than freshly ground coffee? You'll save money, too! Makes a wonderful and unusual gift when project is completed. Complete instructions included.

No. 4-400. Wt. 2 1/4 lbs. Coffee Mechanism only. Price .....**\$9.98**

All mechanisms are guaranteed by Craftsman against mechanical defect. Wooden box and drawer can be made from any 1/4" lumber listed on page 13 and 18. (3 sq. ft. are required—specify 7" wide.) Complete drawings, specifications and details on how to make box and drawer included with every mechanism sold. See page 119 where we list No. 1510 knob for the drawer.

**Woodcraft Supply**

Some years ago, a large, dour Scot, Mr. Eaton by name, was trying to teach Boston schoolboys how to cut a clean mortise with machine-made carbon steel chisels. He couldn't, and being a Scot and stubborn, he began to import fine hand tools from across the water. He had to buy more than he needed, and he sold the surplus, reluctantly, from a dark cobwebbed shop on North Washington Street. To his surprise, he found that other craftsmen had also thrown shoddy tools through cellar windows in fits of frustration. North Washington Street has been torn up, and Mr. Eaton has passed on to the great workshop in the sky, but his company has become the Woodcraft Supply Corp., 313 Montvale Avenue, Woburn, Massachusetts 01801. It is a unique enterprise that operates contrary to the accepted principles of American business. As any hardware store owner will tell you, no one today will pay \$47.50 for a nickel-plated fitted wood case. You can buy one from Woodcraft — if you are willing to talk about it for an hour and enjoy a good cup of home-brewed tea. Have you ever had your forearm shaved as clean as a baby's with a 1-pound paring gouge? You're not likely to have the experience many other places. The same personal touch is apparent in everything handled by this unusual company. (They sell a German cabinet-maker's bench of polished red beech that is seven feet long, weighs 300 pounds, is fitted with two built-in vises, and would make most furniture companies blush with shame. \$235.) Woodcraft Supply publishes a large-format illustrated 30-page catalog full of tools that you will never see anywhere else. It costs 25 cents, and you will be a rare craftsman if you don't order something after one pass through it.

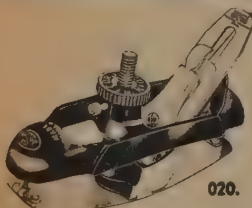
[Suggested and reviewed by Dr. Morton Grosser]

**Woodcraft Supply Catalog**

**\$0.25** postpaid

from:  
Woodcraft Supply Corporation  
313 Montvale Avenue  
Woburn, Mass 01801

**COMPASS PLANE**

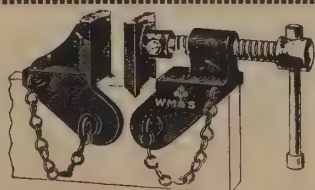


No. 020. Adjustable Compass plane. Its flexible bed adjusts for work on either convex or concave surfaces. Mailing weight 5 pounds. **\$18.50**

Takes No. 0175 cutter.

**CLAMP HEADS**

No. 252. Clamp head. Fits on edge of any one-inch board to provide a clamp of any desired length. Mailing weight 3 pounds. **\$3.50**



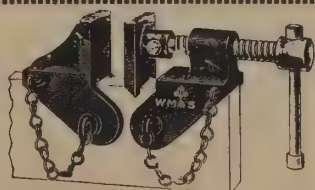
No. X58. Offset Back Saw, blade length 8 1/2 inches. When its spring loaded locking stud is loosened the blade turns over on its center pivot, so the offset is adjustable to be either right or left. Mailing weight 1 pound. **\$2.30**



2Z-8 LARGE BURS  
Styles: Barrel, Round, Flame, Oval, Pear **55c ea** actual size



2Q-5 RAISING HAMMER 4 1/2"  
Faces 1 3/8" x 1/2" 8 1/4 oz. **\$3.10**



**Paxton Lumber**

Beautiful woods, good information.  
[Suggested by Fred Borchardt]

Booklet *Beautiful Woods*, 50 pp. **\$1.00** postpaid  
Set of 46 different sample woods, **\$5.50** postpaid  
Paxton Wholesale School Catalog, **free**



from:  
Frank Paxton Lumber Co.  
5701 W. 66th Street  
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**TEAK, Genuine**

• KILN DRIED, Rough

Small Orders Per 100 Ft. 500 FL. Or More Per 100 FL.

1" First Class European	-----	\$153.00	\$147.00
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Besides a treasured wood for furniture of the highest class, Teak is the criterion by which all other woods are judged for marine usage. It offers beauty of a unique sort; a well made project of Teak will last practically forever. Should be planned only for advanced students, as Teak is quite difficult to work.

**Constantine's Wood Catalog**

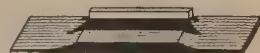
Lots of things for woodworking. Prices are high, but if you can't get it anywhere else... Lots of fancy woods and finishes. Guitar materials. Fancy cabinet hardware.

[Reviewed by Fred Richardson]

Catalog  
84 pp.

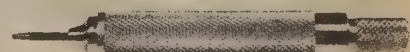
**\$ .25**

from:  
Albert Constantine and Son, Inc.  
2050 Eastchester Road  
Bronx, New York 10461



Bridge. G23 Rosewood 1/2 x 1 1/4 x 8. (Wood only. Not shaped or finished.) Wt. 1 lb. ....**\$ .45**

**CONSTANTINE'S NEW GLUE INJECTOR**



This greatly improved needlenose glue injector, made exclusively for Constantine, far surpasses all others. To use, press needle-nose deep under veneer blister, or drill 1/16" hole into heart of loose joint. Insert long needlenose and pressure-force glue by pushing plunger. Needle-nose squirts glue where nothing else can reach. Pays for itself on first small restoration job. Precision made of aluminum with hardened steel chrome-plated nose. No. 192J11—Postpaid **\$2.00** each. **\$20.00** per dozen

**Allcraft Tool & Supply**

Crafting requires tools specific to the material and the scale you're working with. This is the best supplier we've seen or heard of for craft tools.

[Suggested by ONYX]

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**Allcraft Tool & Supply Catalog**

**\$1.00** (refundable with purchase)

from:  
Allcraft Tool & Supply Company, Inc.  
215 Park Avenue  
Hicksville, N. Y. 11801

**Arts & Crafts**

This catalog looks like it's more for the school trade. Good prices on a wide range of tools and materials.

[Suggested by Mrs. W. B. Mohin]

Catalog  
free

from:  
CCM: Arts & Crafts, Inc.  
321 Park Avenue  
Baltimore, Maryland 21201

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CERAMIC KILNS	30 to 38	SILK SCREEN MATERIALS
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A mold material for taking impressions from life—for reproducing valued antiques when an ancient patina must be preserved, too delicate to submit to being molded in plaster, rubber or gelatine. Moulage will not adhere to anything—molds can be made on human hair or the most delicate skin. Apply warm with brush and palette knife. Captures minutest details. Reuse it approximately 150 times. Complete instructions helps beginners succeed on first project. No. 7678 Moulage, per 2 lb. can.....**\$4.95**

**COMPASS PLANE**

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Individual knives as shown at the left. Order by stock number as indicated. Mailing weight 1/4 lb. **\$1.50**

- ★ Colonial Craftsmen
- ★ Colonial Living
- ★ Frontier Living

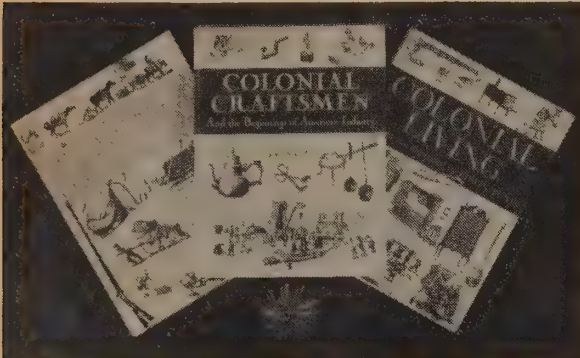
Are these fine Edwin Tunis books really practical? No, not on the face of it. They tantalize you with detailed sketches but sketchy details of old crafts and tools, those very crafts which have long been obsoleted by machinery.

So what's the value? The value to the CATALOG is nostalgia. These books service the desire of our market to back the hell out of 20th Century confusion.

And just now, nostalgia may not only be powerful, but in the big picture very practical, if carried out. One educational route out of a dead end is indeed back. Go back, start over where it feels good, get it right this time. Not for everybody, for sure; just enough to unstack the deck a little, enhance the variety of mistakes and opportunities available.

The dolphins went back, and they're doing all right.

[Suggested by Pat R. Matlock, Bruce Gifford and Kieth Gilbert]



**Frontier Living**  
Edwin Tunis  
1961; 166 pp.

**Colonial Craftsmen**  
Edwin Tunis  
1965; 159 pp.

**Colonial Living**  
Edwin Tunis  
1957; 156 pp.

\$5.95 postpaid

\$6.95 postpaid

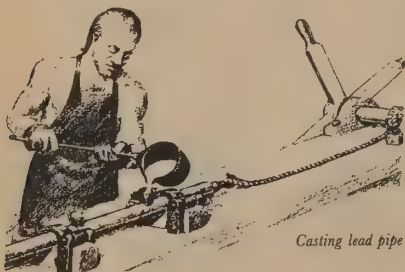
\$6.95 postpaid

all three from:  
The World Publishing Co.  
2231 West 110th Street  
Cleveland, Ohio 44102

or WHOLE EARTH CATALOG

**The Chandler**

A colonial housewife never threw away any fat. She rendered it and stored it in pottery crocks. In very early days the family burned it in grease lamps for light, but it was a smelly, smoky light and candles were better. The mistress could make "taller dips" by repeatedly dipping wicks into hot tallow and cooling, between dips, what adhered. Some families owned tin molds that would cast as many as a dozen candles. The traveling chandler brought along his own big molds that cast six dozen at once. He strung them up with the loosely spun tow-linen candle-wick that the house provided, melted down some of the harder fat, and cast a year's supply of candles. The softer fat the chandler turned into soap by boiling it, outdoors, with lye. As he boiled, he stirred with a wooden paddle, always in one direction because of a superstition that the soap would fail if he didn't.



Casting lead pipe

Colonial Craftsmen

A man who wanted to run water through something other than a wooden pipe usually chose a lead one. The quick improvements in the ways of making such pipe show how fast technology advanced once it got started. The earliest way was to bend a strip of lead lengthwise around an iron bar, weld the seam, and then pull the bar out. Pipe made that way was likely to crack. A better early way was casting in a long brass mold, hinged to open and made with a series of funnels along its top into which the plumber poured molten lead. He pulled the solid iron core out with a windlass before he opened the mold—it was quite a pull. Such cast pipe had flaws and bubbles in it.

About 1800, plumbers began both to "cold-draw" and to "cold-roll" lead pipe. In either case they cast a thick-walled lead collar around one end of a polished steel bar. Drawing was pulling the collar through progressively smaller round dies that made the metal flow along the bar as a pipe, becoming thinner and longer with each die. Passing the collar between grooved rollers accomplished the same result. Hot drawing, done as early as the 1830s, was better than either. This was a continuous operation of pumping hot liquid lead into one end of a mold and pulling finished pipe out at the other. Lead sets up quickly as it cools, so the mold didn't have to be a very long one, but the speed of the draw and the volume of lead delivered by the pump had to remain constant and in the right relation to each other. Lead pipe is still made by a refinement of this method, using hydraulic pressure to force cold lead through a die.

Colonial Craftsmen

★ **Craftool**

More than other craft suppliers, this outfit has whole-system supplies. A spinning wheel as well as looms. Various hand presses. A whole paper-making mill (\$3,650). And the best line we've seen of beginning kits.

[Suggested by Julia Brand and Cynthia Mathews]

Catalog

free ✓

from:  
The Craftool Company  
1 Industrial Road  
Wood-ridge, N. J. 07075

- Woodworking/Craft Kit \$79.95 →
- Gem Stone/Tumbling & Jewelry Making Kit \$24.95
- Batik/Fabric Dyeing Kit \$24.95
- Bookbinder's Repair Kit \$14.95
- Clay Modeling & Sculpture Kit \$24.95
- Woodcarving & Sculpture Kit \$34.95
- Graphic Arts/Etching & Block Printing Kit \$49.95
- Jewelry Making Kit \$59.95
- Stone/Sculpture Kit \$34.95
- Printing Press/Outfit \$99.95

**The ART PRESS**

\$159.50



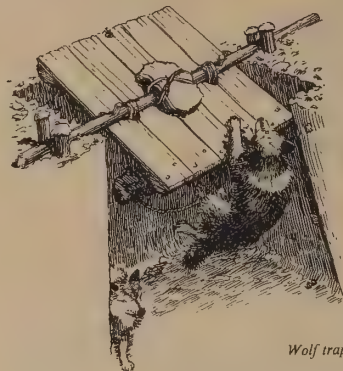
**CRAFTOOL COMPLETE BOOKBINDING OUTFIT**

All the basic equipment and tools necessary for the bookbinding craftsman.

- |                        |                |             |
|------------------------|----------------|-------------|
| Standing Press 1450-B  | Shears         | Drills      |
| Stitching Frame 1380-B | Needles        | Nipper      |
| Lying Press 1560-AZ    | Backing Hammer | Glue Brush  |
| Book Saw               | Hand Drill     | Bone Folder |
| Book on "Bookbinding"  | 2 Knives       | Wax         |

No. 2800B — Complete with laminated top bench 24" x 48" x 32" high \$248.00

No. 2801-1B — Tools and equipment only — less bench and top \$215.00



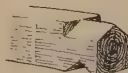
Wolf trap



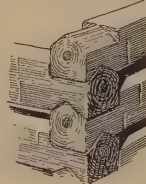
I been at Morning Star for a week now and haven't been laid yet.

Wattle-and-daub cabins supported on "crotchets"

Colonial Living



One way to corner a squared-log house so the joints will drain



Once temporary shelters had been set up and the "wolves who sat upon their tails and grinned at us" had been driven back a little into the woods, the next order of business was to give land to each settler. At Plymouth they tried holding all the land in common, but it didn't work. At Salem and Boston and other later towns, a space was set aside for the church and a large area as a common pasture; what remained was divided up as building sites. The choice locations went to the governor, the ministers, and the other elite in strict order of precedence, the rest being distributed by lot among the common folk.



Frontier Living

Where there are no official police, any group of people will make shift to police itself. The pioneers were beyond the reach of law, but they managed to restrict misbehavior within certain limits. They were especially severe with anyone who injured the group. Minor offenders, like petty thieves or those who shirked their share of community work, were "hated out." They cut the culprit out of all social activities, but they by no means ignored him. On the contrary, they conferred unpleasant nicknames on him that were not merely whispered behind his back. One and all told him loudly what they thought of him any time they met him.

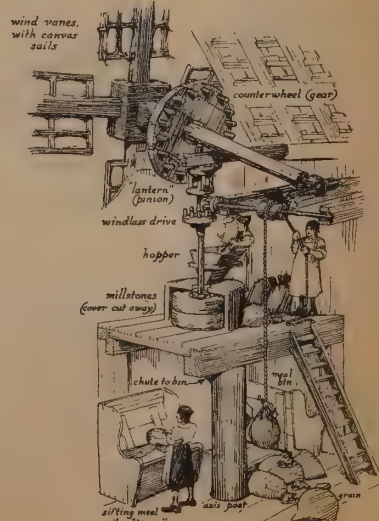
The top social occasion of the backwoods, even more popular than a funeral, was a wedding. The festivities began at the bride's home and there seems never to have been a church ceremony. Indeed, there is no mention of religion at all in any of the old accounts except one note that marriages were sometimes postponed until a parson showed up.

The Ring-tailed Roarers and their female counterparts had full scope at weddings. Those who were not invited were likely to ambush the groom's party and attempt to kidnap him en route to his nuptials. The women often made a similar attack on the bride. We aren't told what happened when these forays succeeded. By established custom, the bride's father set a quart of whisky on his cabin doorstep, and from a mile away the male guests staged a wild horse race to get it. The winner carried it back in triumph to give the groom the first swig.

Frontier Living



A post windmill



The interior mechanism of a windmill

Colonial Living

★  
FOXFIRE

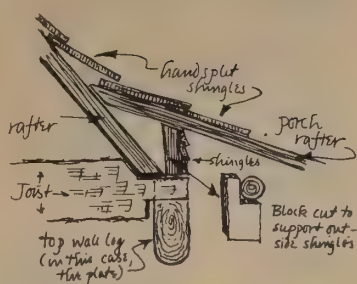
Probably no region in the country has been written about, "explained" and "interpreted" any more than the Southern Appalachian highlands, that mountainous area embracing parts of Georgia, North Carolina, Tennessee, Virginia, Kentucky and on up into West Virginia. And yet, no region is as little known or more misunderstood. Most of the writers and film documentarians who have paid attention to Appalachia have suffered from one social/economic bias or another, or, what's worse, a pasty sentimentality inherited from romantic writers of the John Fox Jr.—James Lane Allen school. Even native writers all too often fall victim to the same stereotypes and clichés that have marred so much of the reportage in the national media.

There are, however, scattered here and there through the Appalachians, a few small journals who are truly in touch with the place they claim to represent. And one of the best of these is FOXFIRE.

FOXFIRE is a quarterly publication concerned with researching, recording and preserving Appalachian folk art, crafts and traditions. A typical issue contained articles on quilting, chairmaking, soapmaking, home remedies, mountain recipes, feather beds and homemade hominy, plus regional poetry and book reviews. One issue was devoted entirely to log cabin building. These are not superficial "feature" articles, but definitive, detailed treatments of traditional skills and crafts that have come close to dying out of our culture.

FOXFIRE would be a credit to a group of professional folklorists. But when you consider that it is edited and published by high school kids at the Rabun Gap-Nacoochee School in Rabun Gap, Georgia, it becomes impressive indeed. The thing I like most about it is the way these kids are looking immediately around them for their inspiration, instead of taking cues from New York and California. In their own way, these people are as hip and sophisticated as any young people putting out a magazine on either coast. More so, even. They're cooler, more adult. Next to FOXFIRE, most "underground" papers seem written by children shrieking at Daddy (or cops, or Nixon) because he won't let them smoke grass or smash store windows. FOXFIRE's editors and writers (and some excellent photographers) seem to me as aware of what's wrong with the world as anyone. The thing that distinguishes them from their shrill counterparts in the cities is the absence of fad, slogan and cliché as they set out to improve the world. These kids in Georgia are living in a real world, studying real things, and in consequence they are creating a wonderfully real publication in FOXFIRE.

[Reviewed by Gurney Norman]

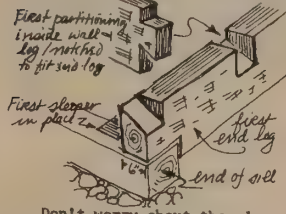


FOXFIRE

\$4.00 /year (quarterly)

from:  
The Southern Highlands Literary Fund  
Rabun Gap  
Georgia 30568

It is now time to choose the placement of the inside walls. If you wish to have a wall running the length of the house, its first log should be laid in place next. If the wall is to run the entire length of the house, cut a log to that length, hew it down to 4" in width, and cut dovetail notches in the ends.



Don't worry about the placement of the inside doors. They will be cut after the wall is completed.

POTATO CANDY

Peel and boil one large white potato. When done, mash up with a fork, add a little salt, and pour in a box of confectionate sugar. This makes a stiff dough.

Roll out on a dough board that has been well floured in a layer 1/4 inch thick. Spread peanut butter all over top. Roll up like a jelly roll (make two rolls if you like). Put this in the refrigerator.

Cut with knife. Serve. Good any time.

The churner said the chant in time to the up and down movements of the dasher as indicated below. The arrows indicate the dasher movement:

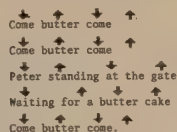


Plate 3: Legs are shaped with a shaving horse and drawing knife.

Choose a tall maple, the trunk of which is about 8 inches in diameter and slightly curved. This curve will produce the sloped back obvious in Figure 2. If you would rather the back be straight, choose your maple accordingly.

Saw a 3'6" length out of the curved section of the trunk for the back posts; a 1'8" length out of the straight section for the front posts; and a 1'4" length out of the straight section for the backs.

At the same time, choose a tall, straight-grained white oak 4"-6" in diameter. From the trunk, cut one 16" length, two 14" lengths, and save the rest for splits.

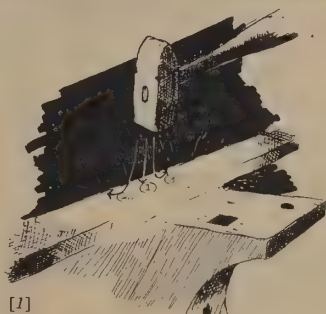
Quarter the maple sections to be used for posts: Split out the heart. Then round the quarters off using first an axe and then the shaving horse. (Plate 3.)

Can you wash your clothes in it? "Yeah, you can. Just take that, y'know, like we used to—we took our clothes and put our soap on 'em and rub 'em and boil 'em. People don't do that now. And I ain't afraid t'wash my hands in it! That there lard kills th'lye." Why do you stir it so much? "It requires it. It wouldn't make if you didn't dissolve it good. You got t'get it thick like jelly, y'know. Y'can't leave jelly 'till it gets right."

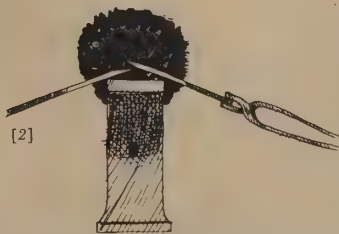
★  
The Art of Blacksmithing

A warm book that makes me want to learn blacksmithing. Bealer presents the history and methods of smithing in a fashion very useful to a person learning the trade. An excellent coverage of tools, most to be made by the smith himself. Bealer collected this material from many old smiths and then tried it himself—in his own forge.

[Reviewed by Fred Richardson]



[1]



[2]

Welding: [1] where to place blows for a lap weld, [2] how to hold iron on anvil before the first blow.

What happens to iron and steel when subjected to heat is easily observed through the use of a sewing needle and a common match. When the point of the needle is held in the flame of the match an immediate change is seen in the steel. First the point turns to a pale yellow, then straw yellow, then purple, then blue, then gray, finally a dull red. These colors run up the needle from the heat as it is conducted through the length of the steel. The red color indicates that the metal has become plastic to some degree, and can be bent without breaking. If held longer in the flame the red color changes in intensity. Following the dull red it changes to a sunrise red, the color of a sunrise on a winter morning. From that it turns a cherry red, then a bright red, then light red, almost orange, then white. A continued heat turns white heat into an incandescent white, then to a liquid incandescent yellow which indicates that the surface has become semimolten. When subjected to further heat it will erupt with tiny incandescent sparks that show the metal is burning. At this heat it is too hot to be worked if it is steel, but it can be hammered if it is pure iron.

As color is a somewhat relative condition, it is difficult at times to determine the color of heated iron in bright daylight. Many old-time smiths solved this problem by keeping a small keg or box near the forge. A heated iron could be thrust into the darkness of the keg and gauged more accurately than in daylight or in the light of the forge fire.

★  
Traditional Country Craftsmen

English country craft, that is. Thatching, basket making, tanning, stone masonry, wheel making. The lot. Cottage industry for the nostalgia market or the total-independence seeker. Make your own goddam barrels.

[Suggested by Marjorie Posner]

Traditional Country Craftsmen

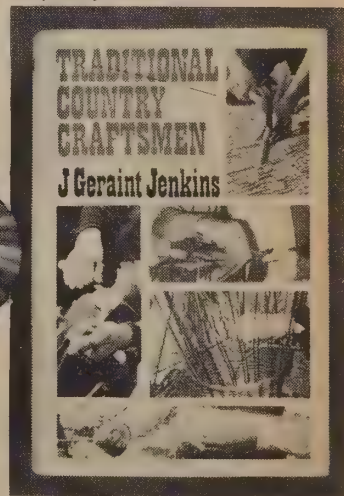
J. Geraint Jenkins  
1965; 236 pp.

\$8.75 postpaid

from:  
Frederick A. Praeger  
111 Fourth Avenue  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

\$5.40 from Blackwell's (see p. 79)



The Art of Blacksmithing

Alex W. Bealer  
1969; 425 pp.

\$10.00 postpaid

from:  
Funk & Wagnalls, A Division of  
Readers Digest Books, Inc.  
Shipping & Service Center  
Vreeland Avenue  
Totowa, N. J. 07512

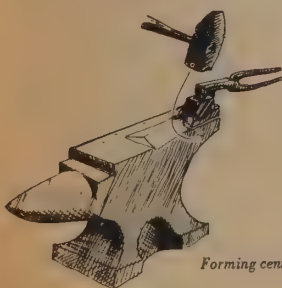
or WHOLE EARTH CATALOG



There is a school of blacksmithing at:

Turley Forge  
Camino Altito  
Santa Fe, NM 87501

\$300 tuition for 6-week course.



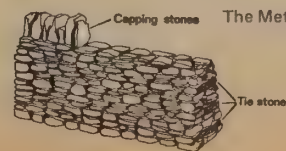
Forming center ridge on adz blade

Generally I have tried to describe and illustrate only the fundamental techniques of the trade, and show how these techniques were used on a few familiar items. I hope that others may find my material interesting enough to acquire the tools of the smith and actually practice his techniques to the point that some of the ancient techniques and tools will be rediscovered for the benefit of modern man. If the ancient aurochs can be reconstituted through selective breeding of modern domestic cattle, it seems possible that the ancient smith may be waiting within a few modern men.

In many Welsh tanneries it was customary to keep one or two large mastiff dogs, and it is said that as soon as market hides were delivered to the tanyard, each one was pegged to the ground so that the dogs could bite off any fats and flesh that adhered to the skins. The mastiffs were, of course, useful to guard the premises and to keep control of the vast number of rats that always infested tanneries. In addition the dogs' excreta when mixed with hot water was essential for treating certain types of soft leather before tanning.



The Method of Dry Stone Walling.



## Pottery

Authoritative and scrupulously organized with concise explanations accompanied by 388 lucid photos, *Pottery* presents an exceptional technique of throwing.

The rudiments seem preferable to those redundant techniques I learned. In addition are many finer techniques I never thought of.

Teach yourself to throw with this book or use it as I would to cleanse myself of bad habits. This is the only appealing pottery book I have ever seen, but it only covers throwing.

[Reviewed by Joe Bonner]

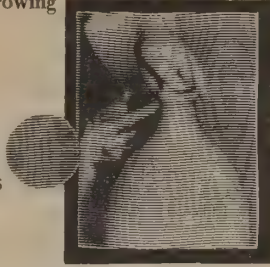
### Pottery the technique of throwing

John Colbeck  
1969; 159 pp.

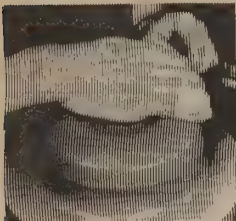
\$10.00 postpaid

from:  
Watson-Guption  
Publications  
165 West 46th Street  
New York, N.Y. 10036

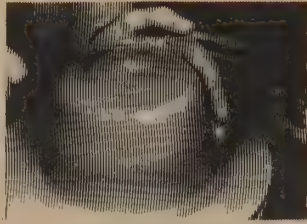
or WHOLE EARTH  
CATALOG



Two main pressures tend to centre the rotating mass of clay:

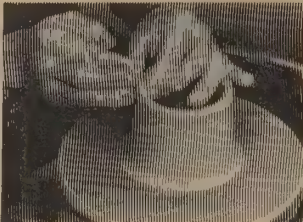
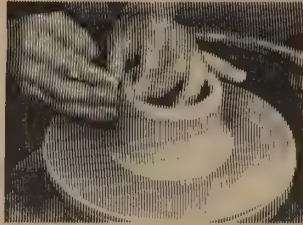
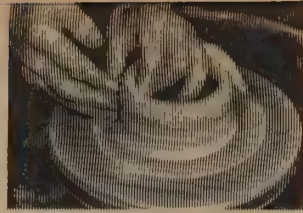


A downward vertical pressure. This pressure is most easily applied by the outside edge of the palm of the right hand. The forearm points to the centre of the wheel and is steadied by resting on the edge of the wheel tray. This pressure exerted alone tends to displace the clay into a wider form.

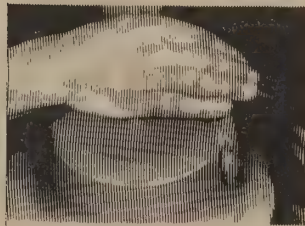


An inward horizontal pressure. This pressure is most easily exerted by the wrist end of the palm of the left hand. This forearm also points to the centre of the wheel and is steadied by resting on the edge of the wheel tray. This pressure exerted alone tends to displace the clay into a taller form.

In practice these two pressures are only rarely applied singly. Small and medium sized pieces can generally be centred by the simultaneous application of the two pressures.



The clay is squeezed between the index finger and any one of the first three fingers of the right hand. This method is used much less frequently than the previous two but beginners do find it useful for gaining additional steadiness. Two variations are possible; if the pressure inside is applied by the ball of the index finger the main pressure can be applied by any one of the fingers and can be varied, the fingers not applying pressure outside can exert a slight steadying pressure to control the form either above or below the main point of pressure; or, if the side of the index finger is used inside pressure can be spread through all three fingers, the point of main pressure usually being in the lowest finger outside and the ball of the inside finger.



The two pressures isolated in the two previous photographs are here shown combined. Every opportunity should be taken while centring of achieving additional steadiness through contact of the hands with each other.

There are other centring holds than the one illustrated. All involve an application of the same two pressures.

## Kilns

The definitive book on kiln construction and use. If you can build a pot you can build a kiln.

Kilns  
Daniel Rhodes  
1968; 240 pp.

\$10.00 postpaid

from:  
Chilton Book Company  
401 Walnut Street  
Philadelphia, Pa. 19106

or WHOLE EARTH CATALOG



Also of interest

*Clay and Glazes for the Potter*  
Daniel Rhodes. \$7.50 from Chilton

*Stoneware and Porcelain*  
Daniel Rhodes. \$7.50 from Chilton

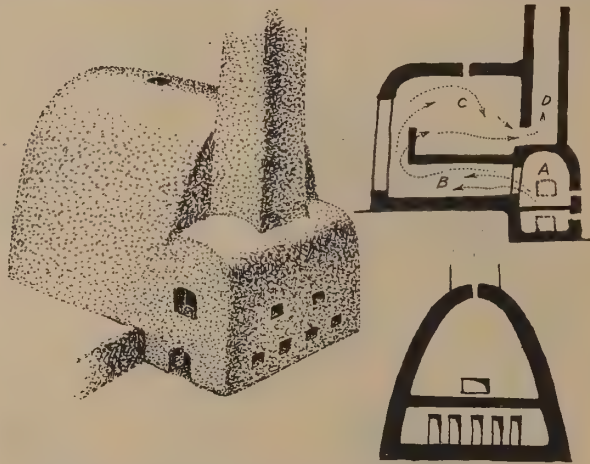
*Ceramics: Potter's Handbook*  
Glenn Nelson. \$6.95 from:

Holt, Rinehart & Winston  
383 Madison Avenue  
New York, N.Y. 10017

*A Potter's Book*  
Bernard Leach. \$8.75 from:

Transatlantic Arts, Inc.  
North Village Green  
Levittown, N.Y. 11756

\$3.60 from Blackwell's (see p. 79)



Design for a wood burning kiln with double crossdraft circulation. The bottom section is used for "Bizen" effects where a lot of flashing is desired, while the upper section is relatively free of direct flame and fly ash, and can be used for regular glazed wares.

Refractory blocks, slabs, skewbacks, arches, or door blocks may be made on the job using castable materials. In fact, it is possible to make the whole kiln from a castable material. Refractory castable mixtures are made from a suitable aggregate, such as firebrick grog, insulating firebrick granules, vermiculite, or perlite bonded with calcium aluminate cement. Calcium aluminate cement is similar to portland cement, and when mixed with water will set up in a hard, solid mass. But unlike portland cement, it is refractory and may be heated to red heat or higher without exploding or melting. Most brands of calcium aluminate cement may be used at temperatures in excess of 1300°C.

To cast a shape, a form must first be made. Forms may be made of wood or plywood, securely fastened at the corners, or in the case of curving forms, of bent plywood or masonite suitably reinforced. The forms may be given a light coat of grease to prevent sticking. The aggregate is prepared by crushing old firebrick or fragments of used insulating firebrick. The aggregate should be made up of particles of various sizes, from about 1/4 inch in diameter to grains as small as sand or smaller. The proportion of very fine particles should not be too great, however. The aggregate is then mixed dry with 1/5 of its volume of cement. Water is added to this, and the mass is mixed in a mortar box until it is of plastic consistency. It should be well moistened, but not so wet as to flow. The mixture is then shoveled into the mold and rammed into place so as to leave no air pockets. The material will set in a few hours and may then be removed from the mold and cured in a cool place for several days. When thoroughly dry, cast shapes may be incorporated into the kiln structure.

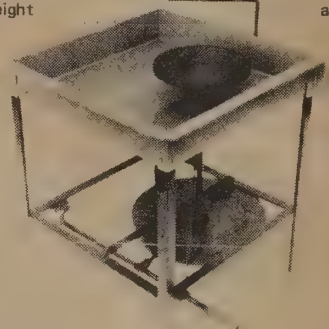
## Potter's Wheels

OK, here's what we know so far about potter's wheels. The ultimate kick wheel is Klopfenstein. The best buy in kick wheels and powered wheels is Brent (kits also available). Another good kickwheel is Soldner. And two we know nothing about: Pacifica and Estrin.

### \* KLOPFENSTEIN

price \$175.00 f.o.b. Crestline, Ohio

reversible throwing head for making plaster bats with a special band and locating slug for re-centering \$15.00  
adjustable hip rest \$15.00  
shipping weight approx 240 lbs.



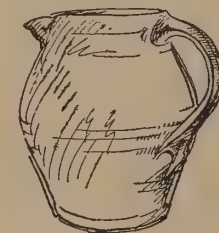
brochure

free

from:  
H. B. Klopfenstein & Sons  
Route Two  
Crestline, Ohio 44827

### BRENT

	HP	Speed	
Model A	1/4	40-150	\$139.00
Model C	1/2	0-220	265.00
Model C kit			195.00
Kick Wheel			79.50
Kick Wheel Kit			35.00



brochure

free

from:  
Robert Brent Potter's Wheels  
1101 Cedar Street  
Santa Monica, CA 90405

[Suggested by Mary Crawford]

### SOLDNER

Kickwheel \$180 (unpainted)  
\$205 (painted)

brochure

free

from:  
Soldner/Pottery & Pottery Equipment  
Box 917  
Aspen, Colo. 81611

[Suggested by Jeff Schlanger]

### \* PACIFICA

Standard	\$ 96.00
Wide	106.00
Adjustable	116.00
Adjustable wide	121.00

brochure

free

from:  
Pacifica Woodcrafts  
P. O. Box 924  
Berkeley, CA 94701



### \* ESTRIN

Basic wheel with 1/4 hp motor \$150  
Less motor 109

brochure

free

from:  
Estrin Mfg. Ltd.  
3651 Point Grey Rd.  
Vancouver 8, B.C.  
CANADA



## Metal Techniques for Craftsmen

If you read this book, you'll know more about metalworking than just about anybody you know. International in scope, it covers an incredible collection of techniques from many countries and cultures. The various techniques are presented with a complete set of instructions for each one and are illustrated by excellent photographs, often of native craftsmen doing their thing. Tools are described and illustrated in detail. Everything is described in detail. Reading this book will take you right up to that point where you'll have to do it awhile yourself to get into it any further. This is a real assembly of diverse information some of it hard to find, and a metal-crafter-jeweller should be into new things within an hour of getting his hands on it. This is one of those rare and super books written by someone that wanted to lay his trip on others. Well worth the money. The "definitive text" as they say.



**SAND CASTING OF ALUMINUM.** Sand casting is the best-known and most frequently used casting process. (For a procedural discussion, see page 325.) The method used for aluminum is the same as that used for other non-ferrous metals, with care taken for temperature control. In small sand castings, a section of 3/16 of an inch is considered the minimum possible. The surface of sand castings depends for its character on the fineness of the sand used. For large castings, coarser sand is advisable. Aluminum sand castings generally have smoother surfaces than other sand cast metals, partly because of the lower melting point required of the metal, and partly because the sand does not burn into the surface of the casting.

[Suggested by Claudio Marzollo.  
Reviewed by Jay Baldwin]

**Metal Techniques for Craftsmen**  
Oppi Untracht  
1968; 509 pp.

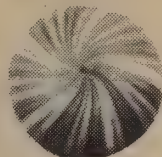
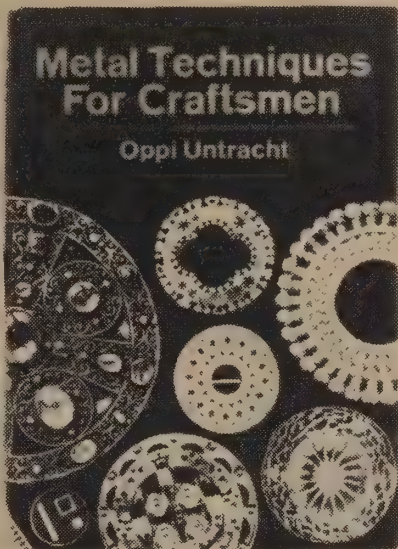
**\$19.95** postpaid

from:  
Doubleday & Co.  
501 Franklin  
Garden City, N. Y. 11531

or **WHOLE EARTH CATALOG**

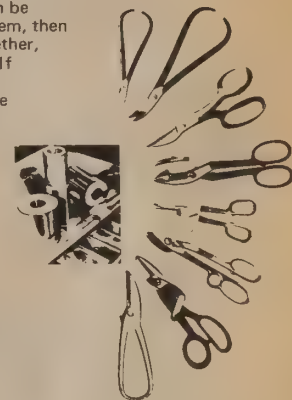
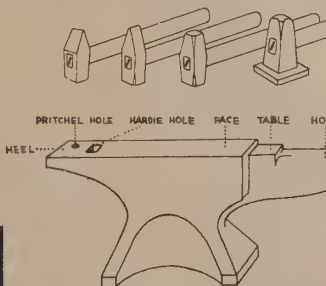


Greek bronze wire fibula, "spectacle type," tenth-eighth centuries B.C. (Geometrical Period). Back view. Length: 5 5/16 inches. This pin, including the pinstem and catch, is made entirely of one continuous piece of wire. Metropolitan Museum of Art, New York. Fletcher Fund, 1937.



A craftsman of Tanjore, India, securing an encrusted silver ornamental medallion on a brass plate in the "nagas" or "swami" process of metal decoration.

Forge welding is the oldest welding process. Wrought iron and mild steel can be welded in forging by heating the parts to be joined till they are brilliant white-hot and emitting sparks. The metal at this point has reached a condition of surface plasticity. The parts are then brought into contact quickly, on top of each other, and hammered together. They fuse into one unit. Butt joints can be welded by first upsetting the ends to be joined, to thicken them, then reheating the ends to welding temperature, placing them together, and hammering them. The original thickness is maintained. If the metal is absolutely clean, free of oil or cinder, no flux is necessary, because the slag in wrought iron acts as a flux. The force to be exerted by the hammer depends on the mass and size of the parts being joined.



## Ceramic Supplies

Two sources. Evaluations, anybody?  
[Suggested by Helen Doolittle]

Westwood Ceramic Supply Co.  
14400 Lomitas Avenue  
City of Industry, CA 91744

Castle Clay Products, Inc.  
1055 South Fox Street, Unit No. 2  
Denver, Colorado 80223

### SPONGES

THE SPONGES LISTED ARE MEDITERRANEAN AND OF THE HIGHEST QUALITY IN THE WORLD. THEY COST SLIGHTLY MORE THAN OTHER SPONGES, BUT THEIR ADDITIONAL USEFUL LIFE MORE THAN COMPENSATES FOR THE DIFFERENCE IN PRICE.

**ROCK ISLAND SPONGE**  
GENERAL PURPOSE. ITS HIGH ABSORBENCE MAKES IT PERFECT FOR CLEAN UP. APPROX 6" LONG.

Westwood

**ELEPHANT EAR SPONGE**  
THESE VERSATILE FLAT FINE GRAIN SPONGES ARE USED WIDELY FOR THROWING AND FINAL SMOOTHING.  
#1 ABOUT 5" \$1.40  
#2 APPROX. 3" LONG \$4.00



FOR THOSE WHO HAVE ALWAYS WANTED TO CAST STONWARE

MAKES A RELIABLE STONWARE SLIP THAT CAN BE CAST IN ALL STANDARD MOLDS. CONTAINS MANY COARSE PARTICLES CREATING A TEXTURED FINISH. FITS OUR STANDARD CONE 5 GLAZES. FIRES WELL IN BOTH ELECTRIC AND GAS KILNS AND COMES OUT VITREOUS, HARD AND NON POROUS. AVAILABLE ONLY IN DRY.

Westwood

COLORS #1 BUFF #2 RED #3 BROWN  
50 lbs. 100 lbs. 500 lbs. 1000 lbs. 1 Tm. 3 Tm.  
3.50 5.50 4.50 Cnt. 4.00 Cnt. 74.00 69.00T

**RAKU** Castle Clay

**FIRED COLOR** Oxidation-white  
**FIRING RANGE** Cone 07-10

### WORKING CHARACTERISTICS

Fine-grained clay, ideal for throwing or hand building. Available with fine, medium or coarse grog.

**PACKING** Wet— 10 lb. plastic bags in cardboard boxes.  
25 lb. plastic bags in 50 lb. heavy plastic shipping sacks.

Dry— in heavy 50 lb. plastic shipping sacks.

**PRICES** F.O.B. Denver, Colorado

Wet, ready for working—25 lb., 50 lb. quantities  
Up to 1000 lbs. \$8.00/100 lbs.  
1000 to 2000 lbs. 7.25/100 lbs.  
Over 2000 lbs. 7.00/100 lbs.

Wet, ready for working—10 lb. quantities  
Up to 1000 lbs. \$10.00/100 lbs.

Dry mixed—25 lb., 50 lb. quantities  
Up to 1000 lbs. \$7.50/100 lbs.  
1000 to 2000 lbs. 7.25/100 lbs.  
Over 2000 lbs. 7.00/100 lbs.



## Adhesive Products

Silicone molding rubber (cast anything!) at low prices & Monzini epoxy based casting compounds. 20th Century materials.

[Suggested and reviewed by  
Jeff Schlanger]



Brochure & pricelist

free from:  
Adhesive Products Corp.  
1660 Boone Avenue  
Bronx, N. Y. 10460

1 1/2 Pt. Kit (1 1/2 lbs.)  
Consisting of 1 lb. ADRUB RTV and 1/2 lb. ADRUB RTV  
Rubber Hardener \$ 6.00

### 4530 MONZINI IRONZINI

5 gallons \$ 50 per pound  
1 gallon .60 per pound

## GENERAL TOOLS AND SUPPLIES (NEW YORK)

Allcraft Tool and Supply Co., Inc., 15 West 45th Street, New York, N. Y. 10036  
Anchor Tool Co., 12 John Street, New York, N. Y. 10007  
Craftool, Inc., 396 Broadway, New York, N. Y. 10013  
Gamzon Bros., 15 West 47th Street, New York, N. Y. 10036  
Paul H. Gesswein & Co., Inc., 235 Park Avenue South, New York, N. Y. 10003  
I. Shor Co., Inc., 64 West 48th Street, New York, N. Y. 10036  
Standard Diamond Tool Co., Inc., 71 West 47th Street, New York, N. Y. 10036  
John Sells and Sons, 66 West Broadway, New York, N. Y.

## EASTERN STATES EXCEPT NEW YORK

Craft Service, 337-341 University Avenue, Rochester 7, N. Y. Tools and Supplies  
William Dixon, Inc., 32 East Kinney Street, Newark 1, N. J. Tools and supplies  
American Handicrafts Co., 45-49 South Harrison Street, East Orange, N. J.  
T. B. Hagstoz & Son, 709 Sansom Street, Philadelphia 6, Pa.  
B. A. Ballou and Co., Inc., 61 Peck Street, Providence, R. I. Jewelry findings  
Capitol Tool and Findings Co., Inc., 100 Delaine, Providence 9, R. I.  
W. R. Cobb Co., 101 Sabin Street, Providence, R. I. Jewelry findings  
Manin Jewelers Supply Co., Inc., 373 Washington Street, Boston 8, Mass.  
C. W. Somers Co., 387 Washington Street, Boston 8, Mass. Jewelry supplies  
General Findings, Inc., Attleboro, Mass. Jewelry findings in all metals  
Arts and Crafts Distributors, Inc. (Showroom and Service Center)  
9520 Baltimore Avenue, College Park, Md.  
Bergen Handcraft Supplies, 300 S. W. 17th Avenue, Miami, Fla.

## MIDWEST AND SOUTH

Brothead Garret & Co., 4560 East 71st Street, Cleveland 5, O. Tools and supplies  
Ohio Jeweler's Supply, Inc., 1000 Schofield Building, Ninth and Euclid Ave.,  
Cleveland 15, O.  
Snapvent Company, 1107 West Cumberland Avenue, Knoxville, Tenn.  
Tools and supplies  
C. R. Hill Co., 35 West Grand River, Detroit 26, Mich. Metals and tools  
Bartlett & Co., Inc., 5 South Wabash Avenue, Room 819  
Chicago, Illinois Small tools, and jewelry supplies.  
The Jewelry Craftsman Co., 139 North Wabash Avenue, Chicago 2, Ill. Findings  
Ernest Linick Co., 5 South Wabash Avenue, Chicago 3, Ill. Jeweler's supplies  
C. and E. Marshall Co., 1445 West Jackson Boulevard, Chicago, Ill.  
Sax Crafts, 1101 North 3rd Street, Milwaukee, Wis. Metals, tools and findings  
Gagers Handicraft, 1024 Nicollet Avenue, Minneapolis 3, Minn. Tools  
Norvell Marcum Co., 223 East Third, Tulsa 3, Okla. Hand tools, jeweler's supplies  
New Orleans Jeweler's Supply Co., 208 Chartres Street, New Orleans, La.  
Southland Jeweler's Supply Co., 213 Baronne Street, New Orleans, La.

## WEST

Baker Platinum (Division of Engelhard Industries), 760 Market Street,  
San Francisco, Calif. Jeweler's supplies, findings and metal  
Miller Tool and Supply Co., 1044 Folsom Street, San Francisco, Calif.  
Nordman & Aurich, 657 Mission Street, San Francisco, Calif.  
Tools, jeweler's supplies and findings  
Williams & Peterson, 130 Geary Street, San Francisco, Calif.  
J. J. Jewelcraft, 2732 Colorado Boulevard, Los Angeles 41, Calif.  
Jeweler's and lapidary's tools and supplies  
Grieger and Co., 1633 East Walnut Street, Pasadena 4, Calif.  
Tools and supplies, lapidary equipment  
L. A. Clark Co., 1417 4th Avenue, Seattle, Wash.

[Untracht also lists sources for power tools, chemicals, gems, abrasives, casting supplies, welding supplies, foundries, wood, plating equipment. Also British suppliers.]

**\* Your Handspinning**

THE book on handspinning.

The book commences with a discussion of wool & sheep, then come chapters devoted to sorting a fleece, learning to make a continuous yarn & the art of carding & spinning wool. There is an excellent section on the construction, use & maintenance of spinning wheels & hints on buying a wheel. There is information on the cultivation & preparation of flax, and the spinning of fibres such as silk, angora rabbit, camel & other animal hairs. There is a chapter on plying & the making of fancy yarns and a section devoted to the preparation of spun yarns for use—washing, bleaching, etc. The book concludes with a chapter on machine spun yarns: counts/ qualities & defects/ fibre identification. Illustrated with many line drawings.

[Suggested by Victoria Becker]

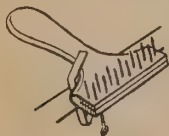
**Your Handspinning**

Elsie Davenport  
1953, 1964; 130 pp.

**\$3.95** postpaid

from:  
Craft & Hobby Book Service  
P. O. Box 626  
Pacific Grove, CA 93950

or WHOLE EARTH CATALOG



**Dog Combing, etc.**

Many dogs yield combings or clippings which can be spun into useful yarns by whichever method is best suited to the length and character of the fibres. Poodle clippings, for example, make a very pleasant "woollen" yarn while the lustre of Spaniel hair needs a worsted spin. The addition of a little oil prior to combing or carding may make spinning easier.

Combing or clippings should be stored until wanted in an air-tight container in a cool place, preferably with a moth deterrent such as paradichlorbenzene.

No instance of the use of cat's hair for spinning has ever come to light but it would be quite possible to spin combings of a fine haired Persian, especially carded with suitable wool. The author's experiments with a mixture of Siamese and camel are not to be recommended!

[These books reviewed  
by Sarah Kahn]

**Card Weaving Cards**

**\$2.95** /100 cards

from:  
Lily Mills Co.  
Shelby, N. C. 28150

or WHOLE EARTH CATALOG

**\* Byways in Handweaving**

The book is concerned with rare weaving techniques and patterns from ancient Egypt & Peru, modern Guatemala, Scandinavia, the South Pacific, Atlas Mountains and various American Indian tribes. Most of the weaves are for narrow bands but many may be adapted for wider fabrics.

There has been a great resurgence of interest in both card-and inkle-weaving since this book was first published in 1954. Both sections include clear text, many pattern diagrams & fine color illustrations of finished pieces. The rest of the book is concerned with a number of other little-known techniques; "primitive" only in the aspect of being non-loom, or requiring only the simplest of materials. There are examples of twined weaving as practiced in many parts of the world as remote from one another as Persia, the Subarctic & the South Seas. A fascinating chapter on braiding & knotting includes a group of Indian, Egyptian, Chinese & Peruvian braids, belt-braiding, Osage braiding. Another section deals with some very subtle and beautiful belt-weaves of Peru, Estonia & Guatemala.

Included in the book are techniques ranging from those simple enough for a child or for use in occupational therapy to some rather difficult & intricate methods which should be quite stimulating to experienced weavers.

**Byways in Handweaving**

Mary Meigs Atwater  
1954, 1967; 128 pp.

**\$7.95** postpaid

from:  
The Macmillan Company  
Front and Brown Streets  
Riverside, Burlington County, N.J. 08075

or Craft & Hobby Book Service (see p. 51)

or WHOLE EARTH CATALOG

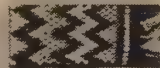


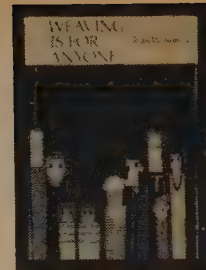
Fig. 18-3 - A  
Fig. 18-10 - B



**\* Weaving is for Anyone**

Rich & inspiring, the theme & theory of this book is that anyone can weave on almost anything. Included in one volume are instructions for making simple and inexpensive looms and a variety of techniques for weaving on these looms. There are directions for looms made of cardboard, picture frames, boards & nails, boxes; there are round looms, bag & backstrap looms. There is a discussion of Peruvian, Chilkat, Salish, Navajo, Ghanaian & Coptic weaving & beautiful illustrations of these techniques and the looms on which they are woven. There are illustrated definitions of weaving terms. A chapter entitled "Weaving from Nature" suggests that a walk in the garden or woods can yield some fine weft material. Over 230 drawings & photos. A good general sourcebook, full of both turn-on and good practical information.

[Suggested by Ann Marie Goldstein]



**Weaving is for Anyone**

Jean Wilson  
1967; 144 pp.

**\$8.95** postpaid

from:  
Van Nostrand-Reinhold Co.  
450 West 33rd Street  
New York, N. Y. 10001

or Craft & Hobby Book Service (see p. 51)

or WHOLE EARTH CATALOG



**\* Procion Fiber Reactive Dyes**

Discovered in England in 1956, these are quite different from other dyes in several respects: brilliance of color, simplicity of application, and fastness to light & washing.

Applicable to cotton, linen, rayon & silk, they are not suitable for dyeing wool. Well suited to the needs of the handweaver & stitcher, the printer & batik worker. Used in a thickened printing paste, procion dyes are ideal for painted warp technique.

Information and prices from: Glen Black  
1414 Grant Avenue  
San Francisco, CA 94133

**\* New Key to Weaving**

A one-book weaver's library. A comprehensive textbook covering all aspects of loom-weaving. Incredibly packed. Section on tapestry weaving alone is worth the cost of the book.

[Suggested by Victoria Becker]

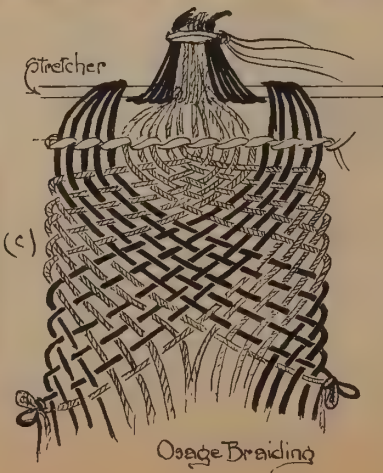
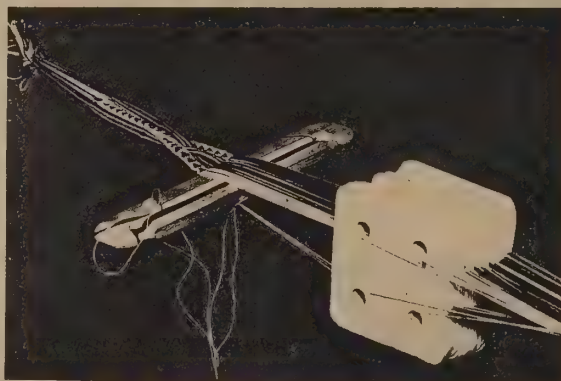
**New Key to Weaving**

Mary Black  
1945, 1949, 1957; 573 pp.

**\$12.00** postpaid

from:  
The Bruce Publishing Company  
400 North Broadway  
Milwaukee, Wis. 53201

or WHOLE EARTH CATALOG



★ **America's Knitting Book**

*Did you know that sweater sizes aren't standard? I didn't. Gertrude Taylor tells you how to choose your correct size by glancing through the pattern direction: Add the no. of stitches in the complete bust line and divide by the stitch gauge. This will give you the correct size. Be warned to add 3 inches to your actual measurement for ease.*

America's Knitting Book contains all the information needed for a beginner in an easy to understand style.

"Do not hold needles like a pencil. Perch up on top of the needles." How many people quit before starting because it was too hard to hold needles like a pencil?

The instructions are good and the graphics don't look like 1940. There is also lots of stuff that's far too advanced for me to really comment on except to say that I felt that I could do it with the instructions given.

[Reviewed by Lois Brand. Suggested by Ann Hresko]

**America's Knitting Book**  
Gertrude Taylor  
1968; 288 pp.

**\$9.95** postpaid

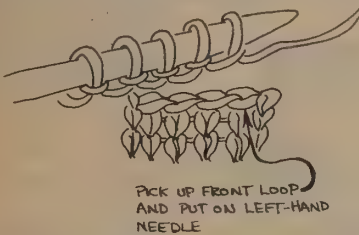
from:  
Charles Scribner's Sons  
Vreeland Avenue  
Totowa, N. J. 07512

or WHOLE EARTH CATALOG



*The Improved Horizontal Buttonhole*

Starting at the front edge, work two stitches (or whatever your pattern calls for), bind off the next four stitches (or whatever your pattern calls for). Work to the end of the row. On the next row, work until you come to the hole, then turn your work around and "knit on" four stitches as in making the regular buttonhole, then pick up the front loop of the first bound off stitch and slip it onto the needle next to the knit-on stitches. Then turn your work around again and work to the end of the row (2 stitches). On the following row, work two stitches then knit together the "picked-up bound-off stitch" and the last stitch of the knit on stitches.



PICK UP FRONT LOOP AND PUT ON LEFT-HAND NEEDLE

This buttonhole may be used whenever you are working with knotty or nubby yarns and cannot plan on hand-finishing the buttonholes. If you are working with smooth yarn, you will be hand-finishing the buttonholes, and it is not necessary to use this improved buttonhole.

**Macramé, the Art of Creative Knotting**

Although designs for knotted pieces differ according to locale and use, there are very few individual knots. Virginia I. Harvey has collected photographs of traditional knotted pieces throughout the world and presents them in a book called *Macramé, the Art of Creative Knotting*. She carefully diagrams the half-knot, square knot, double half-hitch, diagonal double half-hitch, vertical double half-hitch and other knots. The basic knots are described in detailed instructions for making a sampler. Following the pattern for the sampler will give the beginner experience in doing the knots, and show how combining just a few types of knots can offer large pattern variation.

This book is the best reference manual of knotting technique available. It offers information on all facets of macramé, including discussion on planning, mounting, shaping and finishing a knotting project. Tools and materials are displayed. There are photos exhibiting how different fibers worked in the same pattern can vastly alter visual and textural effects. The pictorial history of macramé and examples of contemporary knotting projects offer plenty of design ideas for more advanced macramé craftsmen.

Knotters interested in explicit directions for traditional macramé purses can obtain patterns by sending \$1.10 to: Pesch Art Studio, 28 Colonial Parkway, Dumont, N. J. 07628 with a request for "Macramé Bags," Booklet A.

[Reviewed by Sue Boyle.  
Suggested by Alexandra Jacopetti]

Virginia I. Harvey, author of *Macramé*, announces the new quarterly publication, *Threads in Action*, a technical publication on non-loom techniques. *Macramé* will be the principal subject with occasional articles on stitchery, bobbin lace, netting, knotless netting, sprang, knitting, crochet, and others.

Subscriptions are **\$8.50/year**

from:  
*Threads in Action*  
Box 468  
Freeland, Washington 98249

Individual copies are **\$2.50**, or **\$3.25** with yellow vinyl cover.

[Suggested by Helen Bitan]

**Macramé, The Art of Creative Knotting**  
Virginia I. Harvey  
1967; 128 pp.

**\$8.50** postpaid from:

Van Nostrand-Reinhold Co.  
450 West 33rd Street  
New York, N. Y. 10001

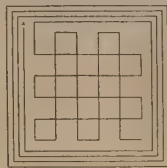
or WHOLE EARTH CATALOG

★ **Successful Sewing**

1. Contains a good list of equipment with reasons for having each item.
2. Contains a good chapter on the selection, use and care of a sewing machine for you.
3. Contains a clear explanation of sewing processes generalizing whenever possible, and not creating a lot of special cases.
4. Contains a complete section on fabrics, fibers, and finishes including background, use, properties and home laundering instructions.

[Reviewed by Lois Brand]

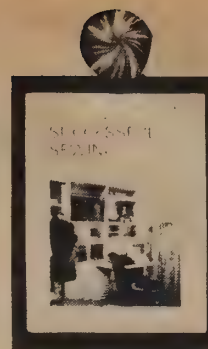
*Practice sewing straight.* If you have never used a sewing machine before, it is a very good idea to start by sewing practice lines, angles and curves. One sewing machine manufacturer, Viking Husqvarna, produces practice sheets (domestic science teachers and college lecturers can make block applications for classroom use) and they have given me their permission to reproduce two of them here. . . . Sew along the lines keeping as accurate as possible. Do not watch the needle but keep your eyes on the sewing line. If you wish you may sew without thread on these practice squares, though it is perhaps more encouraging if you do use thread.



Practice patterns.

*Flat fell seam.* This is very similar to the welt seam finish but is the seam used when you are sewing fine garments such as lingerie and baby clothes. It is sewn with the wrong sides of the fabric facing each other, so that the turnings come on to the right side of the garment. Stitch along the normal seam line. Trim one seam allowance to 1/4 in. Press both seam allowances to one side, with the trimmed seam allowance underneath. Turn under the raw edge of the other seam allowance about 1/4 in. and press. Pin, tack and stitch down by machine or by hand to conceal all raw edges.

This is quite a useful seam for fine fabrics with edges which tend to fray or curl up unless properly secured.



**Successful Sewing: A Modern Guide**  
Nesta Hollis  
1969; 206 pp.

**\$8.75** postpaid

from:  
Tatler Publishing Co., Inc.  
29 East Tenth Street  
New York, N. Y. 10003

or WHOLE EARTH CATALOG



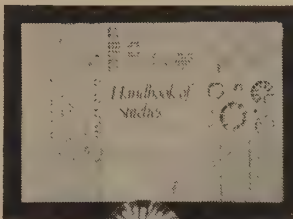
*French seam.* This is the traditional seam for fine, hand-sewn lingerie, but whether sewn by hand or by machine, a French seam can also be extremely useful for other garments, and especially for fine garments for babies and young children, where frequent washing might cause an unfinished seam to fray or unravel.

Like the flat fell seam, the French seam is produced the "wrong way" — the wrong sides of the fabric are placed together for stitching, so that the raw edges appear on the right side of the article.

Instead of stitching on the seam line, stitch nearer to the raw edges of the fabric—say about 3/8 in. from the edge of the fabric. Trim the seam allowance slightly; turn article to the wrong side. Fold along the stitched seam line so that the right sides of the fabric are touching. Press along the fold, and make a line of tacking stitches 3/8 in. from the fold. Then stitch. No raw edges should be visible on the right side of the fabric; nothing looks worse than a French seam where strands are trapped in the seam, and there is almost no way of getting rid of these untidy ends once the seam has been stitched. Finally, open and press.

★ **Handbook of Stitches**

200 embroidery stitches, with descriptions, diagrams & samplers. Compact handbook, good for beginners.

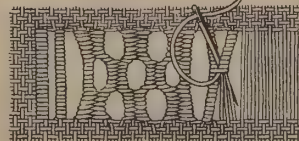
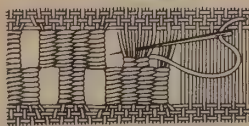


**Handbook of Stitches**  
Grete Petersen and Else Svannas  
1959, 1966, 1970; 76 pp.

**\$3.50** postpaid

from:  
Van Nostrand-Reinhold  
450 West 33rd Street  
New York, N. Y. 10001

or WHOLE EARTH CATALOG



**Dye Plants and Dyeing**

This book I consider about the best that is available on its subject and would make an excellent basic handbook for the beginner. It contains historical information as well as the basic steps to dyeing, recipes, and articles about dye plants from various regions and countries. So, no matter what part of the country you live in, you will find a variety of plants and recipes which you would be able to use. There is enough information in this book which should enable you to start your own dyeing and end up with satisfactory results . . . which is not true of all natural dye books. The one difficulty in using it, however, is that there is no index.

[Reviewed by Carole Beadle]

**Dye Plants and Dyeing**  
100 pp.

**\$1.25** postpaid

from:  
Brooklyn Botanic Garden  
Brooklyn, N. Y. 11225

or WHOLE EARTH CATALOG

**CUM Yarn Samples**

Though one can stockpile free & usually mediocre yarn catalogs, \$3 sent to CUM brings a large binder filled with sample-cards of handweaving yarns of finest quality, large color range, yet cheaper than dime-store knitting worsted.

CUM is now set up to handle U.S. orders; their catalog/price list is in English, gives price per pound in dollars, unlike other European yarn houses. Samples include 1 & 2-ply woolen yarn, rug, tapestry & knitting yarns, worsted, cotton & linen yarns, rug warps, twine. All yarns are mothproofed; prices average less than \$3/lb. for yarns of high quality, esthetically and structurally. Orders answered promptly; delivery time approx. 6 weeks by ship, less than 2 weeks by air.

Catalog and Binder of samples

**\$3.00** postpaid

from:  
CUM Textile Industries, Ltd.  
Rømersgade 5  
1362 Copenhagen K  
Denmark

★ Tie and Dye

This is the only book on tie-and-dye that is available in this country. A few other books briefly discuss tie-and-dye, one of the simple means of fabric design, suitable for school-children, blah, blah, blah. But Ann Maile treats tie-and-dye like an ancient and complex folk art. Not that she is pedantic. She very clearly explains how to accomplish all the traditional and intricate effects possible with limited materials and free-flowing organic imagination. Tie and dye is such a simple art form that many people have already discovered it, and are doing it without any books to tell them how. So why buy a book?

You can buy bolts of machine printed tie and dyed drip proof, smear dry never iron cotton, . . . pretty far out. But the question isn't to be or not to be far out. The question is whether you are into the craft of tie and dye in order to create beautiful objects or just weird artifacts. If you want to really get into it, the book seems really useful and inspiring. If not—well, . . .

[Reviewed by Terry Gunesch. Suggested by Madge Gleeson.]



**Tie and Dye**  
Anne Maile  
1963, . . . 1969; 182 pp.

**\$6.50** postpaid

from:  
Taplinger Publishing Co., Inc.  
29 East Tenth Street  
New York, N. Y. 10003

or **WHOLE EARTH CATALOG**

**\$3.00** from Blackwell's (see p. 79)



Outlining Shapes in Oversewing

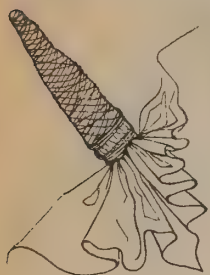
Oversewing or whipping stitch can be used very successfully to outline any shape drawn on the sample. Whether further stitching or binding is added within the shape is a matter of choice. This way of outlining does not bunch the cloth up to quite the same extent as a running stitch outline. The scale of the actual stitching may be quite small, about 1/8 in. across, using single or double Sylko, or up to 1/2 in. wide, with double thread. The width of the stitches, that is the amount of cloth picked up on the needle, each time it is inserted into the cloth, decides the thickness of the outline, and their density determines the tone. For instance, a clear-cut resist outline will need more stitches per inch than a medium toned contour.

Variation in the thickness and tone of the lines should be exploited in working out designs.

It is almost impossible to get fine delicate designs on coarse fabric, but, on the other hand, with fine cloth any degree of fineness or coarseness in a pattern is possible.

Method

Draw or trace the design on cloth. Decide which are to be made thick dominant lines and which not so outstanding. With the appropriate cotton or thread, single or double, knotted at one end, begin to sew a little to one side of the line. Take each stitch over and under it at any angle between 30 deg. and 60 deg.



SEWING TECHNIQUE OR TRITIK

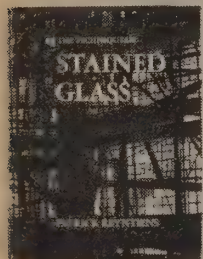


Textured squares

★ The Technique of Stained Glass

Alright, you dome builders, now that you've got the sunlight working for you, how about getting it to play for you. There's livelier routes to color than car tops. Stained glass technique, ancient and modern, is here in depth. List of suppliers given.

[Suggested by Stephen B. Siegal]



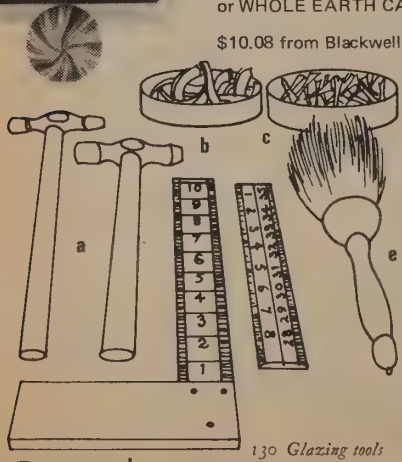
**The Technique of Stained Glass**  
Patrick Reyntiens  
1967; 192 pp.

**\$15.00** postpaid

from:  
Watson-Guptill Publications  
165 West 46th Street  
New York, N. Y. 10036

or **WHOLE EARTH CATALOG**

**\$10.08** from Blackwell's (see p. 79)



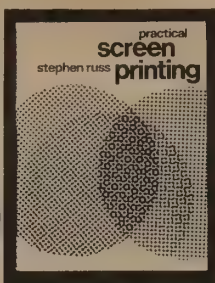
130 Glazing tools

- a light hammers d set square
- b lead scraps e brush
- c farrier's (horse-shoer's) nails



★ Practical Screen Printing

Aha. A good silk screen printing book.



**Practical Screen Printing**  
Stephen Russ  
1969; 96 pp.

**\$8.50** postpaid

from:  
Watson-Guptill Publications  
165 West 46th Street  
New York, N. Y. 10036

or **WHOLE EARTH CATALOG**



The secret of smooth and trouble-free printing is to have everything organized, and all the materials and equipment checked before colour is put into the screen. As far as possible the day should be planned so that the whole edition can be printed straight off without a break, because if things are going to go wrong, they will go wrong when printing is interrupted. It is very much easier to keep up a steady, rhythmical output if two people can work together as a team: the printer concentrates on printing, and the helper takes away the wet prints and hangs them up to dry. Textile and wallpaper printing on the long table is, in any case, a two-man job.

Plastics

These two books give a good idea of what's possible in art with super-versatile plastics. Newman is more comprehensive and has an excellent materials chart. Roukes has some unique techniques and more inspiring pictures. Both list suppliers.

[Suggested by Jim Robertson and Audrey M. Simurda]

**Sculpture in Plastics**  
Nicholas Roukes  
1968; 176 pp.

**\$12.50** postpaid

from:  
Watson-Guptill Publications  
165 West 46th Street  
New York, N. Y. 10036

or **WHOLE EARTH CATALOG**



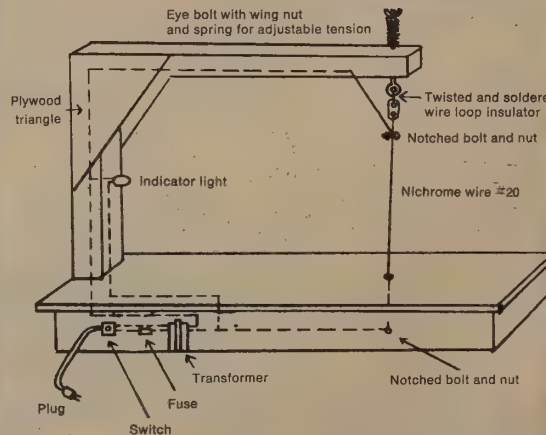
**Plastics as an Art Form**  
Thelma R. Newman  
1964, 1969; 403 pp.

**\$12.50** postpaid

from:  
Chilton Book Company  
401 Walnut Street  
Philadelphia, PA 19106

or **WHOLE EARTH CATALOG**

**\$10.80** from Blackwell's (see p. 79)



Cutting intricate forms from Styrofoam and other cellular plastic foams is easy with this 6 volt hot wire cutter, which you can make at home if you are handy. As the diagram indicates, you can make the entire structure out of wood, plus the following parts, available from your local radio parts store and hardware store: transformer, filament 6.3V @ 10 amps; switch, double pole, single throw; red indicator light; fuse holder and fuse; insulator; nickel chrome wire; plug and rubber coated wire; notched bolts and nuts; spring.

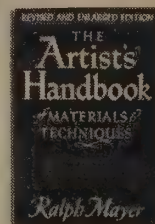


★ The Artist's Handbook of Materials & Techniques

Written in a time when "artist" meant "painter", this classic gives detailed technique on preparation of your own materials for painting.

These emulsions have been employed by experimental painters, but because no standard tradition has been established they must be closely observed and tested before being used, to make certain that they are homogeneous mixtures miscible with solvent and that they will dry well. The presence of finely divided pigments is helpful in the formation of water-in-oil emulsions; tube oil colors can be used in their preparation.

The presence of much turpentine in an emulsion recipe definitely favors the formation of the regular, or oil-in-water type; on the other hand, formation of the water-in-oil type can be aided by omitting all volatile solvent from the mixture. I find that whole egg gives far superior results than egg yolk, in every respect.



**The Artist's Handbook of Materials & Techniques**  
Ralph Mayer  
1940, 1947; 721 pp.

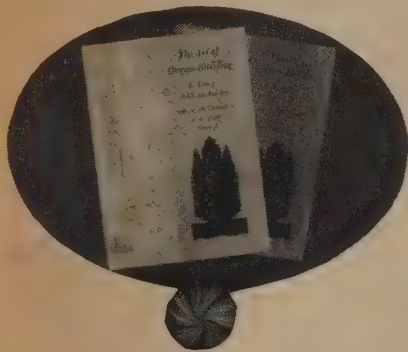
**\$6.95** postpaid

from:  
The Viking Press  
625 Madison Avenue  
New York, N. Y. 10022

or **WHOLE EARTH CATALOG**

★  
The Art of Organ-Building

If you like the idea of combining architecture and musical instrument design, this book is the standard of pipe organ construction. Hey Baer, could we drive one with solar energy, or would it only work when the wind was blowing?

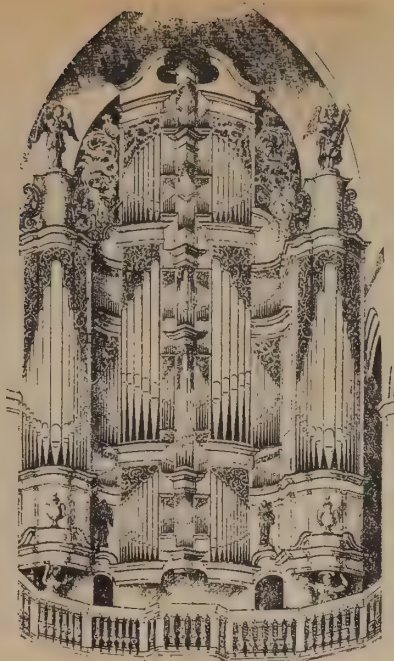


**The Art of Organ-Building**  
George Ashdown Audsley  
1905, 1965; 1358 pp.; 2 vols.

**\$17.50** postpaid

from:  
Dover Publications, Inc.  
180 Varick Street  
New York, N. Y. 10014

or WHOLE EARTH CATALOG



Wooden pipe of a *Principal* or *Open Diapason*, 16 ft.

**TRUMPET.** Ger., TROMPETE. Fr., TROMPETTE.—This is probably, taken generally, the most important reed stop in the Organ, adding richness and dignity to every combination of stops into which it enters. So important and useful is a good TRUMPET, 8 FT., that no Organ of any pretension is built without one. The proper tone of the TRUMPET is imitative of that of the orchestral instrument; and there is almost unlimited scope for the skill of the reed voicer in the production of this stop. The tubes of the TRUMPET are of metal and of inverted conical form and normal speaking lengths.

**TUBA or TUBA MIRABILIS.**—A reed stop of the TRUMPET class, but distinguished from the ordinary TRUMPET by its powerful and commanding voice. Its pipes have resonant tubes of large scale and normal speaking length, and are voiced on high-pressure wind, varying from 10 inches to 30 inches. Much higher pressures have been proposed for this stop; but, in the name of musical art, if not of common sense, it is to be hoped that such proposals will be condemned by every person possessing musical sense and taste. The four powerful reed stops in the Solo division of the Concert Organ in St. George's Hall, Liverpool, speak on wind of 22 inches, and their tones dominate those of all the remaining ninety-six speaking stops combined.

★  
Velodur

The following is from a Navy report.

DESCRIPTION

Velodur-metal is a molecular bonding metal that can be used to bond materials together without heat or energy. Its components are macro-molecular substances and atomized steel and aluminum particles which form a metallic bond. It can be used on steel, aluminum, copper, brass, zinc, concrete, tile, glass, wood, rubber, cast iron, and synthetics. Two or more unlike metallic materials may be bonded together with no electrolytic action taking place. Velodur-metal is nontoxic, nonflammable, it has unlimited shelf life, will resist heat up to 570 degrees F, and will not conduct electricity. The standard bonding metal consists of two components, an activator and a base. These two components are mixed by volume on a 1 : 1 ratio. The curing time is 3-4 hours; after this time Velodur-metal may be drilled, threaded, machined or ground. Velodur-metal also comes in a rapid form, mixed on a 1 : 1 ratio also, that allows repairs on tanks, piping systems and other pressure vessels while still under pressure. Velodur rapid cures in 4-5 minutes. However, the Velodur rapid will not hold up as well as the standard Velodur. After using the Velodur rapid to stop the flow of pressure the Velodur standard metal should be applied over the rapid for the best and lasting results.

USS NANTAHALA (AO 60) — Butterworth heater, upper level, forward engineering room, expansion joint was badly deteriorated along bottom and continually leaking due to several holes. Welding or brazing were impossible. Velodur-metal was applied using fiberglass cloth as a void cover with excellent results. The operating pressure and temperature of this heater is 125 psi and 400 degrees F.

Velodur Metal Technical First Aid Kit Contains:

- 2½ lbs. Velodur Metal Standard
- ½ lb. Velodur Rapid
- 1 bottle Special Cleaner
- 1 yard reinforcement tape
- 1 spatula
- ½ pt. Velodur Fluidizer
- 1 measuring cup

Complete kit . . . \$75.00

from:  
American Velodur Metal, Inc.  
P. O. Box 156  
Scituate, Mass. 02066

F.O.B. Scituate, Mass.

★  
Del Trading Post

Supplies authentic raw materials for American Indian crafts, particularly northern plains. Excellent selection of beads.

Catalog

**\$15**

from:  
Del Trading Post  
Mission, South Dakota 57555

16/0 Czech beads — These are the very smallest beads being made. Excellent for use on Peyote style fans, gourds and staffs. We have the largest selection of colors of any dealer in the country. .15 per bunch.

dot

BUFFALO HIDES — These are full size cow and bull hides, winter killed. After they are skinned, the hides are heavily salted, rolled up and tied. This is the way we get them and the way we sell them. Because of the salt the hides can be kept for a long time without fear of spoilage or bug damage. Price is \$25.00 plus shipping. Note: Because of the large size we cannot ship these to Europe.

dot

TRADE CLOTH — In the old days English Stroud Cloth was one of many types of "trade cloth" and was characterized by 3 dark lines running in the white selvedge edge. This cloth was popular on the Northern Plains, particularly in Canada, and was used for clouts, leggings, dresses, shirts, etc. This cloth is still being made by the same English mill who made the old cloth but they no longer "save" the selvedge. In other words the cloth is dyed right to the edge, there is no white selvedge. The 3 dark lines are still woven in along the selvedge however. In color, weave and texture it is the same as the old cloth. 100% wool Stroud, 56" wide, made in England — \$15.00 per yard. Scarlet and Navy blue available.

Craft & Hobby Book Service

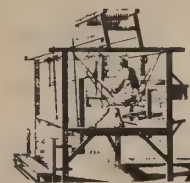
Mail order only, Craft & Hobby Book Service offers a free, comprehensive and invaluable catalog of books for weavers and needle-workers. Only source for many of the titles listed. Books from all over the whole earth on hand-weaving, spinning, dyeing, loom-building, knitting, rugmaking, macramé, embroidery, tapestry, lace-making, knots & knotting, textile design. Newly revised & expanded catalog includes select titles in related fields: textile printing, batik, tie-dye, costume design, folk & primitive art & crafts, bead-work, color theory. Each book is well reviewed / catalog is thoroughly indexed / service is prompt & personal / books may be returned if not found suitable.

[Suggested and reviewed by Sarah Kahn]

Catalog

free

from:  
Craft & Hobby Book Service  
P. O. Box 626  
Pacific Grove, CA 93950



★  
Diderot Pictorial Encyclopedia of Trades and Industry

I have a feeling that publication of this book will obsolesce the Bettman archive, because here—copyright free—are the 18th century engravings that everybody's been copping and reprinting since the 18th century.

The illustrations are clear enough that you really inspect some of the technique of masonry, agriculture, glass-making, fishing, dyeing, paper-making, metal-working, all that stuff at the intersection of craft and industry.

It says on the dust jacket that "Diderot committed his Encyclopedia to the goal of publicizing trade secrets in the hope that this would lead to more rational industrial processes." Helluva project. Did it work?



**A Diderot Pictorial Encyclopedia of Trades and Industry**

Denis Diderot. Ed. Charles Coulston Gillispie  
1763, 1959; 920 pp.; 2 vols.

**\$25.00** postpaid

from:  
Dover Publications, Inc.  
180 Varick Street  
New York, N. Y. 10014

or WHOLE EARTH CATALOG



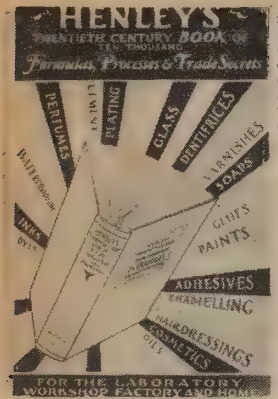
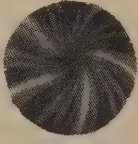
In cities built of stone, the mason had the central place in the building trades which in America is occupied by the carpenter. This plate is arranged to illustrate his different tasks in the construction of some grand house: (A) hoisting stones all cut to fit; (B) mortaring joints; (C) truing a footing; and (D and E) marking stones with rule and calipers and cutting them to measure. Almost lost in the background (G) is a mason sawing a large block. Various laborers mix mortar (F) and haul sand and plaster about (I,K).

## ★ Henley's

Henley's was first published in 1907, and is a fascinating mixture of obsolete and still useful formulas and processes as advertised. Some are useful but obscure (formulas for fire-eating); Some are useful but who cares? (formulas for furniture glue not as good as what you can buy); Some are frighteningly incomplete (the section on explosives); Some are bizarre (a hair pomade containing Spanish Fly); Some you can get better elsewhere (ceramic glazes); Some are funny (remove frost from windows by swabbing them with sulfuric acid); Many brews require chemicals not easily available, but sources are given (mostly in New York) and there is a glossary of outmoded terms. Some of the formulas might be of historical interest (how to make harness grease). It's not a pretty book; every copy I've seen has printing flaws, probably due to worn plates. I've been happily thumbing through my copy now and then for many years. I've never used anything from it.

[Suggested and reviewed by J. Baldwin]

**Red for Wool.**—For 40 pounds of goods, make a tolerably thick paste of lac dye and sulphuric acid, and allow it to stand for a day. Then take tartar, 4 pounds, tin liquor, 2 pounds 8 ounces, and 3 pounds of the paste; make a hot bath with sufficient water, and enter the goods for 1 hour; afterwards carefully rinse and dry.



Henley's  
1907... 1957; 867 pp.

\$5.95 postpaid

from:  
Embassy Sales  
Box 67  
East Elmhurst, N. Y. 11369

or WHOLE EARTH CATALOG

**Anti-Freezing Solution for Automobilitis.**—In the average size (20 qt.) automobile engine radiator, if 14 gallons of ethylene glycol is used, together with 10 oz. of sodium chromate, the radiator and engine block will be protected to -20° F., and the cooling system will at the same time be protected against destruction by corrosion.

**Anti-Freezing, Non-Corrosive Solution.**—A solution for water-jackets on gas engines that will not freeze at any temperature above 20° below zero (F.) may be made by combining 100 parts of water, by weight, with 75 parts of carbonate potash and 50 parts of glycerine. This solution is non-corrosive and will remain perfectly liquid at all temperatures above its congealing point.

**Anti-Frost Solution.**—As an excellent remedy against the freezing of shop windows, apply a mixture consisting of 55 parts of glycerine dissolved in 1,000 parts of 62 per cent alcohol, containing, to improve the odor, some oil of amber. As soon as the mixture clarifies, it is rubbed over the inner surface of the glass. This treatment, it is claimed, not only prevents the formation of frost, but also stops sweating.

### FIRE EXTINGUISHER (For Automobiles):

Mix well together:  
98 Parts of Carbonate of Soda  
2 Parts of Oxide of Iron

When this mixture is thrown on a fire carbonic gas is liberated. This gas being heavier than air, smothers the fire.

## ★ The Tools and Rules for Precision Measuring

A good basic book for "mechanics, hobbyists and home workshop owners." The title describes it well. Being a Starrett publication, it naturally shows only Starrett tools, but the information is good for almost all makes. Its information is primarily on Micrometers, Dial Indicators and Gage Blocks, although it covers other tools briefly. Has several useful tables in the back.

[Suggested and reviewed by Fred Richardson]

In effect, a micrometer caliper combines the double contact of a slide caliper with a precision screw adjustment which may be read with great accuracy. It operates on the principle that a screw accurately made with a pitch of forty threads to the inch will advance one-fortieth (or .025) of an inch with each complete turn. As the sectional view shows, the screw threads on the spindle revolve in a fixed nut concealed by a sleeve. On a micrometer caliper of one inch capacity, the sleeve is marked longitudinally with 40 lines to the inch corresponding with the number of threads on the spindle. Every fourth line is made longer and is numbered 1, 2, 3, 4, etc. to indicate one-tenth inch, two-tenths, etc. while other lines are staggered for easy reading.

### The Tools and Rules for Precision Measuring:

The L. S. Starrett Co.  
1965; 80 pp.

free

from:  
The L. S. Starrett Co.  
Athol, Mass. 01331

Man is a tool-using animal. Weak in himself and of small stature, he stands on a basis of some half square foot, has to straddle out his legs lest the very winds supplant him. Nevertheless, he can use tools, can devise tools; with these the granite mountain melts into light dust before him; seas are his smooth highway, winds and fire his unwearied steeds. Nowhere do you find him without tools. Without tools he is nothing, with tools he is all.

Thomas Carlyle (1795-1881)



## ★ Electric Motors

This book gives a few principles on motor operation fundamentals, then describes in more detail several types of ac and dc motors and the control and starting devices needed to run them. Some curves of operating characteristics and a brief trouble-shooting guide are given for each type of motor. There is enough information to get a feel for the differences between the many types of ac and dc motors which exist, but it would probably be difficult for a layman to use this book to select the proper motor for a given application without outside help. It is probably also necessary to have a basic understanding of simple electricity theory (see the Basic Electricity series by Rider Publications) before reading Electric Motors. Nevertheless, it is a fairly complete survey of available motor types, all under one cover.

[Reviewed by Marv Vickers]

### Electric Motors

Edwin P. Anderson  
1968; 414 pp.

\$5.95 postpaid from Audel's or Whole Earth Catalog  
(cheaper from Silvo or U.S. General)

from:  
Theodore Audel & Co.  
Division of Howard W. Sams & Co., Inc.  
4300 West 62nd Street  
Indianapolis, Indiana 46206

or WHOLE EARTH CATALOG

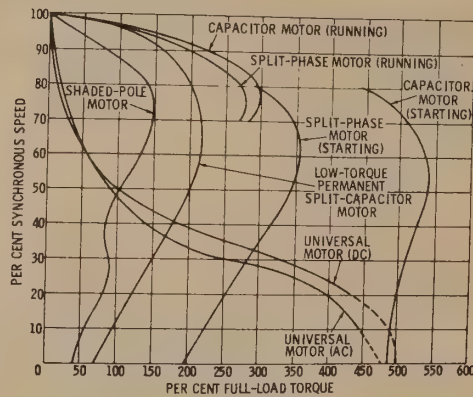


Fig. 20. Speed-torque characteristics of common types of fractional-horsepower motors.

Fractional-horsepower motors are manufactured in a large number of types to suit various applications. Because of its use in a great variety of household appliances, the fractional-horsepower motor is perhaps better known than any other type. It is nearly always designed to operate on single-phase AC at standard frequencies, and is reliable, easy to repair, and comparatively low in cost.

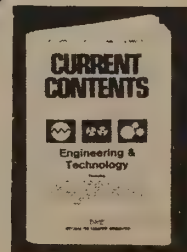
Single-phase motors were one of the first types developed for use on alternating current. They have been perfected through the years from the original repulsion type into many improved types, such as:

1. Split phase.
2. Capacitor-start.
3. Permanent-capacitor.
4. Repulsion.
5. Shaded-pole.
6. Universal.

## ★ Current Contents

Expensive access. This is a weekly magazine of contents pages of journals in your field—Engineering and Technology; Physical Sciences; Chemical Sciences; Behavioral, Social & Management Sciences; Education; Agricultural, Food & Veterinary Sciences; and Life Sciences. I'll bet anything that President Garfield, whose brainchild this is, is some kind of a mensa.

Current Contents (subject areas above)  
\$100 /yr (\$67.50 to schools, hospitals, etc.)



from:  
Institute for Scientific Information  
325 Chestnut Street  
Philadelphia, PA 19106



Dr. Eugene Garfield,  
President of Institute for  
Scientific Information

## ★ Home Appliance Servicing

This is the most useful book on home appliance repairing that I have seen. It is intended for the serviceman, but it is written clearly enough to help anyone who knows how to use a screwdriver. Covers small and large appliances like ranges (gas and electric), refrigerators, & air conditioners.

Reading the appropriate section before calling a repairman would be good insurance against padded repair bills.

[Suggested and reviewed by Fred Richardson]

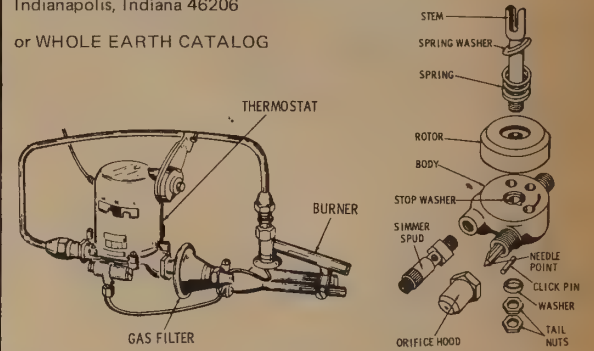
### Home Appliance Servicing

Edwin P. Anderson  
1965; 600 pp.

\$6.95 postpaid from Audel or Whole Earth Catalog  
(cheaper from Silvo or U.S. General)

from:  
Theodore Audel & Co.  
Division of Howard W. Sams & Co., Inc.  
4300 West 62nd Street  
Indianapolis, Indiana 46206

or WHOLE EARTH CATALOG



With top lighters, pilot flames generally should be adjusted so that the top of the flame does not come in contact with any part of the lighter. An impingement of the flame on cold metal will usually produce either an undesirable odor from the incomplete combustion of the gas or an undesirable carbon deposit. Pilot outage and odor are sometimes experienced with lighters that have a solid top lighter hood; these conditions are caused by an accumulation of carbon and dirt in the dome and around the air ports of the hood and can usually be corrected by drilling a 1/2-inch-diameter hole in the top of the hood.

### Washer Service Chart

Trouble	Possible Cause	Remedy
Motor overheats and stops.	Washer overloaded.	If dry load did not exceed that given in the instruction book, check whether towels, blankets, or other highly absorbent fabrics are causing washer to become overloaded. If machine is oversoaped, this will clog drain and impose an undue load on motor.
Noisy motor.	Pump impeller loose.	Remove pump, and check impeller for loose setscrew. Tighten if necessary.
	Transmission defects.	See that gears do not show signs of excessive wear. Replace when necessary. Check oil level. If transmission check is satisfactory, and motor noise prevails, motor bearings or other motor parts are faulty. Repair or replace motor.
Motor does not reverse.	Belt slipping.	Check tension of transmission to V-belts. See that belt is not cracked; if so, replace.
	Motor reverse relay not functioning.	See that connections are secure or that relay or timer is not loose on terminals. If relay contacts are badly burned, they should be replaced. If relay coils are faulty, replace or obtain new relay of same manufacture as that previously used.

## IEEE TRANSACTIONS ON SYSTEMS SCIENCE AND CYBERNETICS

ET 0380

Volume SSC-5 1969 Number 3

### PAPERS

Some New Approaches to Machine Learning	N. V. Finder	173
Additional Features of an Adaptive, Multicategory Pattern Classification System	J. M. Pitt and B. F. Womack	183
Constraint Theory. Part III: Inequality and Discrete Relations	G. J. Friedman and C. T. Loewens	191
Development of a Community Health Service System Simulation Model	F. D. Kennedy	199
Stochastic Allocation and System Analysis	A. Klinger	207
A Formulation of Fuzzy Automata and its Application as a Model of Learning Systems	H. G. Wee and K. S. Fu	215
The Systems Approach to Test Evaluation	D. M. Bradley	223
Electrochemically Active Field-Trainable Pattern Recognition Systems	R. M. Stewart	230
Stochastic Learning of Time-Varying Parameters in Random Environment	Y. T. Chien and K. S. Fu	237

### CORRESPONDENCE

Recursive Estimates of Probability Densities	C. T. Wulbert and T. J. Wagner	246
An Evolutionary Pattern Recognition Network	A. H. Klop and E. Guse	247
Every Norm is Not Logarithmically Convex	A. Klinger	250
Application of Optimal Control Theory to the Crashworthiness of a Passenger Vehicle Model	H. Kaufman and D. B. Larson	251
Strategy and a Tactic for Generation of Transportation Alternatives	P. W. Shulimner and R. D. Nutter	257
Correction to "On the Inverse of Linear Dynamical Systems"	P. Durato	260

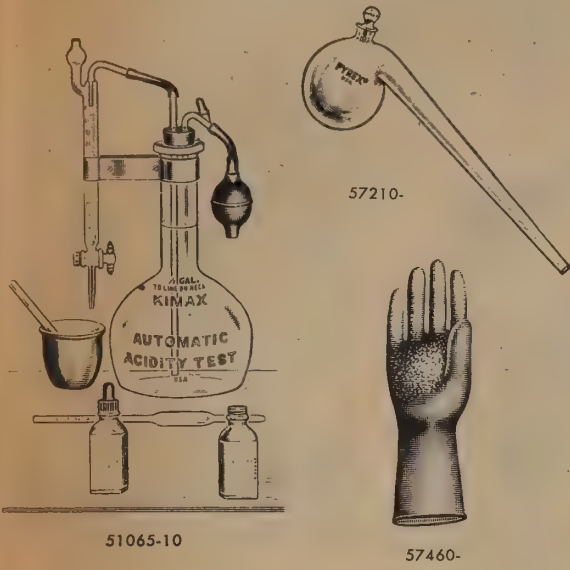
### BOOK REVIEWS

"Dynamic Programming, Sequential Scientific Management," by A. Kaufman and R. Cruon, translated by C. Sneyed, reviewed by T. J. Higgins and C. H. Falkner	260
"Optimum Systems Control," by A. P. Sage, reviewed by D. Tabak	262

**\* Matheson Scientific**

A nationwide distributor of professional lab equipment, from Abbe refractometers to Zimmerli vacuum gauges. Their 1111-page catalog costs them \$15 each, so consult with a salesman at their office nearest you: if it appears you'll be a regular customer you get the catalog free. Minimum order \$20.

[Suggested by Walt McIntosh]



On Jerry Stoll's advice, I painted 3/4 inch plywood with this Carboline paint (clear) and made a darkroom sink impervious to all evil. Next time, a bathtub.

**PAINT—Carboline Protective Coating, Vinyl, Series K.**

A strongly adhering self priming top coat for wood, metal or concrete. It is easy to apply and the dry film retains good flexibility and provides excellent abrasion resistance. Thin films afford exceptional protection in moist atmosphere and are recommended for dark room and laboratory maintenance. Series K paint is primarily a maintenance protective coating for general use in mildly corrosive atmospheres. It is easily applied with brush or by spraying, dries rapidly, keeps idle time of facilities to a minimum and requires no separate primer for surfaces in good condition. Dries to a glossy finish when used over Carboline primers and provides maximum protection when so used.

May be applied directly to wood, metal or concrete. Galvanized and non-ferrous metals require priming with 53082-10 wash primer and 53083-10 intermediate primer to assure best adhesion and longest top coat life. May also be used as a refresher coat over other vinyl coatings. In many cases it may be applied directly over well oxidized coatings of other paints but a test application should always be made first to check for compatibility.

Coverage, 320 square feet per gallon in a 1 mil coat. Recommended film thickness 3 mils. Thickness per coat 1 1/2 mils (dry). Drying time to touch, 10 to 15 minutes; to over coat, 2 to 4 hours. For thinner see 53080-75.

Cat. No.	Mfrs. No.	Color	Pkg. size	Each
53080-15	K-23	Black	1 qt.	\$2.05
53080-20	K-23	Black	1 gal.	6.10
53080-45	K-63	White	1 qt.	2.60
53080-65	K-83	Clear	1 qt.	2.05
53080-75	TP-92	Thinner	1 qt.	1.40



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Elk Grove Village, Ill. 60007  
1850 Greenleaf Ave.  
312-439-5880

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Fallon Road  
Middlesex Industrial Park  
617-438-5700

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12101 Centrol Place  
513-771-9100

Cleveland, Ohio 44125  
4540 Willow Parkway  
216-883-2424

Detroit, Michigan 48216  
1600 Howard Street  
313-965-6422

Houston, Texas 77011  
6622 Supply Row  
713-923-1627

Kansas City, Mo. 64111  
3160 Terrace Street  
816-561-8780

Los Angeles, Calif. 90022  
5922 Triumph Street  
213-685-8060

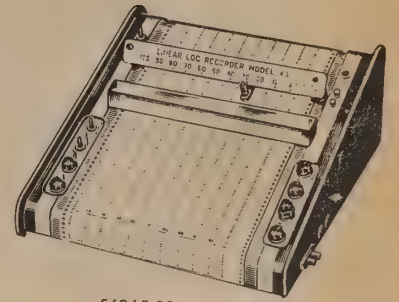
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Hayward, Calif. 94545  
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**\* Laboratory Supplies Co.**

This company is geared for smaller orders and more amateur equipment than Matheson.

Catalog

[Suggested by M. A. Klotz]

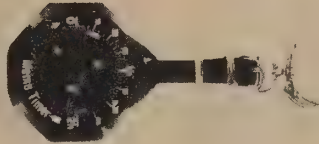
free?

from:  
Laboratory Supplies Co., Inc.  
29 Jeffrey Lane  
Hicksville, N. Y. 11801

**AA573 Epoxy glue**—World's strongest adhesive. It handles the toughest bonding jobs. Comes in handy two-tube package. The great strength of the glue is achieved by a chemical reaction of the resin and hardener when they are mixed in equal quantities. Glue will bond all metals, wood, leather, masonry, pottery, rubber and most plastics to themselves or each other. It is transparent, flexible and waterproof. Sets in 4-6 hours. 1/2 oz. tube kit (1 resin, 1 hardener) Kit \$ .98



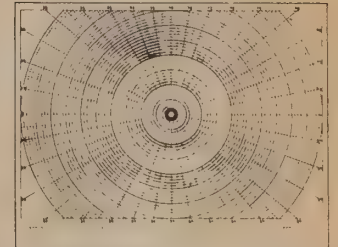
**AA322 Handy Memo Timer.** Here is a pocket-sized, Swiss made 2 hour time alarm. Easy to use. Set the dial from 5 minutes to 2 hours. A gentle buzz sounds when the time period is up. Only 1 1/2" in diameter and weighs about 1 ounce. Easy to read with clear gold figures and a red indicator against a handsome black background. Has convenient key holder on strap. Each \$5.95; Dozen \$60.00



**AA39 Instant Cold,** a product designed primarily for first aid purposes but can be used when it is desired to cool a specimen where ice or refrigeration is not readily available. The chemicals necessary to get the cold are packaged in a plastic pouch. By squeezing the pouch, the chemicals are mixed and in about two seconds 20° cold is created in the pouch. Stays cold for about 30 minutes. The plastic bag will conform to the shape of many items. Does not deteriorate on the shelf. These bags are excellent for use in first aid to control swelling, reduce internal bleeding, reduce pain, etc. These are for one time use only. Per carton of 2 \$ 1.88 Per case of 8 cartons of 2 12.00



**AA40 Instant Heat,** a product similar to above but with the reverse property of being able to provide heat when you are not near a source of heat. Will provide heat for about one to two hours. Per carton of 2 \$ 1.88 Per case of 8 cartons of 2 12.00



**AA415 Plastic graph sheets.** New gridded sheets are laminated so that the printing is permanent. One side has a matte finish for pencil plotting. The lamination and matte finish features permit unlimited reuse of the same gridded sheet. Each sheet is approximately 8 1/2" x 11", punched for standard ring binder. Grids are printed in red for good contrast between the grid and the plotted data.

Model	Type of ruling
A	4 x 4 to the inch
B	8 x 8 to the inch
C	10 x 10 to the inch
D	20 x 20 to the inch
E	10 x 10 to the centimeter
F	Log- 1 x 1 cycle
G	Log- 2 x 1 cycles
H	Semi-Log- 1 cycle x 60 divisions
J	Semi-Log- 2 cycles x 190 divisions
K	Polar coordinate chart

Each \$ .75 Assorted Dozen \$6.00 Assorted Gross \$5.40/doz.

**Government Product-News**

This is a goofy array of new products ranging from police equipment to seam sealant that can be applied to a wet or oily surface without cleaning it first (and whoop dee doo if that one works!) A subscription would be useful to a buyer for a school system or the like, but would be of limited value to a commune. It's one of those things that new products freaks and designers like to read once a month but isn't really worth the price of the subscription to typical private citizen. Read it at your local business library.

I dig it.

[Reviewed by Jay Baldwin. Suggested by J. Cline]



Product: Mobile "Tac-Lites" for police, fire, rescue operations, or any situation demanding brilliant light that will cut through fog, smoke or murky water. Features: Operates from any 12-volt battery power source. Quad-beam unit combines two super-spot lamps with two flood lamps, delivers effective beam for nearly five miles. Single-beam unit produces 200,000 candle power, weighs 3 pounds. circle 248 for more facts from Buco Southfield Mich

**ORGANIC WASTE DIGESTANT** controls obnoxious malodors

Product: "Bi-Trol" for digesting fats, proteins and carbohydrates in waste materials to yield odorless, harmless end-products. Purpose: For use on litter, in lagoons, holding tanks, oxidation and stabilization ponds, dead animal pits and wherever rapid digestion of waste and elimination and control of bad odors is needed. Features: Product serves as a media in which bacteria and enzymes, naturally occurring in the waste materials, can proliferate and carry out their digestive functions under optimum conditions. Considered safe to use and harmless to plants, animals and humans. circle 242 for more facts from: Oxford Chemicals Atlanta, Ga.

**Government Product-News**

\$6.00 /yr (monthly)

from:  
Government Product-News  
731 Hennepin Avenue  
Minneapolis, Minnesota 55403

**Backing vehicles cause accidents.**



**Warn-A-Larms prevent them.**

The Warn-A-Larm rings only when the vehicle backs up. The Warn-A-Larm doesn't know or care whether the vehicle is in gear, under power, if there's a driver in the cab or not. It just keeps ringing. It can't stop unless the vehicle stops. It can't start unless the vehicle moves backward. A runaway vehicle sounds just as loud and as often as a vehicle backed up under controlled conditions. The faster it backs, the more often it sounds. It's all mechanical and all enclosed. Heavy steel balls fall against the inside of the bell, four times during each revolution of the wheel. No switches, no wires, no black boxes, no external clappers. You can install or remove it in minutes. Meets U. S. Army Corps of Engineers specifications and state requirements.

Write for catalog, price list, Warn-T.



**\* PIC Design Corp.**

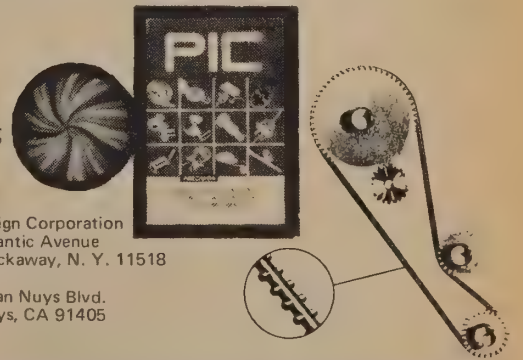
Precision components. Gears, shafting, clutches, dials, differentials, and a precision 522-page catalog.

[Suggested by Fred Richardson]

Catalog free

from:  
PIC Design Corporation  
477 Atlantic Avenue  
East Rockaway, N. Y. 11518

6842 Van Nuys Blvd.  
Van Nuys, CA 91405



**\* Cadco Plastics**

Sheet, rod, pipe, tape, rod, film, adhesives. Vinyl, polyethylene, nylon, mylar, polypropylene, ABS, PVC. Comprehensive stock, offices nearly everywhere. Inquire to headquarters:

[Suggested by Fred Borchardt]

Cadillac Plastic and Chemical Co.  
15841 Second Avenue  
P. O. Box 810  
Detroit, Michigan 48232

Silvo Hardware

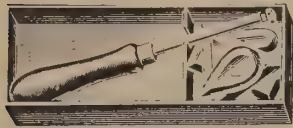
Tools tools tools tools. Brand names. Mostly good stuff. Several quality levels on almost all items. If you know what you want, it is probably here. Prices good, sometimes not as good as U. S. General. I have been pleased by their service on returned items. Takes about two and a half weeks to West Coast. Minimum order \$10.00.

[Reviewed by Fred Richardson]

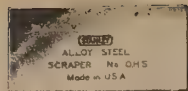
Silvo Catalog  
146 pp.

\$.25

from:  
Silvo Hardware Co.  
c/o Mr. Collins  
Advertising Dept.  
107 Walnut Street  
Philadelphia, PA 19106



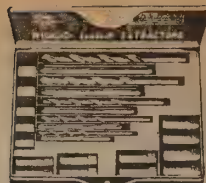
**Red Devil Painters' Scraper Set** — The sturdy, professional scraper comes complete with four interchangeable blades—1 Ogee, 1 Half Ogee, 2 Triangle (2 1/2" & 1 1/2").  
3001-R1 P—1 lb. 9" long .....\$3.05



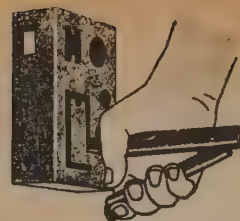
**Stanley Hand Scraper** — Great care is exercised in the selection of steel and heat treatment of these blades, to make them superior tools. Gauge or thickness — .035".  
OHS-519 2 1/2 x 5" .....\$1.03  
OHS-519 3 x 5" .....\$1.10  
OHS-519 3 x 6" .....\$1.18



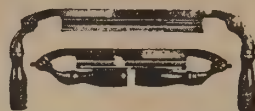
**Nee-Comfort Leather Knee Pads** — For Professional Cement and Floor Men. Made with fine quality top grain cowhide for the "pros" of the trade. Heavy water proof felt, cushions the knees to give maximum comfort. Smooth bottom allows worker to slide readily on floor surfaces. Water repellent felt keeps knees dry on cement work. Wide straps fit comfortably under knee, and holds pads secure in place when standing. Overall size, 3 1/2" wide x 7" long.  
309-M4 P—3 lbs. ....\$5.45



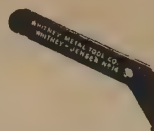
**Rigid "LonGrip" Screw Extractors** — With HIGH SPEED DRILLS  
**SET No. 10** — For screws of diameters 1/4" to 1/2" inclusive. Maximum depth extractions one inch. Contains one each of Extractors Nos. 1 to 5 inclusive, with turnnuts. Drills No. 1 to 5 inclusive. Drill Guides Nos. 921 to 1821 inclusive. Twenty precision tools. Packed in a pre-formed, non-breakable box.  
10-R4 P—2 lbs. ....\$10.51



**Nibbling Tool** — hand operated — Cuts sheet metal like a punch and die. It's easy to use — Starts with a 7/16" hole — then "Nibble" to the size required. It cuts clean like a punch and die. No strain or distortion is added to the edges or to the original form. Capacity: Steel 18 ga. Alum., copper or plastic 1/16".  
NIB-A10 P—2 lbs. ....\$3.95



**No. 635 Greenlee Folding-Handle Razor Blade** — length 10" — Lightweight. Razor Blade pattern for long years of dependable service. Mahogany-stained handles, reinforced with a steel ring, are slotted to fold over blade, protecting cutting edge and preventing injury to anything it may contact. Joints are locked with wing nuts so that no tool is needed to lock or release handles. When folded, the knife packs into a space 3 1/2" wide and 1 1/2" high.  
635-G12 P—2 lbs. ....\$9.50



The No. 14 **HAND SHEAR** is a light weight hand tool which may be used for straight or irregular shaped shearing. The manner by which it is used is quite simple — hold the tool in a horizontal position with the point and end of handle in contact with the metal. Then with a light blow with a hammer on the flat provided the point may be driven in the metal. The handle may then be raised to a convenient working angle and by tapping on the flat surface the tool may be driven forward in the metal. A strip of metal approximately 3/32" in width will be removed.  
14-W4 P— .....\$2.65



**No. 33 Stanley Nail Claw**. Gets close into corners to pull nails where a claw hammer cannot. Drip forged from octagon alloy steel with carefully designed extracting claw. Size 3/4" x 11".  
H33-S19 P—2 lbs. ....\$1.59



**Curved Jaws, with Wire Cutter**

**Vise-Grip Thin Nose Wrenches** — Made of special alloy steel, heat treated for utmost toughness. Light, trim and streamlined; bright nickel plated. New involute jaw curve gives tooth contact on four points of nuts — increases tooth contact on round work. New, easy-release lever in handle. Thin tapered nose permits working in extremely close quarters. New easy release lever — just press lever and jaws click open. These wrenches are actually 9 tools in one; adjustable end wrench, pipe wrench, thin nose plier, clamp, toggle press, locking wrench, vise, wire cutter and bolt cutter.

**Vise-Grip Curved Jaws** — with wire cutter —  
7WR-P3 P—1 lb. 7" long — 1/4" thick jaw — adj. to 1 3/8" .....\$1.89  
10WR-P3 P—2 lbs. 10" long — 3/8" thick jaw — adj. to 1 7/8" .....\$2.19

Petite and Powerful  
only 5" long

**New Jr. Vise-Grip Curved Jaws** — with wire cutter — fits in your pocket.  
5WR-P3 P—1 lb. 5" long — 3/8" thick jaw — adj. to 1 1/4" .....\$1.69

Brookstone Tools

If precision tools are what you need, this company has nice ones.

Brookstone Catalog  
23 pp.

\$.25

from:  
Department C  
3 Brookstone Building  
Peterborough, N. H. 03458



**SOLDERING PADS CONCENTRATE**  
HEAT, HOLD WORK

So simple, yet so useful. Soft asbestos solder pads reflect, concentrate heat from torch, iron or gun. Make better joints quicker.

Won't spark, crack or fume from heat. Save bench top from burns. Last indefinitely.

Better yet, act as work holding jigs. Soft enough to take pins, brads, or staples to position and hold parts to be soldered. Simplifies otherwise awkward set ups. Ideal for model and jewelry work.

Each pad about 6" x 2 1/2" x 1/2".  
J-1346 Soldering pads (pair) ..... 80¢  
Three pairs & up ..... Each 80¢



**LEATHER STROP FOR**  
RAZOR-SHARP TOOLS

Another superior sharpener from days when a man would make his straight razor sharp as today's best blades — as barbers still do.

Excellent for all knives, chisels, other edge tools that work best, are safest, when dead sharp.

Faced both sides with thick "Russian-Juchten," the finest West German hand-tanned leather, finished in the old Russian manner, and impregnated with ultra-fine abrasives.

Red side, rouge-impregnated, hones, sharpens — gently, without tearing the metal. Black side for finishing — polishes the edge till it will shave close and clean. Use dry — no mess.

About 12" long. Finely finished beechwood handle. Leather facings about 8" x 1 1/2".  
J-1360 Double strop .....\$2.25  
Three & up ..... Each \$1.95



**CLEVER TOOL HOLDS, STARTS,**  
PHILLIPS SCREWS

Firmly holds all cross-slot screws — Phillips, Reed & Prince, others. Holds all sizes, smallest to largest. A snap to use. Merely insert in screw head, pull back knurled ring and screw is held. To release, push knurled ring forward.

Very nicely made. Spring tempered jaws for long life, strong grip. Steel parts plated against rust. Handsome red vinyl covered handle adds beauty, comfort, and reduces risk of electric shocks.

J-1599 Screw starter, 5 3/8" long ..... \$1.85  
Three & up ..... Each \$1.70  
J-1600 Screw starter, 8 7/8" long ..... \$1.95  
Three & up ..... Each \$1.80



**MACHINIST'S SCRAPER**  
FOR FLAT SURFACES

Sharp-cornered front end of this handy scraper smooths, cleans, levels, flat surfaces. Tough, hardened chromium alloy steel cuts steel and other metals and materials. Easily sharpened on bench grinder.

Excellent for breaking sharp corners, cleaning surfaces for soldering. Removes excess solder. Removes oxides and paints for better electrical contact. Blade about 4 3/8" long x 3/8" wide x 1/8" thick. Lacquered hardwood handle. Well made. A good looking tool.  
G-1680 Flat scraper .....\$1.60  
Three & up ..... Each \$1.45

MINIATURE SET  
CUTS 1/4" TO 5/8" DIA. HOLES

This fine quality cutter set makes holes in steel, other metals, shim stock, wood, plastics, rubber, paper, cardboard, fiber, other materials, FAST. Holes are neat, clean — not ragged as with ordinary hole saws.

Also cuts elongated holes, odd cutouts, starter holes for snips. Cuts off bolts, screws, frozen nuts. Cuts heads off bolts, screws, rivets. Cuts straps, hangers, rods, brackets.

7 interchangeable high speed steel cutters — 1/4", 3/16", 3/8", 7/16", 1/2", 9/16", 5/8", dia. Each cutter good for over 3000 holes in sheet steel! Specially designed teeth for faster and easier cutting than drilling. Use with any 1/4" electric drill.

Arbor has high speed steel automatic center point to avoid need to center punch. Depth rod adjusts depth of cut up to 3/16", as in cutting out spot welds.  
G-1579 Complete cutter set .....\$12.95  
Three & up ..... Each \$11.75

Small Parts, Inc.

Did you ever take a broken appliance apart and find you needed a small nylon washer or a new flat spring, and the company that manufactured it is no longer in business? This unusual mailorder firm stocks such items as well as nylon threaded rod, brass and stainless steel wirecloth, tubing connectors, Teflon tubing and many other hard-to-find items. Their free 60 page catalog contains brass, aluminum, nylon and stainless steel in various forms and shapes for those hobbyists who wish to construct their own home-made machines or devices. The company pays shipping charges and does not require a minimum order. However, a handling charge of \$1.00 is added to all orders under \$5.00.

Service — no experience with them yet.

[Suggested and reviewed by Gerard Ruch]

Catalog from:  
Small Parts, Inc.  
6901 N. E. Third Avenue  
Miami, Florida 33138

54

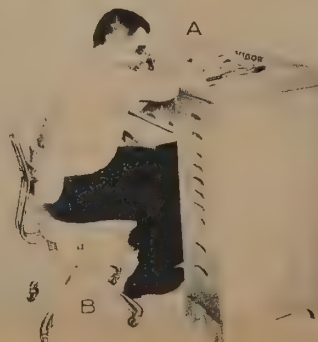
National Camera, Inc.

All manner of tools for fine work. Not limited to camera repair at all.

[Suggested by Jay Baldwin]

Catalog  
\$1 /yr (quarterly)

from:  
National Camera, Inc.  
Englewood, Colorado 80110



Surplus Center Equipment Catalogs

Not only are these catalogs handy to the man who may need such parts, but they can also serve as idea-generators for solving certain mechanical problems—thumb through the pages. Some of the parts are better hunted locally where you can see, try, discuss with salesmen and haggle. Some are rare and good deals. Best suited to the mechanically hip, especially away from big city sources. All "surplus" is risky stuff unless you're familiar with it.

[Reviewed by J. Baldwin.  
Suggested by Lama Foundation]

Catalog  
free

from:  
P. O. Box 713  
Lincoln  
Nebraska 68501

3 Horsepower Battery Motor



COST GOV'T  
OVER \$98.00

(ITEM #1000) \$17.91 F.O.B. Lincoln

• (ITEM #1000) — New, government surplus. Powerful DC motor ideal for use to drive battery operated golf carts, scooters, trolling boats for fishermen, battery driven compressors, hydraulic pumps and uses in the field where AC current is not available.

• This motor is rated 3 horsepower at 3800 r.p.m. at 24-volts DC. It will run very nicely on 12 or 18-volts DC at slightly reduced power, speed and current. Double fan cooled for continuous duty operation. Speed can be varied by varying the applied voltage. Rotation is clockwise but can be reversed with slight modification in connections (Instruction sheet shows you how).

SPECIFICATIONS

- Operates on 12 to 24-VDC
- 3800 RPM ; 24-VDC
- Continuous duty rated
- Full load 115-amps.
- Idle current 10-amps.
- Speed can be varied.
- Ball bearing equipped
- Rotation CW facing shaft
- Double fan cooled
- Shaft diameter 21/32"
- Size 12" x 6 1/2" x 6"
- Shipping weight 30 lbs.

Surplus Rheostat

COST GOV'T  
OVER \$15 00

(ITEM #2209)

\$2.99

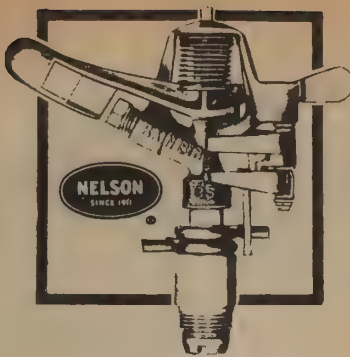
F.O.B. Lincoln

• (ITEM #2209) — Gov't. surplus flying watt rheostat that can be used as a control for surplus aircraft generators for welding or output control. Can also be used to regulate voltage on model trains, lights generators, etc. Has "OFF" position and 2 temp. 25 amp, 125-volt, receptacles. Rated 475 ohms 100 watt. Size 7" x 5 1/4" x 1 1/2". Shipping weight 2 lbs.

**U. S. General Supply Corp.**

Again tools, tools, tools. Brand names, catalog number is the manufacturer's model number. More junk than Silvo, and I think they sell their mailing list. At least I get lots of junk mail that I trace to them. Prices sometimes better than Silvo, service somewhat worse. Good to compare the two, as they have different prices and different things. \$20.00 minimum order. Net costs are coded into the item number. Divide the numbers following "E" by two. Audel books are 15-25% cheaper than publisher prices.

*[Reviewed by Fred Richardson]*



**3/4" RAIN BIRD HEAD**

Full or part circle sprinkler for extra large lawns over 50 by 50 feet. Radius adjustable 40 ft. to 50 ft. Water flow 8 GPM. 3/4" male bottom pipe thread.

711-P31BE1770 .....\$13.45 (8.85)

**Catalog**

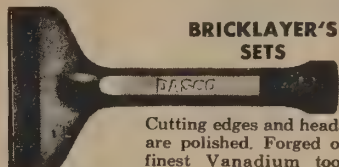
\$1.00, refundable

from:  
U. S. General Supply Corp.  
100 General Place  
Jericho, N. Y. 11753



**PHILADELPHIA PATTERN.** Forged in 1 piece from highest grade trowel steel; tempered, taper ground, hand smithed and polished. Straight post with handle set for correct balance. 6" handle is securely attached. Polished steel ferrule.

501-1910E940 10x5" size .....\$7.05(4.70)  
501-1910½E940 10½x5½" size .....7.05(4.70)  
501-1911E940 11x5½" size .....7.05(4.70)

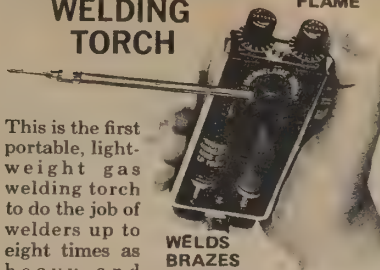


**BRICKLAYER'S SETS**

Cutting edges and heads are polished. Forged of finest Vanadium tool steel.

200-1450-3E360 3x7 .....\$2.65 (1.80)  
200-1450-3½E370 3½x7 .....\$2.80 (1.85)  
200-1450-4E420 4x7 .....\$3.15 (2.10)

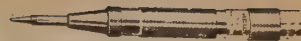
**MINIATURE GAS WELDING TORCH**



This is the first portable, light-weight gas welding torch to do the job of welders up to eight times as heavy and costing four times as much. A self-contained hand held oxygen butane instrument that welds, brazes and solders up to 5000° F with pin-point heat.

908-1000E3000 .....\$19.95  
Replacement Oxygen Cylinders (15.00)  
908-1001/5E600 Pkge. of 5 tubes .....\$3.75  
Replacement Butane Cylinders (3.00)  
908-1002/5E400 Pkge. of 5 tubes .....\$2.50 (2.00)

5000°  
PINPOINT  
FLAME



**AUTOMATIC CENTER PUNCH**

Adjusts for light or heavy impressions. For instantaneous single-hand spotting. Replaceable points are made of special, rugged, tempered alloy steel. A precision-made simply-constructed quality tool, moderately priced. 1/2" diam., 5" long.

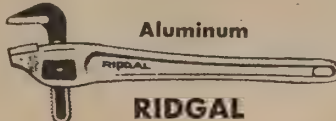
350-79E690.....\$4.70 (3.45)



**LARGE TAP & DIE CHESTS**

Adjustable dies and suitable die stocks and tap wrenches are fitted in wooden boxes. Medium set contains following taps, dies: NC-1/4x20, 3/8x18, 3/8x16, 7/8x14, 1 1/2x13, 1 1/2x12, 3/4x11, 3/4x10, 1/2 pipe, 1/4 pipe. NF-1/4x28, 3/8x24, 3/8x24, 7/8x20, 1 1/2x20, 1 1/2x18, 3/4x18, 3/4x16.

150-3465E16800 1 1/2" O.D. Dies  
Large set contains following taps and dies:  
NC-3/8x12, 5/8x11, 3/4x10, 7/8x9, 1x8.  
NF-5/8x18, 3/4x18, 3/4x16, 7/8x14, 1x14.  
150-2101E19680 2" O.D. Dies .....\$147.60 (98.40)

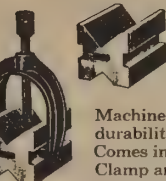


**Aluminum**

**RIDGAL**

Almost 50% lighter than regular pipe wrenches of same size. Has aluminum handle. Hook-jaw for easy entry to tight spots. Jaws made of finest alloy steel for long life.

Stock No. Size Capacity Price  
303-A14E1380 14" 1/2 to 2" \$10.35 (6.90)  
303-A18E2040 18" 1/4 to 2 1/2" 15.30 (10.20)



**V-BLOCKS & CLAMPS**

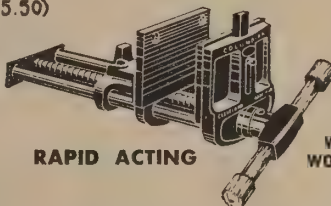
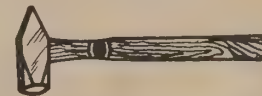
Machined tool steel for rugged durability to assure long life. Comes in sets of 2 only, including Clamp and V-block Size 1 1/4" sq.

350-116E1100.....\$7.50(5.50)  
As Above, but Hardened and Ground tool steel.  
350-117E1800.....\$12.30 (9.00)

**BLACKSMITH'S HAND HAMMER**

Cross Pein hammer of finest German drop forged steel. Quality finished hefty handle.

604-3CPE540 3 lb. Head .....\$4.50 (2.70)

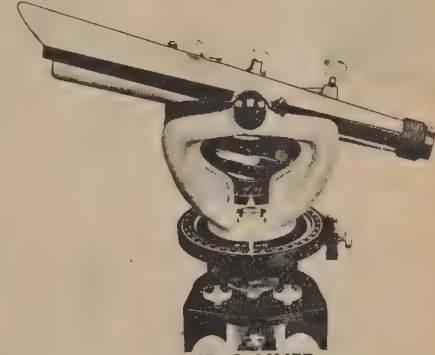


**RAPID ACTING**

**WOOD WORKERS VISE**

Has instant-adjustment rapid-action feature screw closed on work then locks it in place. Dog in front jaw. Heavy cast iron body. Wood handle. Continuous steel screw and steel guides. Extra sturdy reinforced

Stock No. Jaw Weight Price  
312-7RDWE5580 ... 4x7" 27 lbs. \$39.10(27.90)  
312-10RDWE6360 4x10" 33 lbs. ...44.50 (31.80)



**SPEED-A-LINER**

**BUILDERS' TRANSIT LEVEL**

20 power optics for laying out horizontal and vertical angles, leveling, setting building lines, checking elevation and plumbing. Spring-loaded lever-type lock for quick conversion from transit to level. Large, easy-to-grip focusing controls can be operated with gloves on. Internal focusing, horizontal circle with double vernier that reads direct to 1/4 degree (15 min.). Has built-in sunshade.

563-200ANE22700 Instrument .....\$129.00 (113.50)  
563-200ASE25700 With Tripod .....145.95(128.50)

**Airborne Sales**

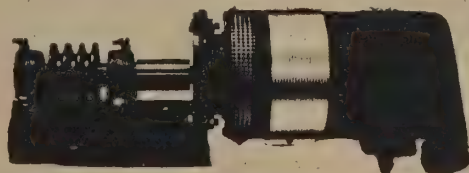
Airborne Sales Company is not the usual surplus melange. Emphasis seems to be on electrical, pneumatic, hydraulic and mechanical systems and attendant parts and pieces. Their stock includes both new and used, marine specialties, tool room items and "hard-to-find" things and stuff. Pumps and motors for a variety of applications and power sources are available. Tired of your smog producer? Develop your own electric car with motor No. 1893 (their 1965 catalog), a \$259 Westinghouse product for \$29.75. Gauges, tools and fittings are available for much of the pneumatic, electronic, hydraulic and mechanical systems common to aeronautic and space programs.

*[Suggested and reviewed by C. P. Christianson]*

Airborne Sales Catalog  
95 pp.  
\$25

from:  
Airborne Sales Company  
8501 Stellar Drive  
Culver City, CA 90230

**COMPLETE WELDING UNIT**



**NOT A KIT - THIS IS READY TO USE!**

MERELY BELT TO YOUR TRACTOR, TRUCK, CAR OR OTHER POWER SOURCE. COMES COMPLETE AS SHOWN WITH CONTROL UNIT.

With 200 amp. generator internal cooling fan type. Ship. wt. 85 lbs.  
No. 83 .....\$87.50 each  
Same as above less generator. Ship. wt. 45 lbs.  
No. 84 .....\$59.50 each

**Master Mechanics Mfg.**

*Jacks 'n pumps 'n motors 'n gadgetry.*

Catalog  
\$10

from:  
Master Mechanics Mfg. Co.  
P. O. Box A Burlington, Wis. 53105 P. O. Box 65 Sarasota, Florida 33578

**Campbell Tools**

*Machinist's stuff. Carries the low-cost Mitutoyo line of precision instruments.*

Catalog  
\$50

from:  
Campbell Tools Co.  
1424 Barclay Road  
Springfield, Ohio 45505

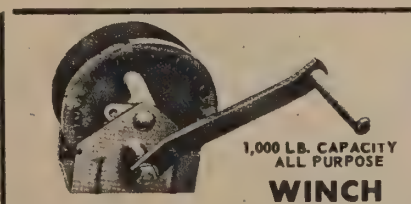


**DIAL TEST INDICATORS**

RANGE	NO.	GRADUATION
.04"	513-102	.001"

Set includes  
Stem (102036) & Point (102039) already installed. Plus  
Bars (102043) & (102045)  
Points (102040) & (102041)  
Stem (102081)  
Clamp (102051)  
Wrench (102037)

Complete with Holders and Points  
PRICE  
\$19.50



**1,000 LB. CAPACITY ALL PURPOSE WINCH**

**8.95** USE A WINCH AND SAVE YOUR BACK EASY TO MOUNT ON TRUCK OR TRAILER

Operates in any position! Now load your boat trailer, truck or regular trailer the easy and simple way! Just mount winch on your truck or trailer, attach the cable to the load and pull it on. Winches constructed of heavy gauge steel. . . ruggedly built for years of service.

1000 lb. Capacity Winch. Concealed tooth driven gears, cannot damage rope or injure fingers. Locks in any position. Drum holds 195-ft. of 3/16-in. cable. Mechanical advantage 9 to 1. Gear ratio 3 to 1.  
from G 187 Shpg. wt. 8 lbs., Special. . . \$8.95  
1750 lb. Capacity Winch. As above but larger & better. Oil-impregnated bronze bearings. Drum holds 580-ft of 1/8-in. wire rope. Mechanical advantage 19 to 1. Gear ratio 5 to 1. Size 9-3/4x6-3/32x7-in. high.  
G167a, Shpg. wt. 18 lbs., Special. . . \$18.95



**TURNBUCKLE MIX**

Copper plated brass barrel. Copper plated steel ends. Length open from 5" to 10". Approx. Govt cost \$35.00. For boats and all outdoor and indoor installations. Ship. wt. 4 lbs.

No. 1337 SET OF 20 \$4.95



**FUEL SHUT-OFF VALVE**

Knife type, slides in and out. Illustrated in half-open position. Handle has a full open or closed position. May be set at any point between. Aluminum construction with a stainless steel knife. 5/8" L x 2 3/8" W. Valve opening is 1-5/16". NEW. Govt. cost \$103. each. Ship. wt. 2 lbs.

No. 2422 \$4.95 each

**\* Palley's**

There are many so-called "surplus" stores, most with some sort of specialty. They usually have started as war surplus, but now include all manner of industrial surplus, some of which is surplus for good reason. Some stores also carry cheap shoddy junk and "seconds" that are not at all bargains. Shopping for surplus can be tricky, but if you know what you are doing you can often do very well. It is helpful to know something about the merchandise in question and what it would cost at a straight supplier. It is better to shop in person rather than by mail because some examples are in better condition than others, and the catalog descriptions are often incomplete. It is also easier to haggle. You should keep in mind that there may be repair parts problems with surplus machines, and that it is unwise to depend upon a certain item being always available. Some otherwise succulent tidbits may turn out to work only on 27 volts DC; a bummer. Keep in mind that the "it may not be here tomorrow" feeling in a surplus store can hypnotically lead the unwary to bringing home a bunch of junk that "may come in handy later". Ingenious persons can often work wonders with aerospace stuff.

Palley's is known as the largest surplus house in the country. The most recent catalog lists mostly industrial surplus. Pumps, generator sets, storage tanks, fans, switches, power tools, vehicle winches, and gasoline engine powered carpenter saws and drills are among the items useful to the commune. They can get you specific stuff, and will haggle quantity prices.

[Reviewed by J. Baldwin]

**Palley Supply Co. Catalog**

**\$1.00**

from:  
Palley Supply Co.  
2263 E. Vernon Avenue, Dept. M-70  
Los Angeles, CA 90058



**THOMPSON FUEL PUMP**

Offset rotary vane type with built-in relief valve. Constant flow of 400 GPH at 2500 RPM. Discharge pressure is 30.6" HG. Has 3/4" pipe ports. Size: 5" x 4-1/2" x 4". 25 PSI.

P-F83-DY46

**\$8.49**

**NEW HART OIL BURNING RANGE**

The famous Vulcan-Hart 84" double oven range with fuel injection oil burner! Fuel injection system uses a General Electric 1/12 HP motor and provides instant and extremely hot fire. Motor operates on regular house current—115 volt, 60 cycles—and is connected to a Ray Oil Burner using No. 1, 2, or 3 fuel oil. 27" x 15" x 22" ovens are lined with ceramic and full length polished steel grill has 5 removable parts. Chimney is equipped with barometric draft control. Originally cost government approximately \$900.00. Complete with 1/12 HP motor.

CA-S86-SU Only \$195.00



**FAMOUS SIGNAL CORPS TYPE EE-8 FIELD TELEPHONE**

The famous EE-8 Field Phone. Ideal for use on rifle ranges or wherever clear, dependable communication is desired up to 15 miles between stations. Operates on two standard batteries. Set includes a ringing generator, one phone—all contained in the original compact carrying case. All are reconditioned and checked out.

EL90-EE8SU Each \$17.50

EL90-EE8SU-2—System of 2—  
32.50



**16-PIECE STUDENT'S SET**

Has a 6-3/8" compass with straightening device, opposite broken joints, micrometrical adjustment, driver, pen and pencil parts and telescopic lengthening bar, also a 6" hairspring divider with straightening device, 4-1/4" Bow divider, Bow pencil and Bow pen with center wheel adjustment, a Swedish ruling pen, drop Bow, extension compass and divider with hairspring attachment, a 5-1/2" ruling pen with cross joint blade for easy cleaning, extra plastic handle for compass parts, a screwdriver, a repair tube with extra leads and needle. All made of brass, nickel-plated. The complete set in velvet-lined, pocketbook case.

IT-1814

**\$16.95**

**Unistrut**

Unistrut is great stuff. You can make houses, furniture, partitions, stage sets, boat trailers and just about all sorts of things out of it, and can take them apart later and use the Unistrut again. It comes in several sizes, in several metals and finishes, and is completely adjustable. I've used it for such diverse things as tables, store interiors, pack frames, animation stands and camera dollies, telescopes. Unistrut is distributed nationwide, but locally there may be competitors that offer cheaper prices and different finishes. Good for space frames such as Fuller's octet truss.

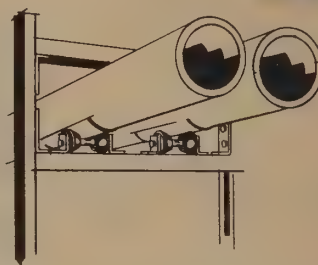
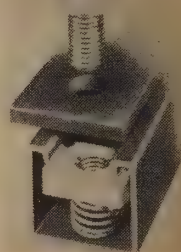
Similar in use but not in sophistication is "Giant Erector Set" slotted angle that goes under a number of trade names. It's usually called "slotted angle" or "metal lumber" in the Yellow Pages. It's particularly good for shelving and camping bus interiors, where 2 x 4's are not really suitable. A good brand is AIM by Interlake Co., 4903 Pacific Blvd., Los Angeles, CA. It costs about the same as finished lumber and takes no skill at all to use. Comes with bolts and nuts and a simple table to calculate loads. Also Good Stuff.

[Suggested and reviewed by J. Baldwin]

**Unistrut Catalogs**

free

from:  
Unistrut Corporation  
4118 South Wayne Road  
Wayne, Michigan 48184



**\* The Engineers' Illustrated Thesaurus**

I like this book better than *The Way Things Work* (p. 60). It lists concepts, structures, and processes strictly by function instead of by object. So as you page through, the elements start adding up in your head in bizarre combinations. Let's see: if we attached a mercury switch to a geared-down rotator on the windmill and connected it to a strobe light, then whenever our heads kaleidoscoped we'd know the wind was blowing 20 miles an hour and we'd halt all traffic on the pedestrian suspension bridge before it went harmonic and tossed all our visitors in the canyon.

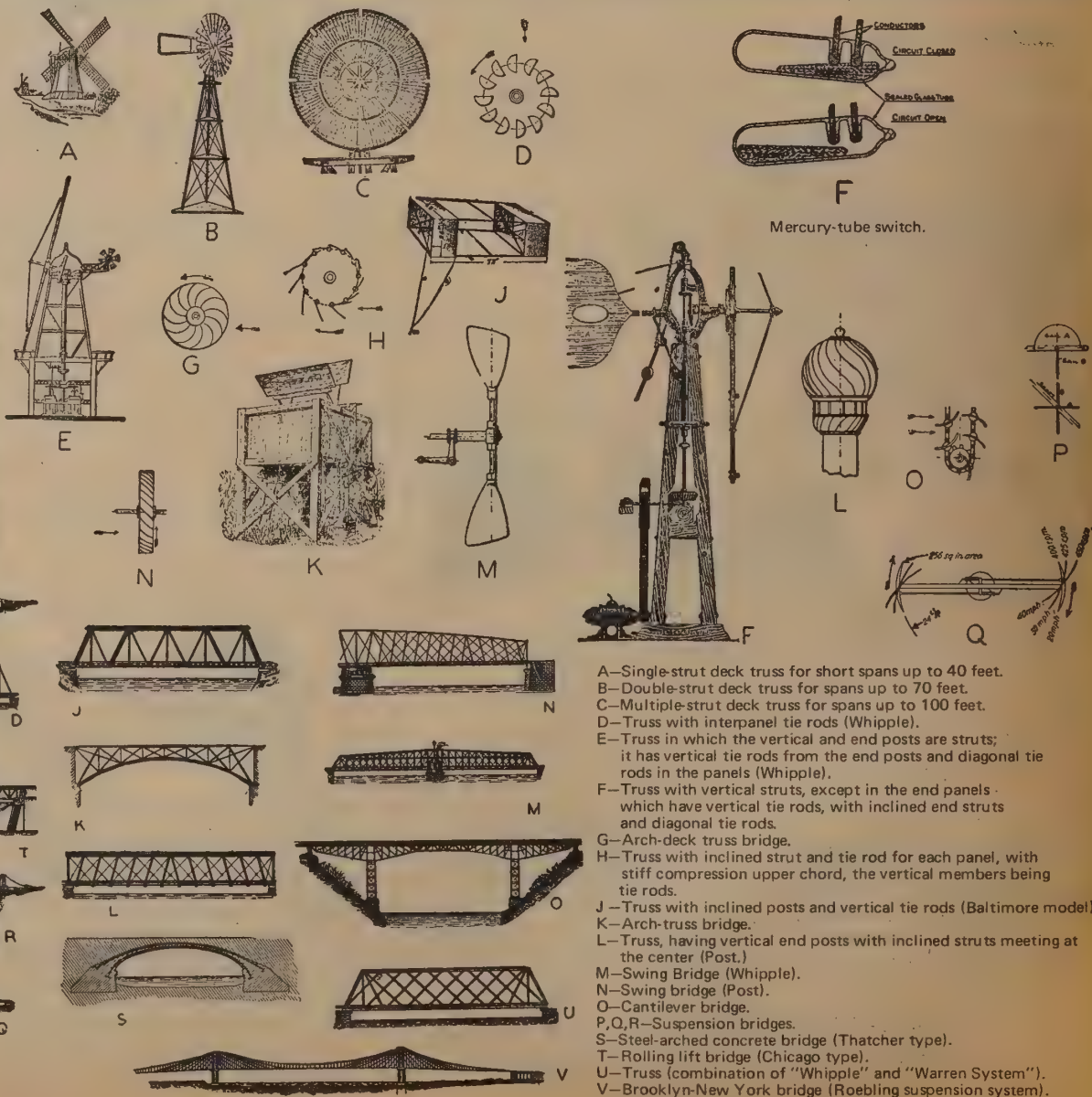
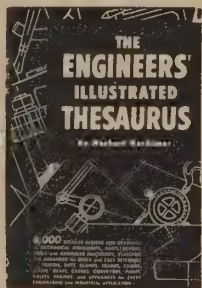
[Suggested by Steve Durkee]

The Engineers' Illustrated Thesaurus  
Herbert Harkimer  
1952; 557 pp.

**\$6.00** postpaid

from:  
Chemical Publishing Co., Inc.  
212 Fifth Avenue  
New York, N. Y. 10010

or WHOLE EARTH CATALOG



Thomas Register of American Manufacturers

Let it all hang out: 7 volumes, 10,000 pages, 50,000 product ads, 70,000 classifications. It's the great American industrial yellow pages—and like the yellow pages, an education. If the Sears Catalog will tell you where American consumption is at, TR tells you what's happening in production. And if you're trying to make the switch toward production, TR can help you find what you need.

Thomas Register published annually in the summer  
\$30.00 postpaid

from  
Thomas Publishing Company  
461 Eighth Avenue  
New York, N. Y. 10001

also available in most libraries

1968 Thomas Register Products: **Aba-Com** (FPE), **Con-Gat** (Drexel and Company), **Gau-Mad** (T), **Mag-Pum** (IPC), **Pun-Ste** (A), **Sti-Zwi** (CHECK KOPPERS), **A-Z** (special or standard fasteners).

**MORE HOURS OF WEAR • MORE ECONOMICAL...**

**SARJANIAN**  
PLASTIC COATED INDUSTRIAL GLOVES  
PLASTIKING KING

SARJANIAN GLOVE COMPANY  
7500 DIE AVENUE • DETROIT, MICHIGAN 48205

**MARKET FORMS FOAMS**

NEW! MARKET "SECOND SCULP" moldings...  
MARTEL PISTON PRODUCTS COMPANY INC.

**PRESTO-FOAMS URETHANES**

PROTECTIVE FOAM PLASTICS  
DONRAY PRODUCTS CO.

**CARTEX**  
CARTER CORPORATION

**CARDINAL GLOVE**  
FINE GLOVES FOR INDUSTRY  
SAFETY GLOVES and MITTENS  
AMERICAN OPTICAL COMPANY

**KIND OF INFORMATION T. R. WILL FURNISH**

For every industry, every manufacturer, every product, anywhere in the U. S. A.

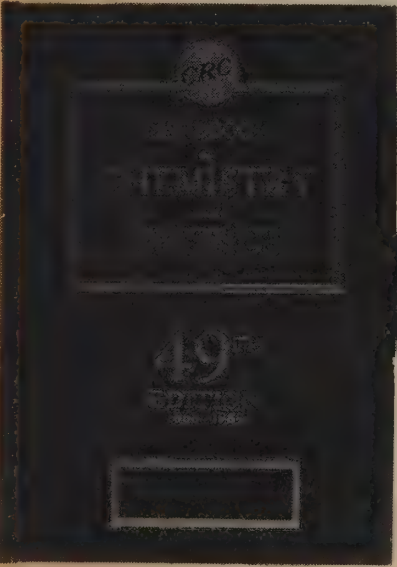
VOLUMES 1, 2, 3, 4, 5 and 6  
1—Does anyone in Alabama make Cast Iron Pipe?  
2—Are Induction Coils manufactured in Wyoming?  
3—Who makes Electric Motors in Michigan?  
4—Is there a large manufacturer of Rubber Hose in Connecticut?

VOLUME 7  
5—Trademark Section.  
6—Where are the plants of the Allis-Chalmers Mfg. Co.?  
7—Who succeeded the Acme Rubber Mfg. Co.?  
8—Where is the home office of the Bristol Brass Corp.?  
9—How many products does General Electric make and what are they?  
10—Is Nova Pump & Engine Co. a parent company or subsidiary?  
11—Where are the branch offices of the Star Expansion Co.?  
12—What is the capital rating of the Western Supply Co.?  
13—Who are the officials of the Erie Foundry Co.?  
14—What is the cable address of Acme Visible Records, Inc.?  
15—What companies does Hommet Corp own or control?

Handbook of Chemistry and Physics

Among handbooks this one is unusually wealthy in basic information. Its 6-figure math tables are the standard (they're obtainable separately: \$6.50 from Chemical Rubber). Its chemistry and physics tables constitute a comprehensive inventory of invisible effects. It doesn't teach you how to use or even read the inventory, but if you know-how, here's the know-what tool chest.

[Suggested by Lloyd Martin]



**Handbook of Chemistry and Physics**  
Robert C. Weast, ed.  
1918... 1968  
(49th Edition); 3604 pp.  
\$22.50 postpaid

or WHOLE EARTH CATALOG

Machinery's Handbook

If you make things out of metal you need Machinery's Handbook. This thick, comprehensive guide to shop and engineering practice was originally designed to fit in the tall center drawer of a machinist's chest. Machinist's chests have stayed the same size, but the shaping of metal has become more and more complicated. Machinery's has coped with the squeeze heroically; the current (18th) edition contains 2293 pages printed on fine India paper, and it still fits the drawer. You can find in it things like tap drill sizes for S.A.E., metric, and Whitworth threads, what welding rod to use for which metal, and how much weight you can hang on a rope if it goes around a fat (or thin) barrel. You can also look up logarithms, area, volumes, and centers of gravity, and learn how to design helical gears, replace bearings, grind a lathe bit, and do many other useful and not-so-obvious things. The book is divided into thirteen main sections, indexed, thumb-indexed, and bound in tough, satisfyingly archaic industrial green with gold stamping.

[Suggested and reviewed by Dr. Morton Grosser]

**Machinery's Handbook**  
1914... 1969; 2293 pp.  
\$16.00 postpaid

from:  
Industrial Press, Inc.  
200 Madison Avenue  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

Table 8. American Standard 300-Pound Steel Flanged Fittings

Nom. Pipe Size	Inside Diam. Flange	Min. Wall Thickness	Flange Diam.	Flange Thickness	Bolt Circle Diam.	No. of Bolts	Stip. of Bolts	Dimensions to Contact Surface of Raised Face						
								AA	BB	CC	EE	FF	GG	
1/4"	1 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
3/8"	1 3/8"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
1/2"	1 1/2"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
3/4"	1 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
1"	1 1/2"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
1 1/4"	1 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
2"	2 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
2 1/2"	2 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
3"	3 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
3 1/2"	3 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
4"	4 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
4 1/2"	4 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
5"	5 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
5 1/2"	5 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
6"	6 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
6 1/2"	6 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
7"	7 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
7 1/2"	7 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
8"	8 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
8 1/2"	8 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
9"	9 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
9 1/2"	9 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
10"	10 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
10 1/2"	10 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
11"	11 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
11 1/2"	11 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
12"	12 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
12 1/2"	12 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
13"	13 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
13 1/2"	13 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
14"	14 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
14 1/2"	14 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
15"	15 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
15 1/2"	15 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
16"	16 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
16 1/2"	16 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
17"	17 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
17 1/2"	17 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
18"	18 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
18 1/2"	18 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
19"	19 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
19 1/2"	19 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
20"	20 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
20 1/2"	20 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
21"	21 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
21 1/2"	21 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
22"	22 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
22 1/2"	22 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
23"	23 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
23 1/2"	23 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
24"	24 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
24 1/2"	24 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
25"	25 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
25 1/2"	25 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
26"	26 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
26 1/2"	26 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
27"	27 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
27 1/2"	27 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
28"	28 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
28 1/2"	28 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
29"	29 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
29 1/2"	29 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
30"	30 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
30 1/2"	30 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
31"	31 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
31 1/2"	31 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
32"	32 1/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
32 1/2"	32 3/4"	11	4 1/2"	1 1/4"	3 1/2"	4	7/8"	4 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"

**New Scientist**

*New Scientist is the best evidence we've seen that there are new scientists in the world, young, politically aware, irreverent, active. Every week here's yet another New Scientist (if you get behind reading, it's hopeless), full of actual news, critique, and gossip of the research world. The magazine is British, so you get perspective on U. S. accomplishments (flattery nonetheless), and report of world-wide activities unreported in most American journals. The Ariadne column is a gem.*

[Suggested by Steve Baer]

**On machine murder**

Astronomers and opticians may well have been appalled at the recent report that an equipment technician at the McDonald Observatory in Texas has the million-dollar, 107-in reflective mirror of the world's third largest telescope lowered to within pistol range and shot it. The local establishment has had him arrested and are putting about that he was drunk at the time. But among those who feel wonder if things weren't just about right at Walden Pond, there is conjecture that the solar marksman might really have been registering symbolic sympathy with other American Garibaldis of our automatic age who have started in gunning for the arrogant machines.

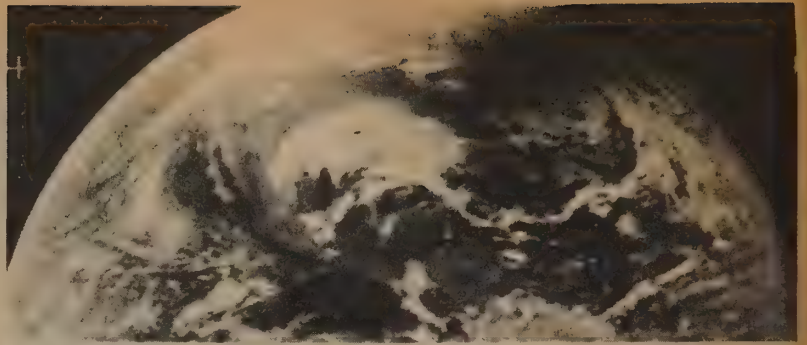
In a steel mill in Gary, Indiana, a crane driver lately put 15 cents into the factory milk-vending machine but got nothing out. Instead of creeping humbly away and leaving his money in the smug monster, he went back to his travelling crane, manoeuvred it over the stove-enamelled thief, raised the jib 15 feet in the air and let it drop to smash the victim into a metal goulash of milk, wire and money. A little to the south, in the state capital, Indianapolis, the owner of a petrol station finally got fed up with feeding nickels into his pumpside soft drink non-vending machine. One day, when his total loss down its unresponsive slot had topped 10 quid, he had to give refunds to two customers who'd lost their money in it. And, when he needed to slake his thirst after the argument, it swallowed his coins as well and never disgorged a bottle. So he went to his deck, took out his revolver, and saying to the machine, "that's the last time you'll cheat anybody", he shot it dead. He was fined 160 dollars by the municipal judge and given 10 days in jail for firing a gun within city limits.

**Frost as bleach?**

Sir,—Can any of your readers explain to me why it is that babies' nappies, when washed and hung out damp throughout a frosty night, lose all vestiges of stains that have previously resisted all efforts of my wife, washing machine, and the detergent manufacturers to eliminate?

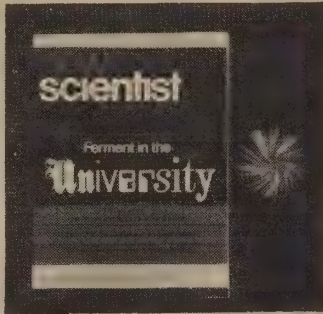
Is there a case for a refrigerator with a nappy compartment?

Michael B. Wilkinson



**The biggest shadowgraph show in the world**

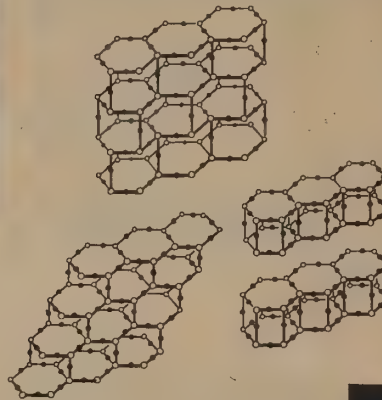
The total eclipse of 7 March, photographed from space by NASA's Applications Technology Satellite-3, in a synchronous orbit 22,300 miles high. In this picture, the Moon's shadow can be seen moving off into the North Atlantic.



**New Scientist**

**\$16.00** for one year (weekly)

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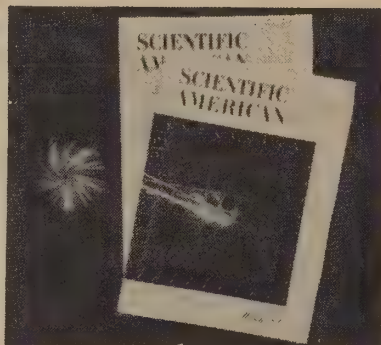


Allen and Killman are unable to decide between these three alternatives, each of which fit the available spectroscopic data. But meanwhile, any of the three versions can also account for many of the known physical properties of anomalous water. The dense packing of oxygen and water atoms in cyclimetric water explains the high density of anomalous water grown in the laboratory. Furthermore, the Princeton workers suggest that quasi-crystalline structure of cyclimetric water would result in the formation of microcrystallites: the tumbling together of these microcrystallites could account for the high viscosity of anomalous water, while the strong interactions between them offer an explanation for anomalous water's high surface tension.

"The self-sufficiency of the specialist's world is a prisoner's illusion. It is time to open the gates."  
Lewis Mumford

**Scientific American**

*Good old Scientific American.*



**Scientific American**

**\$8.00** for one year (monthly)

from:  
Scientific American  
415 Madison Avenue  
New York, N. Y. 10017

or most newsstands.

If we look at man's use of energy, the future of fossil fuels or fission is measured in centuries; only deuterium or sunlight can carry us through a long history of industrial life. Our history is now marked on a time axis by one single pulse of fossil energy, rising from the axis and falling back to it again in about a millennium. We are in the first fourth of that pulse today. Right now men add as much heat to the earth's surface as the natural flow of heat by convection and conduction from the earth's hot interior does, and we face a tenfold rise in man's activities. For the first time in so central a parameter as energy men will have worked on a geologic scale. (Of course, the sun sends 1,000 times more heat to the earth's surface; we shall not cook ourselves that way!) Still, our myriad stacks and tailpipes aggregate to more heat than Krakatoa, Etna and the Valley of Ten Thousand Smokes.

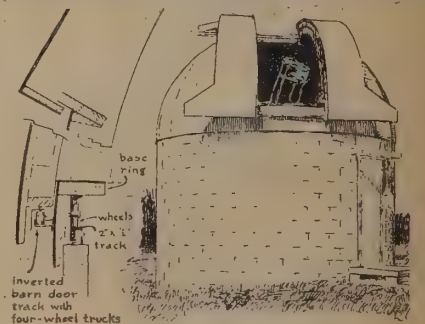


A photograph taken in bright starlight using a Marconi, low-light level television camera. The plane's shadow is quite clear on the runway.



**Globe-Trotter's Peril**

The painful, nauseating but feverless disease known as "traveler's diarrhea" has often been blamed on a change in water or climate, on chilled drinks and on other dietary indiscretions. Its actual cause now seems to be known; it appears to result from the sufferer's ingestion of the intestinal bacterium *Escherichia coli*, but a bacterium that belongs to a strain different from those he already harbors.



External and detailed views of the shutter

**Product Engineering**

Roy Sebern pointed out the main satisfaction of reading **Product Engineering**: in the usual magazines such as *Popular Science*, everything has the tone of "I-wish-they'd make..."; whereas in **Product Engineering** it's "We are making..." The magazine has good reporting and excellent editing. Increasingly it is going beyond the question of how to make stuff into why make stuff. Departments include *Research & Technology, Mechanical Design & Power Transmission, Hydraulic/Pneumatic Power & Control, Materials & Manufacturing, Product Planning & Management, and the Engineer & His Profession.*

A stove that will burn almost any type of coal without giving off smoke has been developed by the South African Council for Scientific & Industrial Research. The aim, of course, is to reduce air pollution. In addition, council says, the new stove cannot overheat, yet develops temperatures for ordinary cooking and uses less fuel than a conventional stove.

Basic features of the stove are a firebox grate with a set of front bars only 4 in. high, to make sure the fuel bed is shallow (with a thick bed, the upper layers of fuel receive air robbed of its oxygen by the lower layers, and smoking results); a hot plate that is actually the upper surface of the horizontal flue; and a single door that serves both as fire door and ash door. The door has a novel variable-size air opening in its lower half. This opening admits air to the underside of the fire and makes it possible to cut the air supply down to bank the fire, or to increase it to achieve the optimum working temperature.

To prevent overheating, the stove is designed so, when the door is opened to add fuel, excess air enters above the fire and the draft is reduced. Thus, opening the door to increase the heating rate above the optimum point will result in cooling the stove down rather than heating it up.

**Things That Go Bump**

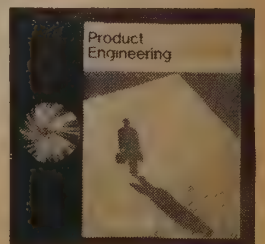
The center of the galaxy may be emitting intense bursts of gravitational radiation, according to evidence reported at the recent annual meeting of the American Physical Society by Joseph Weber of the University of Maryland. . . .

If Weber's detectors are indeed responding to gravitational radiation, what could be the significance of emanations predominantly from the center of the galaxy? Einstein's general theory of relativity predicts that gravitational waves should be produced by matter that is accelerating with respect to the observer. "Evidently," says Weber, "matter in the center of the galaxy is either collapsing or being rearranged on a grand scale."

**Product Engineering**

**\$15.00** for one year (biweekly)

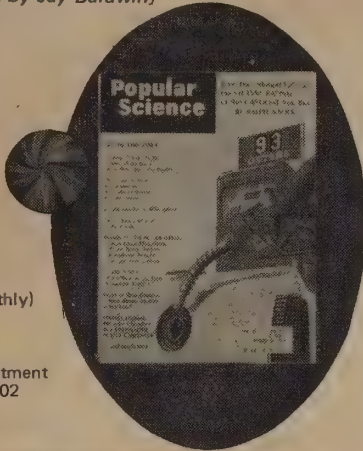
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Fulfillment Manager  
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P. O. Box 430  
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## Popular Science

Of the three, Popular Science, Popular Mechanics, and Mechanics Illustrated, consistently the somewhat better is Popular Science. It's a good source for current applied science reporting and base-ment technology. Most of the tool sources we list advertise in the magazine.

[Suggested by Jay Baldwin]



### Popular Science

\$5.00 /yr. (monthly)

from:  
Popular Science  
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Boulder, Colo. 80302



Super-Bipe STOL, with spectacular climbing ability, wastes no time getting airborne.

A new long-life, high-energy battery developed by the U.S. Army can be recharged as easily as popping bread into a toaster. The mechanically rechargeable zinc-air battery doesn't need special or lengthy charging. The basic unit is a flat zinc-air cell about the size of a five-pack of cigars. The cells are stacked in glass fiber battery cases to allow circulation. A soldier in the field can recharge the battery simply by removing the long, narrow zinc anodes in each cell, dropping in new ones, and adding water. The battery is good for 100 such cycles. It is used for backpack radios and night-vision devices.

## Science

Last issue I knocked Science for being unloveable and uncommunicative. Now I have to acknowledge I've gotten more useful tips from the magazine than any other technical or scientific journal.



### Science

\$12/yr. (weekly)

from:  
American Association for the Advancement of Science  
1515 Massachusetts Avenue, N. W.  
Washington, D. C. 20005

### Our Fragile Environment

The quality of the environment, ecology, and pollution problems have recently become matters of concern everywhere. My own personal explanation for this outburst of interest may be peculiar to myself, but I would like to know whether my explanation sounds a responsive chord in the minds of others. I date my own reawakening of interest in man's environment to the Apollo 8 mission and to the first clear photographs of the earth from that mission. My theory is that the views of the earth from that expedition and from the subsequent Apollo flights have made many of us see the earth as a whole, in a curious way—as a single environment in which hundreds of millions of human beings have a stake.

One view in particular is awe-inspiring—with Africa in the foreground and the whole profile of the Mediterranean very clear. One stares at the whole Mediterranean, looking from outer space much as in an atlas, but not as a drawing. Much of our most commonly taught history centers around that little sea, a mere patch of the hemisphere, which once seemed to its inhabitants to be the whole world.

Looking at the blackness beyond the sharp blue-green curve, trying to see even the place where the thin envelope of atmosphere and the solid earth meet, the curious word "fragile" comes to mind. To be on the earth and think of it as fragile is ridiculous. But to see it from Out There and to compare it with the deadness of the Moon! I suspect that the greatest lasting benefit of the Apollo missions may be, if my hunch is correct, this sudden rush of inspiration to try to save this fragile environment—the whole one—if we still can.

John Caffrey  
American Council on Education  
Washington, D.C. 20036



Citroën Mehari, beefed-up for off-road racing, has roll cage, extra lights, rubber auxiliary gas tank.

A superinsulation that grew out of the Apollo Space Program has been modified into a fabric that may open a new world of comfort for the outdoorsman.

An aluminum coating reflects up to 80 percent of your body heat, but does not clog the pores of the fabric. The result is a free-breathing material that can make a garment up to 30 percent warmer with no significant increase in weight or bulk.

The inside of the woven nylon fabric is mist coated via a vacuum deposition process with a layer of aluminum about one millionth of an inch thick. Then another substance is coated over the aluminum to protect it whenever the fabric is washed.

The fabric is already available in a line of jackets made by McGregor and can be used in other types of clothing, and in tents and sleeping bags as well.

The Norton Company, of Newton, Mass., makes the machine-washable material and another product, the Space Sportsman's Blanket, of a similar fabric. The blanket material is non-breathing, however.—Herbert Shuldiner.



Insert this new version of the Stickle-Dickle in your saber saw and you can cut in any direction. Its teeth spiral up the shank—for intricate scrollwork, just move the saw in the direction you want to cut. Coastal Abrasive Co., Trumbull, Conn. 06611, makes it. \$2 at stores.

In preparation for the next industrial revolution, I suggest that we revise our vocabulary. For instance, there is no such thing, no such person, as a consumer. We merely use "things"; and, according to the law of the conservation of matter, exactly the same mass of material is discarded after use. Thus, as the standard of living goes up, the amount of waste and consequent pollution must go up.

I believe we must base the next industrial revolution—a planned one—on the thesis that there is no such thing as waste, that waste is simply some useful substance that we do not yet have the wit to use. Industry so far is doing only half its job. It performs magnificent feats of scientific, technological, and managerial skill to take things from the land, refine them, and mass-manufacture, mass-market, and mass-distribute them to the so-called consumer; then the same mass of material is left, after use, to the so-called public sector, to be "disposed of." By and large, in our society, the private sector makes the things before use and the public sector disposes of them after use.

In the next industrial revolution, there must be a loop back from the user to the factory, which industry must close. If American industrial genius can mass-assemble and mass-distribute, why cannot the same genius mass-collect, mass-disassemble, and massively reuse the materials? If American industry should take upon itself the task of closing this loop, then its original design of the articles would include features facilitating their return and remaking. If, on the other hand, we continue to have the private sector make things and the public sector dispose of them, designs for reuse will not easily come about.

We industrial revolutionaries must plan to move more and more into the fields of human service, and not leave such concerns to the so-called public sector. We have seen our food supply grow to abundance in the United States, with fewer and fewer people needed to grow it. We are seeing the automation of factories, with an abundance of "things" provided by fewer and fewer people. On the other hand, we have a shortage of human services and a shortage of people providing these services. It follows quite simply that, if private enterprise is not to dwindle, while the public sector grows to be an all-embracing octopus, then private enterprise must go into the fields of human service.

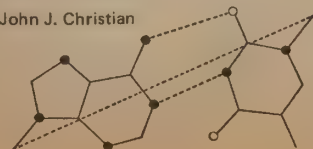
—Athenstan Spilhaus, president, American Association for the Advancement of Science



Mammalian evolution might be expected to be conservative and limited to a rate characteristic of the entire ecosystem. However, mammalian evolution has been explosive with respect to rate and diversity.

I suggest that the conservative influence of social dominance is more than offset by other consequences of hierarchical behavior, and that social behavior is a major force in the evolution of mammals. Mammalian selection and evolution may occur to an important degree through the agency of socially subordinate individuals, and it is these individuals that will provide the genetic material involved in adaptation to new circumstances.

John J. Christian



11.2 Å

## Clearinghouse

Its full name is "Clearinghouse for Federal Scientific and Technical Information," it's managed by the U. S. Department of Commerce, and it's quite a service. All current unclassified R&D (research and development) done for or by the Government is available through Clearinghouse; this amounts to 30,000 new documents each year. Specific accesses are: U. S. Government Research and Development Reports (December 1,000 new documents twice a month), \$22/year; Fast Announcement Service, for as many as 57 subject areas, delivered constantly, \$5/year; and Technical Translations, twice a month, \$12/year. These are indexes. Once you find what you want you order a paper copy (hard copy) for around \$3 or micro-film (microfiche) for around \$65. The following examples of listings are from the Fast Announcement Service.

[Suggested by Jon Dieges]



Write for free information and order forms to:  
U. S. Department of Commerce  
Clearinghouse for Federal Scientific  
and Technical Information  
Springfield, VA 22151

AD-691 231 -- THE INFORMATION THEORY ASPECT OF TELEPATHY, L. M. Kogan, U.S.S.R., 1969, translated from Russian, July 69, 20p.

AD-677 116 -- A SOLAR-ILLUMINATED ALGAL PHOTOSYNTHETIC EXCHANGER, R. L. Miller et al., Martin Co., Denver, Colo., for the Air Force, June 68, 26p. . . . Describes a continuous culture system for studying the use of solar energy for algal growth and photosynthetic gas exchange.

.. ORDER: PB-180 051 -- TRITON CITY - A PROTOTYPE FLOATING COMMUNITY, Triton Foundation, Inc., Cambridge, Mass., for the Dept. of Housing and Urban Development, Nov. 68, 131p.

Fuller's floating city

AD-683 047 -- WHAT IS MEMORY THAT IT MAY HAVE HINDSIGHT AND FORESIGHT AS WELL, H. Von Foerster, Univ. of Illinois, Urbana, for the Air Force, Jan. 69, 61p. . . . Discusses the phenomenon of physiological memory from the viewpoint that memory is embedded into the totality of cognitive processes and considered as a computational operation rather than a storage and retrieval problem.

AD-681 752 -- A FIFTEEN-YEAR FORECAST OF INFORMATION-PROCESSING TECHNOLOGY, G. B. Bernstein, Naval Supply Systems Command, Washington, D. C., Jan. 69, 187p. . . . Uses SEER (System for Event Evaluation and Review), a technique that incorporates the consensus of participant experts, to produce a technological forecast of what is expected to occur in the information-processing industry.

PB-180 665 -- THE INFLUENCE OF DESIGN ON EXPOSED WOOD IN BUILDINGS OF THE PUGET SOUND AREA, E. W. Schein, USDA, Pacific Northwest Forest and Range Experiment Station, Portland, Ore., Sept. 68, 50p. . . . Identifies the best existing design solutions to exposure hazards.

AD-680 168 -- SPIRAL GENERATION OF BUILDING SHELLS: OR MILITARY CONSTRUCTION, A. N. Collishaw and R. D. Graham, Dept. of the Army, Ohio River Division Labs., Corps of Engineers, Cincinnati, Ohio, Nov. 68, 30p. . . . Discusses immediate and potential applications of the spiral generation construction process to military construction. Included are permanent, semi-permanent, and temporary construction.

PB-182 401 -- BUILDING CLIMATOLOGY, PART IV: NOISE, National Swedish Institute for Building Research, Stockholm, 1968, 86p. . . . Annotated bibliography of literature dealing with the following aspects of noise: (1) subjective reactions to sound, noise, and vibration, (2) objective methods of registering sound and noise, (3) noise situations, (4) fighting noise (technical and legal steps to improve noise climate) and sound insulation, (5) acoustic planning, and (6) theory of sound propagation.

AD-678 571 -- TAN-O-QUIL-QM TREATMENT FOR FEATHERS AND DOWN, G. Cohen, U.S. Army Natick Labs., Natick, Mass., Aug. 68, 80p. . . . Describes a process for treatment of feathers and down that uses a tanning agent and a water repellent and is applicable to both landfowl and waterfowl feather filling materials. Feathers treated by the process have increased filling power that is durable to laundering, are free from dust, are exceptionally clean, and will not develop an odor even when wet.

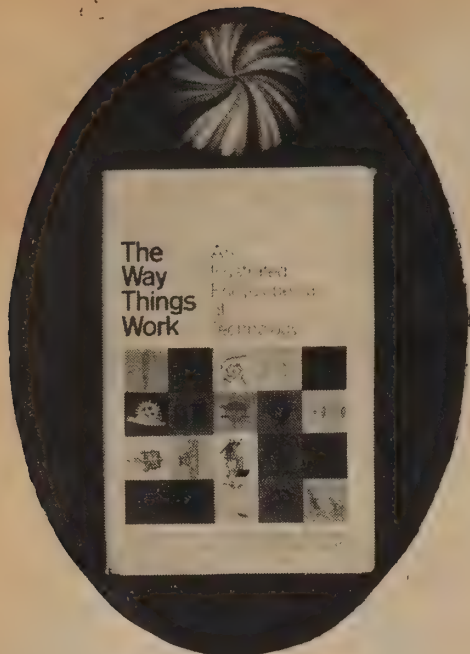
AD-685 850 -- WATER SUPPLY IN COLD REGIONS, A. J. Alter, Cold Regions Research & Engineering Lab., Hanover, N. H., Jan. 69, 94p. . . . Discusses the influence of a cold environment on sanitary engineering works and services, water supply engineering in cold regions, and water supply during military field operations. Report includes a bibliography.

AD-688 132 -- POLYURETHANE FOAMS: TECHNOLOGY, PROPERTIES AND APPLICATIONS, A. H. Landrock, Picatinny Arsenal, Dover, N. J., Jan. 69, available in paper copy only, \$15.50, 257p. . . . Discusses state-of-the-art of urethane foams. Topics covered are: chemistry of urethane foam process; types of polyurethane foam; methods of manufacture; toxicity of raw materials; adhesives and other methods of joining; surface coatings; foam properties; test methods; military and space applications; economics and costs; comparative properties of other foams; specifications and standards; trade designations; and definitions of terms. Report includes a bibliography of over 700 references from the open literature, government project and contract reports, commercial bulletins, and conference papers.

AD-686 723 -- WIND SURFING--A NEW CONCEPT IN SAILING, J. R. Drake, RAND Corp., Santa Monica, Calif., Apr. 69, 23p. . . . Describes various board and sail configurations used in wind-surfing. The hand-held fully articulated sail is an entirely new means of propulsion and control.

This one is great, a stand-up surfboard with a ball-joint flexible-boom sail. Surf in, then turn around and surf out. Design and instructions.

59



**The Way Things Work**

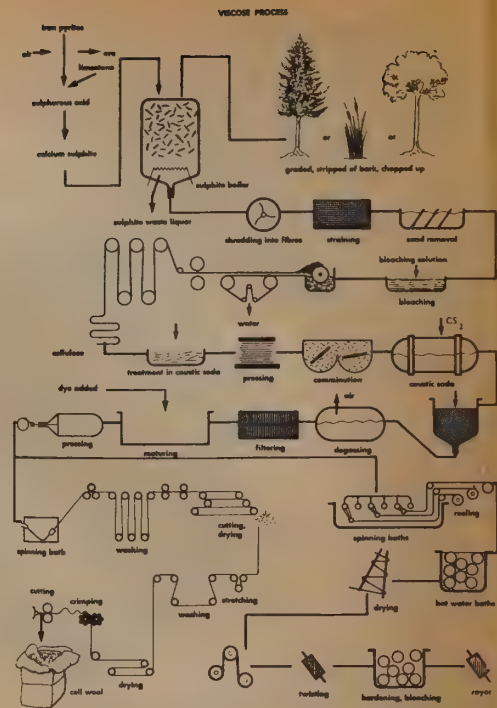
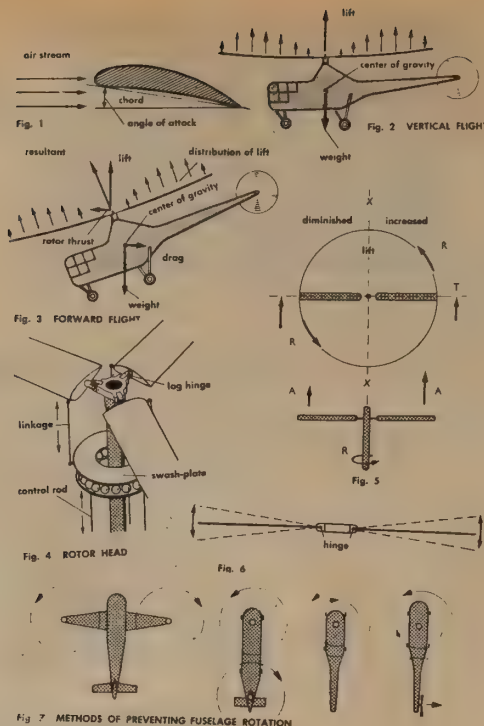
The Way Things Work  
1967; 590 pp.

\$9.95 postpaid

from:  
Simon & Schuster  
630 Fifth Avenue  
New York, N.Y. 10020

or WHOLE EARTH CATALOG

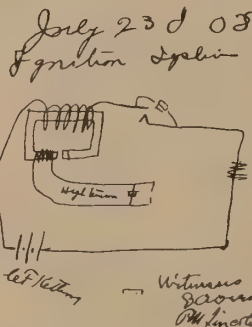
Best book for the bathroom we've seen. Nibble your way to knowledge of technology. Each two pages of the book is a bunch of text and a bunch of diagrams on all the big and little gadgets and processes you can think of, ball-point pens to data-processing. If you develop time travel, it might be interesting to take this book back to the sixteenth century and leave it under some European's pillow. (Now think about contact with alien civilizations.)



**Introduction to Engineering Design**

Out of a whole section of books on design in the Engineering Library at Stanford, this book looked far the best. Recently Steve Baer (dome and solar designer) came across it on our editing tables, sat down and paged, then got up and hurriedly wrote a letter to a friend about the book and its author. I asked Steve to pick out some useful quotes and pictures and he wouldn't. "Look anywhere you open it," he advised, then ordered a copy.

Contents of the book include: The Engineering Problem Situation, Design Project Organization, Information and the Need Analysis, Identification of the Problems, Information Sources, Synthesis of Alternatives, Estimation and Order-of-Magnitude Analysis, Engineering and Money, Preliminary Design, Engineering Problem Modeling, The Iconic Model, Conceptual Representation, Expansion of the Criterion Function, Checking in Engineering Design, Optimization, etc., etc.



**Fig. 6.2** A sketch that changed automobile ignition. (Courtesy General Motors Corp.)

Now we need to arrive at costs. The most convenient reference is a broad-coverage catalog (such as that of Sears, Roebuck), in which wood, metal, and other supplies can be found listed at retail prices. Of course, one can also phone the retail plumbing or lumber suppliers. In any case, we find

- Wood: 15¢-20¢ / board-foot in the sizes we need
- 1 in. iron pipe: 30¢ / ft
- ¾ in. copper pipe: 58¢ / ft (One size smaller than iron pipe for the same flow rate.)

Assuming one-half board-foot for each running foot of wood channel, the comparisons are

- Wood: 10¢ / running foot, materials only
- Iron: 30¢ / running foot, materials only
- Copper: 60¢ / running foot, materials only

Since we would do the work ourselves, the cost of labor is disregarded, and it seems that wood should be our choice. On one final check though, we ask whether these are all the choices. Someone suggests plastic pipe, so we look that up: It is corrosion-resistant, flexible, easily connected, sanitary; it has a smooth interior; it could be in one piece and simply laid on the ground. It seems to be a natural choice. The price of ¾-in. diameter plastic pipe is 10¢ / ft; 1-in. diameter is 16¢ / ft. Considering the labor needed with wood or iron pipe, or the cost of copper tubing, and the plastic's sanitary advantages, the plastic pipe (high-density polyethylene) is certainly the preferred choice.

Thus our final estimate is the use of this plastic tubing, probably ¾-in. diameter at 10¢ / ft.

†  $A = Q/V$  (area = flow/velocity)  
where  
 $Q = 4 \text{ gal/min} = 1000 \text{ cu in./min}$  (1 gal - 231 cu in.)  
 $V = 2 \text{ ft/sec} = 24 \text{ in.}/(1/60 \text{ min}) = 1500 \text{ in./min}$   
 $A = \frac{1000 \text{ cu in./min}}{1500 \text{ in./min}} = 2/3 \text{ sq. in.}$

**Introduction to Engineering Design**  
Thomas T. Woodson  
1966; 434 pp.

\$9.95 postpaid

from:  
McGraw-Hill Book Company  
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Hightstown, N.J. 08520  
Manchester Road  
Manchester, Missouri 63062  
8171 Redwood Highway  
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**Fig. 7.4** Possible water channel sections. Water supply project for mountain cabin.

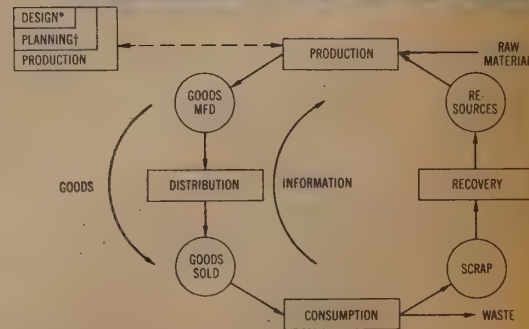
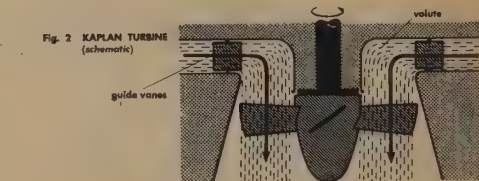
**WATER SUPPLY FOR MOUNTAIN CAMP**

For another simple example, let us estimate how we would bring water from a running stream into a tank (let's say a 50-gallon gravity tank) to supply water for a vacation cabin in the woods. A natural supply point is 100 ft away upstream, guaranteeing among other things a clean, continuous water supply. Our problem is transport. Shall we use pipe, an open rock-lined channel in the ground, or a wooden flume or trough? See Figure 7.4.

As we think about this, we discard the open channel in the ground as too easily contaminated. The pipe could be laid on the ground; and the wood flumes could be suspended from tree trunks and possibly covered as shown by the dashed "board" in the illustration. Thus, we have two reasonable ways of doing this job; the questions now concern cost and convenience.

Next we check the sizes needed. If we wanted the 50-gal. tank filled in 15 min, we would need a flow of about 4 gal/min. This is a stream of water about as big as a person's finger when the water is flowing two feet per second, as shown by the equation in the footnote deriving the cross-sectional area, A, of the stream.

This area would require a pipe one inch in diameter. If we were using the wood "vee" channels, we would need two boards each about three inches wide to avoid splashing over, or one-half board-foot per running foot of channel (per foot of channel length). (A board-foot is one square foot of wood, one inch or less thick.)



\* DESIGN is a part of PLANNING  
† PLANNING is a part of PRODUCTION

**Fig. 3.7** The production-consumption cycle, showing the place of engineering design.

## The Design of Design

It's superficially a book for design engineers, but should be useful to anyone engaged in the design of physical objects or strategies. Simple and basic. More advanced treatment of design techniques gets you into computers and very sophisticated decision making theory. The main trip is concentrated on getting your head straight so that design decisions of any sort can be made intelligently. There's a good bit of practical advice concealed in a slurry of English Humour. The only book of its type that we know of. Among the better points:

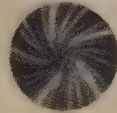
- Concentration and then relaxation is the common pattern behind most creative thinking.
- Beware of intrinsic impossibilities.
- Beware of pseudo-technical words. [He means words like "sturdy," "big," "beautiful", etc.]
- Define problems in figures or configurations.
- Aim at continuity of energy.

He really gets to the center of the modern-technology-versus-New-Mexico-Funk argument:

If the design of a particular machine or production line is based on the way the process was originally done by hand, it is unlikely to be the final form. The feeding forward by mechanizing a style that was handy when only hands were available is doomed, in the long run, to be superseded by the feeding back of ideas and materials from the physical sciences. Beware of well-dressed arts and crafts.

[Reviewed by J. Baldwin]

You are taken out to lunch and everyone is anxious to hear you tell them how a "few adjustments" or possibly "some electronics" will solve all the difficulties. You have to break it to them that everything is wrong in principle.



**The Design of Design**  
Gordon L. Glegg  
1969; 93 pp.

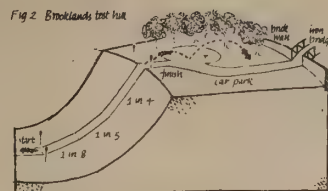
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Now when a steel pile is suddenly hit on its top, the bottom does not simultaneously go further into the ground. The force from the hammer is transmitted as a shock wave which travels down the length of the pile, finally giving the bottom end a kick. But more than this happens. A steel pile behaves like a long helical spring and vibrates longitudinally at its resonant frequency, until the side damping effect of the ground dissipates the residual energy, which it does very quickly.

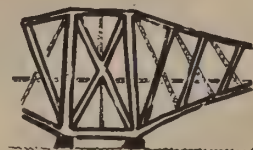
The problem of making the tube an ally and not an enemy can be solved by utilizing this resonant frequency. If you apply a force that pushes and pulls on the top of the pile with the same frequency as the resonant one, you can silently feed in energy in a form which the pile can transmit to its bottom end. This has useful side effects as the vibration fluidizes the earth surrounding the pile and greatly reduces the frictional drag. The energy is tuned, focused and economized.



cart wheel



bicycle wheel



the Forth bridge



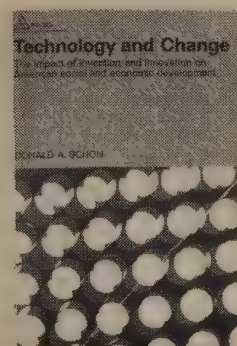
the Severn bridge

Suspension bridge designers thought at first that the major problem would be the load, and learned by spectacular experience that it was really the stability.

## Technology and Change

The subtitle of this book is "The impact of invention and innovation on American social and economic development". The author studies this area in the light of experience in several industries, one of which is the building industry, where change has been slow in coming. This book will be of interest to its intended readership in industry. But on a larger scale, it offers an answer to that teeth-grashing question: "Why does the 'establishment' resist change?" Or for that matter, "Why does everybody resist change?" This is one of the neatest and best explanations I've seen (perhaps because it so closely matches my experiences as a Professional Designer). It will be interesting for those who wish to better know their Corporation As An Enemy as well as to those who wish to equip themselves and their organization to better deal with inevitable and intentional change. One of his more interesting points is that "revolutionaries" are often a reactionary force instead of being truly revolutionary; they are the conservatives, especially where technological change is concerned. Lots of subversive stuff here. Recommended reading for changebringers.

[Reviewed by Jay Baldwin.  
Suggested by Steve Baer]

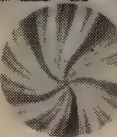


**Technology and Change**  
Donald A. Schon  
1967; 248 pp.

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Unexpected success is no less destructive of the rational view of corporate activity than is unexpected failure. When the addition of carbon black turns out to increase the strength of rubber; when the book-mending tape turns out to have a multiplicity of unexpected consumer uses; when the new plastic, designed for a cheaper molding process, turns out to perform well in a completely different application—the corporate manager can only react with a wry smile. In ways he did not understand, and was unable to state before the fact, things have gone well; but what has he learned that will prepare him to cope with the next time?

Corporate behavior is based on regular, orderly, linear, predictable processes—the extension of the industrial manufacturing process itself. How is it to absorb invention?

What used to be stable divisions in our community are no longer stable:

- the division between education and work, and with it, the view of the young as learning and the old as established;
- the division between labor and business;
- the old regionalism;
- the old divisions between race and race and class and class;
- the division between the change-oriented outcasts (inventor, poet, therapist) and the stable society;
- the division between "good" creative private enterprise and "evil" controlling Government.

The call to Revolt has as much appeal as the call to Return. It is an alternate response to the destruction of the myth of stability. In effect, it says that the old objectives are hollow and inadequate. There is oppression, slavery, humiliation, constraint and injustice. There is no Promised Land in sight. Revolt against these things! The call to revolt need not produce its own image of a Promised Land. It takes its image from the present against which it reacts. It gets its concreteness from the life it refuses to accept and is, in this sense, a form of conservatism.

If we cannot be inattentive to change of objectives in our society and cannot accept the silent calls of return and revolt, what is left? How do we ever tolerate and stand up to change in objectives?

## Direct Use of the Sun's Energy

The best book on Solar Energy that I know of. Any curious and intelligent person can learn a great deal about our planet and ourselves by reading this book about ways of using sunlight. There are many numbers in the book but the math never goes beyond 8th grade arithmetic. The book is clear and simple whether talking about heating water—

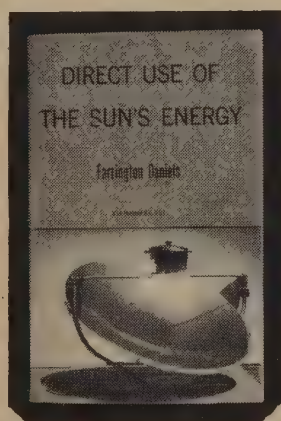
For general domestic use of hot water for bathing and washing dishes a temperature of 135°F (57°C) is considered adequate and 20 gal per person per day is a reasonable consumption. In many sunny climates these requirements can be met with an insulated storage tank and solar radiation absorber which has an area of 0.75 ft<sup>2</sup> gal<sup>-1</sup> of hot water. A family of four would need a tank of 80 gal and a solar absorber of 60 ft<sup>2</sup>.

or photochemical reactions—

The photo dissociation of iodine (I<sub>2</sub>) molecules into atoms absorbs most of the visible light of the sun with a considerable amount of energy which cannot be retained. It is immediately evolved as heat during the exposure to light.

I read the book on a Greyhound bus in Texas two years ago and it has changed my life and my way of thinking.

[Reviewed by Steve Baer]

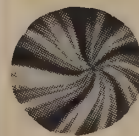


**Direct Use of the Sun's Energy**  
Farrington Daniels  
1964; 374 pp.

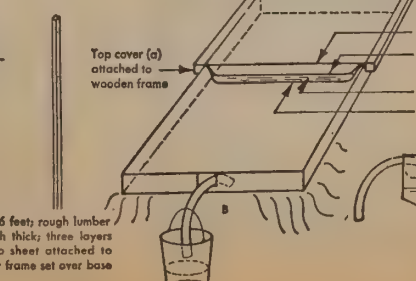
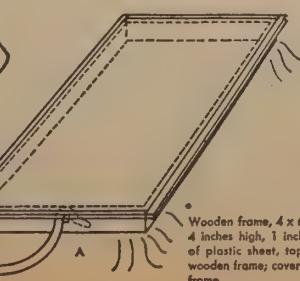
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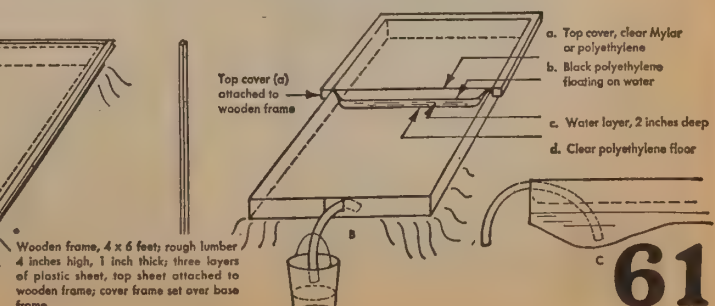
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Inexpensive solar water heater. A. Filling with cold water. B. Emptying hot water with suction syphon. C. Side view, showing position of end of hose.



11. World wide distribution of solar energy in hundreds of hours per year. [Adapted with permission from Solar Energy, cover, 1, no. 1 (1957).]

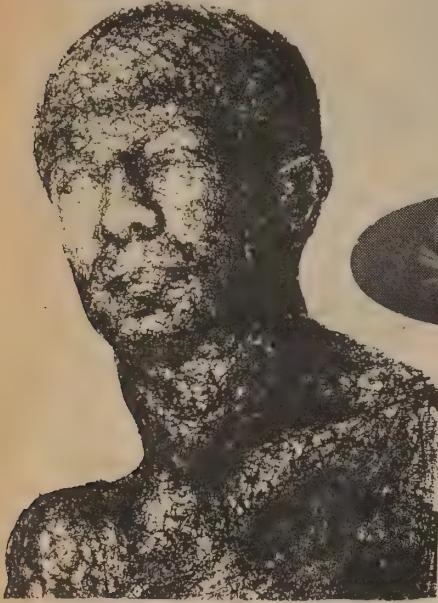


## The Natural Way to Draw

*Drawing is a deeper and wider kind of writing. It's better communication in many ways than writing, and it's much closer to your mind. (The same goes for music and speech).*

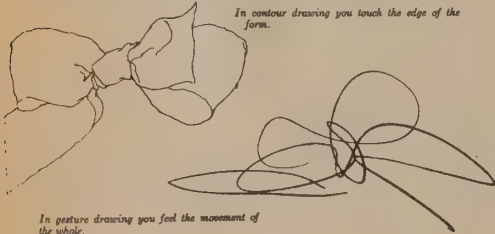
*This classic work by an outstanding art teacher is not only the best how-to book on drawing, it is the best how-to book we've seen on any subject.*

[Suggested by Roy Sebern]



The job of the teacher, as I see it, is to teach students, not how to draw, but how to learn to draw.

YOU SHOULD DRAW, NOT WHAT THE THING LOOKS LIKE, NOT EVEN WHAT IT IS, BUT WHAT IT IS *DOING*. Feel how the figure lifts or droops — pushes forward here — pulls back there — pushes out here — drops down easily there. Suppose that the model takes the pose of a fighter with fists clenched and jaw thrust forward angrily. Try to draw the actual thrust of the jaw, the clenching of the hand. A drawing of prize fighters should show the push, from foot to fist, behind their blows that makes them hurt.



In contour drawing you touch the edge of the form.

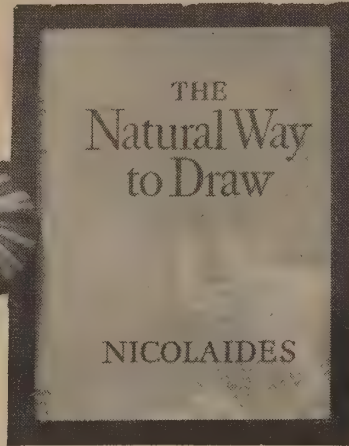
In gesture drawing you feel the movement of the whole.

THE SOONER YOU MAKE YOUR FIRST FIVE THOUSAND MISTAKES, THE SOONER YOU WILL BE ABLE TO CORRECT THEM.

# Communications

The first exercise, which you are about to attempt, is planned consciously to bring into play your sense of touch and to coordinate it with your sense of sight for the purpose of drawing.

Look at the edge of your chair. Then rub your finger against it many times, sometimes slowly and sometimes quickly. Compare the idea of the edge which the touch of your finger gives with the idea you had from merely looking at it. In this exercise you will try to combine both those experiences — that of touching with that of simply looking.



The Natural Way to Draw  
Kimon Nicolaides  
1941; 221 pp.

\$6.00 postpaid

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Houghton Mifflin Co.  
Wayside Road  
Burlington, Mass. 01803

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A gesture drawing is like scribbling rather than like printing carefully — think more of the meaning than of the way the thing looks.

### Exercise 1: Contour Drawing

Materials: Use a 3B (medium soft) drawing pencil with a very fine point (sharpened on sandpaper) and a piece of cream-colored manila wrapping paper about fifteen by twenty inches in size. Manila paper usually comes in large sheets which may be cut into four pieces of that size. You may use, also, the kind sold as "shelf paper" provided it is not glazed. Fasten the paper with large paper clips to a piece of prestwood or a stiff piece of cardboard. Wear an eyeshade. Do not use an eraser until you come to Exercise 28.

Sit close to the model or object which you intend to draw and lean forward in your chair. Focus your eyes on some point — any point will do — along the contour of the model. (The contour approximates what is usually spoken of as the outline or edge.) Place the point of your pencil on the paper. Imagine that your pencil point is touching the model instead of the paper. Without taking your eyes off the model, wait until you are convinced that the pencil is touching that point on the model upon which your eyes are fastened.

Then move your eye slowly along the contour of the model and move the pencil slowly along the paper. As you do this, keep the conviction that the pencil point is actually touching the contour. Be guided more by the sense of touch than by sight. THIS MEANS THAT YOU MUST DRAW WITHOUT LOOKING AT THE PAPER, continuously looking at the model.

Exactly coordinate the pencil with the eye. Your eye may be tempted at first to move faster than your pencil, but do not let it get ahead. Consider only the point that you are working on at the moment with no regard for any other part of the figure.

TWO TYPES OF STUDY. The way to learn to draw is by drawing. People who make art must not merely know about it. For an artist, the important thing is not how much he knows, but how much he can do. A scientist may know all about aeronautics without being able to handle an airplane. It is only by flying that he can develop the senses for flying. If I were asked what one thing more than any other would teach a student how to draw, I should answer, "Drawing — incessantly, furiously, painstakingly drawing."

Probably you realize already that contour drawing is of the type which is to be done "painstakingly." On the other hand, gesture drawing, which you will begin today, is to be done "furiously." In order to concentrate, one can act furiously over a short space of time or one can work with calm determination, quietly, over a long-extended period. In learning to draw, both kinds of effort are necessary and the one makes a precise balance for the other. In long studies you will develop an understanding of the structure of the model, how it is made — by which I mean something more fundamental than anatomy alone. In quick studies you will consider the function of action, life, or expression — I call it gesture.

Some students become self-conscious and confused as soon as they attempt to draw a face. Don't think of the head or the face as something different from any other part of the body. Draw it as you would draw a hand or an elbow or a knee.

Don't try to "get a likeness" of your model. The tendency of the beginner is to separate likenesses from drawing. Draw strangers if you can because you care less what they look like. Do not draw members of your family — or at least do not show them your drawings — because their one reaction will be to look for the likeness. Keep it clearly in mind that YOU ARE NOT MAKING A PORTRAIT. You are making a study of a head.



CHANGING THE POINT OF VIEW. It is well known that the printed or spoken word has a tendency to take on authority once it is printed or spoken. To get away from it almost takes a revolution. The same thing is true with your own drawing. The very mistakes you make, as they linger on the paper, have this tendency to become authoritative. To combat it, move about the room during the long pose, making occasional scribbled drawings. A thing is factually the same from whatever point of view you see it, but seeing it from different points of view will illuminate the meaning of the forms and lines you have been looking at.

Whenever you are uncertain as to how to begin a study think of the movement.

## Art and Illusion

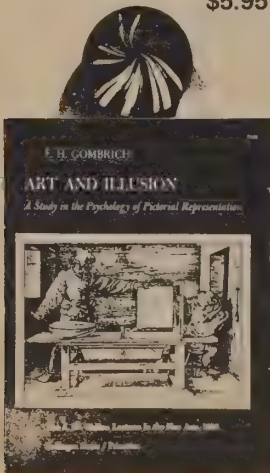
*So much art criticism is so much a vapid waste of time that a book like this one is thoroughly a shock. Every page yields fresh information (did you know that the comic strip was singlehandedly invented by a Swiss gent named Töpfler in the 1820's?) and worthwhile hypotheses about how art and artists gradually teach themselves energies of effect. Furthermore the book is a bargain — it has 319 fine illustrations, 18 in color.*

Art and Illusion  
E. H. Gombrich  
1960, 1961; 466 pp.

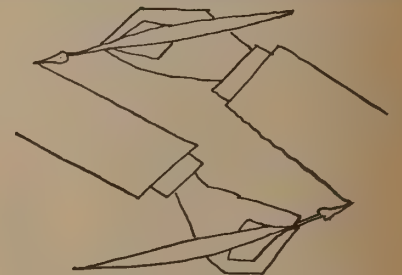
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Princeton, New Jersey 08540

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Only in the realm of dreams has the artist found full freedom to create. I think the difference is well summed up in the anecdote about Matisse. When a lady visiting his studio said, "But surely, the arm of this woman is much too long," the artist replied politely, "Madame, you are mistaken. This is not a woman, this is a picture."



202 STEINBERG: From "The Passport"

Max Friedländer tells the revealing story of the bank official who insisted that German bank notes should retain a portrait head in their design. Nothing, he said, was harder for the forger to imitate than precisely the right expression of these artistically quite insignificant heads, nor was there a quicker way of discovering a suspect note than simply observing the way these faces look at you.

Rabbit or duck?

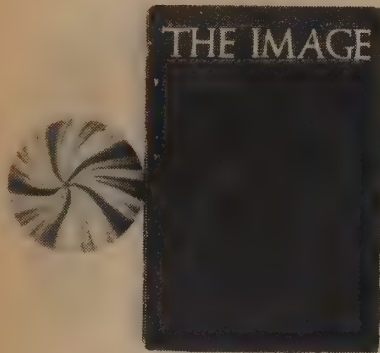


True, we can switch from one reading to another with increasing rapidity; we will also "remember" the rabbit while we see the duck, but the more closely we watch ourselves, the more certainly we will discover that we cannot experience alternative readings at the same time. Illusion, we will find, is hard to describe or analyze, for though we may be intellectually aware of the fact that any given experience must be an illusion, we cannot, strictly speaking, watch ourselves having an illusion.

★  
The Image

*This book is by an economist enchanted with cybernetics. He's after the organizing principle in life, the image the everything comes together through. He scarcely mentions the brain, and he's right. It ain't the brain.*

[Suggested by Martha Neufeld]



**The Image**  
Kenneth E. Boulding  
1956; 175 pp.

from:  
The University of Michigan Press  
Ann Arbor, Michigan 48106

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The meaning of a message is the change which it produces in the image.

Between the incoming and outgoing messages lies the great intervening variable of the image. The outgoing messages are the result of the image, not the result of the incoming messages. The incoming messages only modify the outgoing messages as they succeed in modifying the image.

I have never been to Australia. In my image of the world, however, it exists with 100 per cent certainty. If I sailed to the place where the map makers tell me it is and found nothing there but ocean I would be the most surprised man in the world. I hold to this part of my image with certainty, however, purely on authority. I have been to many other places which I have found on the map and I have almost always found them there. It is interesting to inquire what gives the map this extraordinary authority, an authority greater than that of the sacred books of all religions. It is not an authority which is derived from any political power or from any charismatic experience. As far as I know it is not a crime against the state nor against religion to show a map that has mistakes in it. There is, however, a process of feedback from the users of maps to the map maker.

There is a strong tendency for authoritarian organizations to use violence or the threat of violence in support of the role structure, that is, in order to gain acceptance of the role on the part of the persons occupying the lower role. For a time this may be successful in maintaining the organization. It is usually, however, self-defeating because of the corruption of the communication system which it entails. The case is somewhat analogous to that of the schizophrenic or the extreme paranoid. His sense receptors are so much "afraid" of him that they merely confirm the products of his heated imagination. The terrorized information sources of the tyrant likewise tell him only what they think will be pleasing to his ears. Organizations as well as individuals can suffer from hallucinations. It is the peculiar disease of authoritarian structures.

At the other extreme, democratic structures in which there is no adequate leadership, that is, in which the feedback is destructive of the decision-making process on the part of higher roles are likewise unstable and incapable of maintaining themselves. If discussion is to be a successful process of decision-making it must exhibit a degree of convergence toward common images of the whole organization. If the feedback from the followers destroys the image of the leader instead of merely modifying it, the process is likely to be self-defeating.

The image acts as a field. The behavior consists in gravitating toward the most highly valued part of the field. It does not follow from this, however, that the consequences of behavior are in conformity with the image which produced them. Disappointment and surprise are a common lot of both organisms and organizations. We behave according to some image of the consequences of our acts. When, however, these consequences are reflected in information fed back to us, we find very often that feedback does not confirm the original image. Under these circumstances, as we have seen, the image may be modified or it may not.

In tracing the effect of images on the course of history, peculiar attention must be paid to the images of time and especially the images of the future. Curiously enough, it may not be so much the actual content of the image of the future which is important in its effect, but its general quality of optimism or pessimism, certainty or uncertainty, breadth or narrowness. The person or the nation that has a date with destiny goes somewhere, though not usually to the address on the label. The individual or the nation which has no sense of direction in time, no sense of a clear future ahead is likely to be vacillating, uncertain in behavior, and to have a poor chance of surviving. Those images of the future which are most persistent and which have had the greatest impact on human history seem to be those which are impenetrable to feedback and which maintain themselves by their own internal beauty and consistency.

★  
Foundations of Modern Art

*Full of pronouncements to make you urp ("There are only three billion seconds in a century. Art? To make us forget it"). This 1931 work still serves by odd illumination. Every third pronouncement or so scratches an itch you didn't know you had. The pictures (226 of them) are splendidly peculiar—battleships, native masks, a survey of military formations, a fat lady, cubist paintings, an ancient Egyptian with glasses. I don't know if the book has much to do with art: it has plenty to do with the tension of environment and anti-environment.*

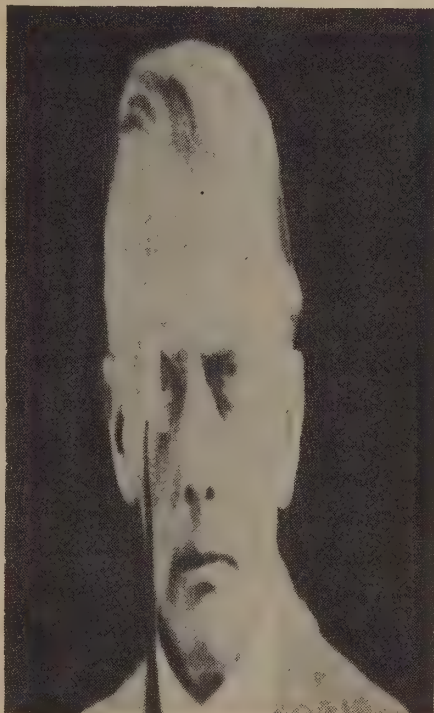
[Suggested by Frederick Ted Castle]

**Foundations of Modern Art**  
Ozenfant, Trans. by John Rodker  
1952; 347 pp.

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180 Varick Street  
New York, N. Y. 10014

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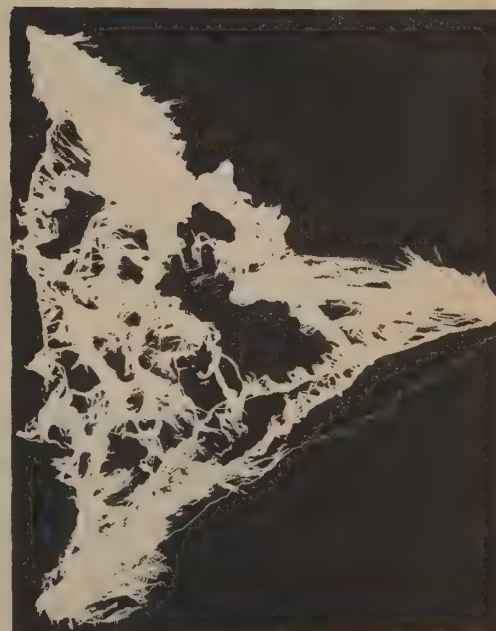
Great individuals have always been rare. The history of Art is a few names only. The masters were those who said something new in their time. At first a nuisance, they succeeded later in inoculating the public with their own special needs, which eventually became everyone's heritage. The schools are the product of the paraphrasers whose affiliations, branches, colonies, and large-scale production exploit the "market" created by the masters. Thus even the Renaissance had a few great painters and crowds of lesser men. Yet schools have their uses, for they help to get the master accepted by toning him down, and when they exaggerate him they end by boring everybody, and thus deliver society from his tyranny.

The early youth of a man marked out for greatness reveals his later quality. His middle age is often characterized by work that is not truly representative, for self-criticism often obscures his natural virtues. Often works of this period, when technically he is most accomplished, mirror a malaise due to the fact that his intellect has not yet established full harmony with his instincts. The greatest works of art are those produced in the fifties. By then the master has drawn from his intellect all it can give, and is reaping the reward of his experiments. He discovers or rediscovers his own well-springs. Michael Angelo, Tintoretto, Renoir, Cezanne.

The American Customs lately brought suit against Brancusi. They claimed that, in order to avoid the duty payable on raw materials, he had made a false declaration by designating his bronzes as works of art. One of the arguments used by the Customs officials was: "M. Brancusi claims that this object represents a bird. If you met such a bird out shooting, would you fire?"

SUSPENSE

Our mind always tries to organize what appears unorganized or not organized enough. It also tries to resolve the discontinuous in continuous. Our mind tends to complete the incomplete or interrupted forms. We feel first suspense, then satisfaction of completion. (Phenomenon much in use in music.)



Electric Spark

What else is barbarism but an incapacity for distinguishing excellence?  
—Goethe

To imitate something is merely to stuff it.



Negress seeing herself for the First Time in a Good Mirror.



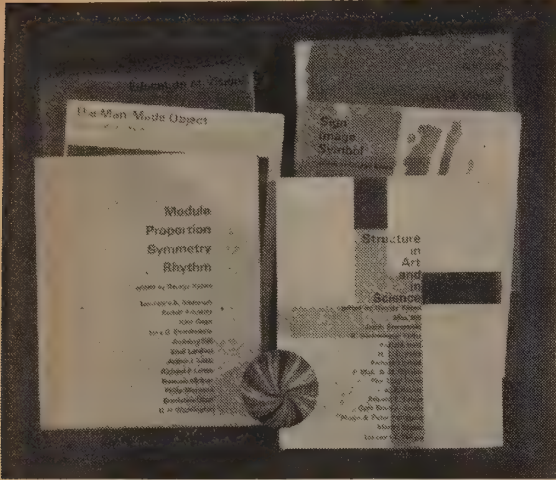
Proud mouldings of Doric cornices! This valve is proud!

★ VISION & VALUE series

Design! Prestige! \$75!

Some years ago Gyorgy Kepes revolutionized the Design industry with a book called *The New Landscape*, illustrating the convergence of the scientific and artistic imagery. Since then he's been compiling a deep series of latest thought on motion, image, structure, symbol, module, so forth. It's a casket of jewels, some glass but pretty, some valuable gemstone.

[Suggested by Len Fehskens]



- Education of Vision 1965; 233 pp. \$12.50 postpaid
  - Structure in Art and in Science 1965; 189 pp. \$12.50 postpaid
  - The Nature and Art of Motion 1965; 195 pp. \$12.50 postpaid
  - Module Proportion Symmetry Rhythm 1966; 233 pp. \$12.50 ppd
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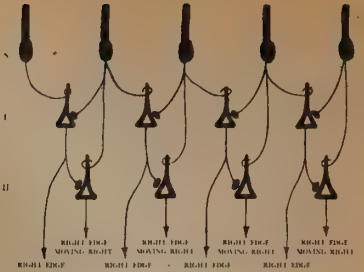
\$10.08 each from Blackwell's (see p. 79)



In the Eskimo language, little distinction is made between nouns and verbs, but rather all words are forms of the verb "to be," which is itself lacking in Eskimo. That is, all words proclaim in themselves their own existence. Eskimo is not a nominal language; it does not simply name things which already exist, but rather brings both things and actions (nouns and verbs) into being as it goes along. This idea is reflected in the practice of naming a child at birth: when the mother is in labor, an old woman stands around and says as many different eligible names as she can think of. The child comes out of the womb when its own name is called. Thus the naming and the giving birth to the new thing are inextricably bound together. . . .

The Eskimo language contains no first-person pronoun, which in English is so important we make "I" upper case, an honor otherwise restricted to gods and kings. Eskimo does provide a suffix to indicate participation of self in experience, but generally Eskimos avoid even this, and use an impersonal pronoun: "One has driven his spear into a walrus." Yet, despite the absence of individualism in our sense, there is often spectacular achievement, and though there is no "I," there is great dignity.

Edmund Carpenter  
Sign Image Symbol



Anisotropic periodic network computing the property "right edge" and the property "right edge moving right."

Since associations gained from experience are excluded, one must assume that this audio-visual correspondence rests upon the fabric without which experience cannot be gained. The structure of this fabric must permit some cross-talk between the senses, not only in terms of associations, but also in terms of integration. If this structure permits the ear to witness what the eye sees and the eye to witness what the ear hears then there is "together-knowledge," there is *con-scientia*.

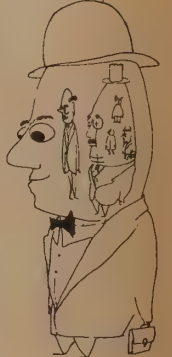
In which sense reality indeed exists for a self-reflecting organism will become clear by the argument that defeats the solipsistic hypothesis. This argument proceeds by *reductio ad absurdum* of the thesis: this world is only in my imagination; the only reality is the imagining 'I.'

Assume for the moment that the gentleman in the bowler hat insists that he is the sole reality, while everything else appears only in his imagination. However, he cannot deny that his imaginary universe is populated with apparitions that are not unlike himself. Hence he has to grant them the privilege, that they themselves may insist that they are the sole reality and everything else is only a concoction of their imaginations. On the other hand, they cannot deny that their fantasies are populated by apparitions that are not unlike themselves, one of which may be *he*, the gentleman with the bowler hat.

With this the circle of contradiction is closed, for if one assumes to be the sole reality, it turns out he is the imagination of someone else who, in turn, insists that *he* is the sole reality.

The resolution of this paradox establishes the reality of environment through evidence of a second observer. Reality is that which can be witnessed; hence, rests on knowledge that can be shared, that is, "together-knowledge," or *con-scientia*.

Heinz Von Foerster  
Sign Image Symbol



Intelligent Life in the Universe

Methodically blow your mind. The information in this book, mutually massaged by the American and Soviet co-authors, proceeds from superb introductions to evolutionary astronomy and biology, through a complete presentation of recent discoveries of astronomy and space science, to brilliant speculation on the parameters of inter-civilization communication. It's the best general astronomy book of recent years but that's nothing next to its impact on all the biggest questions we know.

Almost any other of the many accounts of alleged contacts of human beings with the crews of flying saucers—accounts which regale the flying saucer societies—follow the same pattern and stress the same points. The extraterrestrials are human, with few even minor physical differences from local cosmetic standards. (I know of no case of Negro saucerians, or Oriental saucerians, reported in the United States; but there are very few flying saucer reports made in this country by Negroes or by Orientals.)

Intelligent Life in the Universe

I. S. Shklovskii and Carl Sagan  
1966; 509 pp.

\$2.95 postpaid

from:  
Delta Books  
c/o Montville Warehousing Co., Inc.  
Changebridge Rd.  
Pine Brook, N. J. 07058  
900 Pratt Boulevard  
Elk Grove Village, Illinois 60007  
1104 S. Lawrence Street  
Los Angeles, CA 90021

or WHOLE EARTH CATALOG



With  $10^{11}$  stars in our Galaxy and  $10^9$  other galaxies, there are at least  $10^{20}$  stars in the universe. Most of them, as we shall see in subsequent chapters, may be accompanied by solar systems. If there are  $10^{20}$  solar systems in the universe, and the universe is  $10^{10}$  years old—and if, further, solar systems have formed roughly uniformly in time— $10$  yr =  $3 \times 10^{-3}$  seconds. On the average, a million solar systems are formed in the universe each hour.

The existence of more than one universe is impossible, by definition.

"Well, ladies and gentlemen," Struve concluded, "it was pretty dull on Epsilon Eridani and Tau Ceti eleven years ago."

So, by an interesting coincidence, the distances between the stars in interstellar space, relative to their diameters, are just about the same as the distances between the atoms and molecules in interstellar space, relative to their diameters. Interstellar space is as empty as a cubical building, 60 miles long, 60 miles wide, and 60 miles high, containing a single grain of sand.

Taken at face value, the legend suggests that contact occurred between human beings and a non-human civilization of immense powers on the shores of the Persian Gulf, perhaps near the site of the ancient Sumerian city of Eridu, and in the fourth millenium B.C. or earlier. There are three different but cross-referenced accounts of the *Apkallu* dating from classical times.

But how can a natural satellite have such a low density? The material of which it is made must have a certain amount of rigidity, so that cohesive forces will be stronger than the gravitational tidal forces of Mars, which will tend to disrupt the satellite. Such rigidity would ordinarily exclude densities below about  $0.1 \text{ gm cm}^{-3}$ . Thus, only one possibility remains. Could Phobos be indeed rigid, on the outside—but hollow in the inside? A natural satellite cannot be a hollow object. Therefore, we are led to the possibility that Phobos—and possibly Deimos as well—may be artificial satellites of Mars.

Radio astronomers may be interested to know that the so-called "brightness temperature" of the Earth at television wavelengths is some hundreds of millions of degrees. This is 100 times greater than the radio brightness of the sun at comparable wavelengths, during a period of low sunspot activity.

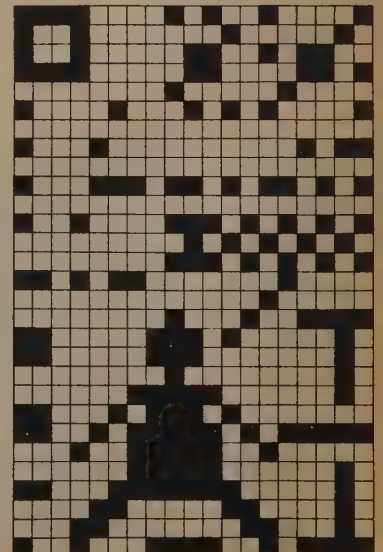
▽ An advanced technical civilization is trying to communicate with us. But how can we possibly understand what they are saying? They are not likely to speak English or Russian. They have had a different evolutionary history. They are on a planet with perhaps an entirely different physical environment.

FIGURE 30-1. A hypothetical interstellar message due to Frank Drake. The 551 zeros and ones are representations of the two varieties of signals contained in the message. The problem is to convert this sequence of 551 symbols into an intelligible message, knowing that there has been no previous communication between the transmitting and receiving civilizations.

```

11110000101001000011001000000010000010100
1000011001011001111000001100001101000000
0010000010000100001000101010000100000000
000000000100010000000001011000000000000
0000001000111010101010101000000000000000
0001001000011101010101000000000101010101
0000000011101010101110101100000001000000
0000000001000000000000000100010011111000
00111010000010110000011000000010000000000
10000000010000000011110000001011000101110
100000001100101111010111100010011111001
00000000001111000000101100011111100000
1000011000001100001000011000000011000101
001000111100101111
    
```

1. decode this →
2. into this →



3. now decode this for physiological, astronomical, chemical, mathematical, social, historical, and linguistic information

★ **The Story of Language**

*We are ensorcelled by language. I am coming to believe that halting the all-too-unified construction of the Tower of Babel by dispersing the communication system was a good idea. Pluralism may be a nuisance, but juggernaut unanimity is a curse. One escape from the bonds of one's own language is excursion into another, or into very variousness of language usages, as this book encourages—it's a good, richly exemplified trip. [Another escape is silence.]*

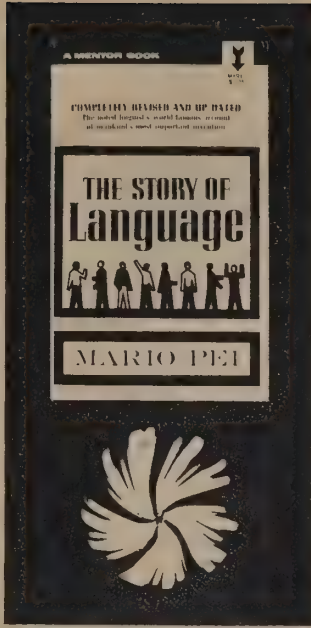
[Suggested by Herb Childs]

**The Story of Language**  
Mario Pei  
1949, 1965; 508 pp.

**\$1.25** postpaid

from:  
The New American Library, Inc.  
1301 Avenue of the Americas  
New York, N. Y. 10019

or **WHOLE EARTH CATALOG**



Very close to the spoken language is also the whistling language used by the natives of Gomera, in the Canary Islands, who communicate by means of it over very long distances (some say six miles); it seems established, however, that this whistling language is based on Spanish rhythms and pitch. A similar type of whistling language is employed by the natives of Kusnoy, a village in Turkey. The sounds are described as formed with tongue curled around the teeth and lips not puckered but tensely drawn, with the palm of the left hand cupped around the mouth, and high pressure applied from the lungs. The villagers are said to speak, argue, and even woo in whistles.

Hoboes and gypsies have a way of carving symbolic messages on the bark of trees, or scratching them on rocks, for the benefit of their fellows who may follow. A pair of spectacles, in gypsy symbolism, means "Beware! Danger and trouble here!"; but a small circle inside a larger one spells out "Very kind people. Don't impose on them."

Perhaps the phonetic system of writing is not the acme of perfection after all. There is at least a talking point in the arguments of those who advocate that we go back to the picto-ideographic systems of our remote ancestors or simply adopt the ideographic writing of the Chinese. At least all the peoples of the earth, regardless of their spoken tongues, would understand one another in writing.

Economic relations depend on numerals to a greater extent perhaps than on any other factor. It therefore does not surprise linguists to find that numerals are among the oldest and best-defined words indicating connections among the languages of a given family. A word indicative of a given numeral (say "four," or "ten," or "hundred") can usually be traced without difficulty through all or most of the languages of a given group. It is as little subject to borrowing as are names of family relationship.

There are in existence only thirteen languages with 50 million or more speakers. They are, in order of numerical importance, Chinese, English, Hindustani, Russian, Spanish, German, Japanese, Arabic, Bengali, Portuguese, Malay, French, and Italian. The roughly approximate figures, which include non-native as well as native speakers, are as follows:

Chinese	700,000,000
English	350,000,000
Hindustani	200,000,000
Russian	200,000,000
Spanish	160,000,000
German	100,000,000
Japanese	100,000,000
Arabic	90,000,000
Bengali	90,000,000
Portuguese	85,000,000
Malay	80,000,000
French	80,000,000
Italian	65,000,000

The use of Indian sign language for international purposes has repeatedly been advocated. Sir Richard Paget and the American Tourist Association, in recent times, have both advanced the possibility of "handage" to replace language.

Technicians of the Sacred

*These are songs from the center, from the middle. (The cortex of humanity is convoluted, each fold patriotic, distinct on the outside, connected in the middle.) Superb editing by Rothenberg. A book to take with you.*



**Technicians of the Sacred**  
ed. Jerome Rothenberg  
1968; 521 pp.

**\$3.95** postpaid

from:  
Doubleday & Co.  
501 Franklin  
Garden City, N. Y. 11531

or **WHOLE EARTH CATALOG**

★ **Morgan's Tarot**

*Just as we were glad to see a guy invent a new language (aUI—see Fall 69 CATALOG), we are delighted by this thoroughly practical tarot deck based on traditions dating back nearly eight years. Two years from now it will be unusable. Twenty years from now it will be as venerable as the medieval Tarot, if anybody notices. The main limitation I see with tarot cards, astrology, any language, is that the systems close on themselves. They offer no exit, except finally an attenuated exhaustion, frustration, possible cause to bust out. Some systems are more open, more immediately and fractionally self-frustrating—science; evolution; human life . . . and the market, where these cards are for sale.*

**Morgan's Tarot**

**\$3.50** postpaid

from:  
Morgan's Tarot  
Boulder Creek, CA 95006

or **WHOLE EARTH CATALOG**



*above*  
What are you saying to me & am I  
in-my-senses?

(Ojibwa)

*An Eskimo Poem against Death*

I watched the white dogs of the dawn.

I am using my heart

(Ojibwa)

PRIMITIVE MEANS COMPLEX

That there are no primitive languages is an axiom of contemporary linguistics where it turns its attention to the remote languages of the world. There are no half-formed languages, no underdeveloped or inferior languages. Everywhere a development has taken place into structures of great complexity. People who have failed to achieve the wheel will not have failed to invent & develop a highly wrought grammar. Hunters & gatherers innocent of all agriculture will have vocabularies that distinguish the things of their world down to the finest details. The language of snow among Eskimos is awesome. The aspect system of Hopi verbs can, by a flick of the tongue, make the most subtle kinds of distinction between different types of motion.

ALL LIVES, ALL DANCES, & ALL IS LOUD

The fish does . . . HIP  
The bird does . . . VISS  
The marmot does . . . GNAN

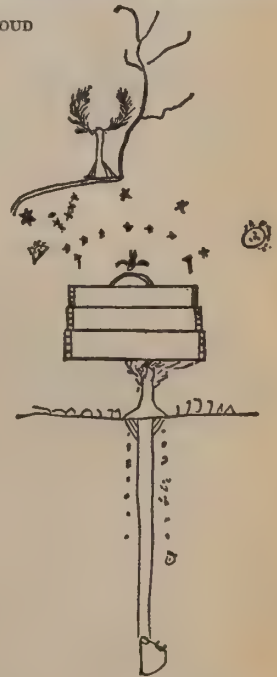
I throw myself to the left,  
I turn myself to the right,  
I act the fish,  
Which darts in the water, which darts  
Which twists about, which leaps—  
All lives, all dances, & all is loud.

The fish does . . . HIP  
The bird does . . . VISS  
The marmot does . . . GNAN

(Gabon Pygmy)

There is no one; there are no people. It is desolate; it lies desolate. There is nothing edible. Misery abounds, misery emerges, misery spreads. There is no joy, no pleasure. It lies sprouting; herbs lie sprouting; nothing lies emerging; the earth is pressed down. All die of thirst. The grasses lie sprouting. Nothing lies cast about. There is hunger; all hunger. It is the home of hunger; there is death from hunger. All die of cold; there is freezing; there is trembling; there is the clattering, the chattering of teeth. There are cramps, the stiffening of the body, the constant stiffening, the stretching out prone.

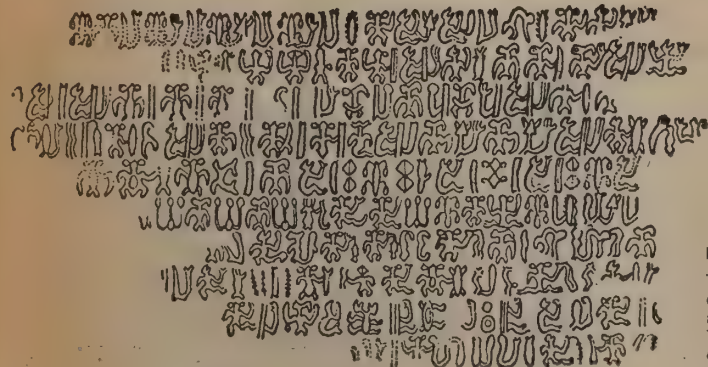
(Aztec)



—Red Corn  
(Osage)

the odor of death  
I discern the odor of death  
in front of my body

—Namebines  
(Ojibwa)



(Easter Island)

the blue, overhanging  
sky  
answers me back

I am still carving an ironwood stick.  
I am still thinking about it.

—Wabezic  
(Ojibwa)

(Bantu)

**An Introduction to Cybernetics**

We are migrating from a world governed primarily by the laws of thermodynamics to a world governed primarily by cybernetics—a weightless world (Fuller says "metaphysical") whose events are the impinging of information on information, whose basis is survival and direction is growth. Thought, society, economics, media, evolution

The two main entries to understanding in this realm are Norbert Wiener (see Fall 69 CATALOG) and Ashby. Wiener's books are wider, more inspiring. Ashby is more thorough.

[Suggested by Dave Evans]

**An Introduction to Cybernetics**

W. Ross Ashby  
1958; 295 pp.

**\$2.16** postpaid

from:  
Blackwell's (see p. 79)  
until Barnes & Noble gets them back in stock.

Thus there exist factors, such as "height of threshold" or "proportion of variables constant", which can vary a large system continuously along the whole range that has at one end the totally-joined form, in which every variable has an immediate effect on every other variable, and at the other-end the totally-unjoined form, in which every variable is independent of every other. Systems can thus show more or less of "wholeness".

This earth contained carbon and other necessary elements, and it is a fact that many combinations of carbon, nitrogen, and a few others are self-reproducing. It follows that though the state of "being lifeless" is almost a state of equilibrium, yet this equilibrium is unstable, a single deviation from it being sufficient to start a trajectory that deviates more and more from the "lifeless" state. What we see today in the biological world are these "autocatalytic" processes showing all the peculiarities that have been imposed on them by two thousand million years of elimination of those forms that cannot survive.

The organisms we see today are deeply marked by the selective action of two thousand million years' attrition. Any form in any way defective in its power of survival has been eliminated; and today the features of almost every form bear the marks of being adapted to ensure survival rather than any other possible outcome. Eyes, roots, cilia, shells and claws are so fashioned as to maximise the chance of survival. And when we study the brain we are again studying a means to survival.

One way of blocking the flow (from the source of disturbance D to the essential variable E) is to interpose something that acts as a simple passive block to the disturbances. Such is the tortoise's shell, which reduces a variety of impacts, blows, bites, etc. to a negligible disturbance of the sensitive tissues within. In the same class are the tree's bark, the seal's coat of blubber, and the human skull.

At the other extreme from this static defence is the defence by skilled counter-action—the defence that gets information about the disturbance to come, prepares for its arrival, and then meets the disturbance, which may be complex and mobile, with a defence that is equally complex and mobile. This is the defence of the fencer, in some deadly duel, who wears no armour and who trusts to his skill in parrying. This is the defence used mostly by the higher organisms, who have developed a nervous system precisely for the carrying out of this method.

What is an amplifier? An amplifier, in general, is a device that, if given a little of something, will emit a lot of it. A sound-amplifier, if given a little sound (into a microphone) will emit a lot of sound. And a money-amplifier would be a device that, if given a little money, would emit a lot.

Such devices work by having available a generous reservoir of what is to be emitted, and then using the input to act as controller to the flow from the reservoir.

**Basic Graphics**

Comprehensive treatment of design graphics—tools, geometry, projection, graphs etc.—with good updating on use of computer graphics.

Basic Graphics  
Warren J. Luzadder  
1957, 1962, 1968; 641 pp.

**\$10.95** postpaid

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Prentice Hall, Inc.  
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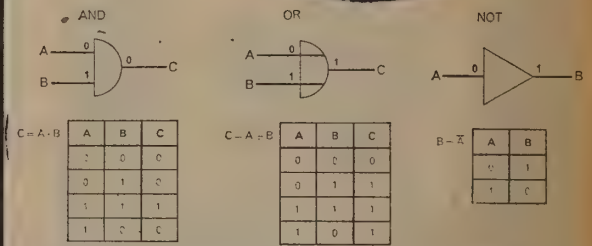
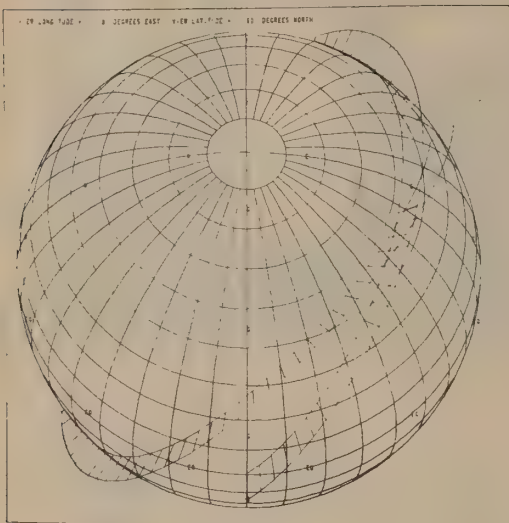
**Information**

The September 1966 issue of Scientific American was devoted entirely to the new technology of information. Now available as a paperback book, it is the best introduction we've seen to computer science. Articles include: "Computer Logic and Memory", "Computer Inputs and Outputs", "Systems Analysis and Programming", "Time-sharing on Computers", "The Transmission of Computer Data", "The Uses of Computers in Technology", "The Uses of Computers in Organizations", "The Uses of Computers in Education", "Information Storage and Retrieval", and "Artificial Intelligence".

Information 1966; 218 pp.  
W. H. Freeman & Company  
660 Market Street  
San Francisco, CA 94104  
**\$2.50** postpaid

or WHOLE EARTH CATALOG

The computer is almost exactly what man is not. It is capable of paying undivided attention to unlimited detail; it is immune to distraction, precise and reliable; it can carry out the most intricate and lengthy calculation with ease, without a flaw and in much less than a millionth of the time that would be required by its human counterpart. It is emotionless, or so we suppose. It suffers neither boredom nor fatigue. It needs to be told only once; thereafter it remembers perfectly until it is told to forget, whereupon it forgets instantly and absolutely.



Simulated waterfall spills over the edge of a cliff and splashes into a pool in this computer experiment performed by John P. Shannon at the Los Alamos Scientific Laboratory as part of a study of dynamic behavior of fluids with the aid of numerical models.

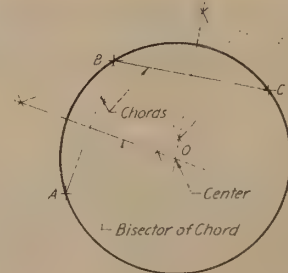
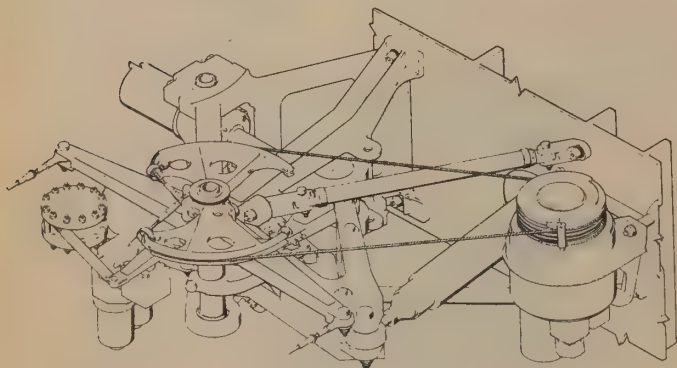
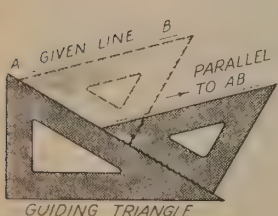


Fig. 4.21. To find the center of a circle through three points.



To draw a line parallel to a given line.

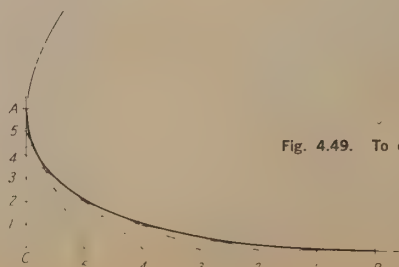


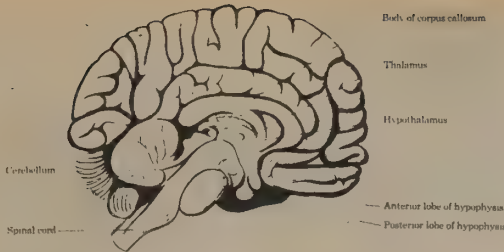
Fig. 4.49. To construct a curve of parabolic form.

One can not ignore the fact that graphics now serves as a language for communication between man and computer.



★ **The Machinery of the Brain**

Some is known about the brain, but not much. Woolridge's book is the best intro to the subject we've seen. For richer detail, get Pribram's two-volume *Brain and Behavior* (each volume \$2.95 from Penguin, 7110 Ambassador Rd., Baltimore, Md. 21207).



Experiments have been reported with a six-month-old baby to determine how many trials would be necessary to condition it against reaching out to touch the flame of a lighted candle. (The experiment of course was so arranged as to block the child's hand each time before injury was sustained.) The number of trials required was the same as for training the earthworm, approximately 150!

The optical mapping system of the human brain is of special interest and importance. Through the more than one million fibers of the optic nerve of each eye, the pattern of light and dark formed by the lens on the retina is transmitted to a specific set of neurons in the *occipital lobes* of the cortex. Although the picture that is produced by the pattern of voltages reaching these positions at the extreme back of the head is a highly distorted one, topological continuity is preserved, in the sense that adjacent points in the retina are represented by adjacent positions on the cortex. The application of an electric stimulus to any of these cortical points causes the subject to see flashes of light at the corresponding point of his field of view. Similarly, the illumination of the retina by a single bright spot of light results in the arrival of the usual train of voltage pulses at the corresponding spot of the visual cortex.

If monotonously repetitive stimuli are provided, such as a regular series of clicks or staccato tones, the nonspecific-brain-potential measurements will display the property of *habituation*: the pulse of brain potential induced by each audible stimulus will, with continuing repetition, gradually diminish and ultimately disappear. If we consider these nonspecific brain potentials as being somehow related to the degree of attention the subject is paying to the stimulus, their gradual decline correlates nicely with subjective experience: noises that initially interfere with concentration or keep us awake may ultimately recede into the background of our consciousness and lose their effectiveness if they are monotonous and repetitive in character. Such habituation must be regarded as another basic form of learning. It is in effect a kind of negative learning, perhaps antonymous to the essentially positive learning of conditioned responses. Habituation is found throughout the animal scale, from protozoa to man. The indication is that, as in the case of learning by conditioning, habituation derives from some fundamental property of nerve tissue and does not necessarily require special complex neuronal circuits.

If subsequent work confirms the preliminary indications that pleasure and pain centers occur together, it will be interesting to learn what kind of pleasure is the negative of what kind of pain, in electrical neuronal terms.

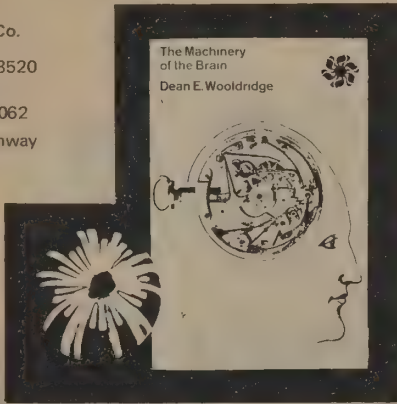
**The Machinery of the Brain**

Dean E. Woolridge  
1963; 252 pp.

**\$1.95** postpaid

from:  
McGraw-Hill Book Co.  
Princeton Road  
Hightstown, N. J. 08520  
Manchester Road  
Manchester, Mo. 63062  
8171 Redwood Highway  
Novato, CA 94947

or WHOLE  
EARTH  
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★ **Brains, Machines and Mathematics**

Take the theoretical-neuron work of McCulloch & Pitts, the Perceptron, von Neumann and Shannon's communication theory, Gödel's incompleteness theorem, and Wiener's cybernetics. Blend, and see how far along we are toward a "biological mathematics". The answer is not far; this is a tidy survey of how far we aren't.

[Suggested by Dave Evans]

In these pages we coerce what is essentially still the mathematics of the physicist to help our slowly dawning comprehension of the brain and its electromechanical analogs. It is probable that the dim beginnings of *biological* mathematics here discernible will one day happily bloom into new and exciting systems of pure mathematics.

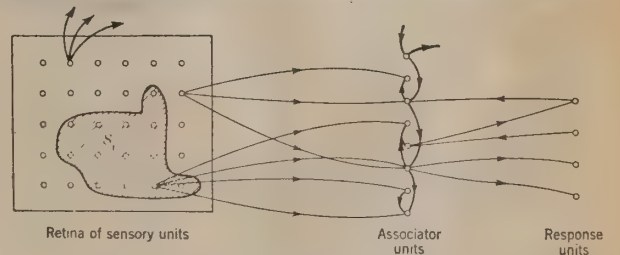


Figure 2.5 Schematic of a perceptron.

**Reinforcement rules:** There seems a great deal of evidence that humans have two kinds of memories—"short-term" and "long-term." It further appears that we have to retain an idea for quite a while in short-term memory before it is transferred into long-term memory. The time taken for this transfer has been variously estimated—one estimate is 20 minutes. It appears that if someone goes into coma, his memories of the 20 minutes or so prior to this are lost forever, i.e., they were not transferred to his long-term memory. It is now commonly believed that short-term memory is precisely that type of memory we gave our modular net—the passage of complicated patterns of electrical impulses through the net. It appears, then, that if such transient activity persists long enough it *actually changes the net*.

The Perceptron group has had three main modes of investigation: mathematical analysis, simulation on a digital computer, and construction of an actual machine. Each method has its own advantages. One important result of using an actual machine is that it has been found that *neither precision nor reliability of the components is important, and the connections need not be precise.*

Another interesting result is that the perceptron can "learn" *despite trainer error.*

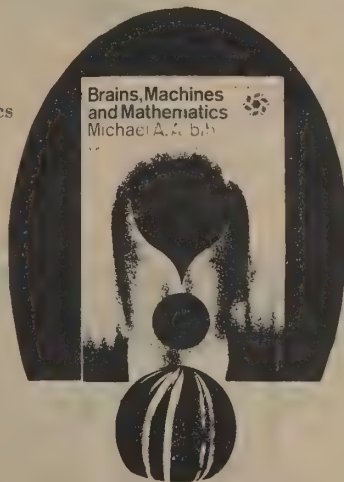
**Brains, Machines and Mathematics**

Michael A. Arbib  
1964; 152 pp.

**\$1.95** postpaid

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Hightstown, N. J. 08520  
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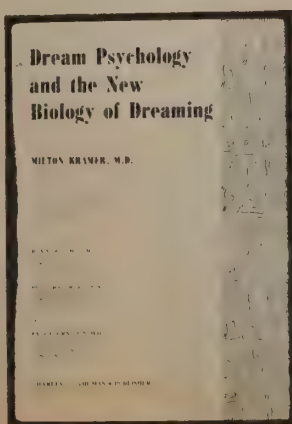
★ **Dream Psychology**

The latest word from a diverse group of psychiatrists and psychologists on the science of dreams and dreaming. The book is a symposium report and has that sort of closed-in inter-professional tone and language. Scientists talking to scientists about studies about dreams. A good reference, probably a very complete one, on what we know about the phenomenon of dreaming. *Ter-ri-bly an-a-ly-ti-cal.*

[Reviewed by Diana Shugart]

A dream is an evocation, not an event. Let me be bold enough to discuss the dream in terms which await experimental verification. As I see it, the dream *reflects* a function rather than serving one; passes through awareness as a *result* of biological energetics or "work," rather than doing "work" itself; is an *effect* rather than a cause of the ninety-minute cycle—which itself reflects a homeostatic mechanism that subserves the requirement for safely providing the organism sufficient periods of restorative sleep to insure survival. Thus in my view, the dream does not exist in order to provide an outlet for the discharge of primary-process or instinctual energy; rather it represents an epiphenomenon of that fundamental periodicity, as yet poorly understood, which perhaps is basic not only to the maintenance of sleep during the night but also to the maintenance of alertness during the day—a periodicity with feedback characteristics being the stuff of which all homeostatic mechanisms are made. Despite the temptation to do so, we shall not be likely to unravel the basis for this periodicity until the precise nature of the sleep requirement itself is defined.

It is my opinion that some nightdreams have the same purpose as some daydreams; namely, to provide some entertainment for oneself, and I suspect that dreams are not as involuntary as Dr. Ullman seems to say. I can recall, as a small child, how curious and fascinating I found my own dreams and how I looked forward to having them. Dreaming seemed so much more pleasant than spending the whole night doing nothing.



**Dream Psychology and the New Biology of Dreaming**

Milton Kramer, M.D., ed.  
1969; 459 pp.

**\$17.00** postpaid

from:  
Charles C. Thomas, Publisher  
301-327 East Lawrence Avenue  
Springfield, Illinois 62703

or WHOLE EARTH CATALOG



With due regard for methodological considerations, which are recounted along with other experimental details in our already-cited research report, we compared 120 home dreams from twelve male subjects with the same number of their laboratory dreams drawn equally from the first three REM periods of the night. These two sets of dreams were scored, with minor changes and additions, by means of the first versions of the later-to-be-refined Hall-Van de Castle scales. The major finding was that there were more sexuality and misfortunes-aggressions in the home dreams. Laboratory dreams, on the other hand, had more characters, more elements such as writing material and money that seemed to be related to the experiment, and more bizarre elements. One other interesting finding, in light of the necessity to explain these differences, was that dreamers were more likely to be involved in aggressive interactions in home dreams while in laboratory dreams they were more likely merely to witness aggressive interactions.

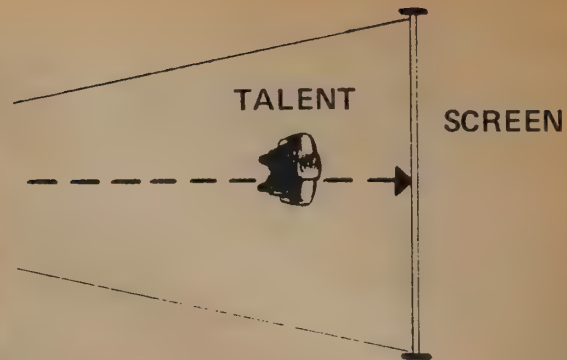
## American Cinematographer

Accurate, specific information on what's new in equipment, techniques, standards, and the attitudes of technicians using them. Also gossip and news about who's doing what where. Covers all aspects of professional filmmaking from Hollywood Super Panavision 70mm to 8mm educational loops.

The ads, fully as important as the text, are mouthwatering for those with an appetite for Eclairs and such.

If you read it regularly you'll never need Baddeley—you'll know how it's really done. Often the information is directly and simply usable; sometimes it stimulates visions of the super-cinema of the future. When in school I consulted back issues for a psychology paper on perception. The articles are really interesting and, best of all, there is no film criticism so you avoid all those negative emotions.

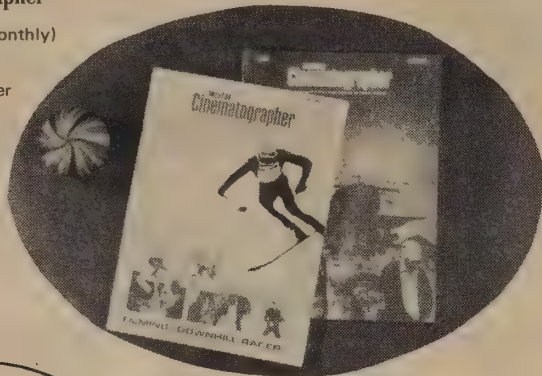
[Suggested by Gordon Ashby  
Reviewed by Sandra Tcherepnin]



## American Cinematographer

\$6.00 for one year (monthly)

from:  
American Cinematographer  
1782 North Orange Drive  
Hollywood, California  
90028



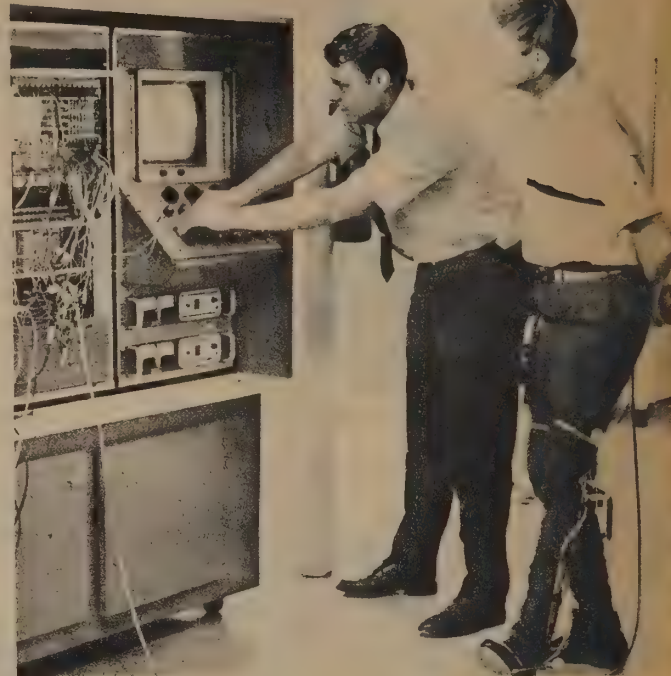
Introduced at the recent 106th SMPTE Conference in Los Angeles, the brand new MINI-PRO by ColorTran proceeded to create its own minisensation as "the first professional battery-operated or 110-volt portable 'quartz' light."

The idea of a lamp that can be operated either off of a battery-pack or line current is a conversation piece in itself, since there exists no other light on the market with such versatility. However, this capability accounts for only one of the MINI-PRO's unique features.

Calvin's Camera Department has been experimenting with some exciting front screen projection materials and techniques lately. We've learned some things that might interest producers who—

- have limited studio space
- are working on low budget productions
- need to get worldwide locations into a film, but have those locations only on 35mm slides
- want quality that is hard to get with rear-screen projection.

We've concluded that we can do a better job cheaper using 3M Scotch-lite retro-reflective screen material (#7610) and shooting from out front . . . than we can with the rear-screen method.



Harrison adjusts Animac computer, while Jones goes through a series of movements which he can watch an animated character duplicate exactly on the cathode tube.

## American Cinematographer Manual

Indispensable data book, used by American cinematographers. Expensive, because it is absolutely comprehensive, up to date, from Hollywood, and has no competitors.

American Cinematographer Manual  
Joseph V. Mascelli, A.S.C., ed.  
newest edition 1969; approx. 600 pp.

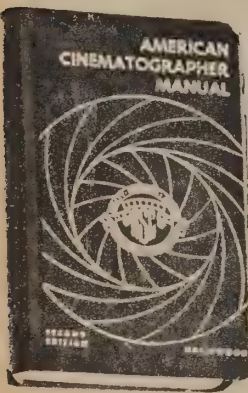
\$15.00 postpaid

from:  
The American Cinematographer Manual  
P.O. Box 2230  
Hollywood, California 90028

or WHOLE EARTH CATALOG

More than 600 pocket-size pages of concise, practical, informative text, tables, charts, diagrams, drawings and listings of all the latest production equipment and filming techniques in use today!

Key word printed on the edge of every right-handed page provides INSTANT INDEX for quickly locating desired data!



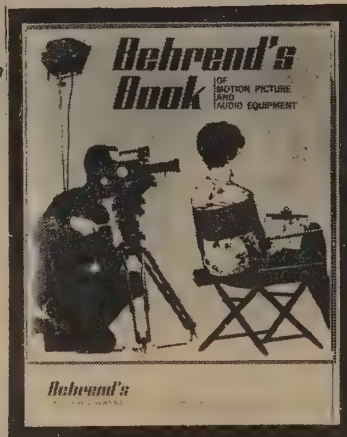
## Behrend's Book

One disadvantage of mail order is that you don't get to rap with the clerk and find out how to use the thing you're buying. That disadvantage is somewhat overcome in this catalog of film equipment (sales and rental). They explain matters more than is usual with remote merchants.

Behrend's Book  
1969; 108 pp.

free

from:  
Behrend's Incorporated  
161 East Grand Avenue  
Chicago, Illinois 60611



2. Moving one step and several hundred dollars up, we come to the production camera. This camera is best typified by the Arriflex and Eclair. Both have registration pin movements to assure rock-steady image quality. Both are widely adaptable, by means of accessories, to cope with varying assignments.

In cameras of this type, you will always find electric motor drives, usually interchangeable, to allow an extra-ordinary range of speeds and applications.

Also, cameras of this type have interchangeable magazines, so the film maker can shoot whatever emulsion he chooses, switching as the need occurs, without inconvenience.

## Superior Bulk Film

A reliable mail order service (& store) for 8 mm & 16 mm film, processing, equipment for home processing labs, & most equipment & supplies for amateur filmmakers who desire control & versatility at low-cost. Their film & processing package deals are as cheap or cheaper than any I've seen, probably more reliable than most. Also have excellent specials frequently. Discontinued film stocks, spliced reels, etc.—check it out! Good catalog available, newsheets rundown specials, new stuff, changes, etc. This place isn't one of these Jumbo-Junk Filmailer houses.

[Suggested and reviewed by Bruce Schmiechen]

Catalog

Free

from:  
Superior Bulk Film Co.  
442-450 N. Wells Street  
Chicago, Ill. 60610

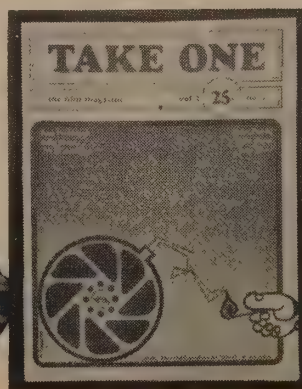
## Take One

Here's a not-bad film criticism magazine. It talks to directors.

Take One

\$3.00 /12 issues (bi-monthly)

from:  
Unicorn Publishing Corp.  
Post Office Box 1778  
Station B  
Montreal 110  
CANADA



computers as amplifiers of human imagination . . . graphic display systems using "light pens" . . . at which the artist can draw, ask the machine to rotate his drawing, (move it in many ways) . . . and put it on film . . . simultaneously making an electronic sound track . . . animation of drawings of great detail done in minutes . . . computer sensing systems that study the eye's movement over research material and when the eye rests on an image, the image automatically enlarges; if the eye rests for a longer time on the same material, the image changes . . . (imagine a french lesson on an electronic page full of words that are going by rapidly, you are reading from a display scope or tv screen. if a word is doubtful to you, by looking at it for three seconds it will enlarge itself above the other words; if you are still looking at it three seconds later, it will automatically change into English . . .)

JM: Would you like to have a contract that gave you the final cut?  
SP: I don't think I need one. I don't make a picture by myself, I make a picture with other people's ideas, other people's minds, other people's bodies. We make a picture together and if they don't like to work this way, then I fire them.

**★ Guide to Filmmaking**

*ed pincus is a careful man, once a logician of sorts, now a cameraman. he's taught still work at the visual arts center, harvard, and now is at the mit film department.*

*his book is carefully done, thorough, nicely indexed, easier to use than the american cinematographers manual, and probably more useful to the student.*

*and it only costs a buck fifty.*

*its good, ed.*

*hi, jane.*

[Reviewed by J. D. Smith.  
Suggested by everybody]

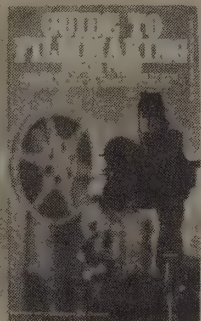
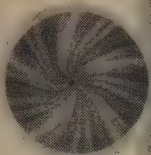
**Guide to Filmmaking**

Edward Pincus  
1969; 256 pp.

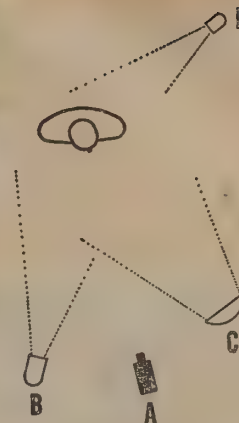
**\$1.50** postpaid

from:  
The New American Library, Inc.  
1301 Avenue of the Americas  
New York, N. Y. 10019

or WHOLE EARTH CATALOG



**16. 16MM CAMERA—FILMING WITH SOUND.** Cameraman (left) is shooting hand-held with an Eclair NPR. Soundman (right) is using a Nagra III NPH tape recorder with Sennheiser 804 shotgun microphone with a homemade windscreen. Subject is shooting hand-held with a Bolex. (National Educational Television)



**Simple three-light setup:**  
A spotlight (B) which serves as the key light and a flood light (C) which serves as the fill light are set up near the camera (A). The back light (D), usually a spot, is used to separate the actor from the background and to give an edge light.

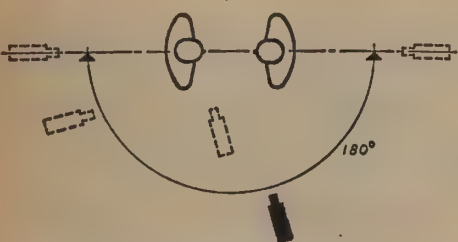
The unedited footage is called *rushes* or *dailies*. Almost invariably there is a considerably greater amount of rushes than there is of final film. The ratio of film shot to final footage is usually between 5:1 and 10:1. But the ratio varies tremendously depending on the type of film being made and the method of filming. Peter Emmanuel Goldman's underground classic *Echoes of Silence* was done using a ratio of less than 2:1 for an hour-long film. At the other end of the spectrum, documentary filmmakers who use no script often shoot ratios higher than 40:1, which means shooting over 90,000 feet to end with an hour's length of film. Often one of the most difficult tasks in writing up a budget for a film is to estimate the amount of footage that will be needed.

When there is a script for a film, a great deal of additional footage is shot to give the editor a selection of shots and to guarantee that there will not be any continuity gaps either within scenes or in the story line. It is not unusual, when two possibilities for a story line exist, for *both* to be filmed and the final choice delayed until the film is being edited. Often the same action is filmed several times in several "takes" to get different camera angles (positions) and to guarantee that the actors have performed their task well.

In much black and white photography, correct exposure for the subject will give you a pale, washed-out, and cloudless sky. A sky darkened too much (by using a heavy filter) will have a phony, heavily dramatic quality. The bluer the sky, the easier it is to darken it and the less filtration needed. When the sky is overcast or misty, filters will not be very effective. The sky near the sun and on the horizon is often almost white and does not respond to filtration. If the film is overexposed, the filter effect may be largely lost.

If you wish to bleach a blue sky, a blue filter will do the trick.

As in all things, it is often hard to find yourself in film. For some, the way is to make their films alone. For others, film is essentially a group enterprise. In film you may be able to find yourself, understand the world, show others what the world really is, and, finally, change it.



**The 180° rule:** If we draw a line through the main action, any camera position on one side of the line will preserve screen direction.

**INDEX**

from television receiver,	113-14;	Edge-numbers of films, latent and machine,	96 (figure)
filters for use in,	118-19	Editing, picture,	65, 120-35;
Color films, storage of,	184	in the camera,	65;
Continuity editing: of picture,	124-25;	as most important element in filmmaking,	120;
of synchronous sound film,	162	concept of, defining film space and film time,	120-21;
Continuity shooting,	65-66	parallel editing,	121;
Contour shadow, in lighting,	85	180° rule,	121-23 (figure);
Copies, and image sharpness,	123;	cutting and pacing,	123;
	81	cut-away and cut-in (insert) shots,	123;
Cord-to-cord printing by film lab,	98	continuity editing,	124-25;
Critical focus of lenses,	36	mechanics of,	125;
Cut-away shots,	66, 123	jump-cutting,	125;
Cut-in (insert) shorts,	123	film rewinds,	125-26;
Cutting and pacing, in editing,	123	action viewer,	126-27;
	123	splicing,	127-31 (figure);
Cutting shots,	133	175-82 (figures);	
Dailies (rushes) of unedited footage in filming,	64	miscellaneous equipment for use in,	131-32;
Damage to film, possible causes of,	172	film bin as useful accessory in,	131;
Degaussing of sound editing equipment,	161	leader,	132-33;
Dehumidification of stored black and white films,	183	cutting shots,	133;
Depth of field,	36, 39, 80;	workprinting,	133;
charts,	187-245	handling film,	134;
Diaphragm of lens,	37 (figure)	screening print for,	134-35
Dichroic daylight conversion filters,	88, 112	Editing, sound,	157-64;
Diffraction, and reduction of overall sharpness of image,	39	sound transfer,	157;
	39	sound studio services,	157-58;
Diffusion filters,	117	synchronizer,	158;
		Moviola editing machine,	159;
		editing tables,	159;
		synchronizing rushes,	159-60;
		care of magnetic film,	160;

**★ Towards a Poor Theatre**

*The strongest work in theater lately is Jerzy Grotowski's. This is his book. Social yoga, with balls.*

[Suggested by Robert Frank]

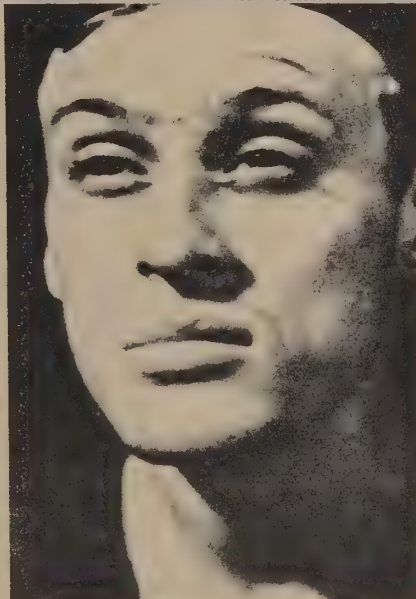
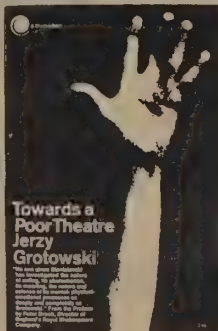
**Towards a Poor Theatre**

Jerzy Grotowski  
1968; 262 pp.

**\$2.45** postpaid

from:  
Simon & Schuster, Inc.  
630 Fifth Avenue  
New York, N. Y. 10020

or WHOLE EARTH CATALOG



**Akropolis:** Masks created solely by the facial muscles (Zygmunt Molik, Zbigniew Cynkutis, Rena Mirecka). Photo: Teatr-Laboratorium.

*There is one absolute rule*

Bodily activity comes first, and then vocal expression. Most actors work in the opposite order.

*First you bang on the table and afterwards you shout!*

The vocal process cannot be free without a well functioning larynx. The larynx must first be relaxed, and then the chin and jaws.

If the larynx does not relax and open, you must try to find a way to make it do so. That is why I asked the third pupil to stand on his head. If he does this, and at the same time speaks, shouts or sings, there is a good chance that the larynx will open.

If the actor, by setting himself a challenge publicly challenges others, and through excess, profanation and outrageous sacrilege reveals himself by casting off his everyday mask, he makes it possible for the spectator to undertake a similar process of self-penetration. If he does not exhibit his body, but annihilates it, burns it, frees it from every resistance to any psychic impulse, then he does not sell his body but sacrifices it. He repeats the atonement; he is close to holiness. If such acting is not to be something transient and fortuitous, a phenomenon which cannot be foreseen in time or space: if we want a theatre group whose daily bread is this kind of work—then we must follow a special method of research and training.

When I take sides against half-heartedness, mediocrity and the easy-come-easy-go attitude which takes everything for granted, it is simply because we must create things which are firmly orientated towards either light or darkness. But we must remember that around that which is luminous within us, there exists a shroud of darkness which we can penetrate but not annihilate.

Contact is one of the most essential things. Often when an actor speaks of contact, or thinks of contact, he believes that it means to gaze fixedly. But this is not contact. It is only a position, a situation. Contact is not staring, it is to see. Now I am in contact with you, I see which of you is against me. I see one person who is indifferent, another who listens with some interest and someone who smiles. All this changes my actions; it is contact, and it forces me to change my way of acting.



The costumes are bags full of holes covering naked bodies. The holes are lined with material which suggests torn flesh; through the holes one looks directly into a torn body. Heavy wooden shoes for the feet; for the heads, anonymous berets. This is a poetic version of the camp uniform. Through their similarity the costumes rob men of their personality, erase the distinctive signs which indicate sex, age, and social class. The actors become completely identical beings. They are nothing but tortured bodies.

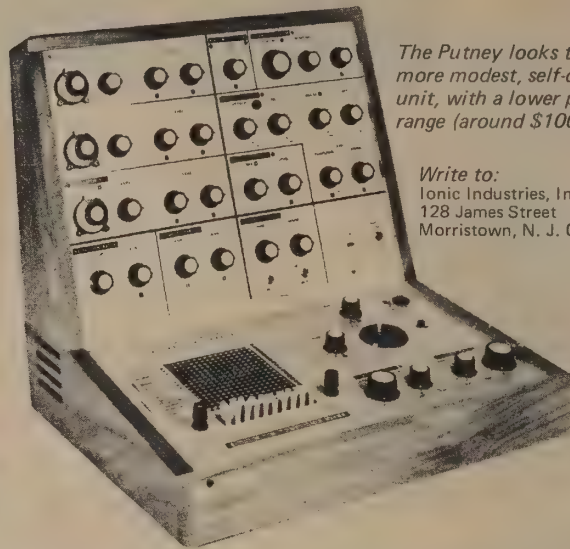
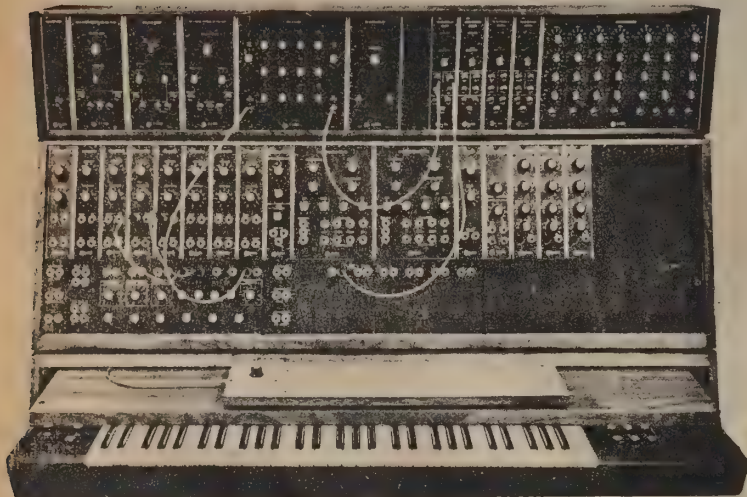
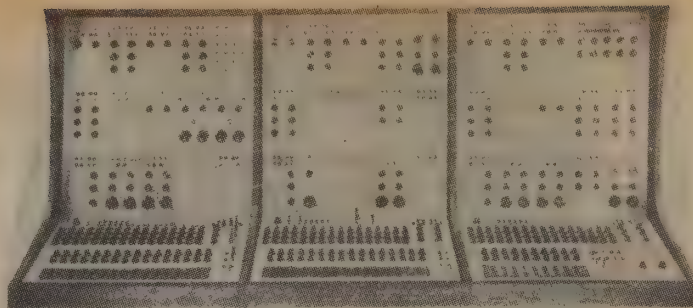
The inmates are the protagonists and, in the name of a higher, unwritten law, they are their own torturers. The merciless conditions of the extermination camp constitute the milieu of their lives. Their work crushes them with its size and its futility; rhythmic signals are given by the guards; the inmates call out in screams. But the struggle for the right to vegetate and to love goes on at its everyday pace. At each command the human wrecks, barely alive, stand up erect like well-disciplined soldiers. The throbbing rhythm of the play underscores the building of the new civilization; the work expresses the inmate's stubborn will to live, which is constantly reaffirmed in every one of their actions.



★ Music Synthesizers

The three we know of are Moog, Buchla, and Putney. All three permit you to make music now, live, that used to take hours to assemble on tape. We would like to hear comments from users of these machines—which do you prefer; why; what machine is better for what uses?

Moogs range from \$3500 to \$8000.  
Write to:  
R. A. Moog Co.  
Trumansburg, N. Y.



The Putney looks to be a more modest, self-contained unit, with a lower price range (around \$1000).

Write to:  
Ionic Industries, Incorporated  
128 James Street  
Morristown, N. J. 07960

Buchla, now marketed by CBS, has a handy user's guide and prices go like this:

Cabinet	\$214.00
Mixer	107.00
Voltage Controlled Mixer	395.00
Dual Voltage Controlled Gate	160.00
Dual Ring Modulator	246.00
Touch Controlled Voltage Source	545.00
Touch Controlled Voltage Source	387.00
Power Supply	210.00
Sequential Voltage Source	280.00
Patchboard	35.00
Dual Envelope Detector	166.00
Timing Pulse Generator	225.00
Dual Square Wave Oscillator	225.00
Sequential Voltage Source	495.00
Harmonic Generator	950.00
Frequency Counter	550.00
Dual Control Voltage Processor	139.00
Dual Sine-Sawtooth Oscillator	275.00
White Noise Generator	107.00
Dual Random Voltage Source	259.00
Dual Microphone Preamplifier	195.00
Dual Instrument Preamplifier	125.00
Dual Equalizer - Line Driver	165.00
Dual Attack Generator	195.00
Frequency Shifter	570.00
Dual Reverberation Unit	230.00
Sharp Cutoff Filter	595.00
Dual Lowpass Filter	140.00
Bandpass Filter	135.00
Octave Format Filter	225.00
Phase Shifter	140.00

Write to:  
CBS Musical Instruments  
Columbia Broadcasting System, Inc.  
1300 E. Valencia  
Fullerton, CA 92631

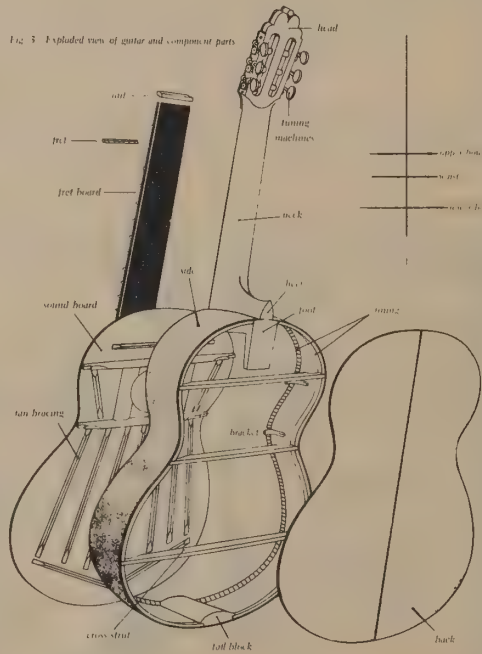
Classic Guitar Construction

This is the only adequate book on the subject in English: it is worth your money even if you don't intend to build a guitar. Every method and tool described actually works, and the design and illustration are of the quality to be expected from a professional designer.

If you can work up your courage to the point of actually starting in, the following is good advice—

- 1) Buy a good 18" straightedge: a 1/4" x 1" dimension-ground steel bar (available from industrial supply houses) is the cheapest way. You need it to get the fingerboard really straight.
  - 2) The fret slots must be .025" wide for most fret wire. Ebony is hard and brittle so the slots must be accurate. Most saws sold as "fret saws" won't work, so beware when buying.
  - 3) (a) Make sure joints fit as near perfectly as you can make them before gluing.  
(b) If an operation doesn't come out right, do it over. Don't let yourself get away with any shoddy work.
- The experience of building a guitar is guaranteed to change you, probably for the better.

[Reviewed by David Russell Young]



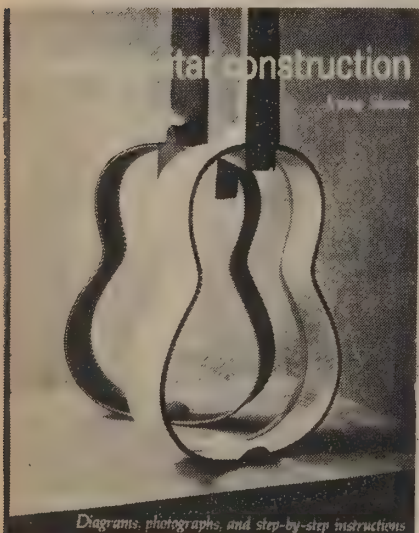
Apply varnish with a soft-hair 1" flagged-and-tipped brush. Twirl a new brush between your palms to shake out loose hairs. Do not use a varnish brush for anything but varnish.

Classic Guitar Construction  
Irving Sloane  
1966; 95 pp.

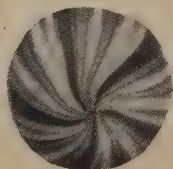
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201 Park Avenue  
New York, N. Y. 10003

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Diagrams, photographs, and step-by-step instructions



Guitar sales are soaring as factories in the United States and abroad work at top speed to fill the demand. Unfortunately, fine guitars cannot be made at top speed and mediocrity is the rule. In Spain, \$120 will buy a guitar of a quality that cannot be duplicated in the United States at any price except by a few private luthiers. Hand-made guitars start at about \$500.

★ How to Build Speaker Enclosures

In order to get the best response from a speaker, the enclosure needs to be carefully designed and engineered to match the speaker being used.

If you have some knowledge and skill in cabinet construction, you should be able to use this book to build excellent speaker enclosures. It doesn't tell you how to put them together, but it does tell you how to calculate size, design baffles, and properly brace the cabinet to keep it from vibrating.

Not for the novice carpenter.

[Reviewed by Fred Richardson.  
Suggested by Michael Wells]

How to Build Speaker Enclosures  
Alexis Badmaieff and Don Davis  
1966; 144 pp.

\$3.50 postpaid  
(\$.40 ppd in Canada)

from:  
The Bobbs-Merrill Company, Inc.  
4300 West 62nd Street  
Indianapolis, Indiana 46206

or WHOLE EARTH CATALOG

\$3.00 from Blackwell's (see p. 79)



★ Listening Incorporated

Exotic equipment.

MSA-1 Spectrum Analyzer	\$4875.00	Sondol Echo Locator	95.00
Environ Ears Sound System	950.00	Power Supply Module	15.00
Underwater Ears	4500.00	Strobe Light	50.00
GPF-2 Neurophone	2650.00	Correlator	3000.00

Write to:

Listening Incorporated  
6 Garden Street  
Arlington, Massachusetts 02174

or Ocean Science Services, Inc.  
411 California Avenue  
Palo Alto, CA 94308

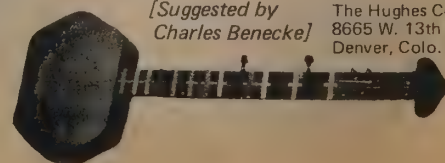
★ Instrument Kits

Dulcimers (\$8-26), sitars (\$25), guitars (\$10-25), balalaikas (\$9-25), thumb pianos (\$3).

[Suggested by Charles Benecke]

Catalog free

from:  
The Hughes Company  
8665 W. 13th Avenue  
Denver, Colo. 80215



**Rolling Stone**

Primarily an emergent-music trade magazine, it has expanded to be the dominant newspaper to its Generation. The music information is still there, and so is dope notes, lengthy thorough reports on Generational heroes and events, and no-heavy-ax-to-grind-yet accounts of political occasions. The Stone's editorial standards, both on writing and graphics, are refreshingly high, and Wenner and crew have good ideas—which may save them from the cramp that Graham and the Fillmores got into with similar success in the same high-energy field.



**Rolling Stone**

Jann Wenner, ed.

(bi-weekly)

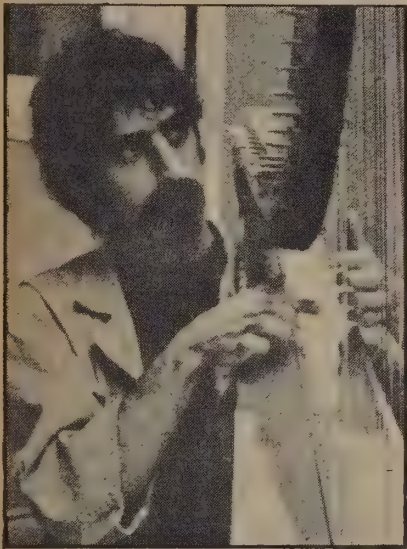
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Frank Zappa: for Mothers

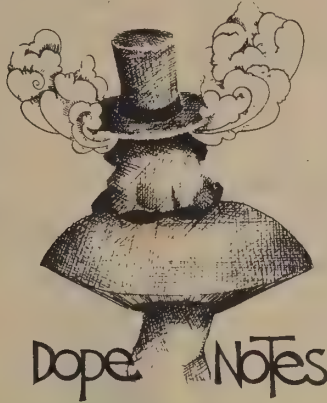


SIRS:

ROLLING STONE readers might like to know that you don't have to pay outrageous prices for LP's such as *Hey Jude*, *Abbey Road*, *Let It Bleed*, and *The Band*. Since English record prices aren't inflated like this, as you mention in your February 2nd issue, one solution is to order records direct from an English supplier. Two good ones I've found are: Papworths, 32 Alfreton Road, Nottingham NG7, 3NL, and Tandy's Records, 20 Wolverhampton Road, Warley, Worcestershire. The typical English LP runs about \$3.40, and the outlets mentioned above will absorb postal charges if your order is large enough—it helps to go in with a friend or friends.

ANDREW BUC  
CLAYTON, MO.

Wherever they went, "Wavy" and his staff talked up their idea of Earth People's Park. "The idea keeps changing. Like we all started out with one big piece of land, and now it's lots of little pieces," Mr. Gravy told one reporter. "Let's take all the confliction and get it together. That's the difference in our age. What's happening is the change between competition and cooperation; we're into cooperation. It's happening everywhere I go. I feel people getting behind it, finding what it is, and coming together on it."



**★ Friends**

This is the British equivalent of Rolling Stone (derivative; for a while they were together, then severed). It has some kinds of items we've seen nowhere else, and that's welcome. We're told they've helped themselves to large quantities of the last WHOLE EARTH CATALOG. If so, we'll probably be pissed.

**Friends**

\$ .30/copy

[subscriptions available, but no price indicated.]

from:

T F Much Company Ltd  
305 Portobello Road  
London W11, ENGLAND



Listen, Hippies, Look, Wake Up. You are being too hip. So you've taken your tabs of 500 microgram Orange Golden Sunshine Purple Special and you reckon you know it all, no-one can teach you anything, you got the power of Lerv, an' yer fat smiles an' yer Biba dresses an' yer seven-skin joints an' yer long lervly hair just gotta turn the natives on. Will you wear that smile right through your five year jail sentence in Malaga, Erzurum, Bombay, Tetouan? Will you grin as they stamp something strange in your passport (pity you never learnt the language and can't understand it), will you hand them a flower when they try to rape your dopey girl friend who used to sunbathe naked on the roof and say 'fuck what the neighbours think, a bit of tit won't kill them.'?

Wake up. Stop carrying your plastic hip culture round the world. Formentera used to be a beautiful island of sleepy farms and white-washed houses. This summer it was like the carbon-copy of the main drag in any big Western City, flashy boutiques full of ugly clothes, bars full of freaks bashing bongoes long after the owner has asked them to stop, everyone playing the same dreary games they played in Finch's bar or the Filmore East. Ask the local people what they think: they's rather have fat middle-aged German tourists who spend money than a load of penniless bums who steal from them and stir up the police while trying to turn their paradise into a psychedelic circus.

The director, Sam Peckinpah, is a certain kind of man. I don't know if you have known any, but I hope so, because they are our honourable ancestors who paid their dues at a time when living free was damned lonely.

Ten or twelve years ago I knew and admired these men. They had seen war and had had many adventures which had made them very wise. . . . Mostly they were painters and writers who had done something else before, like engineering or mathematics. Their tatoos and beards and crazy clothes were as much a dare as a statement.

Competent and tough, always broke, because they didn't give a rat's ass about money; afraid of nobody, but patient with fools and gentle with women. Part Henry Fonda, Pancho Villa, Ezra Pound and Johnny Guitar, or so I thought. They thought the usual run of human existence was a load of crap, but they didn't worry much about consistency in their rejection of squareness. They smoked grass—when just nobody thought it was a very nice thing to do—and drank like plowed ground soaks piss. A doctrinaire Marxist could also be a proud ex-Marine and a loyal buyer of Zippo lighters. In short, changing the world was too remote to be considered, and a man had to live his life as he



saw fit, for which the only reliable rule was the abolition or, at least avoidance of bullshit.

In my part of the country, they kept as much of the reactionary cowboy jive as suited them. This sometimes included guns, which I am quite sure they did not at any time confuse with their genitals.

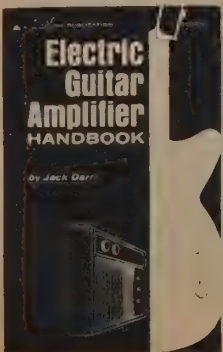
I envision a great piece of civic statuary, to be erected when the world is a better place: a strong, skinny man of thirty or so, in desert boots, levis, and navy jersey. An early copy of Evergreen Review is in his hip pocket and he is holding a can of suds. Nearby is a stack of junk, a Charlie Parker record, worn out Mexican sandals, a Chianti bottle, a carton of Camels, the maintenance manual for an MG TC. It would be called, 'The Old Head and His Stuff', this statue.

**★ Electric Guitar Amplifier Handbook**

For years my clearest image of impotence was the college student and the soft-drink machine: he has just watched his Pepsi flow by without benefit of the expected automatic cup, and he is kicking shit out of the machine. This image has gradually been replaced by the finer one of the rock musician and his audience of worshipful fans and his intermittent amp.

Avoid embarrassment, learn about the components of thy act. This is a remarkably adequate repair manual.

[Suggested by Philemon Vanlangendonck]



**Electric Guitar Amplifier Handbook**

Jack Darr  
1965, 1968; 160 pp.

\$3.95 postpaid

from:  
The Bobbs-Merrill Company, Inc.  
4300 West 62nd Street  
Indianapolis, Indiana 46206

or WHOLE EARTH CATALOG

\$2.88 from Blackwell's (see p. 79)

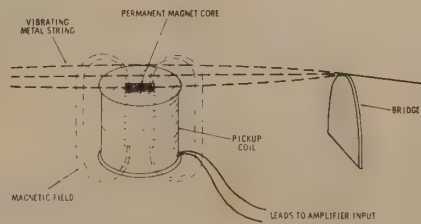


Fig. 2.2. Operation of a magnetic pickup

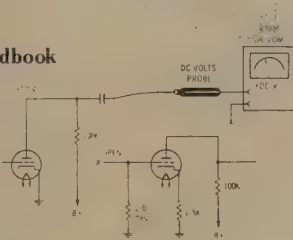


Fig. 4.4. Testing a coupling capacitor for leakage.

**★ Illustrated Method for Flute**

It's hard to imagine learning to play the flute without the help of someone who already knows, but if you've got that, this book would help. It's super-basic, designed for those who never even picked up a flute before, and it does cover all the things you need to know to play. One weakness is that the fingering chart is at the back, when you need to start using it about halfway through. The chart's use is also limited because it's printed on both sides of the page, so you can't refer to half of it without stopping to turn it over, a handicap for beginners.

[Reviewed by Diana Shugart.  
Suggested by Tia Whitney]



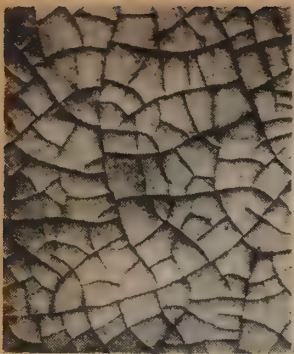
**Illustrated Method for Flute**  
Sheridan W. Stokes and  
Richard A. Condon  
1969; 41 pp.

\$5.20 postpaid

from:  
Trio Associates  
P. O. Box 2752  
Culver City, CA 90230

or WHOLE EARTH CATALOG

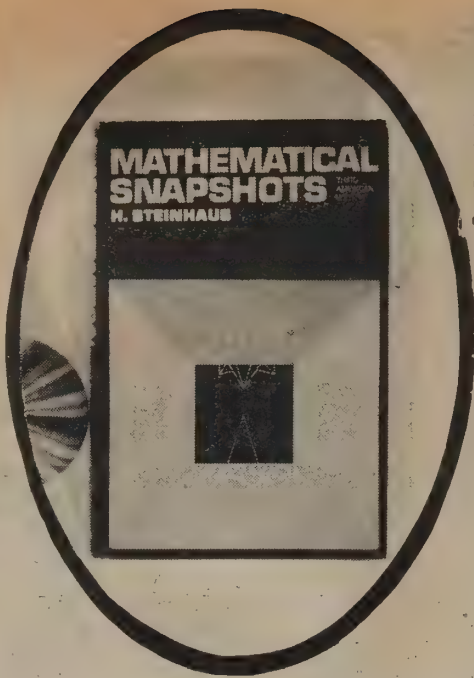
Our teaching experience leads us to suggest a series of short but concentrated practice sessions (e.g., five to fifteen minutes) each day. Few people can give their full attention to a subject for more than fifteen minutes at a time. Indeed, for most people, the span of concentration is five to ten minutes. Because practicing without concentration is often useless and sometimes harmful, we recommend a series of short practice periods during which you concentrate solely on a single thing to be accomplished. You will find these short but concentrated practice sessions much more fruitful than tedious hours of dutifully "playing exercises."



The patterns we observe on the shore of a river when the mud has been dried up by the sun (98) seem to be quite irregular; nevertheless as a rule they show right angles. This can be explained by assuming the cracking to be an effect of contraction; the line appearing as a fissure has, by a principle of mechanics, to make the work of disjunction as small as possible. The work is proportional to the areas of the sections and the lines must have a course such as to minimize the surfaces laid open by the fissure. This procedure gives right angles if the clay is homogeneous; the varying thickness of the layer accounts for the curvature of the lines. This remark supplies in many cases a means of deciding which line appeared earlier and which later: the older of the two splits passes right through the point of junction. Thus we can follow the genealogy of splits and eventually find the ancestors of the whole system.



Suppose the pattern was composed initially of two regions, A, and B. A new line appears, joining two points of two already existing arcs and giving rise to a new region C (100); since the new line breaks up two arcs into two parts each, the number of arcs increases by three. After  $n$  steps we have  $n$  more regions and  $3n$  more arcs. Since there were initially two regions and three arcs, we now have  $n+2$  regions and  $3n+3$  arcs.

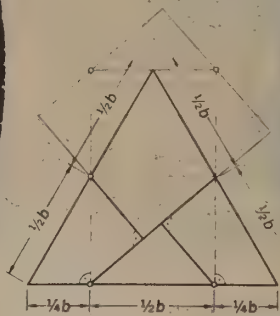


**Mathematical Snapshots**  
H. Steinhaus  
1950, 1969; 311 pp.

**\$7.50** postpaid

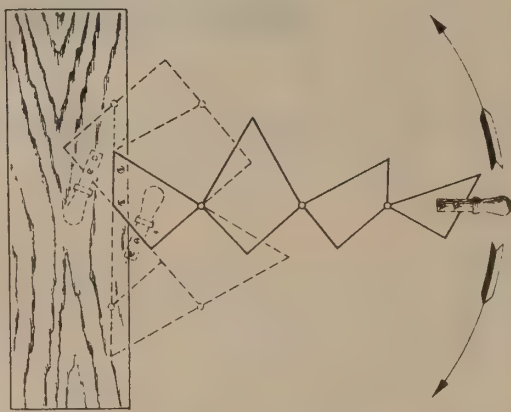
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2

From these four small boards (1) we can compose a square or an equilateral triangle, according as we turn the handle up or down. The proof is given by sketch (2).



1

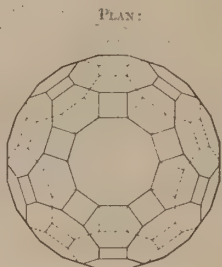
**Mathematical Models**

H. Martyn Cundy & A. P. Rollett  
1961; 286 pp.

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$F_4 F_6 F_{10} V_8 E_{30}$   
20 12 120 180

**POLYHEDRA**

**3.9.4. Great stellated triacontahedron.  $V(3.5)^2$**

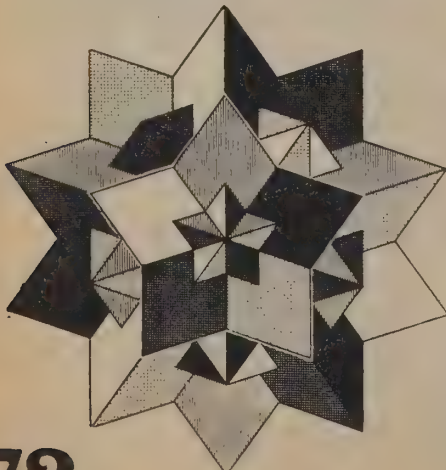


FIG. 153

Obviously, for any model which is to be at all permanent, cardboard will be used.

The card should be white with a good surface, and fairly thin, about the thickness of a plain postcard. Thick cardboard makes ugly corners, and allowance ought to be made for its thickness in drawing the net. It is useful, however, to cut flat sheets of thick card for internal strengthening in some of the stellated and interpenetrating polyhedra.

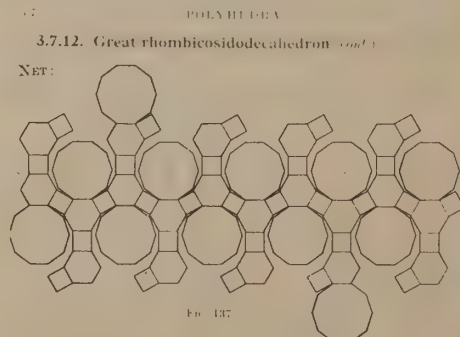


FIG. 137

When the dimensions of the model have been decided on, the net can be constructed on the cardboard. In the case of a complicated net this is facilitated by pricking through vertices from a template drawn on tracing paper, but it must be done very accurately. Tabs are then added to alternate outside edges, care being taken to ensure that the angle at the shoulder of the tab is small enough to admit of the tab's being cemented to its appropriate face. The net can now be cut out with a razor-blade and the edges scored half-through for bending. (Where edges have to be scored on the back—in the stellated polyhedra—this is indicated in the diagrams.) The face of the net becomes the outside of the polyhedron.

For joining, a quick-drying cement, such as balsawood cement as used for model aircraft, is essential. After the cement has been applied to a tab, the edges to be joined are brought together, and the tab can be held down with a small wire paper-fastener while the cement dries. This is particularly useful in small models when the fingers cannot easily get inside, and near the finish of any model when there are several edges to be joined at once. A thin wire probe is sometimes useful in getting the last face to adhere.

**Mathematics**

As far as we're concerned, these are the principles as well as method in the universal language.

*Mathematical Snapshots operates by visibility. What's going on mathematically is plain as day in the diagrams and illustrations. It's like learning history by anecdotes.*

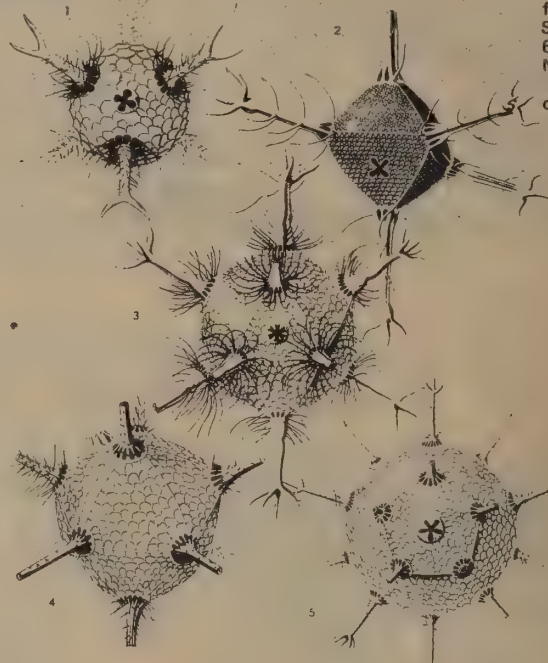
*Mathematical Models is a classic of 4-D technique. The whole purpose of the book is enabling you to make your own geometric forms in the world. Like learning history by psychodrama.*

[Suggested by Sim Van Der Ryn]

The World of Mathematics, an anecdotal, telling of mathematical history by anecdotes.

Mathematics: and Meaning. Russian-computing, everything of today.

Problem 36 of the papyrus begins: "Go down 1 times 3, 1/3 of me, 1/5 of me is added to me; return 1, filled am I. What is the quantity saying it?"



Here (Figure 45) is a page from Haeckel's Challenger Monograph showing the skeletons of several Radiolarians. Numbers 2, 3, and 5 are octahedron, icosahedron, and dodecahedron in astonishingly regular form; 4 seems to have a lower symmetry.

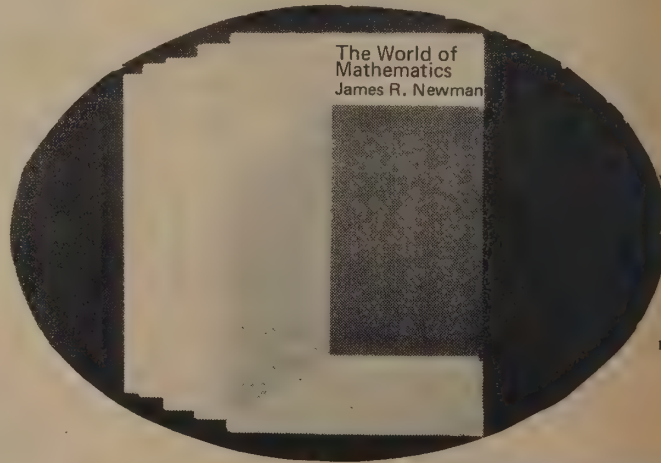


FIGURE 10-

**2.5. CURVE**

One very old method of expression and one which affords a welcome

The exterior perimeter of a net of a polyhedron which is all in one piece becomes a 'tree' of edges on the solid. This tree may be branched, but every edge is double and occurs twice on the perimeter of the net. It is evident that if these edges are numbered consecutively round the net every even edge will be joined to an odd edge in the final solid. This means that tabs need only be attached to the even edges. In the nets which follow, tabs are not shown unless there is special need to do so. In all other cases the rule is: attach tabs to alternate edges round the net.

There is an exception in the case of the last face, which is best left free of tabs. The missing tabs must be added to the other edges, and are best made large, so that a platform can be built up to which the last face can be stuck.

pencil and paper', is that of one originated in a book by Mrs. E. M. Whittaker's *Approach to Mathematics*, which has recently been revived, both in form and content. Basically it consists of constructing models by stitching with coloured threads pricked in cardboard.

self-education math books. From them you can learn delight

Mathematics IS history and  
 ingenious multi-faceted  
 theories—pure, applied,  
 fine and complete  
 seen from outside.

Content, Methods,  
 with from inside. A  
 technical run-down of  
 concern in mathematics

The Graphic Work of M. C. Escher is geometry set at its own throat via the images of dreams. The subjective frontier.

The New Mathematics Dictionary and Handbook is the handiest of handy reference books.

[Suggested by Lloyd Kahn]



The Graphic Work of M. C. Escher

M.C. Escher  
 1960,68; 76 plates  
 \$7.95 postpaid

from:  
 Hawthorn Books, Inc.  
 70 Fifth Avenue  
 New York, N. Y. 10011

or  
 WHOLE EARTH CATALOG



57. DOUBLE PLANETOID, wood-engraving, printed from 4 blocks, 1949, diameter 37.5 cm

Two regular tetrahedrons, piercing each other, float through space as a planetoid. The light-coloured one is inhabited by human beings who have completely transformed their region into a complex of houses, bridges and roads. The darker tetrahedron has remained in its natural state, with rocks, on which plants and prehistoric animals live. The two bodies fit together to make a whole but they have no knowledge of each other.

...AS our mental eye penetrates into smaller and smaller distances and shorter and shorter times, we find nature behaving so entirely differently from what we observe in visible and palpable bodies of our surrounding that no model shaped after our large-scale experiences can ever be 'true'. A completely satisfactory model of this type is not only practically inaccessible, but not even thinkable. Or, to be precise, we can, of course, think it, but however we think it, it is wrong; not perhaps quite as meaningless as a 'triangular circle,' but much more so than a 'winged lion.'

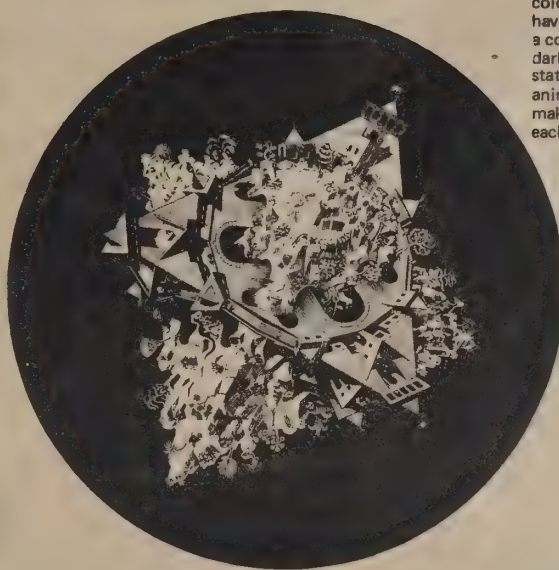
Mathematics: Its Content, Methods, and Meaning

A. D. Aleksandrov, A. N. Volmogorov, R. A. Lavrentev  
 1956, 1963; 1144 pp.; 3 vols.

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 The M. I. T. Press  
 Cambridge, Mass.02142

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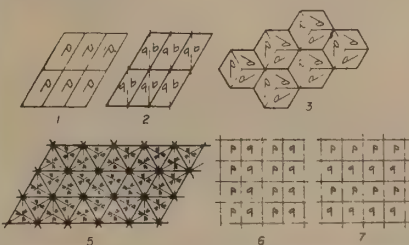


III. There exists neither a point nor a line in the plane that is carried into itself under all the transformations of the group. Groups of this type are called plane Fedorov groups. They are the symmetry groups of infinite plane ornaments. There are altogether 17 of them: five consist of motions of the first kind only, and twelve of motions of the first and second kind.

In Table 3 we have given examples of ornaments corresponding to each of the seventeen plane Fedorov groups; every group consists of precisely those motions that carry an arbitrary flag drawn in the diagram into any other flag of the same diagram.

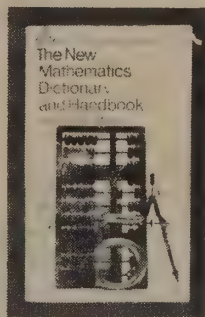
It is interesting to note that the masters of the art of ornamentation have in practice discovered ornaments with all possible symmetry groups; it fell to the theory of groups to prove that other forms do not exist.

Crystallographic groups. In 1890 the eminent Russian crystallographer and geometer E.S. Fedorov solved by group-theoretical methods one of the fundamental problems of crystallography: to classify the regular systems of points in space. This was the first example of a direct application of the theory of groups to the solution of an important problem in natural science and made a substantial impact on the development of the theory of groups.



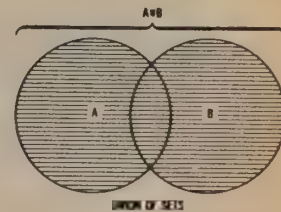
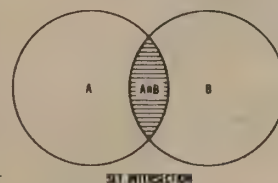
The New Mathematics Dictionary and Handbook

Robert W. Marks  
 1964; 186 pp.  
 \$ .95 postpaid



from:  
 Bantam Books, Inc.  
 271 Madison Ave.  
 New York, N. Y.  
 10016

or WHOLE EARTH CATALOG



VENN DIAGRAMS. Diagrams using overlapping circles to show relationships between sets; developed by John Venn (1834-1923), English logician. Each circle represents one set. Two or more may be overlapped. The areas of overlap (lens-shaped areas) indicate subsets which may contain elements common to both or all of the indicated sets. Some authors shade or cross-hatch the areas that contain members of a set; other authors use shading or cross-hatching to indicate emptiness. In the diagram below, shading indicates content.

The shaded area represents that set of all elements that are both elements of A and elements of B.

Example: If A is the set of all students who take chemistry, and B is the set of all students taking physics, the shaded area is the set of all students taking both chemistry and physics.

The shaded area in the second diagram represents the set of all elements that are in A, or in B, or in both A and B.

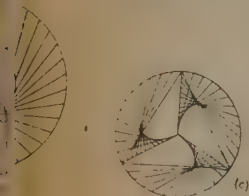
Example: If A is the set of all men who own boats, and if B is the set of all fishermen, the shaded area indicates the set of all men who are boatowners or fishermen, or who are boat-owning fishermen.

Book has 597 Pages  
 Author of this Book is  
 Statements Numbered  
 and 3 are all False

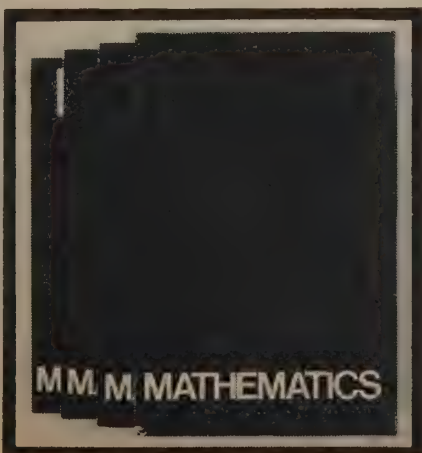


points of the plane are inside this polygon?

SEARCHING  
 on work in mathematics,  
 change from 'the tyranny of



itching. It seems to have  
 mervell, entitled A Rhyth-  
 ublished in 1906. The idea  
 merica and in this country.  
 ag straight-line envelopes  
 through a pattern of holes



## Supply and Demand

A briefer, more classic, and earlier account of economic theory is Henderson's *Supply and Demand*.

Bear in mind that economists are created by economies, not vice versa very much. Who does create economies? You. If you don't like the one you're in, invent and perform a better one. Do it informed or do it innocent, either one beats passive complaint.

[Suggested by Steve Baer]

- I. When, at the price ruling, demand exceeds supply, the price tends to rise. Conversely when supply exceeds demand the price tends to fall.
- II. A rise in price tends, sooner or later, to decrease demand and to increase supply. Conversely a fall in price tends, sooner or later, to increase demand and to decrease supply.
- III. Price tends to the level at which demand is equal to supply.

It has become an axiom of business men that, while Governments can manage with more or less competence a safe and routine business like a Postal Service, their success would be unlikely to prove conspicuous in undertakings where the element of risk is great. There, it is said, we owe everything in the past to the enterprise of individual men (for even joint-stock companies have not been notable as pioneers) adventuring their own fortunes in accordance with their own unfettered judgment.



**Supply and Demand**  
Hubert Henderson  
1922; 142 pp.

**\$1.35** postpaid

from:  
Cambridge University Press  
32 E. 57th Street  
New York, N. Y. 10022

or **WHOLE EARTH CATALOG**

## \* Indexes Information Retrieval-System

What do you have a lot of? Students, subscribers, notes, books, records, clients, projects? Once you're past 50 or 100 of whatever, it's tough to keep track, time to externalize your store and retrieve system. One handy method this side of a high-rent computer is *Indexes*. It's funky and functional: cards with a lot of holes in the edges, a long blunt needle, and a notcher. Run the needle through a hole in a bunch of cards, lift, and the cards notched in that hole don't rise; they fall out. So you don't have to keep the cards in order. You can sort them by feature, number, alphabetically or whatever: just poke, fan, lift and catch. *Indexes* is cheaper than the McBee system we used to list.

[Suggested by Ernest L. Gayden]

PAPER / THESIS DECKS @ \$8.95 ea.  
RESEARCH DECKS @ \$8.95 ea.  
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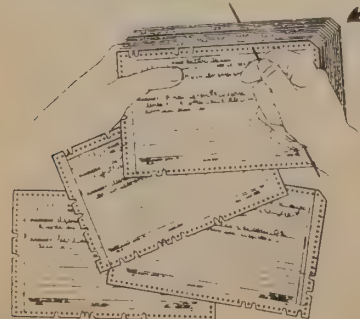
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## STEP FOUR: SORTING

Sorting allows you to retrieve the information that has been Recorded, Coded, and Notched (Steps 1, 2 & 3).



Align the Deck at the clipped corners...

Pass the Sorting Rod through the hole with the number which matches the listed code number of the category you wish to retrieve...

Shake gently...and all cards notched at this hole will drop.

**74** THE CARDS YOU WANT HAVE BEEN RETRIEVED

## \* AAA Adding Machine Company

I wish we'd known about this outfit when we started business. They carry used and reconditioned calculators, adding machines and cash registers at good prices.

[Suggested by Octavia Reyes, Jr.]

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## Features of Model 126

- Single total, manually operated
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- Special counters for No Sale, and Customer
- Flexible keyboard and Key Release lever
- Single lock controls Register operation and records
- Easily read controls Register operation and records
- Easily read Indication, front and back
- Roller-bearing cash drawer construction
- Removable coin tray

**\$119**

## \* Strategy & Tactics

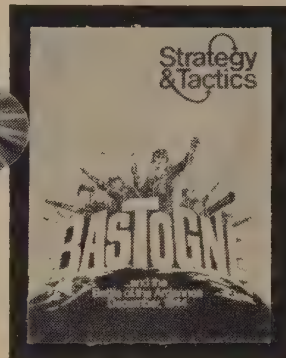
I was once an empire at a huge war game at Camp Drum, New York, and had a wonderful time.

Unfortunately, this magazine seems to be limited to board games using historic battles. It looks to have a cult readership related to Sci Fi fandom. But its considerations of game design, nostalgia-stroking, and bloodless conflict may be worth investigation by inventors of whatever's gonna replace war. You can be sure that peace isn't. Conflict is too interesting.

Strategy & Tactics

**\$7.50** /year (bi-monthly)

from:  
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New York, N. Y. 10009



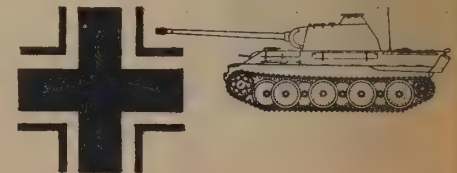
Assault Rifle, MP43, 7.92mm



**CONFRONTATION** - The ultimate in strategic wargaming. You're the Commander-in-Chief of either the US led Western Bloc or the Russian led Eastern Bloc as you engage in both hot and cold war on a 60" x 26" full-color mapboard. Every factor of modern warfare plays its part - from economics to espionage to technology. THE Wargamer's war game. .... \$8.00

**VIET NAM** - Could you win in Viet Nam? Find out in this authentic game of guerilla warfare which includes all of the important factors - diplomacy, world opinion, political warfare, and unique rules of jungle warfare. .... \$6.00

## Reinforcement Rate & Time Record Card



All Germans come from the East.

GERMAN SUPPLIES

After players become familiar with the game they will find that the best place for the Germans to attack is in the south, and wonder why this wasn't actually done in the real campaign. The reason is simple: the off the board road network favored supply and reinforcement from the north. This situation can be recreated by requiring the German player to bring on at least 50% of the combat factors of all types of units on or north of the Via Anziante. For instance, if he received two 6-5's, three 4-3's and a 6-6 in any one impulse, only one 6-5 and one 4-3 could enter south of the Via Anziante. (Note: this rule applies to the type of combat factor a unit has, not to whether it is infantry or parachute or whatever.)

Send Orders to:

**POULTRON PRESS**  
Box 396  
New York, 10009

## \* Cascades

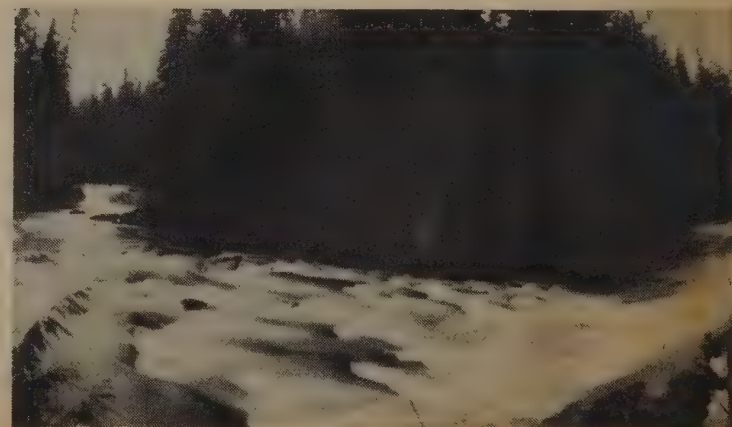
Like Kaiser Aluminum News, here's a free magazine from a big company. It has intelligent articles and superb photographs.

[Suggested by lost-his-name]

Cascades

free

from:  
Pacific Northwest Bell  
821 Second Avenue  
Seattle, Washington 98104



**Design and Planning 2**

*Incredible: you actually got your hands on a computer powerful enough to generate rich graphics, and you have an employer/patron rich enough to buy you some play time on the computer. In order not to waste his money too idly splashing around in your new pool, you might check this book for a beginning inventory of some of the things you and your computer can accomplish together. It's far the most practical book we've seen on the subject, and the subject is what wizards are about.*

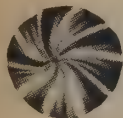
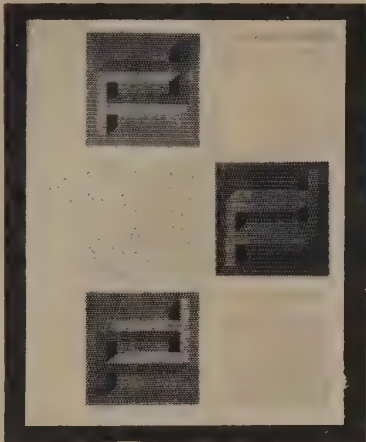
[Suggested by Eric Renner]

**Design and Planning 2**  
Martin Krampen and Peter Seitz, eds.  
1967; 177 pp.

**\$10.00** postpaid

from:  
Hastings House, Inc.  
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New York, N. Y. 10016

or **WHOLE EARTH CATALOG**



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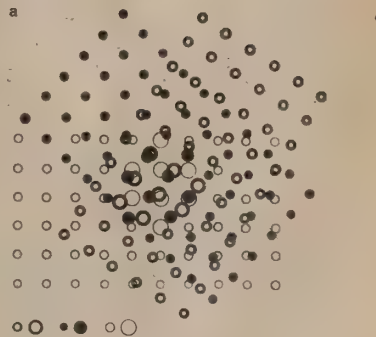
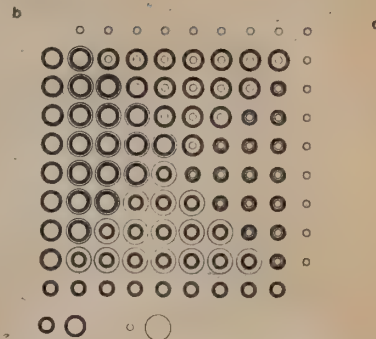
by Kenneth C. Knowlton

**Computers and the Visual Arts**

by A. Michael Noll

**Principles and Programming of Animation**

by Frank W. Sinden



**Critical Path Method**

*Most construction I've been around was under conditions of "The rains are due next week" or "If we don't get the dome covered by the first snow, we've blown it for the winter." Time pressure. At the miraculously complete and on-time Expo 67 in Montreal the magic ingredient was CPM—Critical Path Method. It's the analysis of what must be done in sequence (foundation, then floor) and what can be done concurrently (while the foundation is being dug in, the girls can cut the roof panels). The maximum necessary sequence is your minimum construction time, and is the critical path. Any delays on it slow down the whole operation. A clear CPM map, using now-standard symbols, can vastly simplify coordination. The technique is useful for any group operation that's time-bound. This book is the briefest clearest on CPM.*

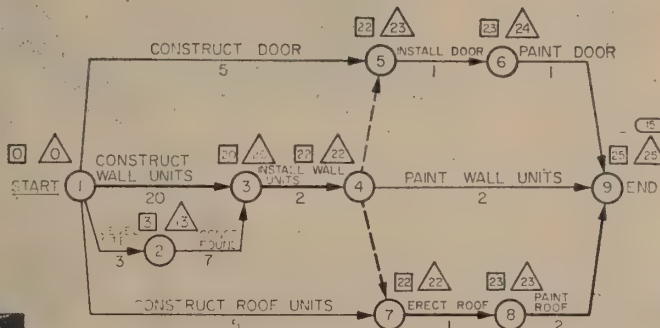
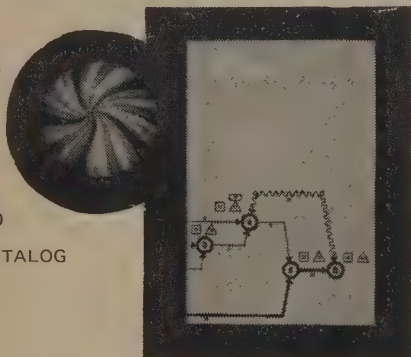
**Critical Path Method**

A. T. Armstrong-Wright  
1969; 113 pp.

**\$2.00** postpaid

from:  
Humanities Press, Inc.  
303 Park Avenue South  
New York, N. Y. 10010

or **WHOLE EARTH CATALOG**



In the above example, the required time for completing the project is 25 days and the project end-event time is calculated as "day 25". Assume that the owner is anxious to complete the garage before a new car is delivered on "day 15", it will thus be necessary to reduce the critical path by 10 days if this scheduled date is to be achieved. In this case it may be a simple matter of doubling the labour on activity 1-3 "Construct wall units" in the hope of reducing the duration by 10 days.

**Handbook of Mathematical Functions**

*Designed for the person who needs but does not have access to powerful computer facilities, this Government bargain is a modernized version of the classical tables of functions of Jahnke-Emde.*

[Suggested by Mrs. W. B. Mohin]

**CONTENTS**

1. Mathematical Constants
2. Physical Constants and Conversion Factors
3. Elementary Analytic Methods
4. Elementary Transcendental Functions  
Logarithmic, Exponential, Circular and Hyperbolic Functions
5. Exponential Integral and Related Functions
6. Gamma Function and Related Functions
7. Error Function and Fresnel Integrals
8. Legendre Functions
9. Bessel Functions of Integer Order
10. Bessel Functions of Fractional Order
11. Integrals of Bessel Functions
12. Struve Functions and Related Functions
13. Confluent Hypergeometric Functions
14. Coulomb Wave Functions
15. Hypergeometric Functions
16. Jacobian Elliptic Functions and Theta Functions
17. Elliptic Integrals
18. Weierstrass Elliptic and Related Functions
19. Parabolic Cylinder Functions
20. Mathieu Functions
21. Spheroidal Wave Functions
22. Orthogonal Polynomials
23. Bernoulli and Euler Polynomials, Riemann Zeta Function
24. Combinatorial Analysis
25. Numerical Interpolation, Differentiation and Integration
26. Probability Functions
27. Miscellaneous Functions
28. Scales of Notation
29. Laplace Transforms

**Handbook of Mathematical Functions With Formulas, Graphs, and Mathematical Tables**

1964, 1968; 1046 pp.

**\$4.50** postpaid

from:  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, D.C. 20402

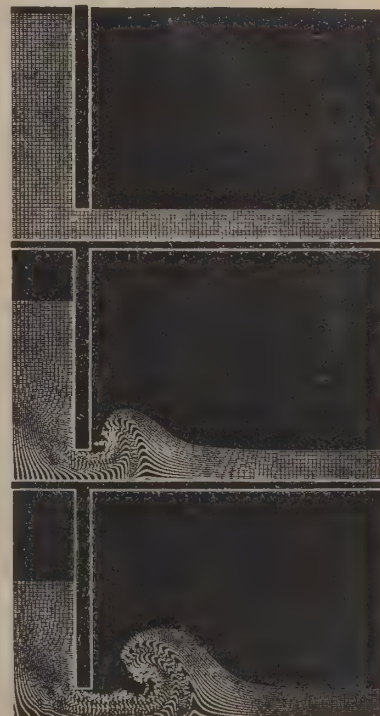
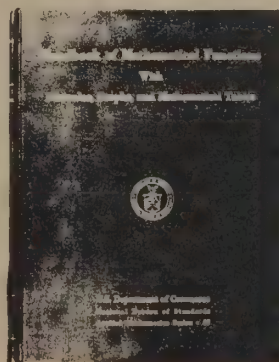
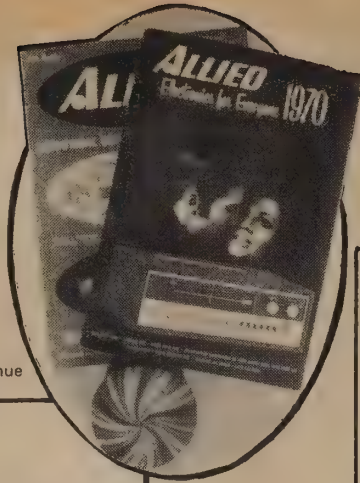


Table 3 - EXAMPLES OF PROPERTIES GIVEN TO GLYPHS

Function	Remarks
TURN	3-axis rotation
PAN, ZOOM-MOZ	3-axis translation
PERSPECTIVE-PROJECTIVE	Geometric transformations
STEREO	2-views
BLINK	Attention direction
SHADE	Optical density variations; texturing
COLOR	Associate a color with the image (parts)
PHOTO	Take a picture
MOVIE	Take a sequence of pictures
NAME	Associate a name with the image(s)
ATTACH	Join line segments
CONNECT	Special glyph linking
DRAW	Follow the light pen
SMOOTH	Apply a relaxation operator to the data
MOODY	Some change to a display list
DIMENSION	Assign lengths (areas, volumes, masses)
ERASE	Remove the image (parts)
WRITE	Prepare for text

**Allied Radio**

After considerable mail and discussion by CATALOG users, it seems clear that Allied is the best mail order source for electronic gear. They also print an industrial electronic catalog that is particularly rich in components, (especially noteworthy: integrated circuit components). Plug in, link up, disincorporate.



**Allied Electronics for Everyone**

Allied Industrial Electronics **free** Catalog

from: Allied Radio  
100 N. Western Avenue  
Chicago, Ill. 60680

**Other sources of electronics supplies include:**

Lafayette Radio Electronics  
111 Jericho Turnpike  
Syosset, L. I., New York 11791

Catalog free. Much more imported equipment and components. We hear complaints about their service.

Olson Electronics  
260 South Forge Street  
Akron, Ohio 44308

Catalog, free, issued monthly. Olson tends toward imported and surplus items. Many small quantity, "special" items. Service was fair last time I ordered from them. Many stores throughout the U. S.

Fair Radio Sales Co.  
P. O. Box 1105  
Lima, Ohio 45802

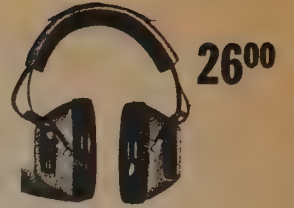
Electronic surplus at good prices. Catalog free.

Allied Data Handbook is a handy little book useful to just about anyone fooling with electricity or electronics. Gobs of information for the Engineer as well as common man. \$1 postpaid from Allied, 112 pp.

Tables for tube substitution, nomographs for coil winding, nominal wire size charts, formulas of all electrical and electronic sorts, color codes.

I have had a copy around ever since I started tearing radios apart when I was 11 or 12.

[Reviewed by Fred Richardson]



**Lightweight "Stereophones"**

Model K-6. Provide breathtaking full-dimensional sound. Accept up to 60 watts per channel from any normal music program source. Padded headband, vinyl-covered foam-filled ear-cushions. Lightweight (only 15 oz.)—listen for hours in complete comfort. Earcushions are removable for easy cleaning. Response, 10-15,000 Hz. 4-16 ohms. With 10-ft. cord, plug. 20 A 8358. Shpg. wt., 2 lbs. .... 26.00

**MODEL 631 BATTERY-POWERED VTVM-VOM ... TWO TESTERS IN ONE**

- One Selector Switch For Entire Unit
- Complete VOM in Combination With Battery-Operated VTVM
- 11-Megohm Input Impedance to VTVM

Single switch selector for VTVM or VOM operation. Has large, easy-to-read 5 1/2" meter with unbreakable face, and spring-backed jewels for ruggedness. Accuracy: VOM, ±3% DC, ±4% AC; VTVM, ±4%. VTVM. DC volts: 0-1.2-6-30-120 (11 megs input impedance). VOM. DC volts: 0-3-12-60-300-1200 (20,000 ohms/volt). AC and audio volts: 0-3-12-60-300-1200 (5000 ohms/volt). DC current: 0-60 μA; 0-1.2-12-120-1200 mA; 0-12 amps. dB: -20 to +63. Ohms: 0-1500-15K; 0-1.5-150 megs. Size, 7 1/2 x 5 1/2 x 3 1/2". Supplied complete with test leads, alligator clips, rubber feet, batteries and instructions. Shpg. wt., 5 lbs. \$19.9113. .... 78.00



PS120 Nutdriver Set. Includes: 10 color-coded drivers from 3/64" to 3/8" in 1/16" steps. 3 1/2" drivers. Plastic case fits pocket. 26 A 2194. Wt., 11 oz. .... 5.85



PS88 Screwdriver Set. 5 slot-tip types from 3/64" to 1/4"; 3 Phillips drivers, #0, #1, #2; 1x3 1/4" standard handle. 3 1/2" drivers. 26 A 2579. Wt., 11 oz. .... 4.20

**Heathkit**

We are not carrying Heathkit this time, due to the following letter, just received.

We recently received your form note indicating that our products are listed in your catalog.

I'm unaware of any authorization for you to list our products. In fact, we have no franchises or dealerships and I'm therefore at a loss to understand your communication.

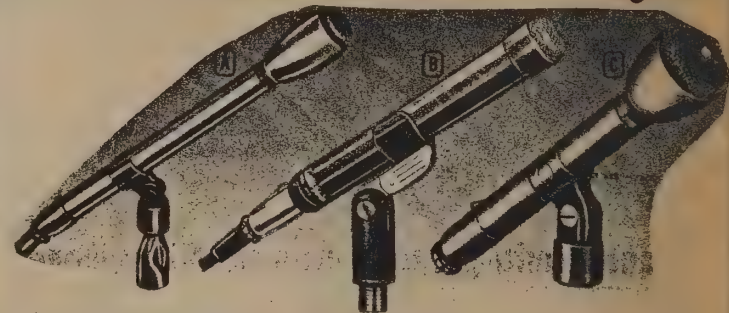
Heathkit products are trademarked and the use of our trade name is prohibited unless prior permission has been granted.

In the absence of authorization I must ask that you refrain from listing our products.

Yours very truly,  
SCHLUMBERGER PRODUCTS CORPORATION

William E. Johnson  
Vice President

WEJ/rs



**Electro-Voice omnidirectional Mikes**

Model RE55 Professional Dynamic Mike. Omnidirectional response especially suited to full-range music recording and other exacting professional applications. For hand and stand use. Pop-proof; built-in blast filter. Response is extremely stable; mike can be calibrated for use as secondary lab standard. 40-20,000 Hz. 150 ohms. Output: -55 dB, 18' three-conductor cable. Satin nickel finish. 10 1/2 x 1 1/2 x 1 1/4" shank. 12 A 7250. Wt., 1 1/4 lbs. .... 126.00

Model 635A Performers' Dynamic Mike. Widely accepted professional omnidirectional mike for hand or stand use. Four-stage pop and blast filter eliminates need for external windscreen. Smooth, shaped response; 80-13,000 Hz. Low impedance. Output: -55 dB. Magnetically shielded diaphragm, turned-steel case. Cannon XLR-3-11 connectors. Non-reflecting nickel finish. 6x1 1/2" dia. 18' three-conductor cable. Stand adapter. 12 A 7461. Wt., 1 lb. .... 49.20

**DRY REED SWITCHES**

Stock No.	Mfr's Type	Form	Size, Dia. x Lgth.	Max. DC Contact Watts	Max. DC Amps	Max. Actuating Volts	Max. Actuating Magnets	EACH
56 A 6603	MRR-2-185	A	.130x.800"	10	.5	200	H-33	1.15
56 A 6605	MSRR-2-185	A	.090x.800"	10	.5	200	H-33	1.15
56 A 6606	MTRR-2-185	A	.092x.635"	3	.250	100	H-33	1.32
56 A 6607	MRG-DT-175	C	.130x.610"	3	.250	28	H-33	4.20
56 A 6608	MMRR-2-185	A	.090x.375"	1	1.0	40	H-31	1.84
56 A 6609	DRG-2-425	A	.210x1.950"	15	1.0	250	H-34	.79
56 A 6610	DRR-1-425	A	.210x1.950"	15	1.0	400	H-34	.89
56 A 6611	DRT-5-425	A	.210x1.950"	50	3.0	1000	H-34	2.10
56 A 6612	SRR-2-425	A	.195x1.425"	15	1.0	400	H-32	.89
56 A 6613	DRG-DTH-445	C	.218x1.562"	10	.5	250	H-32	2.63
56 A 6614	DRV-10-658	A	.218x1.950"	50	3.0	5000	H-34	4.20

**MERCURY-WETTED REED SWITCHES**

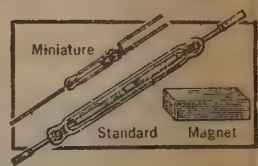
Stock No.	Mfr's Type	Form	Size, Dia. x Lgth.	Max. DC Contact Watts	Max. DC Amps	Max. Actuating Volts	Actuating Magnets	EACH
56 A 6616	HRC-1-535	A	.218x1.950"	50	3.0	400	H-34	2.10
56 A 6617	MRC3-387	A	.330x.710"	28	1.0	100	H-33	4.20

**MAGNETS FOR ABOVE SWITCHES**

Stock No.	Mfr's Type	D. x L.	EACH	Stock No.	Mfr's Type	D. x L.	EACH
56 A 6618	H-31	3/16x1/8x1/8"	.30	56 A 6620	H-33	1/4x1/8x1/8"	.30
56 A 6619	H-32	3/16x1/8x1/8"	.35	56 A 6621	H-34	1/4x1/8x1/8"	.40

**HAMLIN MAGNETIC REED SWITCHES**

- Hermetically Sealed
- Actuating Time—One ms or Less
- Life—10,000,000 Operations
- High Sensitivity
- Compact Size



Premium-quality dry reed and mercury wetted switches for reliable operation under all operating conditions. They are hermetically sealed for safe, dependable use in any type of atmosphere or even under explosive conditions. Switches are unaffected by high or low temperature extremes or pressure.

Compact size, high sensitivity and rapid cycling rate make them ideal for applications in position indicators, counting instruments, limiting switches, flow meters, commutating instruments and reed relays. Fully inspected.

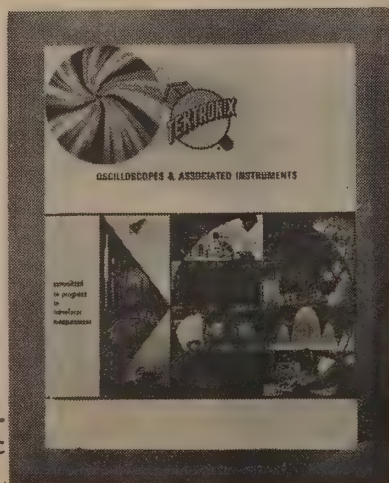
Actuating time of one millisecond or less. Dry reed switches have life expectancy of ten million operations; mercury wetted switches have life expectancy of one billion operations. All switches may be actuated by permanent or electric magnets. Order optional permanent magnets from the table listed at left. Average shpg. wt. per switch, 1 oz.



DEFLEX GROUNDING PLUG. Lets you operate 3-wire appliances from 2 or 3-hole outlets without adapter. Button on plug deflects grounding blade for 2-hole outlets. Tension spring holds blade against metal faceplate. 26 A 3066. Wt., 3 oz. 79¢

**11 Tektronix Catalog**

11a Tektronix has become the electronics industry standard for oscilloscopes. They are consistently ahead of the competition and their attention to "user" features in functions and control design make the instruments a joy to use. This catalog includes the complete line of scopes and of their other test equipment, particularly pulse generators and amplifiers, all solidly designed.



11b The equipment is expensive - \$735 for the cheapest scope - but well worth its price.

[Reviewed by Bill English. Suggested by Mike Brand]

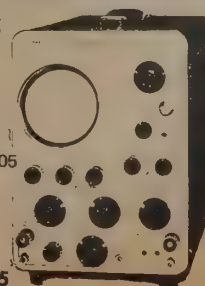
**3 The Radio Master**

3a A collection of advertizing material from manufacturers of electronic parts and equipment. It primarily covers components and test equipment and is a good reference to what is available. In many cases prices are not given and you may have to hunt for a local supplier of some items.

3b The Master is available from major distributors of parts and equipment, free if you are a good customer. [Bill English]

Tektronix Catalog 1968; 336 pp.

free from: Tektronix, Inc. P. O. Box 500 Beaverton, Ore. 97005



TYPE 310A OSCILLOSCOPE .. \$725

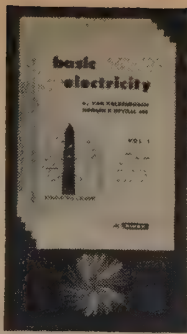
**Basic Electricity**  
Van Valkenburgh, Nooger & Neville, Inc.  
1954; 579 pp; 5 vols.

**\$13.50** a set postpaid

from:  
Hayden Book Company, Inc.  
116 West Fourteenth Street  
New York, N. Y. 10011

or **WHOLE EARTH CATALOG**

\$6.60 from Blackwell's (see p. 79)



**\* Electronics Page**

*Graphically illustrated and intelligently sequenced, the Basic Electricity (vols. 1-5) and Basic Electronics (vols 1-6) sets from Rider are the easiest route from innocence to usefulness in electronics without an unnecessary load of math and physics. Good rudiments.*

*If you plan to go very far with electronics, you will need heavier math. Basic Mathematics for Electronics keeps matters practical.*

*If you're already somewhat into electronics the Rider sets will insult you. A better route into deeper work is the well-regarded Elements of Radio.*

*For work with Silicon Controlled Rectifiers, the handiest device for controlling AC power to lights, motors, heaters, etc., get the comprehensive SCR Manual from GE.*

*A simple, non-technical, concrete, lucid, complete user's guide to hi-fi is High Fidelity Systems.*

*The comprehensive all-purpose reference on audio everything is Audio Cyclopedia.*

[Evaluated by Marv Vickers, Fred Richardson, Les Rosen]



**Basic Electronics**  
Van Valkenburgh, Nooger & Neville, Inc.  
1959; 680 pp; 6 vols.

**\$14.85** a set postpaid

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116 West Fourteenth Street  
New York, N. Y. 10011

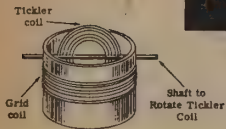
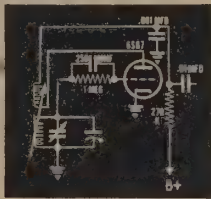
or **WHOLE EARTH CATALOG**

\$7.92 from Blackwell's (see p. 79)



There are many ways of controlling the amount of feedback. One method which has been used involves varying the physical position of the tickler coil with respect to the grid coil. If the coupling between the two coils is reduced by moving the tickler coil away from the grid coil, or rotating it so that its axis is at an angle to the axis of the grid coil, the amount of feedback will be reduced. When this method is used to control feedback, a potentiometer is not connected across the tickler coil.

ARRANGEMENT TO VARY COUPLING BETWEEN TICKLER AND GRID COIL.



You learned that a good way for you to picture the operation of a grid in a vacuum tube was to think of the grid as a valve in a water pipe. The British are so fond of this explanation that, to this day, they call a vacuum tube a "valve." When the grid of the tube is very negative, the "valve" is closed and there is little or no flow of electrons from the cathode to the plate. When the grid voltage is changed so that it becomes only slightly negative, the "valve" is nearly wide open and there is a large flow of electrons from the cathode to the plate.

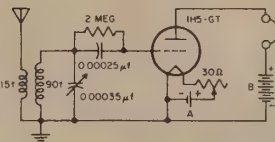
*Basic Electronics*



**Elements of Radio**  
Abraham Marcus and William Marcus  
1965; 672 pp.

**\$8.44** postpaid from:  
Prentice Hall  
Englewood Cliffs, N. J. 07632

Fig. 15-11. Diagram of the complete receiving set, using the triode as a detector. The symbol 2 MEG. over the grid leak stands for 2 megohms. The symbol 30 Ω over the rheostat stands for 30 ohms.



Discrete transistors (where electronics was 10 years ago) are very easy to work with. It is far easier to get into construction and design with transistors than it ever was with tubes. No chassis, no heavy components to mount, no high voltage, power supply can be a battery, etc. Very cheap, too. Trying to work with "state of the art" components (wherever that is now) is very expensive, parts are difficult to get and information is often unreliable.

—Fred Richardson

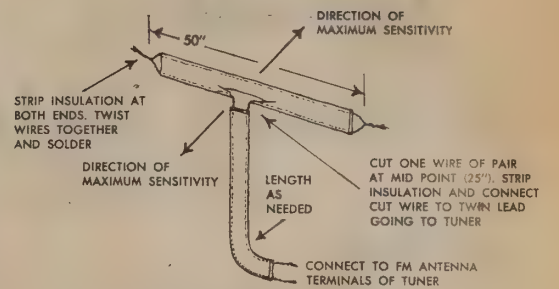
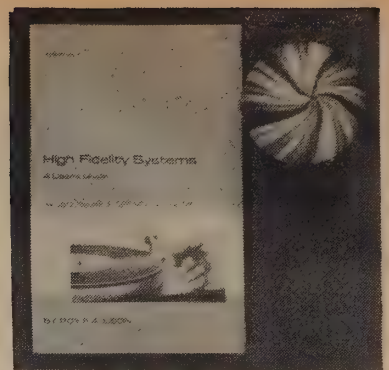
**High Fidelity Systems**

Roy F. Allison  
1962, 1965; 91 pp.

**\$1.25** postpaid

from:  
Dover Publications, Inc.  
180 Varick Street  
New York, N. Y. 10014

or **WHOLE EARTH CATALOG**



How to make a simple FM antenna which is very effective in favorable receiving locations.

Still simpler, and satisfactory in favorable reception areas, is the twin-lead antenna shown in the diagram. This can be stapled inside a closet, on the back of a cabinet holding high-fidelity equipment, along a baseboard moulding, or in any convenient location so long as it isn't very close to large bodies of metal.

One final note on hum: don't overlook the possibility that it may be mechanical noise. The power transformer of an amplifier can buzz at a hum frequency if the mounting bolts or the windings aren't tight. Cures include tightening the mounting bolts and shock-mounting the amplifier on a soft pad. Leave holes for ventilation, of course.

Acoustic feedback usually can be cured (or at least reduced to insignificance) by improving the shock mounts under the turntable. Putting the speakers on thick pads of foam rubber may help also, particularly if they rest on the floor. In some severe cases you may have no alternative to increasing the distance between the turntable and speakers.

*High Fidelity Systems*

**Basic Mathematics for Electronics**

Nelson M. Cooke  
1942, 1960; 679 pp.

**\$8.95** postpaid

from:  
McGraw-Hill Book Co.  
Princeton Road  
Hightstown, N. J. 08520

Manchester Road  
Manchester, Mo. 63062  
8171 Redwood Highway  
Novato, CA 94947

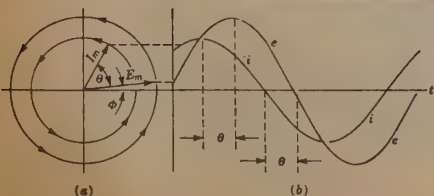
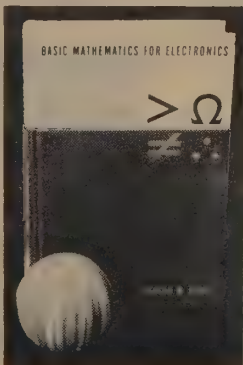
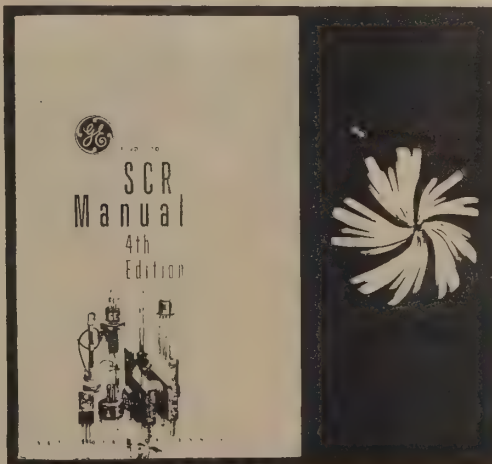


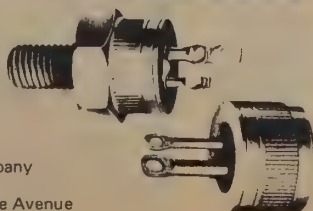
Fig. 32-8 Current *i* leads voltage *e* by phase angle of  $\phi$ .



**SCR Manual**  
F. W. Gutzwiller, ed.  
1967; 513 pp.

**\$3.00** postpaid

from:  
General Electric Company  
Dept. B.  
3800 North Milwaukee Avenue  
Chicago, Illinois 60641



**Audio Cyclopedia**

Howard M. Tremaine  
1959, 1969; 1757 pp.

**\$29.95** postpaid (\$35.95 ppd in Canada)

from:  
The Bobbs-Merrill Co., Inc.  
4300 West 62nd Street  
Indianapolis, Indiana 46206

**Writing and Illuminating and Lettering**

Publish your own book and let the New York madness go choke. Photo-offset on newsprint is incredibly cheap. To make up CATALOG pages we spent \$150 a month for an IBM selectric composer and \$350 for a Polaroid MP-3 camera with half-tone kit, and that's high-rent. With this \$7 book and loving care you could hand-make a publication more personal than speech.

[Suggested by Richard F. Wheeler]

Laying & Burnishing Gold

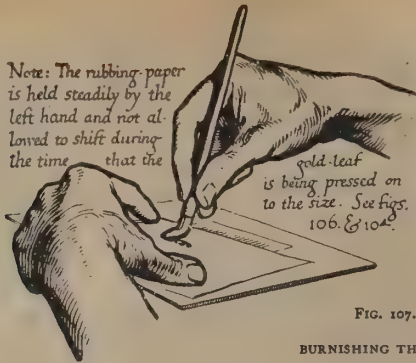
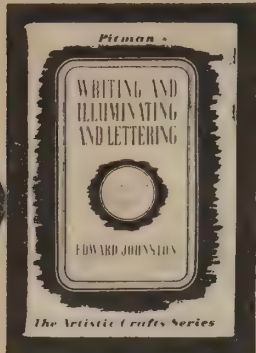


FIG. 107.

BURNISHING THE GOLD

**B**EGINNINGS of books are marked by an initial letter. A large versal—three or more line-spaces high—is quite effective & simple.



**Writing and Illuminating and Lettering**  
Edward Johnston  
1906 . . . 1969; 439 pp.

\$6.95 postpaid

from:  
Pitman Publishing Corporation  
20 East 46th Street  
New York, N. Y. 10017

or WHOLE EARTH CATALOG

\$4.20 from Blackwell's (see p. 79)

**OF QUILLS GENERALLY**

For ordinary use the nib may be cut with a fairly steep angle, as shown (magnified) at a, fig. 36.

But it is better for all careful work and fine, sharp writing that the angle be made very sharp: the knife blade is laid back (much flatter than is shown in fig. 29) and the quill is cut quite thin; the knife blade is then held vertical and the extreme tip of the nib is cut off sharp and true (b, fig. 36).

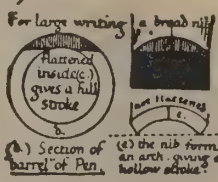


FIG. 36.

**AVOIDING**  
breaking words,  
by writing smaller.  
**MONOGRAMMATIC**  
TREATMENT: IF THE  
SPACE DEMANDS IT  
**LOOPS: &**  
**INSET LETTERS: & TALL:**

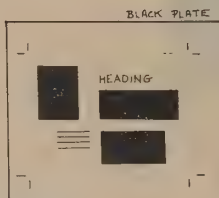


ABCDE ABCO

**Advertising Graphics**

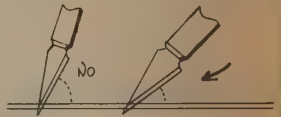
Who wants to make a book of just type and a few clunky illustrations? [If you do, see *Bookmaking*, opposite.] A richer palette is offered, and well described, by *Advertising Graphics*. Drawing, rendering, indication, type, layout, and on through the production process. McLuhan says that ads are good news. Since good news is boring, it's put the burden on advertisers to acid-coat their sugar pill. If we'd had this book back at our beginning, I suspect our \$1 Catalogs would be a lot livelier to look at.

[Suggested by Stephen Sulka]



**Windowing.** If your ad includes a few rectangular halftones either same size or reductions, rectangles of black or the red artist aid can be pasted in position on the black plate or base of the pasteup. When the black (line) copy is shot, the rectangles will appear as transparent windows in the black negative. After the halftones are shot they can be positioned under these windows and burned into the printing plate right with the line work. Of course if the halftones are to be reduced, the artist must figure the scaling to make certain the width and length of the pasted rectangles are proportional to the reduced halftone neg. Using a mechanical scaler is one of the quickest ways to do this.

KEEP BLADE AT LOW ANGLE TO PREVENT CHATTERING

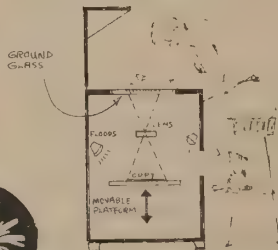
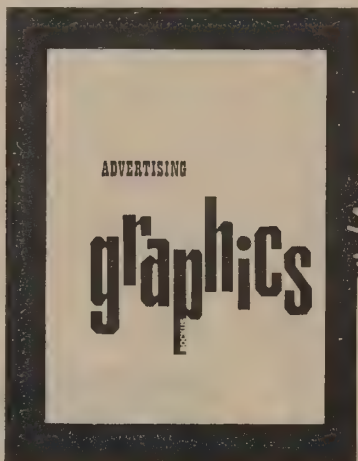


**Advertising Graphics**  
H. William Bockus, Jr.  
1969; 251 pp.

\$6.95 postpaid

from:  
The Macmillan Company  
Front and Brown Streets  
Riverside, Burlington County  
New Jersey 08075

or WHOLE EARTH CATALOG



A Lucy (Camera Lucida) is another device for proportioning—enlarging or reducing on a ground glass plate. The artist or stripper can then trace, draw, or measure from the image.

Cut out your initial or a symbol from a block of wood or art gum eraser. Use it to stamp your prints or stationery as your identifying "chop".



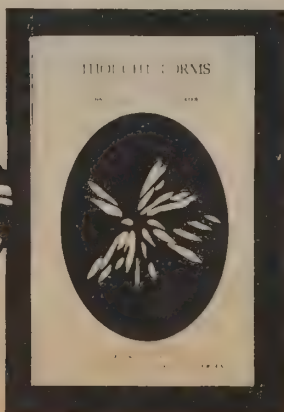
**INDICATION**

The layout artist must be able to indicate or show the typography, lettering, and the human figure quickly and clearly. Type is usually indicated by using chisel-point pencils of varying width.

**Thought Forms**

Well, for once I'm truly sorry our reviews are limited to illustrations in shades of grey. The power of these 58 extraordinary images is mostly in their color, unexpected, unearthly, delicious. The images were seen by the authors as clear representations of human states of mind. Pioneer work.

[Suggested by Jordan Belson]

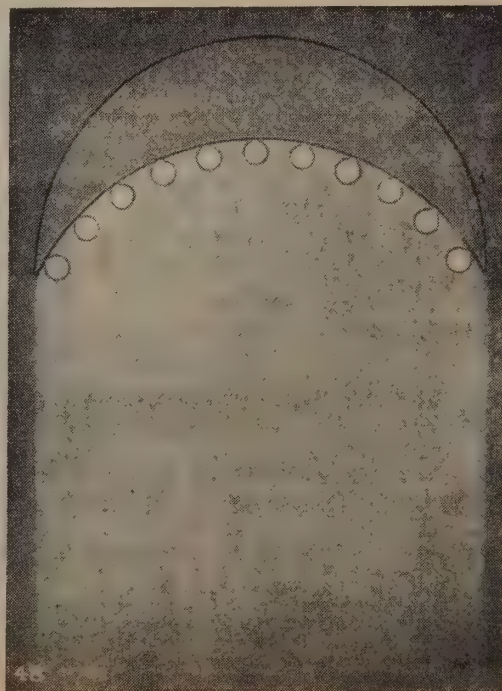


**Thought-Forms**  
Annie Besant and C. W. Leadbeater  
1901, 1969; 77 pp.

\$3.45 postpaid

from:  
Theosophical Publishing House  
Box 270  
Wheaton, Illinois 60187

or WHOLE EARTH CATALOG



**GENERAL PRINCIPLES**

Three general principles underlie the production of all thought-forms:

1. Quality of thought determines color.
2. Nature of thought determines form.
3. Definiteness of thought determines clearness of outline.

**Bookmaking**

A textbook for book designers.

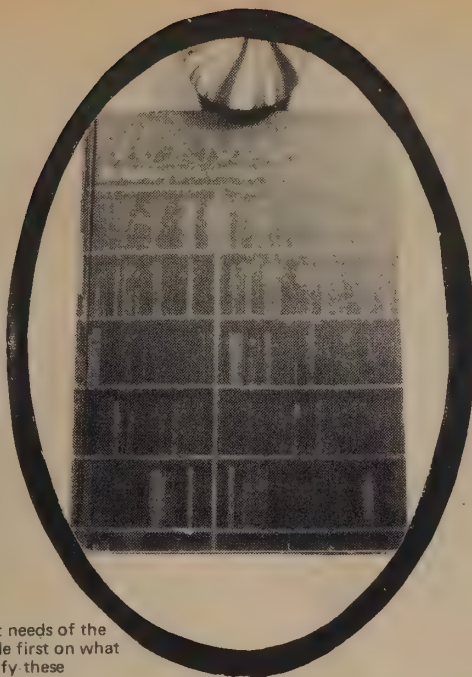
Should enable anyone from author to customer to communicate intelligently about any aspect of the design or production of a book. Probably the only existent reference for someone who needs to deal with printers and publishers, and isn't quite sure he knows an offset from a castoff. Perhaps the best thing that can be said about this book is that it is beautifully designed, but by the time you finish reading it you'll probably know enough to start criticizing its design.

**Bookmaking**  
Marshall Lee  
1965; 399 pp.

**\$12.75** postpaid

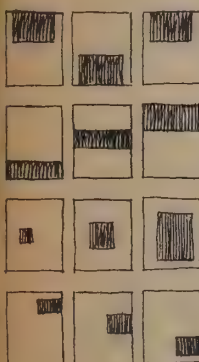
from:  
R. R. Bowker Company  
1180 Avenue of the Americas  
New York, N. Y. 10036

or WHOLE EARTH CATALOG



To reconcile the sometimes divergent needs of the various aspects of bookmaking, decide first on what should be done creatively, then modify these decisions as necessary to accommodate the practical considerations. In other words, plan the ideal first and retain as much of it as you can. This works better than any other procedure because the creative process functions best when it is free of practical considerations. The moment you accept mechanical or economic limitations, your imagination tends to freeze. Not that it merely restricts itself to the practicable—it tends to act as though the limiting walls were made of glass, and it swings in a cramped arc far short of those walls. This is a safe enough procedure, but it precludes any chance of extending the possible.

Illustrations scattered through text



Four kinds of development in sequence.



Circular screen

*Electra Italic*  
[Oblique]  
*Electra Cursive*

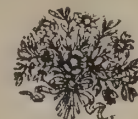
*Janson Janson*  
*Baskerville Baskerville*  
*Caslon Caslon*  
*Granjon Granjon*

*Spartan*  
*Metro*  
*Erbar Light Condensed*  
*Optima*  
*News Gothic*  
*Vogue*  
*Gothic Condensed No. 2*  
*GOthic No. 31*

*Memphis*  
*Cairo*

**PROOFREADERS' MARKS**

Marginal sign	Mark in text	Meaning	Corrected text
3	Proofreading	Delete, take out letter or word	Proofreading
(e)	Legibility is the requirement of a proofreader's marks.	Delete and close up	Legibility is
o		Insert marginal addition	the first requirement
o		Close up entirely	of a proofreader's marks.
o	Symbols should be made neatly and	Less space	Symbols should be
		Push space down to avoid printing	made neatly and
#	in line with the text to which they refer.	Add space	in line with
eg. #		Space evenly	the text to which
¶	Place marks carefully.	New paragraph	they refer.
no ¶	Paragraphs may be	No new paragraph	Place marks carefully. Paragraphs may be



The readability of a page is affected by no less than 9 factors:

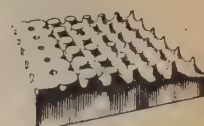
- (a) typeface,
- (b) size of type,
- (c) length of line,
- (d) leading,
- (e) page pattern (which includes "margins"),
- (f) contrast of type and paper (which includes color),
- (g) texture of paper,
- (h) typographic relationships (heads, folios, etc.), and
- (i) suitability to content.

Color has 3 aspects: (a) hue, (b) intensity, and (c) value.

Hue—This is the 'color' of the color (red, blue, yellow, green, orange-red, etc.).

Intensity—This is the purity of the color (intensity is lowered as the color is grayed or 'softened').

Value—This is the darkness of the color (even in pure primary colors there is variation in value—yellow is lighter than blue, blue is lighter than red, etc.); however, an intense yellow may be darker than a blue whose intensity [and value] has been lowered by the addition of white).



There are many considerations involved in matching printer to job, but the main ones are:

- (a) the kind of presses he has (letterpress, offset lithography, gravure),
- (b) the size presses he has,
- (c) the number of presses he has (this relates to capacity to produce),
- (d) the kind of work he has done,
- (e) the quality of his work,
- (f) his schedule, and
- (g) his prices.

**Wittenborn and Co.**

When it comes to buying books by mail I've had few times when it's been really necessary. Mostly they've been when I've been away from New York and I wanted the book NOW. If the book involved the visual arts and came from anywhere in the world, I've sent the price or its approximation to Wittenborn and presto! They have always responded immediately and more than satisfactorily. They're the kind of book store that has most of the staff mailing or typing—busy—not getting in your hair if you want to browse but always helpful. We've never been able to think of a book they haven't been able to help us with; they are always ready to refer you to someone else if they can't help out. They have always been a regular stop for information re-charge with us. Introducing new customers is always a charge: they get kind of watery knees as they begin browsing and suddenly bank accounts fail.

Wittenborn publishes free lists of recent arrivals on their shelves; they are mailed irregularly. They give a 10% "courtesy discount" with some arm twisting. They are the best source in the U. S. for back issues of art and architecture magazines from both the U. S. and most everywhere else. They also publish and/or distribute many small publications such as Ed Ruscha's Royal Road Test and large publications such as Tantra Art. In short, it's a book freak's heaven.

[Suggested and reviewed by ONYX]

Catalog

free

from:  
Wittenborn and Co.  
1018 Madison Avenue  
New York, N. Y. 10021

**Blackwell's Books, England**

Blackwell's Bookstore in Oxford, England, is a service which the Catalog should list. Their collection is probably the world's most comprehensive and they run a global service, providing lengthy, free, separate catalogs on about 25 subject areas, including children's books, books in other languages, science, literature, philosophy, religion, mathematics, etc. Their prices are significantly lower and they will not send a book which can be obtained more cheaply in America unless you so request. They will open an account for you, accept your personal check, and bill you semi-annually. They also buy up old libraries (occasionally famous ones, recently John Masefield's) and issue catalogs on second-hand books and first editions. They have a cable code BOOKS OXFORD and a code system for some catalogs which enables you to place an order with a minimum of cost in a hurry. The books arrive slowly but the catalogs keep coming in all year long and are a great delight themselves.

[Suggested and reviewed by Larry Schwartz]

Catalog

free  
**BLACKWELL'S**  
from:  
Broad Street, Oxford, England

**METHODS OF PAYMENT**

Orders and correspondence should, in every case, be sent direct to Oxford. The following addresses are for remittances only.

**U.S.A. and American Account Area:** by personal check in dollars (£1=\$2.40) sent to Blackwell's in Oxford; or to B.H. Blackwell, Ltd., P. O. Box 1452, Church Street Station, New York, New York 10008 (for their account with the Bankers Trust Co.).

**Canada:** by personal cheque in Canadian dollars (£=\$2.61) sent to Blackwell's, or to The Canadian Imperial Bank of Commerce, P. O. Box 6003, Montreal 3, P. Q., or by Bank Draft in sterling, or by Canadian Postal Money Order.

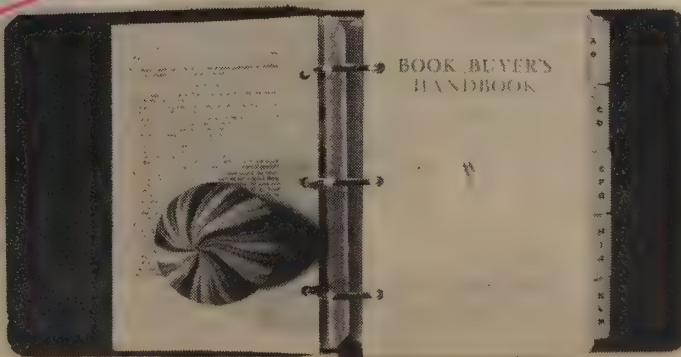
Prices given for Blackwell's in the WHOLE EARTH CATALOG do not include shipping.

**American Booksellers Association**

If you're thinking about retailing books, there's a service you should know about. For \$25 (first-year rate) you can join The American Booksellers Association (ABA) and get two very useful things. 1) The Book Buyer's Handbook, which lists all the publishers and all the necessary trade information—addresses, discounts, credit terms, returns policies, officers, etc. 2) Single Copy Order Forms, which facilitate orders for single books and get approximately the same discount you would expect for an order of five books. Among other things, the form makes it possible to have a book sent straight from the publisher to the customer.

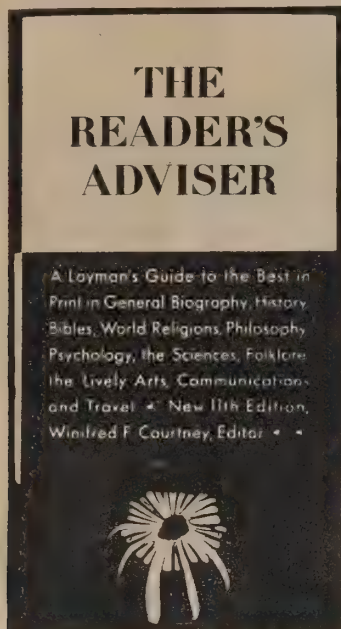
[Suggested by The Checkered Frog]

American Booksellers Association, Inc.  
175 Fifth Avenue  
New York, N. Y. 10010



★  
The Reader's Adviser (vol 2)

"A Layman's Guide to the Best in Print in General Biography, History, Bibles, World Religions, Philosophy, Psychology, the Sciences, Folklore, the Lively Arts, Communications and Travel." And, by God, it is. As access to quality, it beats college.



The Reader's Adviser (vol. 2)  
Winifred F. Courtney, Ed.  
1969; 912 pp.

\$15.95 postpaid

from:  
R. R. Bowker Co.  
1180 Avenue of the Americas  
New York, N. Y. 10036

or WHOLE EARTH CATALOG

THE KING JAMES VERSION is known as the Authorized Version, although, as a matter of fact, it was never authorized by the King. It was, however, initiated by him as the result of a Puritan complaint that the Coverdale Authorized Version, revised as the Bishops' Bible (1568), was not accurate. He appointed a group of scholars to undertake the task of fresh translation. Later editions had printed on their title pages, "Appointed to be read in the churches," which probably gave rise to the legend of authorization. The King James Version was made in 1607-11 during the lifetime of Shakespeare—the Golden Age of English literature. It was translated by 54 scholars and is the most famous English Bible.

Dwight Macdonald (like many who value the Bible as literature) regrets the fact that those who, with justice, have set out to correct this translation, have usually gone too far and bowdlerized great passages. For many the King James, with all its imperfections, can never be surpassed for poetry, religious feeling and majesty and loveliness of utterance. In "Against the American Grain" (*Random* 1952 Vintage Bks. pap. \$1.95) in his essay on the Revised Standard Version called "Updating the Bible," Mr. Macdonald writes: "The King James Version is probably the greatest translation ever made. It is certainly 'The Noblest Monument of English Prose,' as the late John Livingston Lowes called his essay on the subject. 'Its phraseology,' he wrote, 'has become part and parcel of our common tongue. . . . Its rhythms and cadences, its turns of speech, its familiar imagery, its very words are woven into the texture of our literature. . . . The English of the Bible . . . is characterized not merely by a homely vigor and pithiness of phrase but also by a singular nobility of diction and by a rhythmic quality which is, I think, unrivalled in its beauty.' . . . The speed with which it was accomplished was possible only because it was not so much a new translation as a synthesis of earlier efforts, the final form given to a continuous process of creation, the climax to the great century of English Bible translation."

Oxford University Press—The Oxford line of Bibles is the most extensive on the market. The Oxford Bible paper, used in their finer editions, is made by a secret process, and is the most opaque India paper made. Oxford prints mainly the King James Version, but has some Bibles in the Revised Standard Version. "Oxford—America's Gift Bible since 1675" is no idle advertising slogan.

*The Writings of William James: A Comprehensive Edition.* Ed. with introd. by John J. McDermott, including "Annotated Bibliography" of James' works. *Random* 1967 \$15.00; *Modern Library Giant* \$4.95

"The vast selection of pieces represents the diversity in James' thinking that most collections miss; there is a bibliography of James' writings, and a learned introduction that . . . provides a good account of James' ideas, particularly his changing ideas of consciousness."  
—(*New Republic*).

WALTON, IZAAK. 1593–1683.

*The Compleat Angler: or, The Contemplative Man's Recreation.* 1653–1676. *Dutton* Everyman's 1906 \$2.45; ed. by John Buchan *Oxford* 1914 *World's Classics* 1935 \$2.75

"The Compleat Angler," one of the most famous books in English, was written by a self-educated ironmonger. Walton wrote it for his own pleasure as well as that of others; it not only describes the technique of angling, but is a contemplative essay on the peace and quietude attained by the fisherman. After its first appearance in 1653 there were frequent revisions adding new material during the author's lifetime. George Saintsbury called Walton's style one of a "singular and golden simplicity." In spite of Walton's background he became recognized as a "gentleman" of cultured tastes and learning. An Anglican and Royalist, he was overjoyed with the Restoration. In his own time, Walton was known as a biographer, author of the "Lives of Donne and Herbert" (*Cambridge* \$3.90) and "Lives of John Donne, Sir Henry Wotton, Richard Hooker, George Herbert and Robert Sanderson" (*Oxford* \$2.75).

Kenneth Rexroth wrote a charming essay on "The Compleat Angler" in the *Saturday Review* of Sept. 16, 1967, which catches the secret of its enduring appeal—and that of its author shining through it: "Izaak Walton, above all other writers in English, owes his enormous popularity to his virtues as a man, and these virtues are what condition his style and give his work its fundamental meaning. Millions have read him with joy who have never caught a fish since childhood, if at all. Indeed, . . . in America at least, most of the kinds of fish he talks about are left to small boys. The second half of the *Compleat Angler* was added in late editions and written by Charles Cotton as a guide to trout fishing in rough water. Those who want to know how to catch fish can learn most from Cotton's additions. We read Izaak Walton for a special quality of soul . . . for his tone, for his perfect attunement to the quiet streams and flowered meadows and bosky hills of the Thames valley long ago. . . . It may sound outrageous to say that Izaak Walton wrote one of the Great Books—and that about catching fish—because he was a saint, but so it is. . . . He is, in fact, an unusual embodiment of a quietly powerful tradition, that of the contemplative laymen, St. Thomas More, Nicholas Ferrer, William Law, Gilbert White. After the eighteenth century this type is more commonly found in the sciences than in religion. And like Gilbert White's *Natural History and Antiquities of Selborne*, Walton's *The Compleat Angler* is, in a sense, a scientific work, an outstanding example of the piety of science."

Izaak Walton. By Margaret Bottrall. Pamphlet. *British Bk. Centre* pap. \$.75

The Art of "The Compleat Angler." By John R. Cooper. Professor Cooper teaches English and the humanities at the University of Chicago. *Duke Univ. Press* 1967 \$6.00

LAO-TZU (also Lao-tse or Lao-tze; orig. Li Erh). c. 604-531 B.C.

THE WISDOM OF LAO-TZU. Trans. by Lin Yu-tang. *Modern Library* 1948 \$3.45.

TAO TE CHING: THE BOOK OF THE WAY AND ITS VIRTUE. (With title "The Way of Life: Tao Te Ching") trans. by R. B. Blakney. *New Am. Lib.* 1955 pap. \$ .95

TAO TE CHING. Trans. by J. H. Wu St. *John's Univ. Press* \$2.00; trans. by D. C. Lau *Penguin* 1964 pap. \$.95

THE WAY OF LAO TZE. Trans. by Wing-tsit Chan. *Lib. Arts-Merrill* 1963 \$6.50 pap. \$1.95

THE WAY OF LAO. By Witter Byner. The poet's version of the reflections of Lao-Tzu. *John Day* 1944 \$2.50; *Putnam* 1963 *Capricorn* bk. pap. \$ .95

THE CANON OF REASON AND VIRTUE. (Tao Teh King.) Ed. by Paul Carus. *Chinese-English Open Court* rev. ed. \$2.00 pap. \$ .95; (with title "Tao Teh King: Interpreted as Nature and Intelligence") ed. by Archie J. Bahm *Ungar* 1958 \$3.75

CHUANG TZE, SELECTIONS. Trans. and ed. by Fung Yu-lan. *Paragon Reprint* \$6.00

TREATISE ON RESPONSE AND RETRIBUTION. (Tai-Shang Kan-Ying Pien.) Contains Chinese text and explanatory notes. Trans. by Daisetsu Teitaro Suzuki and Paul Carus, 1906; ed. by Paul Carus. *Open Court* 1944 \$1.50 pap. 1950 \$ .95

THE SAYINGS OF LAO TZE. Trans. with introd. by Lionel Giles. 1950. *Paragon Reprint* \$1.75

128.2 MAN'S MIND

ROSLANSKY, JOHN D. (ed.) *The Human Mind*. NY: Fleet, 1969. (c. 1967). 175 pp. \$6.95. 67-30304.

The proceedings of the third Nobel Conference is presented in this book. The contents include seven papers from a variety of viewpoints, ranging from pure science, "Biochemical Aspects of Learning and Memory" (H. Hyden) to "Christian Humanism and the Human Mind" (J. Gustafson). The majority of papers, however, are concerned with the biochemistry and biophysics of mental evolution, development and activity. While all are written at a high level, the lead paper by Sir John Eccles, "Evolution and the Conscious Self," provides an excellent introduction to the development of man's mental processes and should be readily understood by the most casual layman. The book is a series of specific papers representing the special interests of the writers, and does not in any sense present an overview of the current state of knowledge of the human mind. C-P ★

621.47 SOLAR ENERGY ENGINEERING.

HALACY, D. S., Jr. *Experiments With Solar Energy*. NY: Norton, 1969. 147 pp. illus. \$4.14. 69-18892.

*Experiments with Solar Energy* is a revised and updated version of the author's *Fun with the Sun* published in 1959. Being collateral reading, it might serve as a classroom or family science project manual. Directions are given on the selection of materials, approximate cost, the construction and operation of devices utilizing solar energy; solar furnaces; cardboard cooker; solar oven; water heater; solar still; radio; and a solar-powered airplane. Emphasis is placed on the utilization of solar energy in space vehicles and its potential use on lunar stations that offers opportunities to enterprising and imaginative young people. Its expanded usefulness on earth, particularly, in arid lands is not overlooked. The value of this updated volume is enhanced by the inclusion of clear diagrams and illustrative photographs, lists of firms engaged in solar-energy applications and a subject index. A more comprehensive bibliography would have been desirable. [See also *Solar Energy* by John Hoke; Watts, 1968; S/B 4(1) 59.] SH ★

★  
Science Books

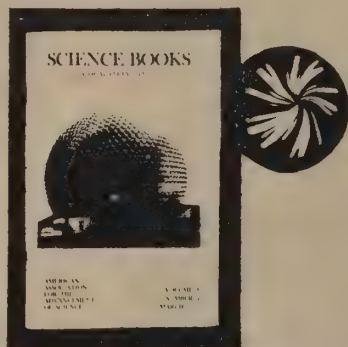
A quarterly published by American Association for the Advancement of Science (the people who publish Science). Most of the reviews are specific and quite nitty-gritty; if they don't like a book they often cite better books on the same subject. It reviews books right on down to kindergarten level; very helpful in locating non-anthropomorphic, factual, logical, and withal delightful books for young ones.

[Suggested and reviewed by John Lord]

Science Books

\$6.50 /yr., (quarterly)

from:  
Publications Department  
American Association for the Advancement  
of Science  
1515 Massachusetts Avenue N.W.  
Washington, D.C. 20005



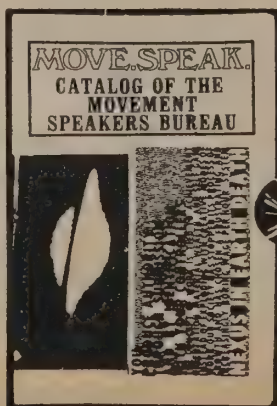
★  
Movement Speakers Bureau

Is an access to radicals catalog. A percentage of the speaker's fee goes to the Movement. (Why do I keep thinking of bowels.) Abbie Hoffman, Dr. Spock, Hugh Romney, Murray Bookchin, Paul Krassner, Noam Chomsky, Arthur Waskow, Tim Leary, Reies Tijerina, okay, okay.

Catalog

Free

from:  
Movement Speakers Bureau  
333 East 5th Street  
New York, N. Y. 10003



★  
Whole Earth Catalog

For a publication whose purpose is to egg on the conjuring and living of new forms, the Catalog is rather a traditional instrument, no more radical than Sears Roebuck or Consumer Reports, merely attuned to a new market, the sub-economy of dope and rock. A richer playground of bright ideas, and other voices, is the 4-times-a-year Supplement, now called \$1 Catalog.

Whole Earth Catalog

\$8 /yr: 2 big CATALOGS, 4 \$1 Catalogs (Jan, March, July, Sept.)

\$4 Fall 69 CATALOG, 128 pp.

\$3 Spring 70 CATALOG, 144 pp.

\$3 Fall 70 CATALOG, 144 pp. (November)



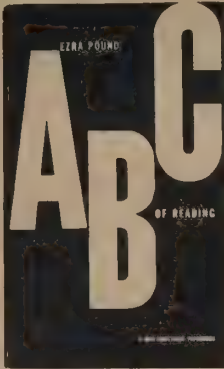
from:  
Whole Earth Catalog  
558 Santa Cruz Avenue  
Menlo Park, CA 94025

or WHOLE EARTH CATALOG

**ABC of Reading**

*In grade and high school I was taught how to hate Shakespeare, most novelists, and all poetry. College merely burnished my ignorance, adding the ability to hate in French. Ezra Pound, where were you when I needed you? Through Pound, literature becomes a place to revel, confirm, maybe even grow.*

[Suggested by Frank Deis]



ABC of Reading  
Ezra Pound  
1934; 206 pp.

\$1.60 postpaid

from:  
New Directions Publishing Corp.  
J. B. Lippincott Co.  
East Washington Square  
Philadelphia, PA 19105

or WHOLE EARTH CATALOG

It doesn't, in our contemporary world, so much matter where you begin the examination of a subject, so long as you keep on until you get round again to your starting-point.

Language is a means of communication. To charge language with meaning to the utmost possible degree, we have, as stated, the three chief means:

- I throwing the object (fixed or moving) on to the visual imagination.
- II inducing emotional correlations by the sound and rhythm of the speech.
- III inducing both of the effects by stimulating the associations (intellectual or emotional) that have remained in the receiver's consciousness in relation to the actual words or word groups employed.

(phanopoeia, melopoeia, logopoeia)

Incompetence will show in the use of too many words.

The reader's first and simplest test of an author will be to look for words that do not function; that contribute nothing to the meaning OR that distract from the MOST important factor of the meaning to factors of minor importance.

'Literature is news that STAYS news.'

The man who really knows can tell all that is transmissible in a very few words. The economic problem of the teacher (of violin or of language or of anything else) is how to string it out so as to be paid for more lessons.

Men do not understand BOOKS until they have had a certain amount of life. Or at any rate no man understands a deep book, until he has seen and lived at least part of its contents. The prejudice against books has grown from observing the stupidity of men who have *merely* read books.

Chaucer and Shakespeare have both an insuperable courage in tackling any, but absolutely any, thing that arouses their interest.

The sonnet was first the 'little tune', the first strophe of a canzone, the form found when some chap got so far and couldn't proceed. Steadily in the wake of the sonneteers came the dull poets.

**Culture is Our Business**

*McLuhan's best format. Each pair of pages has a reprint of an ad on the right, and fresh McLuhan aphorisms, quotes, and misquotes on the left. The resulting energy across the spread is economic and multi-directional—i.e. you make it. Pound's statement (above) about Chaucer and Shakespeare applies as well to McLuhan.*

*To me he is as valuable. His news stays news.*



Culture Is Our Business  
Marshall McLuhan  
1970; 336 pp.

\$10.00 postpaid

from:  
McGraw-Hill Book Co.  
Princeton Road  
Highstown, N. J. 08520  
Manchester Road  
Manchester, Mo. 63062  
8171 Redwood Highway  
Novato, CA 94947

or WHOLE EARTH CATALOG

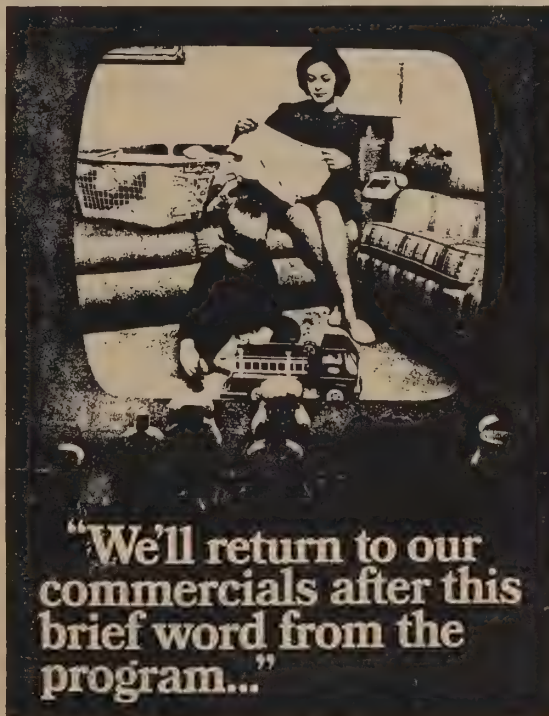
*Psychically, art is valuable only when new.*

**COMMERCIALLY, NEW ART IS KOOKY AND WORTHLESS.**

*The gap between the kooky and the commercially valuable is closing fast.*

**Invention is the mother of necessity.**

When the evolutionary process shifts from biology to software technology the body becomes the old hardware environment. The human body is now a probe, a laboratory for experiments. In the middle of the nineteenth century Claude Bernard was the first medical man to conceive of *le milieu interieur*. He saw the body, not as an outer object, but as an inner landscape, exactly as did the new painters and poets of the *avant garde*.



Maybe the world's oldest television joke isn't a joke any more. Are 30 program interruptions an hour on daytime television really funny? Suppose you're a housewife who's mentally 'tuned-out' because the interruptions have become annoying? And what if you're an advertiser, and one of those interruptions is your very persuasive, very expensive commercial? How persuasive can your message be if it's preceded by another commercial, and immediately followed by two more? And in light of the cut, how efficient? In the last five years, daytime television

rates have risen an estimated 92%. Production costs have soared, too. 140,000 to make one commercial isn't unusual. Television can be a highly effective advertising medium. No one will deny that. But the overcrowding, the clutter, has reached the point where its effectiveness and efficiency must now be questioned. You can't saturate a magazine. For one thing, magazines can print as many pages as they want. And they can increase their editorial content to maintain a good balance between editorial and advertising. And magazine ads don't intrude. People can read them when they feel like it. Come back to them. Tear them out. In fact, most people actually look forward

to seeing ads in magazines. Every month, for example, almost 13 million adult women look forward to seeing your advertising in Good Housekeeping. What's more, they're predisposed to believe it. Our believability, combined with our rather impressive statistics, has created a number of thoughtful businessmen to consider a better balanced media mix. With Good Housekeeping as a prime ingredient. We now return you to your morning newspaper.

Good Housekeeping

**GOING, GOING, GONG**



*If nature didn't, Warner's will.*

Our stretch-banded Young Thing™ bra will do it for \$5. Our Young Thing girdle will do it for \$9. Warner's

*Ads are the cave art of the twentieth century. While the Twenties talked about the caveman, and people thrilled to the art of the Altamira caves, they ignored (as we do now) the hidden environment of magical forms which we call "ads." Like cave paintings, ads are not intended to be looked at or seen, but rather to exert influence at a distance, as though by ESP. Like cave paintings, they are not means of private but of corporate expression. They are vortices of collective power, masks of energy invented by new tribal man.*

*Today, through ads, a child takes in all the times and places of the world "with his mother's TV." He is gray at three. By twelve he is a confirmed Peter Pan, fully aware of the follies of adults and adult life in general. These could be called Spock's Spooks, who now peer at us from every quarter of our world.*

NBC and CBS could easily become the political "parties" of the future, just as the New York Central and the Pennsylvania railroads were once the political parties of the nineteenth century.

Poets and artists live on frontiers. They have no feedback, only feedforward. They have no identities. They are probes.

"Wiretapping," quoth the raven, "is a threat to identity. Why not beat 'em to the wire? Get rid of your identity now."

# Community

## Foods by Mail

Sources for foods that are not treated with DDT, fumigants, etc. Most of these outfits are family affairs, and dedicated to supplying customers with real foods, mostly by mail.

### Wheat

Deaf Smith County, Texas is a mineral-rich area that produces wheat with high amounts of protein—the best wheat available. 50 lbs: \$3.75 plus postage.

From:  
Arrowhead Mills, Inc.  
Box 866  
Hereford, Texas 79045

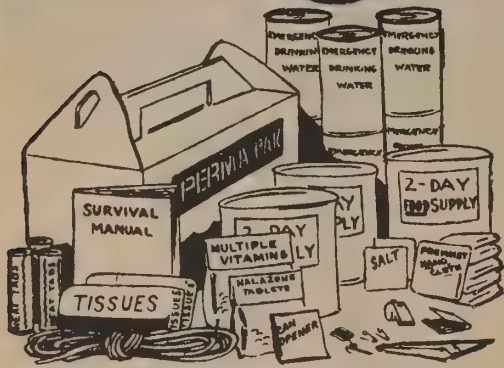
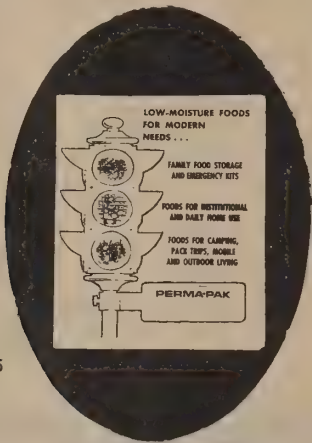
### Perma-Pak

The best source we've seen for storeable foods is this outfit in Utah which caters to keep-a-year's-supply Mormons. The prices look remarkably good on a wide range of stuff from brown rice (\$14.95/100 lbs) to crispy chips of spun vegetable protein (\$44.95/25 lbs). They have a "Year's Food Supply" deal for \$169.95 postpaid (360 lbs). We're carrying two of their smaller food kits (below) to see what it's like.

[Suggested by Gary Snyder]

### Catalog free

from:  
Perma-Pak  
40 East 2430 South  
Salt Lake City, Utah 84115



Food for one for 6 days. No cooking. Freezing does not harm. Emergency survival kit including yukon biscuits, tropical chocolate, energy tablets, pemmican, halazone, vitamins, canned water, heat tabs, nylon rope, whistle, fish hooks, etc.

Karry Kit \$8.50 postpaid  
from WHOLE EARTH CATALOG



3 days of balanced rations. No cooking. Ties around waist or over shoulder. Add water to prepare.

Chow Belt \$3.95 postpaid  
from WHOLE EARTH CATALOG

New England source of natural foods.

Brochure from:  
Erewhon Trading Company, Inc.  
342 Newbury Street  
Boston, Mass. 02115  
or  
8003 Beverly Boulevard  
Los Angeles, CA 90048

### List of 325 Natural Food Sources

Organic Gardening Magazine has compiled a list of organic food suppliers throughout the U. S. Includes fresh and frozen vegetables, fruits, grains, etc. For 1969-70.

\$1.00 postpaid

from:  
Shopping Guide  
Rodale Press  
Emmaus, PA 18049

★  
Loan Library

You can borrow nutrition books for two weeks for the cost of postage from:

Mildred Hatch  
8 Pine Street  
Johnsbury, VT

### New Age Natural Foods

Headed by Fred Rohe, this is now San Francisco's largest natural food store. Their first mail order catalog is now available.

Catalog from:  
New Age Natural Foods  
1326 Ninth Avenue  
San Francisco, CA 94122



### El Molino

Has wide selection (catalog free) and good \$1 cookbook.

El Molino Mills  
3060 W. Valley Blvd.  
Alhambra, CA 91803

### The Food Mill

Large stocks of bulk foods. Gallons of avocado honey, fresh peanut butter.

Leaflet from:  
The Food Mill  
3033 MacArthur Blvd.  
Oakland, CA



### Walnut Acres

Best, most reputable source in U.S. Foods like you've never tasted: unrefined corn germ oil, 40 lb. tubs of peanut butter, wrinkled rye cereal. If you order with friends, bulk orders are economical.

Brochure from:  
Walnut Acres Mill & Store  
Penns Creek, Penna. 17862

### Lee Electric Flour Mills

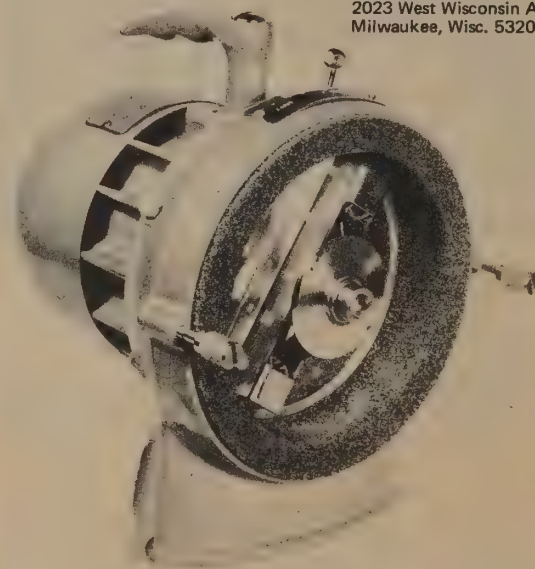
The best bread is made from wheat ground just before baking.

This is a small electric grain grinder manufactured by an old dependable company. A unique feature of this machine is that it grinds the entire grain kernel, including the germ and bran, into fine flour. (Other mills generally discard the germ). You fill the hopper and an automatic feed admits the proper amount of grain into the stone grinding chamber. The carborundum grinding stone never needs redressing, the mill does not get warm enough to impair the nutritional value of the flour, and fresh stone ground flour...pass the bread!

[Suggested and reviewed by Lloyd Kahn]

### Catalog free

from:  
Lee Engineering Co.  
2023 West Wisconsin Ave.  
Milwaukee, Wisc. 53201



MODEL	MOTOR SIZE	OUTPUT PER HOUR		PRICE
		FINE FLOUR	COARSE MEAL	
500	1/6 H.P.	3 TO 5 LBS.	NOT ADJUSTABLE	\$ 95.00
600	1/6 H.P.	3 TO 5 LBS.	20 TO 25 LBS.	\$125.00
S-500	1/4 H.P.	6 TO 10 LBS.	NOT ADJUSTABLE	\$145.00
S-600	1/4 H.P.	6 TO 10 LBS.	40 TO 45 LBS.	\$170.00

Operating Voltage\* 115 AC-DC  
Current Draw 3.0 amperes  
Overall Height 20 inches  
Shipping Weight 20 pounds

### Flours

	25	50	100
*BLENDED BREAD FLOUR	4.24	8.11	15.20
*BREAD FLOUR	4.41	8.47	15.86
*BREAD FLOUR, Unbleached			
White	4.89	9.28	18.41
CAROB FLOUR, Toasted	15.36	30.50	60.10
CAROB FLOUR, Raw	5.09	9.40	17.85
*CORN FLOUR, Yellow	5.09	9.40	17.85
*CORN MEAL, Yellow	4.41	8.47	15.86
CORNELL BREAD FLOUR	4.41	8.47	15.86
GLUTEN FLOUR	10.03	19.09	37.90
*GRAHAM FLOUR	4.05	7.81	14.53
*MUFFIN MEAL	4.05	7.81	14.53
*RYE FLOUR	3.87	7.45	13.86
*RYE MEAL	3.70	7.15	13.30
SOYA CAROB FLOUR	10.30	19.09	37.90
*SOYBEAN FLOUR	6.33	11.85	23.17
*WHEAT FLOUR,			
Deaf Smith	5.12	9.75	18.52
*WHEAT FLOUR,			
Whole, all purpose	3.87	7.45	13.86
*WHEAT FLOUR, Unbleached			
white all purpose	4.41	8.47	15.86

### Corona Hand Mill

From all we can gather, this is the best of the hand mills for grains, etc. With two grindings you get not bad flour.



### Corona Hand Mill

\$12.75 postpaid (\$10.00 in the store) or \$10.95 postpaid

from:  
WHOLE EARTH CATALOG  
558 Santa Cruz Avenue  
Menlo Park, CA 94025

from:  
Smithfield Implement Co.  
99 N. Mark Street  
Smithfield, Utah 84335

**oy of Cooking**

le Davis and Ohsawa to the contrary, I'm the school that dietary schemes are out-  
nt paranoia. A healthy mind insures a  
althy body & vice versa; and what's needed  
re than special diets are common sense and  
od cooking. No food badly prepared is  
od for you. If you simply insure that all  
e eat is fresh, unpoisoned, and well prepared,  
e vitamins and proteins will take care of  
emselves. Rombauer's Joy of Cooking is  
e American bible of food & is essential in  
y household where food is enjoyed. Not  
ly are her recipes enjoyable, but she goes  
to the basic structure of food & food  
eparation techniques that give the novice a  
od idea of what's happening in the kitchen.

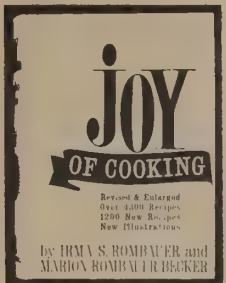
[Reviewed by Johan Mathiesen.  
Suggested by Charlotte A. Wolter.]

oy of Cooking from:  
rma S. Rombauer, Bobbs-Merrill Co., Inc.  
Marion Rombauer Becker, 4300 West 62nd Street  
1931 . . . 1967; 849 pp. Indianapolis, Ind. 46206

\$6.95 postpaid or WHOLE EARTH CATALOG

Certain vegetables and fruits should not be stored together. Apples give off an ethylene gas that makes carrots bitter, for example, and onions hasten the spoilage of potatoes. Watch for other such relationships. Do not wash vegetables until you are ready to use them and then do not soak them, except as indicated, because moisture tends to leach away the water-soluble vitamins.

If you are willing to cut down on refined starch and sugar items, especially fancy baked goods, bottled drinks and candies, a higher percentage of the diet dollar will be released for dairy products, vegetables and fruits. Do not buy more perishable foods than you can properly store. Use leftovers cold, preferably. To reheat them with minimal loss, see page 139.



**The Impoverished Students' Book of Cookery, Drinkery, & Housekeeping**

A brief intelligent introduction to cheap food preparation.

[Suggested by Derek Shearer]

**What to Do with Left-Over Bread**

Never throw out any dry, left-over bread. Slice it, dip it in a mixture of egg-milk-sugar-vanilla-and a dash-of-salt, fry it in butter and you have French Toast. Cube it, sprinkle with melted butter and garlic salt, brown it under the broiler, and you have Croutons. Roll or grind it into crumbs, put them in a plastic bag, and refrigerate, and you'll never have to buy bread-crumbs. Or just use it dry as a doorstep.



**The Impoverished Students' Book of Cookery, Drinkery and Housekeeping**

Jay F. Rosenberg  
1965; 48 pp.

\$1.50 postpaid

from:  
Doubleday & Co.  
501 Franklin Avenue  
Garden City, Long Island, NY 11531

or WHOLE EARTH CATALOG

**Fannie Farmer Cookbook**

annie Farmer is considered by many to surpass Joy of Cooking in the quality of its recipes. It's not quite as comprehensive. It is printed in paperback.

[Suggested by Cappy McClure and Lois Brand]



**Fannie Farmer Cookbook**

96 . . . 1965; 648 pp.

1.25 postpaid from:

Bantam Books, Inc.  
271 Madison Avenue  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

**POTATO PANCAKES**

Grate and drain  
3 medium-sized raw potatoes  
Add  
1 tablespoon flour or 2 table-  
spoons dry bread crumbs  
1 tablespoon cream, sweet or  
sour  
1 egg, beaten light  
1 teaspoon salt  
Grated onion or onion salt to  
taste  
Stir well. Cook by spoonfuls in  
Hot bacon or other fat  
turning once. Or cook in one  
big pancake. Serve with meats,  
with  
Applesauce, cranberry sauce or  
sour cream  
to spoon over the pancakes.  
Serves 4 or 5.

**POPOVERS**

A perfect popover is crisp on the outside, tender and moist inside. The secret of success is simple—do not overbeat the batter, and be sure the popovers are thoroughly baked when you take them from the oven. Test one to be sure.

Set the oven at 450°. Butter muffin pans or glass or pottery custard cups. Beat until light

2 eggs  
Add  
1 cup milk  
1 tablespoon melted butter  
1 cup all-purpose flour  
¼ teaspoon salt  
Beat until evenly blended (30 seconds in an electric beater). The batter should be like heavy cream. Add more milk if necessary. Pour into the pans, having them ¼ full. Bake 20 minutes. Reduce the heat to 350° and bake about 20 minutes longer. Makes 8 to 12.

**Bacon Popovers.** Add to the batter ¼ cup crumbled cooked, crisp bacon.

**The Soybean Cookbook**

This cookbook is listed because too many vegetarians I know are looking too unhealthy. It's particularly poignant when said vegetarian is pregnant and brain-starving the child. Soybeans are extra rich in protein; they're cheap, and not hard to grow. Now would some professional nutritionist let us know if they flat-out replace animal protein? Steve Durkee got laid up for a month last summer because of too little protein in the diet at Lama. They're on vegetable protein now. Is it working, Steve?

Soybeans rank as one of the five great protein foods. The beans are unique in nutritional value because of their high percentage of protein and oil. Not only is the protein high in quantity but it is of good quality, being practically the same in food value as animal protein (meat, milk, fish, and eggs). Chemical analysis shows that soybeans contain in nearly maximum proportions the amino acids essential in the diet of men and animals. This means that soybeans are sufficiently complete to sustain life for an extended period of time. They are the best source of protein from the vegetable kingdom, and can honestly claim the title of "the meat that grows on vines."

Soybeans are an excellent means of making a low-cost diet nutritionally safe. They are one of our cheapest sources of nutritious protein. A few cents' worth of dry beans will serve four to six persons and give them the food value of greater quantities of meat or fish. Soy flour or grits, at the cost of a few cents, can step up the protein content of a dish to equal the more expensive animal protein foods.

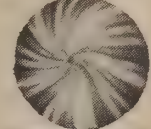
**The Soybean Cookbook**

Dorothea Van Gundy Jones  
1963; 240 pp.

\$1.45 postpaid

from:  
Arc Books  
219 Park Avenue South  
New York, N. Y. 10003

or WHOLE EARTH CATALOG



**Quantity Recipes**

in a commune I lived in in New Mexico we had two major problems: food and sex. This book will go a long way to helping you solve the first. What a drag to take down the Joy of Cooking, find something really groovy to fix for yourself and friends and have to spend a half an hour multiplying all the ingredients by seven or eight knowing that you couldn't possibly need a cup of oregano in the pile, but that's what your figures say. We ate some pretty wild experiments and several of the women and men shied away forever from anything but the lettuce salads. Enormous amounts of food take a certain skill or they become enormous amounts of glp.

This book starts off with the assumption that you need advice in measurement adjustment and conversion, that you don't know anything about quantity size utensils, that you never needed fifty servings of tapioca pudding. How many people have, before moving into a commune?

The orientation is basically institutional but a lot of that kind of procedure and method is right at home in a commune in a family serving type situation. The most important thing the book does is show the cook that it's done all the time.

In my opinion the recipes are basic, that is, I would add here and there seasonings, etc. to make the food special, new, hopefully an experience and not just another meal. Like all cookbooks this finally becomes a guide rather than a road but it will show you a road and act as a guide until the process becomes intuitive. Also, after a few weeks, or months, joking creatively can get a bit strained. Cookbooks will pull you through with the advantage of this one already being adjusted for a large group. One of the best dollar tools a community could buy.

[Reviewed by Steve Katona]

While you're at it, get their free catalog of Bulletins, which lists innumerable titles on food, kitchens, shopping, clothes, flowers, etc., at low cost.

[Suggested by Roger Knights]



**Quantity Recipes**

Marion A. Wood, Katharine W. Harris  
1945, 1966; 233 pp.

\$1.00 postpaid

from:  
Cornell Home Economics Extension  
New York State College of Human Ecology  
Mailing Room  
Building 7, Research Park  
Cornell University  
Ithaca, N. Y. 14850

Another means of decreasing the cost of a recipe is by extending the more expensive items with cheaper ones. Meat stew is used as an example:

**MEAT AND VEGETABLE STEW**

Yield: 50 servings		Yield: 50 servings	
3 servings per pound of meat	Price per unit	5 servings per pound of meat	Price per unit
15 pounds beef . . . . .	\$10.65	10 pounds beef . . . . .	\$7.10
1 cup onions . . . . .	.01	1 cup onions . . . . .	.01
2 quarts carrots . . . . .	.14	0.06/pound 3 quarts carrots . . . . .	.21
2 quarts potatoes . . . . .	.12	0.04/pound 3 quarts potatoes . . . . .	.18
1 quart celery rings . . . . .	.09	0.13/bunch 1½ quarts celery rings . . . . .	.14
1½ quarts (2½ pounds) peas, frozen . . . . .	.45	0.18/pound 2½ quarts (4 pounds) peas, frozen . . . . .	.72
Total cost . . . . . \$11.46		Total cost . . . . . \$8.36	
Cost per serving \$0.23 (\$11.46 ÷ 50)		Cost per serving \$0.167 (\$8.36 ÷ 50)	

The cost of left-over foods used in recipes should be included when figuring costs. Average serving size and cost of serving, 1966, are given in the appendix.

**FRUIT BROWN BETTY**

Yield: 50 servings Size of serving: ½ cup  
10 pounds prepared fruit\*  
2 quarts crumbs  
1 teaspoon cinnamon  
1½ teaspoon nutmeg  
1½ pounds (¾ cups) sugar, brown  
2 quarts fruit juice and/or water  
¼ cup lemon juice†  
½ cup butter or fortified margarine

1. Prepare the fruit and the crumbs.
2. Combine the spices, sugar, fruit juice, and lemon juice. Arrange the crumbs and sliced fruit in layers in greased baking pans. Begin and end with crumbs. Over each layer pour some of the above mixture.
3. Place dots of butter over the top layer. Bake at 350° F. for one hour. Add more water or fruit juice if mixture seems too dry.

Garnish with:  
Whipped cream or lemon or other fruit sauce or hard sauce

\*Fresh, canned, frozen, or dried (stewed) apples, peaches, apricots, or plums may be used.

**Paprikás Weiss Gourmet Shop**

If a bunch of people are eating out of one kitchen where you are, it may be worthwhile to treat yourself to some gourmet equipment. Whether your scene is a logging camp, movie company, revolutionary cell, or country commune, the best way to attract and keep good people is with outstanding food.

[Suggested by Lank Felsen]

Catalog

\$ .25 postpaid

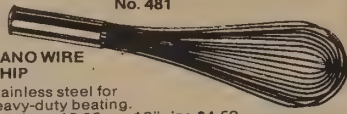
from:  
Paprikás Weiss Importer  
1546 Second Avenue  
New York, N. Y. 10028



**POT STRAINER**  
No. 5220  
Chrome plated, black plastic handle. \$1.59



**DOUBLE-BLADED CHOPPER**  
No. 391  
Two blades make the job twice as fast!  
Stainless steel with easy-grip metal handle. \$2.98 each



**PIANO WIRE WHIP**  
No. 481  
Stainless steel for heavy-duty beating. 12" size \$4.59  
14" size \$4.98



**FRENCH STYLE INSTA-BREWER MAKES REAL COFFEE IN 30 SECONDS**

Measure in coffee. Pour in boiling water. Insert pressure plunger. Let stand from 30 seconds to 2 full minutes, depending on desired strength. Push plunger to bottom and pour. It's as easy as that with the Insta-Brewer. Made of heatproof Corning glass with stainless steel working parts, it also makes superior tea, can be used as a martini pitcher. 1 to 6 cups. \$13.98 each

No. 201

**HOW TO GET A CHERRY STONED!**

**AMAZING CHERRY STONER PITS EVERY CHERRY ON AN ASSEMBLY LINE BASIS**



No. 500

It looks like a Rube Goldberg contraption and operates with the efficiency of a push-button machine. All you do is fill the hopper with cherries and turn the crank. The stone rolls out the end and the pitted fruit pops out from the center. Cherries are never bruised. And not a single pit is missed. Heavily-tinned metal won't rust. \$12.98 each

**The Venison Book**

In my experience, getting the deer is the easiest part, if most written about. The rest of the action—*butchering, storing, cooking*—is the subject of this economical little book.

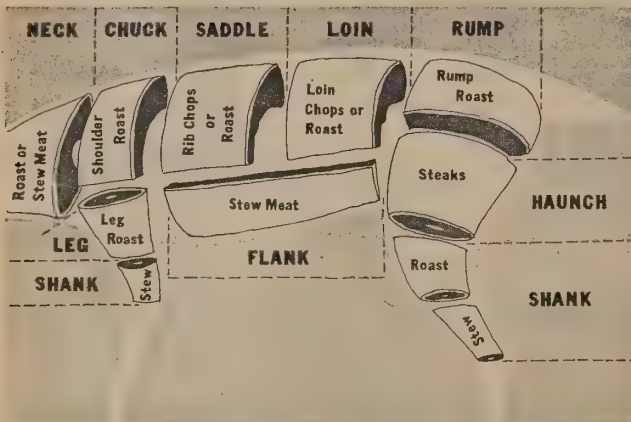
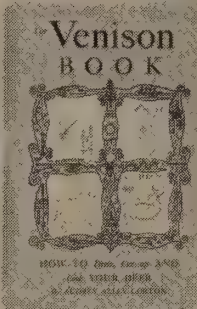
[Suggested by Barbara Kirschenblatt-Gimblett]

**The Venison Book**  
Audrey Alley Gorton  
1957; 78 pp.

\$1.95 postpaid

from:  
The Stephen Greene Press  
120 Main Street  
Burlington, Vt. 05301

or WHOLE EARTH CATALOG



One of the first things some hunters feel obliged to do is to stab or slit the throat to bleed the carcass. This is called "sticking." Consensus among people who have experimented is that this process is entirely unnecessary, and, in certain instances, definitely detrimental.

You can use any cut of meat to make "jerky." If you are just trying it on for size, though, you won't be wasting superior meat if you cut your strips from the flank.

Cut the meat with the grain into strips 1 inch wide and 1/2-inch thick. Make them any length you can. Prepare a brine of 6 quarts of water to 2 pounds of salt (the brine should be salty enough to float an egg in its shell). Soak the strips for 2 days in the brine. Remove and wipe dry. Hang the strips of meat in the sun to dry; they may be pinned to the clothesline with spring clips. When they are dry they may be smoked or simply stored as is, in an airy place well protected with netting.

**Gourmet Cooking for Free**

What to do with your beavertail, moosenose, wild strawberries, fiddleheads, mussels, crayfish, and other non-supermarket provender.

**Gourmet Cooking for Free**  
Bradford Angier  
1970; 190 pp.

\$4.95 postpaid

from:  
Stackpole Books  
Cameron & Kelker Streets  
Harrisburg, PA 17105

or WHOLE EARTH CATALOG



**GRILLED TROUT**

The smaller the trout or other fish, the hotter the grill should be. If the fish breaks or sticks when you turn it or take it up, then odds are that you didn't let the metal get hot enough at the onset. Too, grease the grill well at the start.

Either salt the inside and outside of the trout up to an hour before broiling, or sprinkle the inside with freshly ground black pepper and lemon juice just before it goes on the heat. Whole fish may be split or not, depending on the size and on your preferences. Even when the fish has a thick skin well cushioned with fat, brushing frequently with melted butter will add to the flavor. Once the translucency of the flesh has clouded to opaqueness, the fish will be ready for serving.

Paprika butter melted over grilled trout enhances both appearance and flavor. This can be easily prepared beforehand by melting in a skillet, proportionately, a tablespoon of butter, mixing in 1/2 teaspoon of powdered onion, and cooking over low heat until golden, constantly stirring. Allow this to cool, cream with a teaspoon of paprika and butter, shape into about 1-teaspoon portions and relegate to the refrigerator.

**FRIED MUSSELS**

Mussels, widely available in both fresh and salt water, afford considerably more food than a similar amount of clams or oysters because their shells are so thin. One of the tenderest and most delicate of shellfish, mussels can be deliciously cooked in all the ways oysters and clams are prepared. If you live along the California coast, though, be sure to avoid them when they are quarantined from May to October because of their eating a plankton poisonous to humans during that period.

All you have to do to prepare mussels is scrub them well, preferably with a wire brush and either pull off the beard (the stringy piece connected to the inside of the shell by which they cling to rocks), or cut it off with the point of a small, sharp knife. Don't use any that stay opened when handled. Incidentally, if you steam your mussels and any have remained closed, discard these without opening them, as the shells will be filled with mud.

For temptingly fried mussels, briefly steam them with a small amount of water in a covered pot until they open. Then discard all black parts, and if you haven't already bearded them, do this now. Dip in beaten egg. Then roll in either fine cracker or bread crumbs that have been salted and prepared to taste. Fry very lightly in butter until a creamy golden yellow.

**SEA MOSS BLANCMANGE**

The seaweed called Irish moss (*Chondrus*), common along the Atlantic shores of Canada and the United States where it can be gathered at low tide, cooks up into a delicate blancmange which is so digestible that many drug stores stock it for invalid diets. You can harvest this moss at any season, wash it well in fresh water, and then dry it for future use. Spread out in the sun, it bleaches a pearly white.

When ready to cook, soak 1/2 cup of this iodine-rich marine alga, also called carrageen moss, for 20 minutes in enough cold water to cover it. Then drain and pick out any discolored bits. Add what is left to a quart of milk in the top of a double boiler. Cook over boiling water for 30 minutes. Then strain the milk.

Stir 1/4 cup sugar, a teaspoon vanilla, and 1/4 teaspoon salt into the strained milk. Turn into cups or molds that have been immersed in cold water, chill in the refrigerator until firm, and then serve with cream and sugar. A topping of wild strawberries really sets these off.

**Composition of Foods**

Since natural food does not come with a list of ingredients on the label, the Department of Agriculture has kindly prepared this authoritative analysis of everything edible. If you're serious about nutrition, it's a buy.

[Suggested by Tassajara Zen Center]

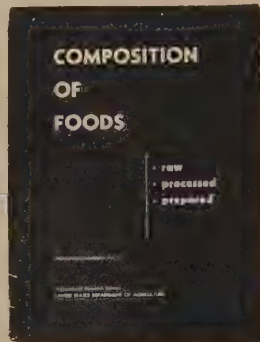
**Composition of Foods**

Bernice K. Watt and Annabel L. Merrill  
1963; 190 pp.

\$1.50 postpaid

from:  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, D. C. 20402

or WHOLE EARTH CATALOG



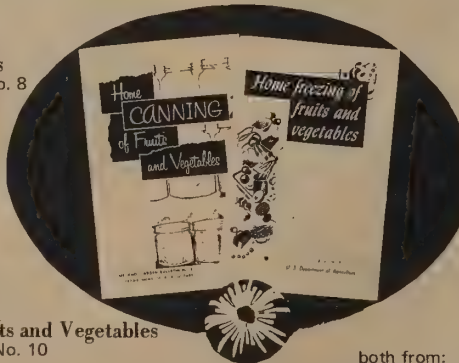
**Home Canning of Fruits and Vegetables**

You can buy a book on this subject for \$5, or you can get these perfectly adequate Government booklets at 20¢ apiece.

**Home Canning of Fruits and Vegetables**

Home & Garden Bulletin No. 8  
1965, 1969; 31 pp.

\$ .20 postpaid



**Home Freezing of Fruits and Vegetables**

Home & Garden Bulletin No. 10  
1965, 1969; 47 pp.

\$ .20 postpaid



Peaches can be peeled easily if they are dipped in boiling water, then in cold water.

both from:  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, D. C. 20402

**NUTRIENTS IN THE EDIBLE PORTION OF 1 POUND OF FOOD AS PURCHASED**

Food and description	Refuse Percent	Food energy Calories	Protein Grams	Fat Grams	Carbohydrate Total Grams	Calcium Mg.	Phosphorus Mg.	Iron Mg.	Sodium Mg.	Potassium Mg.	Vitamin A value Int'l Units	Thiamine Mg.	Ribo-flavin Mg.	Niacin Mg.	Ascorbic Acid Mg.
Cake mixes and cakes baked from mixes—continued															
Marble:															
Mix, dry form	0	1,928	22.2	61.2	342.9	590	1,225	4.5	1,728	853	Trace	0.13	0.41	2.0	Trace
Cake, made with eggs, water, boiled white icing	0	1,501	20.0	39.5	281.2	354	776	3.6	1,175	553	410	0.10	0.38	1.0	Trace

**Winemaking**

At some time in everyone's life he's collected together raisins, sugar and baker's yeast in a gallon wine jug and eagerly awaited the product. More often than not this resulted in an overly sweet, low power, cloudy "amber brew" that discouraged him from further efforts at wine making. Amateur wine making though long practiced is only slowly evolving from the "word of mouth" phase. These two British books are the best that I've seen; however, one does not learn wine making by reading books—he learns good habits and a feel for the techniques of wine making. From there on it is a matter of how much imagination one has, since amateur wine makers have made many delightful wines out of the most unlikely ingredients (Flowers, potatoes, parsnips, rose hips, rhubarb, etc.). Bravery's book (*Successful Winemaking at Home*) is scientific and meticulous with details. He says all wine recipes in his book have been tested personally and are of excellent quality if you follow his general rules for making good wine—and I believe him. However, they are for single (Imperial) gallons (5 quarts) which I feel hardly makes it worth the trouble unless it is a very special recipe. Five gallon spring water bottles are more convenient sizes for tested recipes and thirsty friends.

Berry's book (*First Steps in Winemaking*) is worth while because he has many photos and diagrams of apparatus which I feel is essential to one's initial concept of the process. He has a lot of "hints" and so forth, many of which are sound, but if there's a discrepancy I would stick to Bravery's interpretation. Both books and many others not mentioned have recipes which should get you started. Wines can be made all year if you are willing to experiment.

A few things to remember: Read the principles of wine making carefully; wine and yeast are gentle things and they have to be cared for. Wine yeast is very important and well worth purchasing from dealers. (If you have an idea of sterile transfer techniques and the knowledge that it only takes one little yeast cell you can devise ways of making one commercial culture of yeast grow two years worth of wine.) Equipment can be expensive at specialty stores but wine is easily made in 10-20 gallon polyethylene garbage cans, "clipped" five gallon water bottles (at 1.50 per) at spring water dealers, fermentation locks of the plastic variety, a J shaped siphon to avoid "racking the lees. Temperature is very critical and I recommend a thermostatically controlled heater or room or perhaps an immersible fish tank heater. Tap water has yeast killing chlorine in it: to remove it boiling is probably the easiest, tho if you're doing 20 gallons it can become tedious—chlorine will escape if left to the air for a day or so. Add Sodium Bisulfite (Sodium metabisulfite & Campden to the British); it is an inhibitor to all wild yeasts and many bacteria, but wine yeasts are resistant to it, so you encourage your special yeast's growth and avoid spoilers. It also allows you to avoid heating to sterilize the whole batch. A stronger solution can be used very nicely for sterilizing clean bottles, etc., without affecting the taste of the wine. Lastly one should call the Feds and register (it's free) and avoid a possible hassle.

[Reviewed by Dr. James Fox. Suggested by Tom Wellman]

Below are several catalogues—1 & 2 have good reputations . . . the others I've no experience with.

1. Aetna Bottle Co., Inc., 708 Rainier Avenue South, Seattle, WA 98144 [Suggested by Duane Matterson]
2. The Wyne Table, Box 490, Norman, Oklahoma 73069
3. Wine Art of America, 4324 Geary Blvd., San Francisco, CA
4. Semplex of USA, Box 12276, Minneapolis, Minn. 55412 [Suggested by Tom Wellman]
5. the baccharialia, 321 Saugatuck Station, Westport, Conn. 06880 [Suggested by Patrick N. Baker]
6. E. S. Kraus, P. O. Box 451, Nevada, Mo. 64772

More on Semplex (No. 4 in list)

Everything for anybody into his own wine, or thinking about it. Homemade wine is good, cheap; fun to make and drink.

Semplex of USA is the American agent for a very good English firm. Most of their material is imported (nobody in the USA makes it) and expensive compared to English prices, but cheaper than available anywhere else I've found. Their service is excellent and personal.

They supply everything from pure strains of wine yeast (cheap and really necessary for good wine) to chemicals and incidentals for the more advanced freak. They also carry an excellent stock of books on winemaking from England, Germany and the USA. (I recommend "First Steps in Winemaking" by C. J. J. Berry, \$1.95)

Anyone can easily make a really good (not merely a non-poisonous) wine for about \$1.40 a gallon.

[Reviewed by Tom Wellman]

**MONTRACHET WINE YEAST:**

A new product put out by a large company which supplies many commercial wineries. It is in active dry granulated form and is sealed in a foil envelope under inert nitrogen gas to increase its shelf life. It is a high quality product and each envelope is adequate for 5 gallons of must. Can be used for any type of wine and is very simple to use because it can be added directly to the must without prior starting.

Per packet . . . 39¢ 3 for \$1.00

Semplex of USA

Many old recipes advocate far too much sugar, with the result that the winemaker is disappointed when the yeast fails to use most of it up, and he is left with a syrupy, almost undrinkable concoction.

As a good rule of thumb, remember the figure 3—3 lbs. to the gallon of liquor for a medium wine. Half a pound less will usually produce a dry wine, half a pound more a sweet. Below 2 lbs. of sugar to the gallon the wine may not be strong enough to keep, above 3½ it may well (although not always) be sickly sweet.



**First Steps in Winemaking**

C. J. J. Berry  
1960; 160 pp.

\$1.95 postpaid

from:  
Semplex of USA  
Box 12276  
Minneapolis, Minn. 55412

or WHOLE EARTH CATALOG

**Rose Hip Wine**

One of the finest of all home-made wines; its flavour is unique and it has body and bouquet that take a lot of matching. Rose hips abound in early autumn and it matters not whether they are gathered from your own rose trees or from the hedgerows. They should not be used until they have taken on their winter coat of red or orange according to the type.

4 lb. rose hips, 3 lb. sugar, 1 gal. water, 1 oz. yeast.

Wash the hips well in half a gallon of water in which one Campden tablet has been dissolved. Crush the hips with a mallet or chop them. Put them in the fermenting vessel and pour on half a gallon of boiling water. Boil half the sugar in a quart of water for two minutes and when cooled a little add to the rest. Add the yeast and ferment the pulp for seven days.

Then strain out the solids and put the strained liquor into a gallon jar. Boil the rest of the sugar in the remaining water for two minutes and allow to cool well before adding to the rest. Cover as directed or fit fermentation lock and leave to ferment in a warm place until all fermentation has ceased.

**Successful Wine Making at Home**

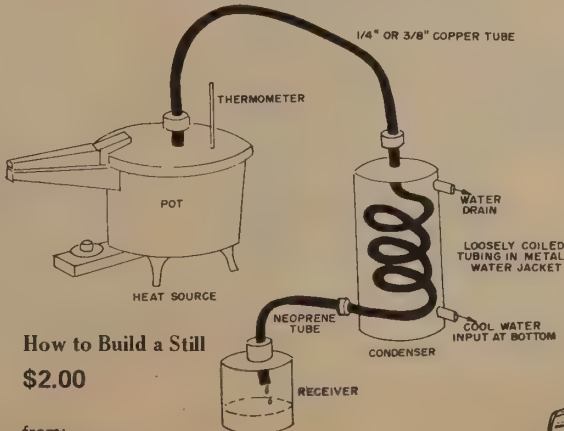
H. E. Bravery  
1961; 151 pp.

\$ .95 postpaid

from:  
Arc Books  
219 Park Avenue South  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

NOTE: Unlawful to build in many countries. May require licensing in others.



**How to Build a Still**

\$2.00

from:  
The Wyne Table  
Box 490  
Norman, Oklahoma 73069

HOME POT STILL

**Home Brewing Without Failures**

It's an interesting book, but awfully hard to use in this country, because it's very difficult to get decent materials for brewing. It is, after all, against the law to make your own beer (at least in California). Wine is legal; up to 200 gallons a year may be made by the head of a family (a real Italian law). In Berkeley, for instance, you can buy Blue Ribbon canned malt extract at most large grocery stores, also probably corn sugar (dextrose) in most. You can buy a bottle capper and bottle caps, and a decent yeast starter at a winery. But Bravery's recipes call for a number of pretty esoteric ingredients.

There are two places to buy brewing supplies through the mail that offer a really good selection. One is Wine-Art Sales Ltd., 1108 Lonsdale, North Vancouver, B.C. This is the nicest mail order house I've ever dealt with. They have a free catalog of beer and wine making supplies. When you order from them, you send no money. They send you the stuff, and a bill, with a discount for American money, and you send them the remittance. I hope no one burns them, because it's really nice to establish such a basis of trust in the cold mail order world. Shipping charges are not expensive, except on heavy stuff, and the wait is only about two weeks (to Calif.).

I would suggest that anyone who wants to get into beer making should use Bravery's book as a point of departure, maybe order some of those nice yeasts, particularly the liquid ones, and other small stuff from Canada or England, but make do with canned malt extract, locally available sugars (yellow-D is a good one, though beer made with it is sometimes a little hard to start), maybe some molasses for extra body.

You should know that Bravery's recipes generally make very, very heavy beer. The heavier the better for me, but it's a long way from Lucky Lager, or even Heinekens and Tuborg. If you like light beer, use less sugar (use corn sugar, too), less malt, and more water. If you use a hydrometer, as Bravery recommends, you can figure out the alcohol content of your beer before you start it with the yeast.

Contrary to what a lot of people believe, a home brewer of at least thirty years experience told me to never save a yeast starter from batch to batch, but to start with a new and good one every time. Yeast gets contaminated with wild spores very easily, and your batches are likely to get worse and worse instead of better and better. Also, he says, you should ferment your beer at low temperatures, 60 degrees or lower, as at higher temperatures, the yeast starts producing alcohols you don't want, like toluene and acetone.

In general, the best way to brew is to experiment, and keep notes, so you can duplicate a really good batch when it comes along.

[Suggested and reviewed by Roland Jacopetti]

**Home Brewing Without Failures**

H. E. Bravery  
1965; 159 pp.

\$ .95 postpaid

from:  
Arc Books  
219 Park Avenue South  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

**Bravery's Super Stout**

- 2 lb. crystal malt
- 2 lb. patent black malt
- 1 lb. black treacle
- 3 lb. white sugar
- 3 oz. hops
- 2 small level teaspoonfuls salt
- ½ oz. citric acid
- yeast - nutrient

and add salt and two ounces hops. Bring to boil and simmer gently for forty minutes. Add remaining hops and simmer hard or boil for a further five minutes.

Put sugar, treacle and citric acid into the fermenting vessel and strain the mash on to it through fine muslin. Stir well, making sure all sugar is dissolved and make up to four gallons with boiling water.

Cover with sheet polythene as already directed (p. 51) and leave to cool to 65° - 70°F. Add yeast and nutrient and leave to ferment for six-eight days.

If using hydrometer, take readings after five days until 1.005 is recorded and then bottle. If hydrometer is not being used, allow fermentation to go on until beer becomes "flat" and then prime — add sugar to recommence fermentation — and then bottle. If draught beer of this sort is wanted merely bottle the beer when it has gone "flat". Improves with keeping for six or more weeks, though it may be used as soon as all yeast has settled and the beer is clear.

OAK BARRELS for fermenting. Adds an air of "the good old days" home brewing operation. PARAFFINE LINED BARRELS does not add wood taste as charred barrels do, but is easier to clean and doesn't leak.

1920	one gallon	10.00
1921	two gallon	11.00
1922	five gallon	12.30
1923	ten gallon	18.90
1924	fifteen gallon	18.30
1925	thirty gallon	28.20
1926	fifty gallon	41.50



The Wyne Table

**Green Revolution  
Modern Utopian  
★ Fountain of Light**

By now there are three American schools of commune—East Coast, West Coast, and New Mexico—and each has a local periodical.

East Coast is the oldest and the most politically designed. Oneida, Brook Farm, last century. School of Living, Twin Oaks, Fort Hill (see American Avatar), and sundry radical enclaves this century. In the 30's the School of Living got going, and its publication Green Revolution was the only thing of its kind for many lean years. It's still invaluable.

West Coast (California, Oregon) has always been un-programmatic, just groovin in the hills, livin on the farm. Mountain Drive in Santa Barbara in the 40's and 50's. Now innumerable havens for urban refugees—Canyon, Wheeler Ranch, Family of the Mystic Arts... Relatively undesigned, often short-lived, they do not really have their own periodical. The Modern Utopian, based in Berkeley, tries to be national.

New Mexico (including Southern Colorado) is the most recent. When did Drop City start up, 1965? Lama, New Buffalo, Libre, Reality Construction, Hog Farm—they're inventive, interested in structure, visible. The new publication in their area, Fountain of Light, has the buoyancy of the early San Francisco Oracle, but with a steadiness, attention to detail, that the Oracle never had. Survival information. Get it right this time.

(New Mexico is the CATALOG's spiritual homebase. When we're not in town, we're generally there.)

The quality of commune life in each area is strongly relatable to the manner of Indian life in those places. The political Iroquois and Cherokees of the East. The easy-going, defenseless West Coast Indians. The structural, mystical Pueblos of New Mexico.



Home Preparation of Sheep and Rabbit Skins  
For sheepskins, make a strong hot lather; let it get cold and wash the sheepskin in it until the wool is clean. Rinse in cold water until all the soap is removed. Dissolve a pound each of salt and alum in two gallons of hot water. Put in a tub with the sheepskin and let soak 12 hours. Hang it over a pole to drain. When drained stretch on a board to dry; and stretch several times while drying. Before it is quite dry, sprinkle the flesh side with an ounce each of powdered alum and saltpeter, rubbing it in well. Fold the flesh side together and hang in the shade for two or three days. Stretch some and turn over each day until dry. Then scrape the flesh side with a blunt knife until soft.

**The Green Revolution**  
\$4 /year (monthly)  
from:  
The Green Revolution  
Route 1, Box 129  
Freeland, Md. 21053



Fine-leaf Yucca

Blooms May-June 2,700-7,500 feet (I've seen it higher—probably blooms later at higher altitude).

Leaves crowded around base, stiff and sharp pointed, 1/4-1/2 inch wide, fibers on edges. Flower cluster 1-5 feet long, white or greenish white, 1 1/2-2 inches long. Fruit is 1-1 1/2 inches, becomes dry at maturity, splitting and letting black seeds drop. It is possible to eat the immature fruit (before they're dry) by boiling 15-25 minutes—similar to asparagus.

**PEOPLE WANTED**

Hippie Haven we ain't. We work together 8 hrs. a day, 5 and 6 days a week. Shoveling cow shit, cutting wood, shoeing horses, baking bread, brewing beer, slaughtering our own meat, etc. "We are merging our fantasies to create our realities." Write Rock-bottom Farm, Stafford, VA, 05072, or call 802/765-6553 between 5 and 7 PM.



A month ago... At New Buffalo for the Celebration of the Birthday of Maharaj Viasa Singh, Yogi Bhajan's Teacher

There has been here at Reality an establishment of regulatory factors such as — setting and maintaining a stable population of stable individuals — meetings of 40 to 50 people around a table built to seat 25 comfortably to decide who will have to leave — very unnatural — but necessary. We have regular meetings to lay out work projects and decide who is to do certain jobs. We are a family of 25. We have been together a year. If too many people are here sometimes you don't talk to your brothers for days and the family has lost track of itself.

We are working together with 20 acres of very poor land to fertilize, compost, terrace, furrow, and irrigate in the best way we can. We are building a green house, hotbeds, goat pen, chicken coop, tool shed, work shop, garage etc. and we need to know who the family is — to be strong and to get the job done right. What more do we need to offer a visiting brother but a good days work, three good meals and a good nights sleep and that's all! This is a way of life, not a scenic wonderland — a bridge, not the water flowing under it. Visitors are encouraged to find for themselves in another State, a family and begin themselves elsewhere. Plainly, frankly, openly and honestly — begin for yourself. It is a sin to step in another's gain.

There is a controversy in our communities now on the subject of the good and proper way to have babies. Most people have definite opinions for or against childbirth at home.

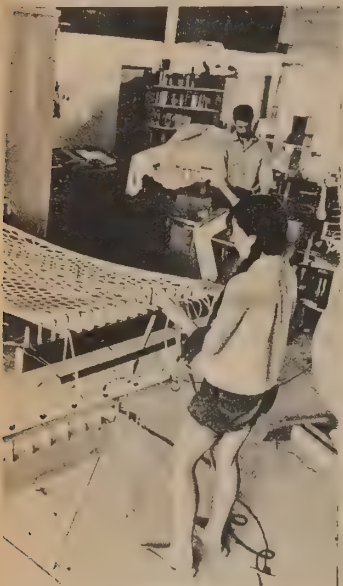
As a woman, I can respect and admire the desire to allow a beautiful and meaningful experience to take place at home, with maximal sharing of the joy of the ultimate fulfillment of womanhood.

As a physician, it scares me shitless.

Getting straight in the sense of total truth is so powerful as an upaya, as a method, that it opens the door to what are called spiritual siddhis, or powers. So that, in fact, your word becomes manifest. That is, what you say, happens. And this is the vehicle to that siddhi, that power.

(Will you go over that again?—Yes, I will.)

If I have no closed doors in my head, if I can speak total truth to any human being I meet at any moment. Now this does not mean that I must, with the albatross around my neck, go and tell my story to everybody. I don't have to tell about all of my sexual escapades, and all my violence and all of my anger and all of my immorality. I don't have to lay it on everybody as if I'm driven—however, it has to all be available. I have got to be able to say to you in perfect faith, there is nothing you can ask me that I know that I cannot tell you. That is, in Herman Hesse's model of the magis theatre, there are no doors in the magic theatre that are shut. Everything's got to be available. I have got to see You as Us, and that means that anything in my head that keeps you from being us is keeping us stuck in the illusion of separateness.



The hammock factory at Twin Oaks. This industry was chosen as the first money making endeavor of the community because it required little capital to start and it uses a great deal of hand labor, which in the beginning was the community's main economic asset. This, like all other work activities at Twin Oaks, is run under the "labor credit" system which insures a psychologically even distribution of work among all community members. Having special skills or training does not give one person any advantage over another.



**The Modern Utopian**  
\$4 /year (quarterly)  
from:  
The Modern Utopian  
2441 Le Conte  
Berkeley, CA 94709

This is where the concept of the "labor credit" comes in. A labor credit value is assigned to each job. Every person has to sign up for an equal number of total labor credits. The labor credits are adjusted such that the desirable jobs have a low value and the undesirable jobs have a high value. This means that if you sign up for undesirable jobs, you don't have to sign up for as many of them as you would if you signed up for desirable jobs only. For instance, one hour of septic tank cleaning might be worth two hours of typing the newsletter. The way we determine the desirability of jobs is by whether or not people sign up for them. If more people sign up for a job than are needed, then it is assumed that the job is desirable and the labor credit value is lowered ten percent. If a job is not signed up for or if not enough people sign up for it, then someone who needs the credits (someone who lost a coin flip) is assigned to the job and the value goes up ten percent.

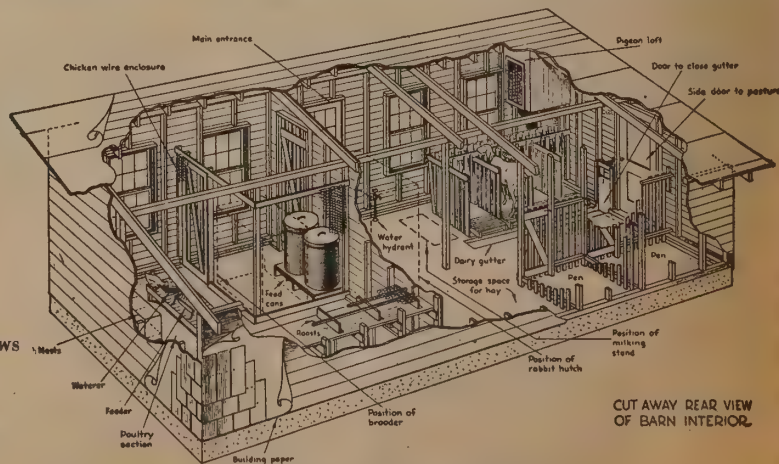
**★ Mother Earth News**

Seeks to fill a need in the WHOLE EARTH CATALOG market by "telling you how." Carries extensive reports of how-to information. The current issue is a 76-page reprint of a 1940's book on living off a miniature farm.

[Suggested by John Shuttleworth]



**The Mother Earth News**  
\$5 /year (6 issues)  
from:  
The Mother Earth News  
P. O. Box 38  
Madison, Ohio 44057



CUT AWAY REAR VIEW OF BARN INTERIOR.

This "breakaway" drawing shows interior of our small barn. We found that this 18 x 30 foot barn efficiently houses 30 hens, 80 broilers, 20 or more rabbits, 4 goats or a cow and calf, 3 or 4 sheep, and a dozen squab. Barn cost \$200 to \$400. Bill of materials, plus complete building plans including 10 large detail drawings of front, ends, interior layout, goat stalls and milking stand, cow stalls, chicken section, squab loft, also a turkey sunporch are available.



★  
**Two Factor Theory**

*There is a conspicuous void in the arguments and the programs of the counter-culture groups of this country, in that they have produced no well-formulated economic theories.*

*Unfortunately and ironically, Lou Kelso, who has some very imaginative economic proposals, has been offering them for many years to the establishment, the dinosaur culture.*

*Kelso has long ago perceived the obsolescence of prevailing economic doctrine that deifies labor as the single component of capitalism. He correctly argues that machinery, land, structure (that is, capital) produce wealth in the same way that human labor does. He calls this insight "two factor" economics or "universal capitalism", and since it recognizes the emerging importance of technology, and accepts the diminishing necessity of human labor, it is an economic theory that is beautifully tailored to the values and beliefs of most CATALOG readers and those seeking alternatives to dinosaur existence.*

*Kelso's book struggles manfully with practical solutions, including a Second Income Plan, a Capital Diffusion Insurance Corporation, and even a proposed Full Production act of 19—.*

*These proposals have been laid on presidential candidates, congressmen, newspaper publishers, leading economists, and nearly all key decision makers of the establishment over and over again.*

*So either Kelso is a lousy salesman or the dinosaurs are convinced their own designs will see them through.*

*My advice to Lou is: "Come on, Lou, grow long hair, drop all that establishment costumery, immerse yourself in the now generation, and start to work with a constituency that wants you and needs you. If you don't some bright young radical economist certainly will."*

*[Suggested and reviewed by Richard Raymond]*

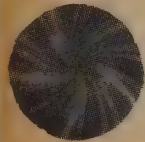
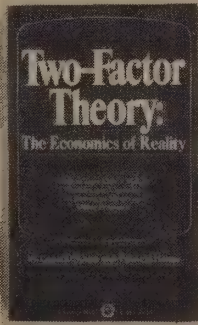
**Two-Factor Theory: The Economics of Reality**

Louis O. Kelso and Patricia Hetter  
1967; 202 pp.

**\$1.65** postpaid

from:  
Modern Library, Inc.  
457 Madison Avenue  
New York, N. Y. 10022

or WHOLE EARTH CATALOG



The theory of universal capitalism makes two assumptions about the good society. One is that its most important value is freedom. Any society seriously caring about freedom must structure its economic institutions so as to widely diffuse economic power while keeping it in the hands of individual citizens. Nor can freedom in an industrial democracy be long maintained unless the economic well-being of the majority is reasonably secure. Never in history has universal suffrage been built on a sound economic foundation; it is this defect, not the ordinary man's inability to cope with freedom, that accounts for the notorious fragility of democratic institutions.

Secondly, it is assumed that leisure is essential to a civilized definition of affluence. To venerate collectively what every intelligent man esteems individually, namely unnecessary toil for the goods of subsistence, makes no human sense. Today, in Western industrial society, we see toil advancing totalitarian claims on the whole of life at the very moment in history when technology offers liberation. Leisure and the liberal-arts tradition are giving way to the totalitarian work state which has no place for whole men, only "human resources" and servile functionaries.

As Harold Moulton of the Brookings Institution first pointed out in 1935, new capital does not have to be financed exclusively from past savings. It can just as easily and logically be financed from credit, by means that create new capital owners simultaneously with new capital assets. Capital produces wealth. Unlike consumer goods, it is inherently financeable. With very slight alterations the same techniques being used today to finance the acquisition of non-income-producing consumer goods can be employed (1) to vastly expand the existing economy—to build a Second Economy—and, (2) to enable noncapital-owning households to buy equity interests in new capital as it is formed, paying for it precisely as the capital owner (with rare exceptions) has always done—out of the income the newly formed capital produces.

Alternative is indeed the crux of the matter, and here it is that youth is vulnerable. For as the elders point out, the posture of moral superiority is easy to maintain from the sidelines, particularly when one's livelihood and education are being provided for by others. But would the young do any better under the same circumstances? Will they do any better when their turns come? The answer is that youth would not and cannot, given the financial and economic framework within which the elders are operating. While the moral convictions of individuals are important in the long run, it is institutions that determine the immediate course of events—particularly the institutions of finance.

Not an evil conspiracy, but defective financial institutions and the lack of alternative institutions have delivered us to the door of the total work state. This book has attempted to present the alternatives, founded on the missing logic of an industrial economy.

★  
**An Alternative Future for America II**

*What's different about this book of economics is that it was designed by graduate students. Though Theobald is the soloist, the voices of the young generation can plainly be heard. It makes you wish that every author who writes about new ways of coping with the changing world would be forced to immerse himself in the lives of those for whom he purports to make predictions.*

*Because it reads like a collection of class notes and uncompleted journal articles (all of which is probably true), the book pulled me into wanting to add a chapter or two of my own. That is a delicious feeling, when you have been so many times bored by economics texts:*

*In fact, the book abruptly ends with a specific invitation to its readers to take some further action. I would hope subsequent editions will continue to have such an open-ended design.*

*The stuff to "wow" over in the book includes Theobald's high-headed insights into computerized decision making ("There is no doubt in my mind that the computer has been one of the factors that has led us into the present disastrous situation in Vietnam"), and his list of the five traps we've laid for our social system: the war trap, into which we have put all our ultimate sanctions for solving international disputes; the efficiency trap, in which we place man's human value to lie measured against the efficiency of machines; the consumption trap—if it's good, it must have a sales price and be advertised; and the education trap, in which we cement our behavior to the past. The fifth trap never gets listed—see what I mean: "unfinished journal articles"?*

*Theobald's most orderly work has to do with his persuasive case for a guaranteed income, about which he has written for many years. The potentiality for his ideas during this distressed period of history are ever more dazzling. And in this book, the dazzlement is fully let loose in a series of far-out proposals for experimenting with altered life styles. It may be weeks before I stop trembling. That's why I wanted to add another chapter or two, when I got to the end of the book.*

*[Reviewed by Richard Raymond]*

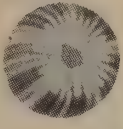
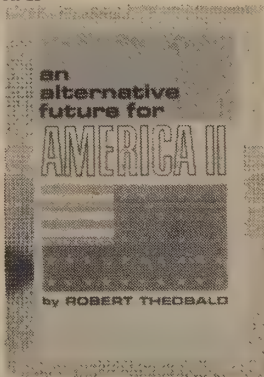
**An Alternative Future for America II**

Robert Theobald  
1968, 1970; 199 pp.

**\$2.00** postpaid

from:  
The Swallow Press, Inc.  
1139 Wabash Avenue  
Chicago, Illinois 60605

or WHOLE  
EARTH  
CATALOG



Diverse communities would move rapidly toward a free goods situation: one where a person walks into a store and takes whatever he wishes off the shelves. We may not have reached a free goods situation by the end of the 1970's but we will certainly have moved a long way towards it. This is inevitable because an increasing number of people will be living on Basic Economic Security (BES) and Committed Spending (CS). People who live on BES and CS are not going to use money for exchanging goods among themselves. They are going to swap human services without exchanging money.

The availability of free goods would lead to some very interesting developments. First, we could begin to eliminate the power which has been accorded by the community to certain groups in the society, which enables them to peg high prices, rates of interest, wages and salaries. In the future, prices, wages, rates of interest and salaries should fall because prices would be related to scarcity and we are moving into a position of abundance.

Supporters of the guaranteed income and supporters of the poverty program not only propose different programs but have different ends in view. The supporters of the poverty program see man as an inefficient machine to be reprogrammed from time to time as machines make his existing skills obsolete. The destruction of his work and life pattern is regretted but seen as unavoidable. Indeed, one can go further and argue that the generally accepted goals of our society appear to be technological wizardry, economic efficiency and the developed individual in the good society, but in that order. I often fear that we persist in this order of priorities because we no longer want to know more about human beings and human systems of organization. Compared to a (necessarily) functionally neat, clean, odorless, efficient and continuously functioning cybernetic machine system, a unit of mankind is messy, smelly, disobedient, quarrelsome, lazy and a walking source of error. For those already in a state of emotional and sensory atrophy, a machine is easier to get on with than a man.

It is the essentially dehumanized approach of the poverty program which ensures that it cannot be successful. I am, of course, aware that there are many people within the poverty program who attempt to use its potential to benefit individuals, but they are fighting the basic thrust of the whole program and their efforts will always be insignificant compared to the total size of the problem. The goal of the poverty program is not to help people to find themselves but rather to push them back into the industrial system just as fast and as often as they are forced out of it.

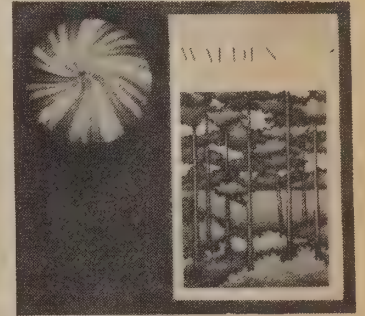
"Our key problem stems from the fact that we have made the value of a man synonymous with the economic value of the toil he performs: we fail to recognize that people should have a claim on resources even if they do not toil. The measure of destruction of our values is, I believe, shown in the fact that those living in an industrial society find it natural that people do not receive an adequate amount of food, clothing and shelter even though there is surplus food in storage and the possibility of producing more housing and more clothing if we gave people the money to buy them. We can contrast this view with that of the so-called primitive societies; in many of these it was literally impossible to starve unless the whole community was starving. George Peter Murdoch, the celebrated anthropologist, described the reaction of one group of natives when he tried to explain the problem of the poor in Western countries. There was stark disbelief: "How can he have no food? Does he have no friends? How can he have no house? Does he have no neighbors?"

We can anticipate the organization of what I have called "consentives": productive groups formed by individuals who will come together on a voluntary basis, simply because they wish to do so. The goods produced by these consentives will not compete with mass-produced products available from cybernated productive organizations; the consentive will produce the "custom-designed" goods and services which have been vanishing within the present economy.

There is no doubt that some people would not choose to perform productive activities but I personally remain impressed with the comment of a banker colleague who arrived at the guaranteed income idea independently and who says: "Given the fact that 3% in all income classes are bums, it's strange that we're only concerned about the element of bums among the poor." Indeed, surveys show that most Americans in all income classes have an almost pathological desire to toil. I personally anticipate that there will be so many people looking for toil in coming years compared to the amount of toil available that people will be prepared to pay to obtain it.

★  
**Walden**

*This edition is the one, I believe, that Thoreau would have bought. It costs fifty cents. The prime document of America's 3rd revolution, now in progress.*



**Walden**  
Henry David Thoreau  
1854; 271 pp.

**\$.50** postpaid

from:  
Harper & Row, Publishers, Inc.  
49 East 33rd Street  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

Most of the luxuries, and many of the so-called comforts of life, are not only not indispensable, but positive hindrances to the elevation of mankind. With respect to luxuries and comforts, the wisest have ever lived a more simple and meagre life than the poor.

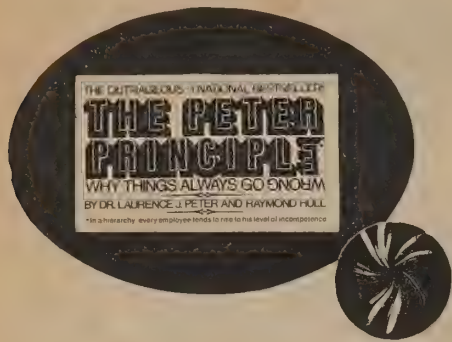
The customs of some savage nations might, perchance, be profitably imitated by us, for they at least go through the semblance of casting their slough annually; they have the idea of the thing, whether they have the reality or not. Would it not be well if we were to celebrate such a "busk," or "feast of first fruits," as Bartram describes to have been the custom of the Mucclasse Indians? "When a town celebrates the busk," says he, "having previously provided themselves with new clothes, new pots, pans, and other household utensils and furniture, they collect all their worn out clothes and other despicable things, sweep and cleanse their houses, squares, and the whole town, of their filth, which with all the remaining grain and other old provisions they cast together into one common heap, and consume it with fire. After having taken medicine, and fasted for three days, all the fire in the town is extinguished. During this fast they abstain from the gratification of every appetite and passion whatever. A general amnesty is proclaimed; all malefactors may return to their town.

"On the fourth morning, the high priest, by rubbing dry wood together, produces new fire in the public square, from whence every habitation in the town is supplied with the new and pure flame."

I learned this, at least, by my experiment: that if one advances confidently in the direction of his dreams, and endeavors to live the life which he has imagined, he will meet with a success unexpected in common hours. He will put some things behind, will pass an invisible boundary; new, universal, and more liberal laws will begin to establish themselves around and within him; or the old laws be expanded, and interpreted in his favor in a more liberal sense, and he will live with the license of a higher order of beings. In proportion as he simplifies his life, the laws of the universe will appear less complex, and solitude will not be solitude, nor poverty poverty, nor weakness weakness. If you have built castles in the air, your work need not be lost; that is where they should be. Now put the foundations under them.

★  
The Peter Principle

*The principle is: a person rises to his highest level of incompetence and then stays there forever because nobody likes to fire the formerly competent. Now you don't need the book, which is mostly a witty dance through ramifications of the principle. Once you're caught in a Peter Principle blind alley, some escapes are: 1) stop pressing up and go sideways, 2) slide back a bit and change direction, 3) quit completely and start over, 4) put curtains and tasteful paintings on the walls of your alley and wait it out.*



**The Peter Principle**  
Dr. Laurence J. Peter and Raymond Hull  
1969; 169 pp.

**\$1.25** postpaid

from:  
Bantam Books, Inc.  
271 Madison Avenue  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

Miss Totland, who had been a competent student and an outstanding primary teacher, was promoted to primary supervisor. She now has to teach, not children, but teachers. Yet she still uses the techniques which worked so well with small children.

Addressing teachers, singly or in groups, she speaks slowly and distinctly. She uses mostly words of one or two syllables. She explains each point several times in different ways, to be sure it is understood. She always wears a bright smile.

Teachers dislike what they call her false cheerfulness and her patronizing attitude. Their resentment is so sharp that, instead of trying to carry out her suggestions, they spend much time devising excuses for not doing what she recommends.

Miss Totland has proved herself incompetent in communicating with primary teachers. She is therefore ineligible for further promotion, and will remain as primary supervisor, at her level of incompetence.

Ordinary incompetence, as we have seen, is no cause for dismissal: it is simply a bar to promotion. Super-competence often leads to dismissal, because it disrupts the hierarchy, and thereby violates the first commandment of hierarchal life: *the hierarchy must be preserved.*

The difference between cases of Pseudo-Achievement Syndrome and Final Placement Syndrome is known as *Peter's Nuance*. For your own guidance in classifying such cases, you should always ask yourself, "Is the person accomplishing any useful work?" If the answer is:

- a) "YES"—he has not reached his level of incompetence and therefore exhibits only the Pseudo-Achievement Syndrome.
- b) "NO"—he has reached his level of incompetence, and therefore exhibits the Final Placement Syndrome.
- c) "DON'T KNOW"—you have reached your level of incompetence. Examine yourself for symptoms at once!

Consider the stench, bad flavors and perils involved in spraying the entire globe with pesticides: compare them with the simple pleasure, and the therapeutic exercise, of hand-spraying the garden.

The power of negative thinking can help us avoid escalating ourselves to a level of live-incompetence, and so help prevent destruction of the world.

Glossary

**Heep Syndrome**—a group of symptoms indicating the patient's belief in his own worthlessness. Observed by D. Copperfield, reported by C. Dickens. Chap. 9.

**Hierarchal Exfoliation**—the sloughing-off of super-competent and super-incompetent employees. Chap. 3.

**Hierarchal Regression**—result of promoting the incompetent along with the competent. Chap. 15.

**Hierarchiology**—a social science, the study of hierarchies, their structure and functioning, the foundation for all social science.

**Hierarchy**—an organization whose members or employees are arranged in order of rank, grade or class.

★  
Alternatives Directories

*Movement yellow pages. Pretty handy.*



**Directory of Free Schools**  
1970; 30 pp.

**Directory for Personal Growth**  
1970; 30 pp.

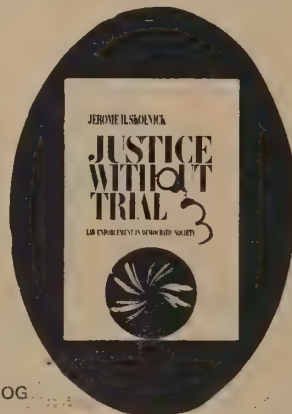
**Directory of Social Change**  
1970; 30 pp.

**\$1.00** each

from:  
Alternatives!  
1526 Gravenstein Hwy, No.  
Sebastopol, CA 97452

★  
Justice Without Trial

*The social edge that the policeman patrols is highly visible these days, and all too relevant, and so ambiguous that few can bear to look at it close. But until it's looked at close, and in broader terms than one's own bust, we'll be stuck with it the way it is. This book is inherently interesting, dealing with goals and tactics and anecdotes of our closest war. It also should be interesting to those who would redesign the edge.*



**Justice Without Trial**  
Jerome H. Skolnick  
1966; 279 pp.

**\$3.95** postpaid

from:  
John Wiley & Sons, Inc.  
605 Third Avenue  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

Whenever rules of constraint are ambiguous, they strengthen the very conduct they are intended to restrain. Thus the policeman already committed to a conception of law as an instrument of order rather than as an end in itself is likely to utilize the ambiguity of the rules of restraint as a justification for testing or even violating them. By such a process, the practical ambiguity of the rule of law may serve to undermine its salience as a value.

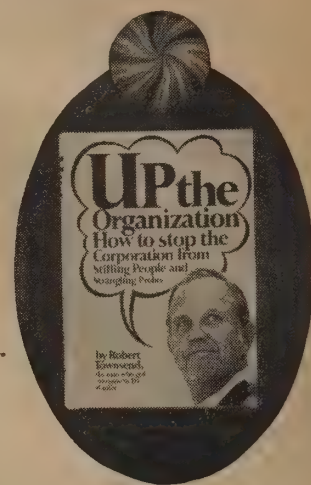
The policeman is directly antagonistic toward euphemisms. Unlike the peacetime soldier, the policeman is always in "combat", out on the streets, doing his job. Like the dogface, he is irritated by most manifestations of what he terms "chicken shit"—an inclusive abstraction encompassing minor organizational rules, legal technicalities, and embellished descriptions. The policeman's culture is that of the masculine workingman. It is of the docks, the barracks, the ballfield—Joe DiMaggio was a helluva good "wop" center-fielder, not an athlete of "Italian extraction," and similarly, the black man is a "nigger," not a member of an "underprivileged minority."

"Straight date" refers to genital intercourse. "Half-and-half" means half "French," half "straight," that is, fellatio followed by genital intercourse. "Greek" refers to anal intercourse. Other sexual acts may be purchased as well, but these are the standard products.

Indeed, from his familiarity with the law about possession, the nonaddict-dealer is likely to have a "stash" or a "stash pad" somewhere removed from his own residence, perhaps at the home of a girl friend, or even in any of the numerous places in the public domain that can serve as "stashes," such as trees, directional signs, the undersides of benches and so forth.

★  
Up the Organization

*Determine what you're about in your business. Reward and nourish what (and who) serves that, and let the rest go hang. You can win a revolution with it, if that's your business. I'd wait for the paperback.*



**Up the Organization**  
Robert Townsend  
1970; 202 pp.

**\$5.95** postpaid

from:  
Random House, Inc.  
201 East 50th Street  
New York, N. Y. 10022

or WHOLE EARTH CATALOG

The Russians have the best system. The real head of their typical embassy is a third assistant attaché, who is completely free of social obligations and can therefore devote himself fully to running the operation, while the French, British, German, and American ambassadors exhaust themselves on the cocktail- and dinner-party circuit.

A lesson very few have learned: If you want to approach the head of XYZ Corporation, call him cold. Tell him who you are and why you want to talk to him. A direct and uncomplicated relationship will follow.

The common mistake is to look for a mutual friend—or a friend's friend on his board, in his bank or investment bank or law firm—to introduce you. This starts all sorts of side vibrations and usually results in a half-assed prologue by the intermediary, who is apt to grind both edges of his own ax.

All decisions should be made as low as possible in the organization. The Charge of the Light Brigade was ordered by an officer who wasn't there looking at the territory.

There are two kinds of decisions: those that are expensive to change and those that are not.

If you can't do it excellently, don't do it at all. Because if it's not excellent it won't be profitable or fun, and if you're not in business for fun or profit, what the hell are you doing here?

If you've inherited (or built) an office that needs a real house cleaning, the only sure cure is move the whole thing out of town, leaving the dead wood behind. One of my friends has done it four times with different companies. The results are always the same:

- 1. *The good ones are confident of their futures and go with you.*
- 2. *The people with dubious futures (and their wives) don't have to face the fact that they've been fired. "The company left town," they say. They get job offers, quickly, usually from your competitors who think they're conducting a raid.*
- 3. *The new people at Destiny City are better than the ones you left behind and they're infused with enthusiasm because they've been exposed only to your best people.*

Admit your own mistakes openly, maybe even joyfully.

Encourage your associates to do likewise by commiserating with them. Never castigate. Babies learn to walk by falling down. If you beat a baby every time he falls down, he'll never care much for walking.

**Hiring.** To keep an organization young and fit, don't hire anyone until everybody's so overworked they'll be glad to see the newcomer no matter where he sits.

## Earth Flag

A gentleman named John McConnell came into the Truck Store a few weeks ago and said that since all the nations have flags, and the UN has a flag, and states and businesses have flags, maybe there ought to be a flag that's just for people. So he got together with artist Norman LaLiberte and one of the Apollo Earth photographs and came up with the Earth Flag. I don't know if I'd die for it, but it's the first flag I've seen that I don't feel it somehow excludes me. The Earth Flag feels nice to wave.



Earth Flag (11 x 13 inches) \$1.50 postpaid  
\*(3 1/2 x 6 feet) \$12 postpaid

from:  
WHOLE EARTH CATALOG

(orders of 10 or more from:  
"W.E." Inc.  
60 Merced Street  
San Francisco, CA 94127)

## Vocations for Social Change

This nifty service has been going for about a year and a half now and is clearly growing in effectiveness. They earn your donation.

Vocations for Social Change is a decentralized clearing house for persons struggling with one basic question: How can people earn a living in America in 1969 and ensure that their social impact is going to effect basic humanistic change in our social, political and economic institutions? Nobody has any "real answers" to this question, but many ideas are being developed out of people's experiences. VSC helps make these ideas available to the general public so that each person's individual search can be enriched.

This newsletter serves as the main gathering point for ideas with which we have come in contact. Not only do we include descriptions of job openings with groups working for social change from a wide variety of viewpoints, but also proposals for new projects that need help in getting started, descriptions of places where you can learn more about social action in an educational setting, and articles on topics related to working for social change on a full-time basis. What all of the people behind these various ideas have in common is a genuine concern for stimulating basic change in American institutions.

Informing you of available opportunities for involvement in social change is only part of our goal. We also hope that the information that we have gathered here will stimulate you to think about what new roles need to be created and to consider the possibility of actually finding a new role for yourself. Many more dedicated people are needed if we are to see significant change in our lifetimes.



Sample copy

free

from:  
Vocations for Social Change  
Canyon, CA 94516

## A Manual of Simple Burial

Not everybody has an opportunity to depart this world gracefully, and those that do usually blow it. The people left behind fumble just as badly, for largely the same reasons: ignorance, fear, a lack of foresight and preparation. None but the dead can know for sure the full consequences of the failure. But even if there are no consequences for the dead, there are enough of them for the survivors in the forms of trauma and ruptured bank accounts, to make this Manual of Simple Burial seem something like a life-saver.

For this little manual of death is firmly on the side of life. As part of the literature of funerals, it's like a living rosebud in a bouquet of plastic flowers. In 64 pages it quietly tells you how to avoid the ghastly system of converting human left-overs into products packaged as "funerals." In simple language backed by intelligent sympathy, it suggests ways to surround the act of passage with appropriate rites of passage that offer real meaning to people in need of meaning.

According to the manual, the main alternative to expensive, hastily-improvised funerals is membership in a memorial society. A memorial society is "a voluntary group of people who have joined together to obtain dignity, simplicity and economy in funeral arrangements through advance planning." The manual provides a list of several societies by name and address. It also has information on cremation, autopsies, eye-banks, bequeathal of bodies, and the business and legal matters that usually attend a death, as well as chapters with titles like "Interpreting Death To A Child," and "What to Do When Death Occurs."

Men choose their horrors. We choose war. We choose pollution. And, by default, we choose to make the rituals surrounding death grotesque. But what is chosen can be unchosen, once an alternative is clear. The Manual of Simple Burial describes a clear alternative to one of our chosen horrors.

[Reviewed by  
Gurney  
Norman]



A Manual of Simple Burial  
Ernest Morgan  
1968; 64pp.

\$1.00 postpaid

from:  
The Celso Press  
Burnsville, North Carolina 28714  
or WHOLE EARTH CATALOG

Figuring out how much to mark-up the price of the goods over what we paid for them was another real mystery. We were aware that many co-ops are short lived because they try to be a miracle store in the beginning by charging very little for the food before they fully understand how much money it takes to run the store. A number of other small grocers in town told us that we couldn't survive on less than a twenty percent mark up. Yet at that mark up we would be pricing ourselves at least five cents above the average supermarket price. We didn't know how much our overhead was going to be so we couldn't calculate it on that. What we ended up doing was taking a chance. If we could operate on volunteer help for several months then we could charge supermarket prices and try to get a lot of people to continue buying at the store out of something more than simple loyalty. Using every night's receipts to increase the stock, we managed to attract even more people by having a larger and larger stock every time they came in. We also did things like compensating for marking staples down by keeping luxuries at about a 20 per cent mark up. Having everyone a volunteer made the store a real community project with many different people working in the store day and night - a constant party or freak show depending on what time of day you came in.

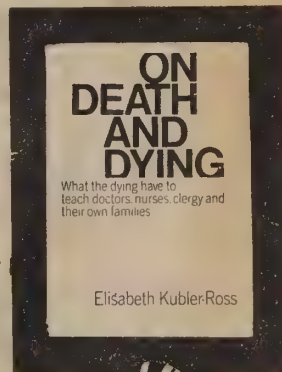
## On Death and Dying

On Death and Dying establishes a psychological fact that most people close to a dying person already know, even if they can't admit it: One tends to turn away. Even from husbands, even from wives, even from one's own children. Dying people are casualties of life. Their dying, especially if it is a long, drawn-out affair, is a reminder of how vulnerable we all are, and that's something most people want to forget.

It's in our process of trying to forget that the dying person himself is often forgotten. There he is, lying there, waiting to be recognized. Doctors, nurses, friends and relatives come to "see" him every day. But what he is desperate for is recognition, and recognition is what we seem so utterly unable to give.

On Death and Dying is a powerful book, because it forces the reader into the point of view of someone dying. Suddenly you're on the other side of that glass between the living and the dying, and it's not comfortable. But, as Elisabeth Kübler-Ross points out, the point is not always to "comfort" the healthy. That tendency is a major cause of the intense psychic suffering dying people must endure, in addition to the physical failures that are killing them. This book speaks for the dying in a way they are unable to speak for themselves. It's disturbing, but then so is all education. I'd say this book is indispensable for all people who are living in the presence of someone else's gradual death.

[Reviewed by Gurney Norman]



On Death and Dying  
Elisabeth Kübler-Ross, M.D.  
1969, 260 pp.

\$6.95 postpaid

from:  
Macmillan Co.  
Front and Brown Streets  
Riverside, Burlington County  
New Jersey 08075

or WHOLE EARTH CATALOG

I remember as a child the death of a farmer. He fell from a tree and was not expected to live. He asked simply to die at home, a wish that was granted without questioning. He called his daughters into the bedroom and spoke with each one of them alone for a few minutes. He arranged his affairs quietly, though he was in great pain, and distributed his belongings and his land, none of which was to be split until his wife should follow him in death. He also asked each of his children to share in the work, duties, and tasks that he had carried on until the time of the accident. He asked his friends to visit him once more, to bid good-bye to them. Although I was a small child at the time, he did not exclude me or my siblings. We were allowed to share in the preparations of the family just as we were permitted to grieve with them until he died. When he did die, he was left at home, in his own beloved home which he had built, and among his friends and neighbors who went to take a last look at him where he lay in the midst of flowers in the place he had lived in and loved so much.

He was quite aware that his days were numbered, and his greatest wish was to be moved into different positions (he was paralyzed to his neck). He begged the nurse never to put the siderails up as it reminded him of being in a casket. The nurse, who was very hostile to this patient, agreed that she would leave them down at all times. This private duty nurse was very angry when she was disturbed in her reading, and she knew that he would keep quiet as long as she fulfilled this wish.

But I, it isn't dying alone, it's the torture that pain can give you, like you just want to tear your hair out. You don't care if you don't bathe for days because it's just so much effort, like you're becoming less a human being.

Everybody expected her to die soon, but day after day she remained in an unchanged condition. Her daughter was torn between sending her to a nursing home or keeping her in the hospital, where she apparently wanted to stay. Her son-in-law was angry at her for having used up their life savings and had innumerable arguments with his wife, who felt too guilty to take her out of the hospital. When I visited the old woman she looked frightened and weary. I asked her simply what she was so afraid of. She looked at me and finally expressed what she had been unable to communicate before, because she herself realized how unrealistic her fears were. She was afraid of "being eaten up alive by the worms." While I was catching my breath and tried to understand the real meaning of this statement, her daughter blurted out, "If that's what's keeping you from dying, we can burn you," by which she naturally meant that a cremation would prevent her from having any contact with earthworms. All her suppressed anger was in this statement.

IF YOU WANT TO RECEIVE THE NEWSLETTER we'll be happy to send you a sample copy. We send VSC regularly for six months to people who support us financially with donations of \$5.00 or more, or send us monthly pledges. This helps cover the costs of mailing and enables us to send sample copies to those who cannot afford to send any money. Institutions, such as libraries and schools are charged \$10.00 a year.

**Dear Dr. Hippocrates**

Long-hairs are doing new stuff with their bodies and nervous systems that occasionally needs medical attention or perspective. Communication was blocked, however, by the social understanding that they aren't supposed to be doing that stuff. Dr. Schoenfeld and his medical advice column in the underground press cut through the blockage, and here came a spout of information as weird as it was useful. Good answers made the questions good.



Tell us about "speed." What happens to the body and brain when "meth" (crystals and tabs) is taken in small and large doses?

"Meth" (methamphetamine) is used in medicine for appetite control, mood elevation, and to raise blood pressure when indicated. The drug is usually ingested in five-milligram tablets one to three times a day. Medical reasons for injecting methamphetamine are specific and few.

Tolerance to the amphetamines develops rapidly and increasingly large amounts must be used to achieve the same results. When large amounts are used, blood-pressure may be raised sufficiently high to blow out a blood vessel in the brain, thus causing a stroke.

True addiction, as well, seems to occur. Recently a patient in a drug-abuse clinic stated that it was harder for him to kick the 'meth' habit than it was to get off heroin. At the time he was shooting up two hundred milligrams of 'crystals' every two hours. He was found dead a few weeks later, apparently from an overdose.

An eighteen-year-old boy on methamphetamine climbed out of a third-story window in Berkeley not long ago. He is now confined to a neurological institute, completely paralyzed from the effects of a broken back.

Both general and student hospitals are seeing increasingly greater numbers of sixteen-to-twenty-five-year-old people who have caught hepatitis from a needle used to inject methamphetamine. Neither boiling water nor soaking in alcohol will necessarily kill the hepatitis virus found in too many spikes.

Speed kills.

For cosmetic reasons and sex appeal, I have been interested for some time in removing my pubic hair. I initially tried scissors which left stubbles; a safety razor leaves red marks and bumps which are both unattractive and painful. An electric razor is better but still unsatisfactory. I called an electrologist who removes hair, but she found my request most peculiar and refused to undertake the work.

Can you suggest a solution to the problem? Is there any reason to believe removal of pubic hair would be either unhealthful or dangerous?

Most Middle Eastern women routinely shave their pubic hair but I leave to you and your chafed friends the question of whether this practice will enhance your sex appeal. It does not seem medically dangerous.

Cautious use of a depilatory or one of the newer electric razors would seem the best solution to your problem. I would advise against permanent removal since you might someday move to a colder climate.

(Note: Judging from the volume of mail received in response to the preceding question and answer, shaving pubic hair is definitely not confined to the Middle East. Excerpts from three letters follow.)

A leading manufacturer of safety razors (Gillette) recently placed on the market something called a 'Scairdy Kit.' The ad dealt with the problem of very brief bathing suits but the letter from the girl who shaves made me wonder. Perhaps she needs instruction in the use of lather or brushless cream.

She will have far better results if she uses an electric hair clipper such as the ones barbers use. The OOOO blade is the finest one and will not leave unsightly stubble, irritate the skin or cause abrasions.

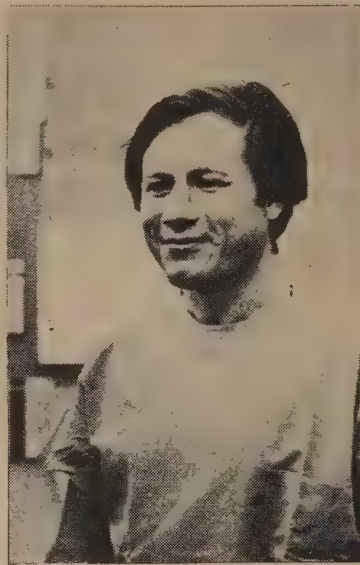
For shaving, use alcohol - it eliminates abrasions and little bumps. This was told to me by a psychiatrist.

Have you ever heard of something called a 'hum' job? During fellatio or cunnilingus one vigorously hums a tune such as 'Jingle Bells.' What do you think of this?

Hmmm. Merry Christmas.

Can infectious hepatitis be contracted through cunnilingus?

This is an excellent way—if the recipient of your affection has the disease.



Dear Doctor Hippocrates  
Eugene Schoenfeld, M. D.  
1968; 112 pp.

\$.95 postpaid

from:  
Grove Press, Inc.  
315 Hudson Street  
New York, N. Y. 10013  
or  
WHOLE EARTH CATALOG

There's been a lot of talk lately about a new drug called MDA. What are its effects? Do the initials MDA mean anything or are they another put-on like the STP initials?

MDA is methylenedioxymphetamine, a mind-altering drug derived from amphetamine. Both drugs were first synthesized (amphetamine in 1933) by Gordon Alles, who died recently in California.

MDA is an example of a mind-altering drug apparently specific to certain functions of the brain. If the LSD experience can be described as one including both perceptual or sensory changes and inner experiences such as insight, the effects of MDA could be said to be similar to LSD with few of the sensory changes. In other words, illusions and other changes in perceiving 'reality' are infrequent or absent with the use of MDA. The drug is said to promote harmonious interpersonal relationships.

MDA has not been extensively tested in humans and may have unrecognized harmful effects, as with any unproven drug. Moreover the MDA available on the black market may contain impurities.

Some men find that the application of an anesthetic ointment to the head and shaft of the penis half an hour or so prior to intercourse allows them to prolong their coital experience. Nupercainal is one such anesthetic ointment available without a prescription.

**The Merck Manual**

In 1850 type-packed pages this book covers most of the possible illness and injuries that can occur to human beings. Each difficulty is described, symptoms are discussed and suggested treatments are indicated.

The writing is extremely technical and is designed as a ready reference for practicing nurses and physicians. Unless you are at ease with the unusually colorful language of modern medicine you will need a medical dictionary to fully understand this book.

While a considerable portion of the advice given is sensible and does not require a doctor's presence, much of the book will not be of use to persons who do not have access to medical supplies. This book is not intended in any sense for primitive or simple living conditions; it does not describe alternatives if medical treatment is not available nor does it suggest folk treatments in lieu of hospitalization. However, if you want to understand what is going on when a member of your family or community is seriously ill, this volume can be helpful. There is an excellent index as well as a special section devoted to specific prescriptions and special therapies. The excerpts given below illustrate both the common-sense and the technical aspects of this volume.

[Reviewed by James Fadiman]

[Innovator reports that many prescription drugs can be obtained without a prescription and at low cost from veterinary supply houses. —SB]

**DYSPEPSIA ("indigestion")**

**Treatment**

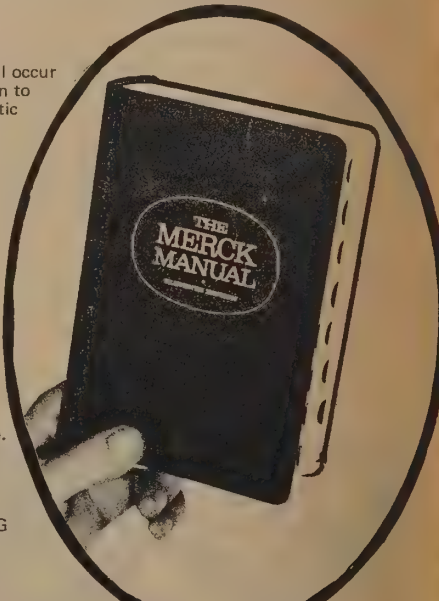
General: The patient should eat a balanced diet (see DIETS, Normal Diet). At least 1 hr/meal should be allowed. Food should be chewed thoroughly without haste and not constantly "swilled down" with liquids. When possible meals should be taken in a pleasant, quiet, relaxing environment. Smoking immediately before meals should be prohibited. Food should be properly cooked, appetizing and eaten in moderate amounts. Following a meal, the patient should avoid excitement.

**HEAT HYPERPYREXIA (sunstroke, heatstroke, thermic fever, siriiasis)**

Etiology: prolonged exposure to excessively high temperature or the direct rays of the hot sun, combined with exercise and lack of air circulation are the responsible factors. . . . Symptoms and Signs: Onset may be sudden or may follow complaints of weakness, headache, vertigo, anorexia, nausea and precordial distress. . . . The temperature rises rapidly to 105 or 106 F. or higher. Convulsions and projectile vomiting may develop and are of serious import. . . . Treatment: heroic measures are indicated and must be instituted immediately. If the rectal temperature is 106 F. or over, an ice water tub bath or a blanket soaked in water is indicated, and the skin should be rubbed vigorously until the temperature falls. . . .

**DISTURBANCES IN ELECTROLYTE (Mineral) METABOLISM**

*Dilutional hyponatremia* will occur when excessive water is given to a patient in whom antidiuretic hormone activity (postoperatively, or in bronchogenic carcinoma, head injuries, or porphyria) or a low glomerular filtration rate is present. Movement of the water from cells in E.C.F. with a high glucose concentration may produce a temporary hyponatremia.

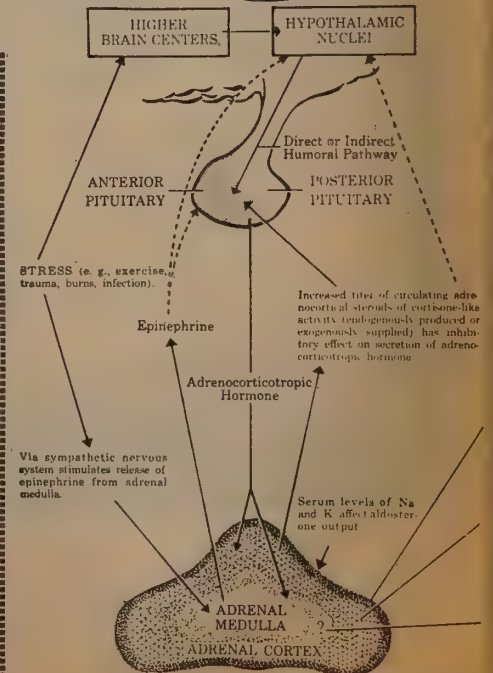


The Merck Manual  
11th Edition 1966; 1850 pp.

\$7.50 postpaid

from:  
WHOLE EARTH CATALOG

**PITUITARY-ADRENAL**



We've been told that the Merck Index can be even more useful than the Merck Manual. The Index is an encyclopedia of chemicals and drugs, now in its 8th edition since 1889.

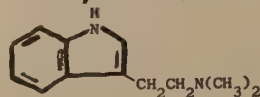
[Suggested by William Bonner]

The Merck Index  
1968; 1713 pp.

\$15.00 postpaid

from:  
WHOLE EARTH CATALOG

**N,N-Dimethyltryptamine. DMT; 3-[2-(dimethylamino)ethyl]indole.** C<sub>12</sub>H<sub>16</sub>N<sub>2</sub>; mol wt 188.26; C 76.55%, H 8.57%, N 14.88%. Occurs naturally in plants with hallucinogenic properties. Isola from the leaves of *Prestonia amazonica* (Benth.) Macbride (*Haemadictyon amazonicum* Spruce & Benth.), *Apocynaceae*: Hockstein, Paradies, *J. Am. Chem. Soc.* 79, 5735 (1957). Synthesis: Szára, *Experientia* 12, 441 (1956) using the method of Speeter, Anthony, *J. Am. Chem. Soc.* 76, 6209 (1954). Relationship between hallucinogenic activity and electronic configuration: Snyder, Merri, *Proc. Natl. Acad. Sci. U.S.A.* 54, 258 (1965).



Crystals, mp 44.6-46.8°. pK<sub>a</sub> 8.68 (ethanol-water).  
Freely sol in dil acetic and dil mineral acids.  
Picrate, mp 169.5-170°.  
Methiodide, mp 216-217°.

\*Schematic and tentative only

## Emergency Medical Guide

No book can substitute for a physician's care. Self-treatment of disease can be worse than no treatment at all. But the proper use of a home health manual may be invaluable in recognizing serious diseases and emergencies, rendering first aid, and treating common medical problems which do not require a physician's assistance. Outdoorsmen and members of isolated farms and communes, especially, should have on hand as much medical information as possible.

Henderson's *Emergency Medical Guide* is a useful book, including illustrated sections on bandaging techniques, mouth to mouth resuscitation, injuries to extremities, poisoning, snake bites, emergencies of infancy and childhood, and home care of the ill. Emphasis is placed on the prevention of accidents and disease. Some situations are covered which are not generally considered emergencies (except by the patient) such as painful menstruation. A chapter on normal human anatomy and physiology is included in order to make the rest of the book more intelligible to those giving first aid.

[Suggested and reviewed by Eugene Schoenfeld]

## Emergency Medical Guide

John Henderson, M. D.  
1963, 1969; 556 pp.

**\$3.95** postpaid from:  
McGraw-Hill Book Co.  
Princeton Road  
Hightstown, N. U. 08520  
Manchester Road  
Manchester, MO 63062  
8171 Redwood Highway  
Novato, CA 94947

or WHOLE EARTH CATALOG

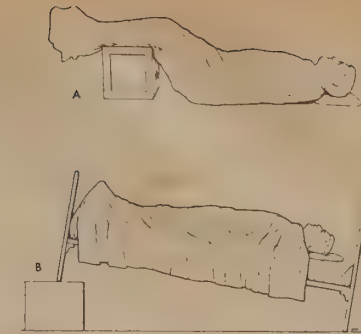
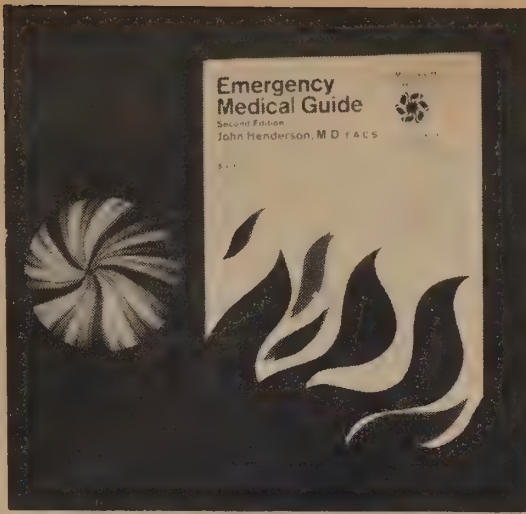


FIG. 6-1. Two methods of placing a victim in the shock position. A. Under emergency conditions, use a box or other device to elevate the legs. B. Under hospital or home conditions, use "shock blocks" under foot of bed.

It is important to keep the victim of the attack from aspirating or choking on vomited matter, but since most attacks will terminate harmlessly by themselves, regardless of what you do or do not do, just protect the victim from injury and bide your time. When he recovers, do not be unduly sympathetic—you may only embarrass him. Give him a drink of water or tea, protect him from curious onlookers, and be sure that he is well enough to go on his way or that he is taken home. If the condition is more serious, see that he gets to a hospital.

Those who are accustomed to handling epileptic seizures make little of the convulsions and do not become excited.

### SUMMARY AND CHECK LIST OF IMMEDIATE MEASURES

Always treat the most dangerous and urgent condition first. Remember the four B's: breathing, bleeding, broken bones, and burns.

A summary and check list of the fundamental general procedures follow:

- Whether or not the injured person is conscious:
1. Make sure that he is breathing. If he is not, begin artificial respiration immediately.
2. If breathing is satisfactory, see whether he is bleeding. If the bleeding is profuse, take measures to control it immediately.
3. When breathing is satisfactory and there is no evidence of bleeding, look for signs of shock and fractured bones.
4. Obtain medical aid quickly—phone a doctor, get someone else to phone him, or get the injured person to a doctor or hospital.
5. Work quickly, but carefully.
6. Loosen tight clothing—collar, waistband, or belt.
7. If the victim vomits, lower his head and turn it gently to one side so that the vomitus will not be aspirated.
8. Remove any loose objects, such as artificial dentures, from the mouth of an unconscious person.
9. Keep the victim quiet and warm. Do not over-heat.
10. Don't give an unconscious person anything to drink.
11. Don't aggravate an injury by unnecessary movements.
12. Don't allow a person with a fracture or suspected fracture to be moved until splints have been applied or he has been fixed to an adequate back board in the case of possible spinal injury.
13. Never urge an injured person to sit up, stand up, or walk until you are sure he can safely do so.



FIG. 4-11. Correct position of hands for external cardiac massage, using the heel of the hand to exert pressure on the breastbone.



FIG. 4-1. Ejecting a foreign body stuck in child's windpipe by a sharp blow between the shoulder blades.



FIG. 15-1. A cradle to keep bedclothes off legs and feet, made from a cardboard carton.



FIG. 8-9. Procedure for reducing a simple dislocation of a finger, applying pull on each side of the affected joint.

**Thumb.** Do not attempt to set a dislocation of a thumb. Because of its complicated anatomy, reduction may require a minor operation. Cover the thumb with a protective compress, support the hand in a sling, and seek medical aid.

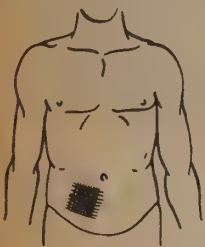


FIG. 111.

## DIAGNOSTIC SIGNS IN UNCONSCIOUSNESS

	1. Fainting	2. Brain Concussion	3. Brain Compression	4. Epilepsy	5. Hysteria	6. Stroke (Apoplexy)	7. Alcohol	8. Opium and Morphine	9. Barbiturate (Sedative tablets)	10. Uremic Coma	11. Sunstroke and Heatstroke	12. Electric Shock	13. Cyanide (Prussic Acid)	14. Diabetic Coma	15. Shock
Onset	Usually sudden	Sudden	Usually gradual	Sudden	Gradual	Sudden as a rule	Gradual	Gradual	Gradual	Gradual	Gradual or sudden	Sudden	Very rapid	Gradual	Gradual
Mental condition	Complete unconsciousness	Unconsciousness, times just confused	Unconsciousness deepening	Complete unconsciousness	Often theatrical	Complete unconsciousness	Stupor, later unconsciousness	Unconsciousness deepening	Stupor, later deepening unconsciousness	Very drowsy, later unconsciousness	Delirium or unconsciousness	Unconsciousness	Confused, later unconsciousness	Very drowsy, later unconsciousness	Listless, later unconsciousness
Pulse	Feeble and fast	Feeble and irregular	Gradually slower	Fast	Normal	Slow and full	Full and fast, later fast and feeble	Feeble and slow	Feeble and fast	Full	Fast and feeble	Fast and feeble	Fast and feeble, later stops	Fast and feeble	Fast and very feeble
Respiration	Quick and shallow	Shallow and irregular	Slow and noisy	Noisy, later deep and slow	Normal or exaggerated	Slow and noisy	Deep, slow and noisy	Slow, may be deep	Slow, noisy and irregular	Noisy and difficult	Difficult	Shallow and may cease	Slow, gasping and spasmodic	Deep and sighing	Rapid and shallow with occasional deep sigh
Skin	Pale, cold and clammy	Pale and cold	Hot and flushed	Livid, later pale	Normal	Hot and flushed	Flushed, later cold and clammy	Pale, cold and clammy	Cold and clammy	Sallow, cold and dry	Very hot and dry	Pale, may be burnt	Cold	Livid, later pale	Pale, cold and clammy
Pupils	Equal and dilated	Variable size but equal	Unequal	Equal and dilated	Equal	Unequal	Dilated, later may contract. Eyes blood-shot	Equal, very contracted	Equal, somewhat contracted	Equal and contracted	Equal	Eyes may squint	Equal, staring eyes	Equal	Equal, dilated
Paralysis	None	None	Present, of leg or arm	None	None	Present; leg, arm or face; or all three, on one side	None	None	None	None	None	May be present	None	None	None
Convulsions	None	None	Present, in some cases	Tonic, later clonic	Irregular and varied limb movements	Present, in some cases	None	None	None	Present in some cases	Present in some cases	Present in some cases	Present	None	None
Breath	—	—	—	—	—	—	Smells of alcohol	With opium, musty smell	—	Offensive; smell of urine	—	—	Smells of bitter almonds	Smells of acetone (like "pear-drops")	—
Special points	Often giddiness and swooning before collapse	Often signs of head injury. Vomiting on recovery	Often signs of head injury. Remember delayed onset of symptoms	Tongue often bitten. Urine or faeces may be voided. Often injury in falling	Graceful collapse. No injury in falling. Never alone at time of attack. Often alternate laugh and cry	Over middle age. Eyes may look to one side. Sometimes loss of speech on recovery	Absence of the smell of alcohol excludes it as cause, but its presence does not prove that alcohol is the cause	Look for source of supply	Look for source of supply	Vomiting in some cases	Vomiting in some cases	Muscular spasm often causes tight gripping of the electrified object	Rapid deterioration. Breathing may stop	In early stages headache, restlessness and nausea. Third and frequent urination	May vomit in early stages. Thirst, defective vision and ear noise

## The Ship Captain's Medical Guide

I doubt if there is a more complete book of paramedical information. It assumes there is no doctor within days or weeks of your situation. Bargain price.

## The Ship Captain's Medical Guide

20th Edition, 1967; 356 pp.

**\$3.60** (30 shillings)

from:  
Government Bookshop  
P. O. Box 569  
London S.E. 1, ENGLAND



or Blackwell's (see p. 79)

Appendicitis is by far the most common inflammatory condition in the abdomen and it occurs particularly in men under 30. It is not usually difficult to diagnose, but the abdominal pains must be distinguished from ordinary intestinal colic. Always suspect appendicitis with abdominal pains. An acute attack of appendicitis commences with pain which is vague in situation to begin with (though generally around the navel), but which after a few hours settles in the right side of the lower part of the abdomen. The pain is usually continuous, and it may or may not be very severe. There may be a loose stool at the beginning of the attack, but after that there is no desire to pass any motion again and constipation exists. The patient usually vomits once or twice during the first few hours of the pain.

★ **Commonsense Childbirth**

Mrs. Hazell writes from the personal experience of having had one child under anaesthesia, another using La Maze method, and a third at home. The book covers pregnancy, birth, and care of the newborn. It is gently positive about husband-coaching and breastfeeding. There's a good chapter on home deliveries. It's written by an intelligent woman, and it doesn't needlessly complicate what is really a very simple method of controlled breathing and relaxation.

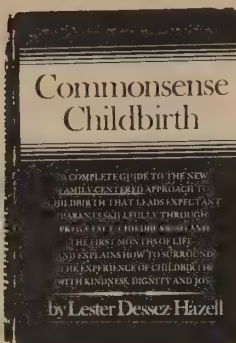
[Reviewed by Pam Smith.  
Suggested by Judy Bass]

**Commonsense Childbirth**  
Lester Dessez Hazell  
1969; 243 pp.

\$5.95 postpaid

from:  
G. P. Putnam's Sons  
200 Madison Avenue  
New York, N. Y. 10016

or WHOLE EARTH CATALOG



My own point of view on home delivery is influenced by the fact that all my experience with it has been positive. Babies born at home seem better to me in every respect, and my students who have had both home and hospital deliveries prefer home. These babies are born crying and healthy, and with their mothers they continue in the pattern of life they have been living the last nine months.

What a mother eats has a profound effect on the outcome of her pregnancy and on her baby's start in life. A number of very convincing studies tie complications of pregnancy to a poor-quality diet. Not only do many minor annoyances of pregnancy vanish when ample amounts of necessary elements are added to the diet, but the baby is basically affected as well. One study found that 94 percent of babies born to mothers whose diet was excellent were perfect specimens, whereas 92 percent of babies whose mothers' diets were inadequate in as little as one element were defective in some way. It has been my observation that the women who feel on top of the world are usually the ones who take good food seriously and concentrate on eating types of food that contain the raw material with which to maintain health and manufacture a healthy baby. . . .

You certainly don't have to become a nutrition expert, however, to provide yourself with high-quality food. The trick is to keep your eye on how much protein you eat and at the same time to see that you get something every day from each of the four major food groups: 1) meat-egg; 2) milk-cheese; 3) vegetable-fruit; 4) bread-cereal. If we want to use a mnemonic device, we can call this the P-4 plan: Eat lots of protein in each of the basic four every day.

As soon as the bearing-down reflex is established, second stage is begun. For the next few contractions you push your baby down two steps, and he slides back one. This can be discouraging if you don't realize that this is the normal pattern of labor. However, when you stop to think about it, this makes good sense. In this way your passages are dilated gently and slowly by the plunger action of the baby, the baby has fluid squeezed from his lungs, his skin is stimulated preparatory to his existence in a world that will be constantly touching him, and then during the interval between contractions everyone rests.

What does the bearing-down reflex feel like? Everyone has experienced this to some degree. It is very like the pushing of a bowel movement, only more sustained and more demanding. It is far easier *not* to push when one is having a bowel movement than when one is having a baby. However, the second-stage contractions are not, as a rule, painful. In fact, they are very satisfying. You may be surprised at the noises you make. So may your family.

The first milk that flows is the high-protein, nonfat type. This fairly gushes into the baby's mouth. Later when the flow is slower comes the cream. The cream sticks to the baby's ribs because it digests more slowly than the nonfat milk. It is also more filling. So it is providential that while the baby is nursing vigorously in the first flush of hunger, he does not get his high-calorie dessert. Entrée before ice cream is a habit formed early!

Thus a baby knows best how to regulate how long he should nurse. He does this according to the needs of his stomach as well as for the joy of cuddling with his mother.

The let-down of the milk is a conditioned reflex. In the early days of nursing the milk flows frequently at only the thought of the baby or even the cry of someone else's baby. Later this becomes conditioned to the particular baby's sucking. Hence the working mother can go all day long and not feed her baby, and her breasts will remain flat and comfortable. As soon as her baby takes a few sucks, the milk flows in any quantity he needs.

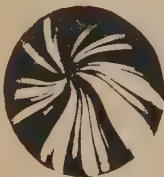
We know that gross brain damage rises in direct proportion to the amount of analgesic medication given to the mother during her labor. The baby of an anesthetized and doxy mother will have been subjected to the same or greater degree (relative to body size) of anesthesia and dopiness at a time when he needs to breathe well and when his circulation should be operating at peak efficiency. Yet the educated laboring woman finds that at every turn she must defend her position that she doesn't need analgesic medication as one attendant after another presses her to accept such nostrums. She may even have to apologize for not wanting to take medicine which she knows could jeopardize her baby.

**Pregnancy, Childbirth and the Newborn, A Manual for Rural Midwives**

This manual was first published in 1950 to teach women and girls in China who had very little education. Since then it has been enlarged and adapted to other countries, so that it is now also published in Portuguese, Spanish and English.

Lessons include anatomy, physiology of the female reproductive organs, the progress and conduct of pregnancy and childbirth, and the care of the newborn. The illustrations and directions will certainly aid anyone interested in a home delivery, since the manual is written for rural midwives without access to modern, sterile hospitals. The suggestions are practical and economical.

[Suggested and reviewed by Haru Bekker]

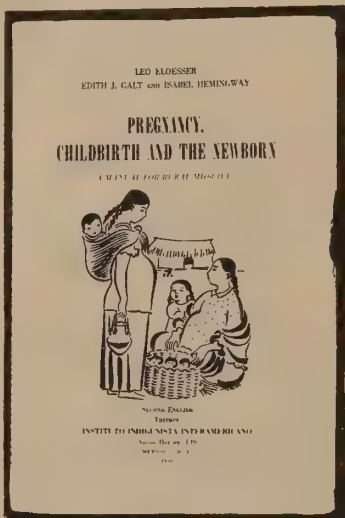


**Pregnancy, Childbirth and the Newborn, A Manual for Rural Midwives**  
Leo Eloesser, Edith Galt and Isabel Hemingway  
1959; 150 pp.

\$1.25 postpaid

from:  
Niños Héroes, 139  
México 7, D. F.  
MEXICO

or WHOLE EARTH CATALOG



**Birth Control Handbook**

*Fantastic. Definitive, thorough, heads-up, loving treatment of the whole birth control picture. A book by the future for the future. There's nothing in the past like it.*

**Birth Control Handbook**  
McGill Students' Society  
1968, 1969; 46 pp.

individual copies **free** plus postage (10¢)

from:  
Students' Society of McGill University  
3480 McTavish Street  
Montreal, Quebec  
CANADA

Conception control necessarily carries liberating potential for women.

A woman may safely engage in pleasurable sexual relations without automatically submitting to the humiliating protective-dependent relationship with a man which is ordinarily imposed. Also, a woman now has the option of bearing and socializing children—it is no longer the sole source of her sexual and social identity. Once "out of the kitchen" a woman can begin to use her mind and body towards socially productive ends by joining labor forces and professions on a level of equality with men.

Condoms can be bought from a drug store without a prescription. The most common retail price for a good brand is about 3 for \$1.25 although the price varies considerably, especially with lubricated and skin condoms.

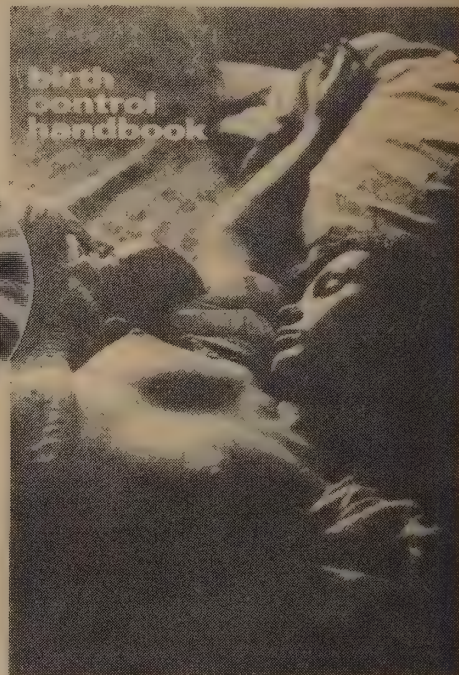
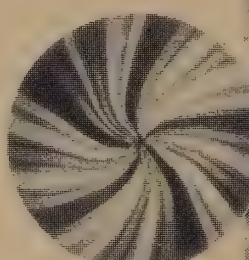
It is common practice to keep a condom in a wallet or pocket until it is needed. This is a serious mistake. The combination of moisture and heat provided by contact with the body leads to deterioration of the condom. The sheath should never be kept in a wallet or pocket for any length of time; it is best to leave condoms in the small cardboard containers in which they are usually sold. Kept this way, without excessive heat or moisture, condoms can be stored for several months.

"Tip" condoms, or condom caps, which fit only around the glans of the penis should never be used, since they are likely to slip off after orgasm.

The diaphragm should not be inserted more than 2 hours before coitus. Also, since it takes up to 6 hours for the spermicidal preparation on the rubber dome to destroy sperm, the diaphragm must not be removed until six hours after the last ejaculation. The diaphragm may be left in place for as long as 24 hours after which it should be removed and washed with soap and water.

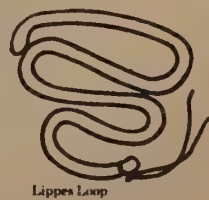
Although there is much disagreement among doctors as to which is the best IUD available, it seems that the Lippes loop (size D, a little more than 1 inch in diameter) is the best one. The Lippes loop is preferred because it has lower expulsion and pregnancy rates, and fewer side effects. Other advantages of the loop, which it shares with such devices as the Marguiles coil include: the ease of insertion and removal, and a nylon appendage which allows the woman to check for the IUD's presence. Although sufficient research has not been done, it appears that effectiveness and acceptability of the Saf-t-coil are similar to those of the loop.

There has not been a single case reported in which an IUD caused cancer. IUDs are not the cause of any kind of cancer.



The aerosol foam (used with an applicator) is a recent variation of the cream method. It works on the same principle as the gel or cream alone, except that the agent is packaged in a container under pressure and is extruded as a foam into the applicator when the latter is pressed against the container. The foam has special qualities that make it particularly acceptable. A smaller amount by weight is delivered, so women complain less of messiness; cost per application is reduced; and furthermore, the vehicle (or the non-reactive base) has characteristics similar to those of a "vanishing cream", so that leakage from the vagina after coitus is greatly reduced.

The most common method of male sterilization, an operation known as a vasectomy, has no effects on a man's sexual desire or virility, except perhaps to enhance it by relieving him from fears of having another child. The operation involves severing the vas deferens thereby preventing the passage of sperm from the testicles to the penis. Since the contribution of the testes accounts for only about 1/10 of the volume of the total ejaculate, the actual quantity of seminal fluid is not appreciably diminished.



Lippes Loop



Marguiles Coil



**COMPLICATIONS OF DELIVERY**

**Breech Delivery**

In about 3% of all deliveries the breech presents. There is not much danger for the mother, but 10% of breech babies die, many of them from trouble with breathing (asphyxia). If properly handled the danger is much less.

**Conduct.** If a breech presentation is diagnosed in a first pregnancy, get help for the delivery or send the patient to a hospital, if possible.

If the patient has had other babies, or is in active labour, do your best to deliver the baby.

Measures to hasten delivery, such as an enema or having the mother walk, should be omitted.

When the presenting part is in sight do not hurry but let the buttocks stretch the perineum slowly. Let the mother deliver the baby. When the whole body is born, support it on your left hand and forearm, using the middle finger of your left hand to find the baby's mouth and make complete flexion of the baby's head. At the same time, press on the fundus with the right hand, or ask a helper to do so, and the head will be born. Do not pull on the baby at any time.

## American Indian Medicine

definitive book—all the tribes, all the medicines. The author is looking through the window of Western medicine Western anthropology, but he is looking with detailed appreciation. Weedmunchers could find no better guide, people who could use it best probably can't afford a doctor and drugstore and probably can't afford this book—another good reason for libraries.

### American Indian Medicine

by Virgil J. Vogel

583 pp.

\$2.50 postpaid

University of Oklahoma Press  
5 Asp Avenue  
Norman, Oklahoma 73069

or WHOLE EARTH CATALOG



concluded that "American tribes had no effective methods of preventing conception," and that they relied mainly on abortion, antiseptic, and abstention to control family size.

It has since proved how wrong Himes was, for not only have contraceptives come into general use in advanced countries, but herbs were finally subjected to laboratory tests in the search for an effective oral means of controlling fertility, and a few of them were found to be effective. Just as America was considered to be undiscovered before the white men found it, the Indian drugs were unreal or of no account until the white men discovered them. This is one example among many of the ethnocentric attitude which has hurt the white men more than the Indian by delaying scientific inquiry into aboriginal herbal knowledge. The Cherokee drug may have been of no use, but it is striking here is the way it was rejected *a priori*, simply because white men knew of no oral contraceptive, and therefore, presumably, none existed. It is noteworthy that until recently it could not only be said that Indian recipes for controlling fertility had not been investigated, but that the very names of the drugs used were largely unknown.

*Prosopis juliflora* [Swartz] DC, and *Prosopis glandulosa* (L.) P. *juliflora* was the *mizquilt* of the Aztecs (hence, *mesquite*), and the leaves mixed with other substances for an eye lotion when the eyes were hot and painful from sickness. Seventy years ago Dr. Burke reported that this shrubby tree was used for the same purpose by Mexican Americans in Texas, and Hrdlicka found that the Indians of the American Southwest using it in a similar manner. The Mescalero Apaches ground the leaves to a powder, placed the substance in a thin cloth, added water, and squeezed the liquid out on the eyes. The Pimas applied the sap to sore eyes. The Maricopas used the dried juice, ground fine, as a sore-eye remedy by applying the substance to the lids and later washing it off with warm water.

The skeletal remains of unquestionably pre-Columbian date concludes are, barring few exceptions, remarkably free from disease. Whole important scourges were wholly unknown. There was no pathologic microcephaly, no hydrocephaly. There was no plague, cholera, typhus, smallpox or measles. Cancer was rare, and even fractures were infrequent. There was no leprosy... there is as yet not a single instance of pre-Columbian syphilis. There were, apparently, no nevi [skin moles]. There were no troubles with the feet, such as bunions. And, judging from later acquired knowledge, there was a much greater scarcity than in the white population of many diseases of the skin, of most mental disorders, and of other serious conditions.

The chief diseases to which the ancient Indians were subject, he added, were digestive disorders, particularly in children and older persons, pneumonia, arthritis, and localized maladies such as nutritional disorders.

*Mentha*. This is the only indigenous species of *Mentha*. Dr. Clapp reported in 1852 that it was little used in medicine but would be a valuable substitute for the European species when they could not be obtained.

The Cheyennes ground the leaves and stems of this species and boiled them for a medicine to prevent vomiting. Wild mint was used by all Missouri valley tribes as a carminative, being steeped in water and sweetened with sugar for a drink. Because of its aromatic flavor, it was also used as a beverage. Among the Menominees it was combined with catnip and peppermint for a pneumonia remedy, being drunk as a tea and also used as a chest poultice. The Flambeaux Ojibwas brewed a tea from the entire plant for use as a blood remedy. It was also used as a sweat bath, and the Pillagers made a tea of it to break fevers. The Potawatomis used the leaves or tops for fevers and as a stimulating tea for pleurisy. Whites have used the whole plant for its bitter, astringent, antispasmodic, antirheumatic, stimulant, and anodyne properties.

Wild mint (*Mentha arvensis*, var. *canadensis* L.) has not been mentioned, but it contains a volatile oil from which pulegone and menthol (USP 1882-1950, NF 1950-) or carvacrol have been isolated.

The shock experienced by plunging into cold water after the sweat bath is parallel to hydrotherapy treatments commonly used today for patients suffering from nervous tension. Therefore it was probably effective for ailments of a psychosomatic nature.

## Folk Medicine

Of all the books on folk medicine that've come through our hands, this is the only one I'd trust enough to use. Seems like every other malady, Dr. Jarvis either pours honey on it or in it.

### Folk Medicine

D. C. Jarvis, M. D.

1958; 192 pp.

\$1.75 postpaid

from:  
Fawcett World Library  
67 West 44th Street  
New York, N. Y. 10036

or WHOLE EARTH CATALOG



## Snugli Baby Carrier

This is the most useful baby carrier I have ever seen. It can be used with a day-old baby, because of the head support, as well as a 2 year old—but not simultaneously since to enlarge the pack tucks are taken out as the baby grows.

A Snugli provides a mother with a baby carrier that allows her to have both hands free. New mothers can attend classes, work, shop, do housework, etc. without having to find a babysitter. Needless to say babies love it. If you can't stand to live with a colicky baby, put it in this pack and fix dinner or whatever.

The Snugli is of extremely high quality (will bear several machine washings and dryings per week and teething; being stuffed in purses and being left in the rain.) It is very comfortable as long as the shoulder straps are kept tight so that the weight is not carried on the small of the back.

I recommend this as second only to diapers to prospective parents.

[Reviewed by Mary Jane Markley.  
Suggested by Chris Brown]

Barre, Vermont, being the largest granite-cutting center in the world, I decided to try adding granite dust which, as it comes from the dust-removing device, is fine, like flour. Granite dust contains 5 per cent of potassium, and has associated with it sixteen minerals. When I applied it to the soil around my garden plants, a number of things happened.

Among my flowers, I have 125 plants of delphinium. Each year I had been having to combat a tiny mite which caused the leaves to curl up and turn black. These harmful mites were so small that I had to use a magnifying glass in order to see them crawling on the leaves. I used a spray but it did not do away with them. When I added the granite dust to the soil around the plants, these harmful mites deserted my garden and have not returned.

Following the general examination, and the special examination of his nose, I gave the boy a chew of honeycomb, to learn what might happen. I wrote out directions for treatment to be followed at home and prepared drops he was to take. Before I had finished this—after about five minutes—the boy suddenly said, "My nose is open! I can breathe through it!" I gave the medicine for home use to the mother and discussed the written directions. Then I examined the boy's nose again to see what the honeycomb had accomplished.

The nose tissues had subsided, as they would have if I had used a shrinking agent in the nose. Instead of being pale, the mucous membrane was now light pink in color. One week later, at the next office visit, the boy's nose was still open and he was breathing with his mouth closed.



Snugli Baby Carrier

\$28.95 postpaid

from:  
Snugli  
Route 1, box 885  
Evergreen, Colorado 80439

or WHOLE EARTH CATALOG

## Sauna

The only book available on Saunas: what they are, the history, how to use and enjoy, and how to build one. Although the construction details are not extensive, there is a list of about 20 Sauna manufacturers who will send you free construction plans, in hopes that you'll buy a heating device from them.

[Suggested by Stan Gould]



Sauna: The Finnish Bath  
1965; 87 pp.

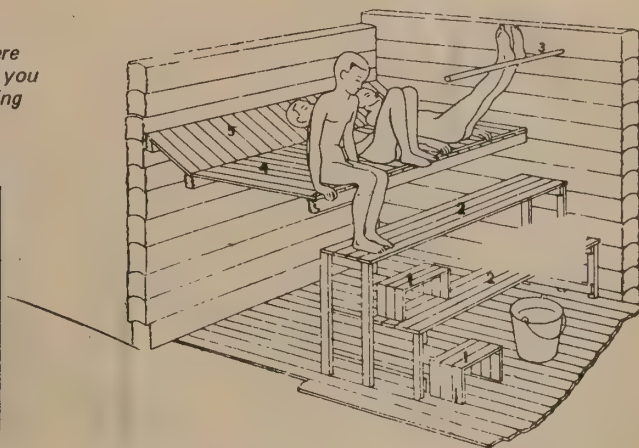
\$3.95 postpaid from:

Stephen Greene Press  
120 Main Street  
Brattleboro, Vt. 05301

or WHOLE EARTH CATALOG

The simplest form of the family sauna is a one-room hut built of logs, with a large rudimentary stove upon which rocks are placed.... The heat of the sauna is non-radiant: that is, it does not radiate directly toward the bather but rather is absorbed in the stones which emit the heat into the air. The indirect heat is gentle and constant.... The stones are heated until they become red hot...ideal temperature 190-200 degrees...water is thrown on the stones but the air remains dry because moisture is instantly absorbed by the wooden walls... traditional sauna includes beating with leafy birch branches, washing, and a plunge in a nearby lake or roll in the snow outside. Then follows a necessary rest while the body cools down completely.

## BUILDING A FINNISH SAUNA



A practical arrangement: 1) small stools used as steps; 2) steps; 3) rail for propping up feet; 4) platform; 5) headrest.

The need for a perspiration bath has arisen in those countries where people have had to do exceptionally heavy physical work.... After heavy work the limbs had to be made supple and strengthened before work could be continued.

There are several different kinds of platform. In some, a series of steps of which the top one is wider than the rest, where there is room to both sit and lie. In others, a wooden stairway leads up to the platform which is like a gallery on which stools and benches are placed.

If possible the sauna should face west, as people usually go into the sauna in the evening, very often at sunset. Then the rays of the setting sun streaming into the sauna room give one a feeling of intense calm. And, lying on the platform, looking out to the lake, one experiences a delicious foretaste of what the cool waters will offer the bather who plunges from the heat of the sauna into their depths.

Interior walls and ceiling are often built of kiln-dried, unfinished redwood, which does not shrink, does not warp, and is a poor heat conductor. Another excellent wood is cedar, which not only shares redwood's good properties but also emits a pleasant odor and does not stain with moisture.

Nailing should be done with hot-dipped galvanized nails to avoid stains from rust; nails should be counter-sunk whenever it is likely that a bather will touch them in the hot room. Tongue-in-groove paneling disposes of this problem in wall construction; benches can be screwed from below.

## How to Live on Nothing

(Our best selling book.)

This book has a lot in common with *Champagne Living On A Beer Budget* (below), but there's enough difference between the two to make them more companion pieces than competitors. The emphasis in *Champagne Living* is on the cheap accumulation of necessary things. *How to Live on Nothing* covers some of that ground too, but its main concern is the development of personal skills to help you get free of the need to pay people like carpenters, plumbers, doctors and real estate agents to live your practical (that is to say, your "real" or "concrete") life for you.

Of course there's no such thing as "living on nothing." The book would be more properly titled, *Living for Something*. For in a curious, unintended, Zen sort of way, that's what this book is about: living simply to establish familiarity with the details of your world, with ordinary local mysteries and miracles such as the wiring system in your house, the fabric of the garments you wear, the truth of the food you eat, and the fuel you burn. Behind the information, the advice, the hints, and the facts, this book is about coming to see things as they are, through your own eyes, instead of the hired eyes of some expert or other. It's about training yourself to trust yourself, and trusting yourself to train yourself, until you're able to claim your right as a human to be competent with your hands.

Finally no one is ever competent with his hands until he uses them, and flipping through how-to-do-it books can hardly be described as manual labor. So perhaps the best way to recommend a book like this is to call it literature and emphasize its inspirational value. I kind of like that idea. I've thought the same thing about the *Whole Earth Catalog* in general, which brings up an interesting question: if the ultimate test of a good manual is its success as art, does that mean that the ultimate test of a good novel is its uses as a manual? We'll see. Meanwhile, here's a good 75 cent how-to-do-it book that could be a help to you on your next trip, real or imagined, into the New Wilderness.

[Reviewed by Gurney Norman. Suggested by Jim Martin]

### How to Live on Nothing

Joan Ranson Shortney  
1961; 336 pp.

\$ .75 postpaid

from:  
Pocket Books  
A Division of  
Simon & Schuster, Inc.  
630 Fifth Avenue  
New York, N. Y. 10020

or WHOLE EARTH CATALOG

A food and nutrition chapter would not be complete without mention of a food bargain that is unknown to most of us. It is MPF, the Multi-Purpose Food, developed at the California Institute of Technology and merchandised through the Meals for Millions Foundation Incorporated, [correction: 1800 Olympic, Santa Monica, CA]. This is a non-profit organization dedicated to relieving and preventing starvation and malnutrition throughout the world. Meals for Millions supplies MPF for 3 cents a meal to famine areas.

**BLACKBOARD CHALK.** Leftover ends of chalk will give metals a shine when rubbed on. Also, store these ends with costume jewelry to keep it from tarnishing.

City dwellers can get many vegetables for the asking at less trouble than we who have to wander among the weeds. The grocer nowadays has a perfect passion for washing greens and wrapping them in plastic. If you reach his place early in the morning when he's engaged in this vitamin-robbing task, you may receive a gift of the discarded vitamin-rich outer leaves plus a stray carrot and some celery stalks. I've obtained boxfuls from a grocer in a nearby town and I use the wooden boxes for fuel while I'm preparing the greens.

**CORKS.** A used cork should be kept near the kitchen sink in a jigger glass or eggcup so that it is handy for scouring cutlery, etc. Used with scouring powder, it is effective and saves wear and tear on your dishcloth.

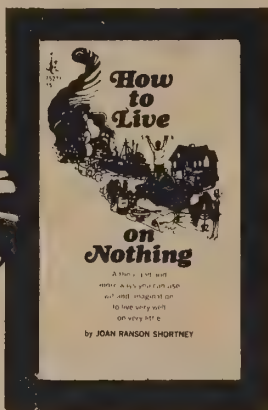
**BREAKFAST WHEAT MEAL.** Wash 2½ cups (1 pound) wheat kernels. Spread on cookie sheet to dry and toast in moderate (350 degrees) oven for ½ hour. Put kernels through coffee grinder, adjusting to fine if you want meal, coarser if you want grits or groats. Makes 3 cups. Store in cool place. To make 4 small or 2 large servings and add concentrated milk values, mix ½ cup wheat meal with ½ cup dry milk solids. Mix to paste in ½ cup cold water. Add to 1½ cups boiling water with ¼ teaspoon salt. Stir over low heat 3 minutes. When smooth and thick, add a teaspoon of honey or raisins or other dried fruit or omit sweetening and serve with butter or cream as your taste dictates.

**DOORKNOB.** If you have no pestle for pulverizing pills and bruising seeds, mashing herbs, etc., use a doorknob in a wooden salad bowl.

If you live in the city you can usually get plenty of discarded crates for tinder, but unfortunately logs are expensive. Newspaper, however, is cheap. If you haven't enough of your own, collect your neighbors' or raid the nearest trash can. To make a log out of paper, roll the newspaper from the bottom up so that the length of the log will be no more than the width of the paper. Make a thick roll (a single Sunday edition should do it) at least 6 inches in diameter. Then fasten the roll by rolling it on the diagonal of two sheets of fully spread-out newspaper and tucking each end of this covering piece into each end of the log roll. You'll not believe this until you try it—I didn't—but this paper log burns slowly and will stretch out a scant wood supply admirably. We use these in our fireplace when it is too damp to go out for wood.

**ENVELOPES,** either the ones addressed to you or the ones enclosed as postage reply envelopes with ads or the ones enclosed with wedding invitations, etc., should be re-used. Open addressed envelopes carefully. Turn them inside out and reglue the seams.

Motor-driven equipment is an increasingly heavy expense as our homes become more mechanized. Most of us, however, pay for unnecessary appliance repairs through ignorance of how to avoid them. It's not necessary to try to rival the skill of a professional repairman. Simply keep him away by knowing a few rules of care and repair. Car engines aren't the only ones to suffer strain in cold weather. A hard start strains any motor. Your washing machine standing on the back porch in a temperature below 40 degrees F. must stand half a day inside in the warmth before you do the wash. If you keep your sewing machine in the cold spare room, apply the same rule. Even the motor-driven grinder out in the unheated garage needs warming before running. Vacuum cleaner, freezer, and refrigerator motors all need warmth before starting.



## Champagne Living on a Beer Budget

If your vision of an alternate life style includes a dome in the mountains, raising your own food and making your own clothes from homespun wool, you probably ought to pass this book up and wait til somebody writes *Beer Living On A Bay-Rum Budget*.

But if you are pioneering in or near a city, and if money passes through your hands with some regularity; if, that is, you consider yourself what I have come to think of as a 'suburban guerrilla,' then *Champagne Living On A Beer Budget* would be a handy tool to have around your camp.

(Someday, after I've lived in the suburbs longer, I'd like to write an essay about my vision of the suburban guerrilla. He's a definite phenomenon. There's a sizeable population of them here in the San Francisco Bay area, men and women out to enjoy the advantages of town life without paying the customary penalties. Every suburban guerrilla probably has his own definition of himself, but my own sense of him is this: he has a job, but not a career. He likes the comforts, but doesn't want to go into debt for them. He makes distinctions between things that are good and things that are merely expensive. He may go in for elegance, or he may dig the funky scene. Hippies, after all, are urban guerrillas. But hippies are kids mainly grooving on each other in special enclaves, and that isn't quite what I'm talking about. I'm talking about people who see the possibility of a rich and abundant adult life within the context of those same suburban communities generally condemned as such hopeless wastelands that 'real' life cannot be supported there. The suburban guerrilla I have in mind is one of the suburbs, as well as in them.

He challenges the assumption that the suburban context is hard; absolute, impenetrable, like plastic. To him, more like a piece of cheesecloth, full of holes to breathe through, and to wind in and out of, like a morning glory, or a pole bean. He borrows much of his point of view from the orientals. He realizes that life goes on in the suburbs just like every other place, even if most of the people there are too blind and deaf to see and hear it. The guerrilla lives by his wits, one day at a time. This makes him alert and alive. He has a talent for cultivating the holes in his cheesecloth. One hole might simply be the way the world is at six a.m. Another might be first-hand knowledge of all the footpaths in the neighborhood. He creates his freedom here and there and now and then, and by diligence winds up with as much as any conscious man

anywhere. His landscape is small and patterned, but there are discoveries to be made on it, discoveries that can feed his own life at the same time they are important to the culture. I know of one elderly couple that subsists almost entirely on the food they raise in their organic garden in the backyard of their home in suburban Menlo Park. As far as I'm concerned, the trip those two people are on, the life they are proving possible, is the most inspiring radical activity in all of San Francisco's radical environs.

One needn't romanticize his life as much as all that, however, to find the book we're talking about a worthwhile manual. Anybody interested in bargains ought to have it. It's loaded with facts, tips and information on good deals in all the important categories. Food, clothing, shelter, real estate, automobiles, household appliances, medical things, taxation, funerals, recreation, retirement, consumer co-ops, travel, babies, insurance, charities, and more. It's entertainingly written; yet the rhetoric never gets in the way of the information. The people who wrote it obviously want to beat the money rap as much as any of us. They also want to live well. Their book will be of considerable help to other people trying to do both, simultaneously.

[Reviewed by Gurney Norman]

### Champagne Living on a Beer Budget

Mike and Marilyn Ferguson  
1968; 247 pp.

\$ .75 postpaid

from:  
G. P. Putnam's Sons  
200 Madison Avenue  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

For a dollar a year, you can subscribe to *Our Public Lands*, a quarterly magazine telling how to buy public lands, where to hunt, fish, or camp; also details of 'Alaskan opportunities.' Order from the Superintendent of Documents, Washington, D. C. 20402

Finally we called eight establishments under Typewriters, Rental. For comparable models of a Smith-Corona electric portable, two companies wanted \$25 per month; two wanted \$22.50; three were asking \$20; one, \$15; one, \$12.50. We finally rented a nearly new machine from a firm that charged \$9 monthly on a two-month basis.

'Overexposed steaks' are a find for those who will literally look beyond the surface of things. The fluorescent lighting used in grocery store meat shelves darkens the steaks quite rapidly. Once a steak turns maroon, it's usually marked down by 25 percent or so—and it's fine.

Some expensive canned fruits, like Elberta peaches and fine Bartlett pears, can be bought in cans of 'chunks and pieces' for a fourth or less than you'd pay for canned halves.

Or, if you'd rather, the National Association of Housing Cooperative Inc., invites your query. Address: 465 Grand Street, New York City, N. Y. 10002. Latest information on new cooperative would be available from the United Housing Foundation, same address; or from the Association for Middle Income Housing, 217 Park Row, New York or the FHC Company, 322 Main, Stamford, Conn. (FHC International 1001 15th Street NW, Washington, D.C., is an affiliate of the FHC Company and helps develop housing cooperatives overseas.)

Homes in the paths of proposed freeways have usually been bought by the city or county and are rented on an annual lease basis until time for demolition. Friends of ours are renting a \$30,000 home for \$85 a month—until the bulldozers claim it. They simply called the city switchboard and asked to speak to someone about renting city-owned homes.

Homes being rented are often not due for demolition for eight or ten years. They're bought up far in advance of need so there won't be last-minute snags or holdouts.

Avoid the cheap \$10-\$17 brake jobs advertised by some service stations and shops. At the price, the linings are most likely of inferior quality, and wheel cylinders won't be rebuilt.

When it comes to air travel you can avail yourself of bargains if you'll fly major airlines on weekdays, regional airlines on weekends...fly by night...forgo the two glasses of champagne in first-class quarters...buy a 'run-of-the-airline' ticket on a regional western carrier if you live in the eastern half of the country...travel to Europe in off-seasons...fly a triangle, with a stop at an intermediate glamour city thrown in for a few dollars extra...travel a heavy-volume, frequently scheduled commuter flight...forgo reservations and fly for half fare, on a stand-by basis, on at least one airline...or register as a first-time airline rider on another and make any round trip in the system for \$25...buy a package which wraps up hotel, entertainment, and air fare.

To locate a Memorial society in your area, or for bequeathal information, write to:

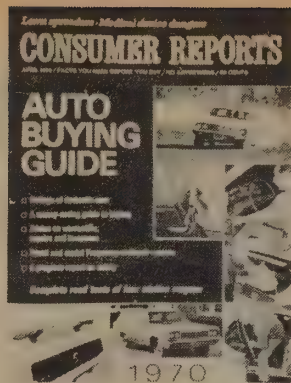
Continental Association  
39 East Van Buren Street  
Chicago, Ill. 60605

For \$1, this nonprofit organization will send you *A Manual of Simple Burial* (64 pages).

For 25 cents, the Continental Association will send you *Memorial Associations: What They Are and How They are Organized*. The association will also be happy to inform you if any societies are newly active in your area.

Consumer Reports

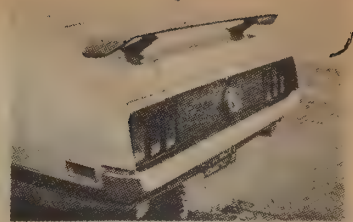
Consumer Reports is a comfort. When the time is come to buy some goodie—color television, or a hi-fi, or a sewing machine—CU (Consumers Union) is there with the information on what's the best, or the best buy, or the healthiest of the brands available. I.e.: how not to get burned (one anticipates the CU research on brand-name psychedelics). Consumer Reports is a monthly magazine with articles on various classes of products and various cases of marketing misbehavior; the December issue is the Buying Guide—a concise compendium of all the quality/price information, available separately for \$1.95. I only wish the magazine could print ads, give the manufacturers a place to beef back, then up the Liberal Hour.



Consumer Reports  
\$3.00/yr. (monthly) U.S.  
\$3.50 Canada, Latin America, Spain  
\$4.00 elsewhere  
Consumers Union  
Mount Vernon, N. Y. 10550

Consumer Reports Buying Guide  
\$1.95 postpaid  
from:  
Consumers Union  
Mount Vernon, N. Y. 10550  
or WHOLE EARTH CATALOG

“... Russ D. Barnard, assistant vp-marketing, CBS Records, said: ‘You can’t sell today’s youth. They are too smart, too experienced and too disillusioned by the total bombardment of sell.’ But, he said, they can be reached through honesty and by having 40 or 50 company promotion managers under 25 and five product managers under 27, like CBS does...”—ADVERTISING AGE.



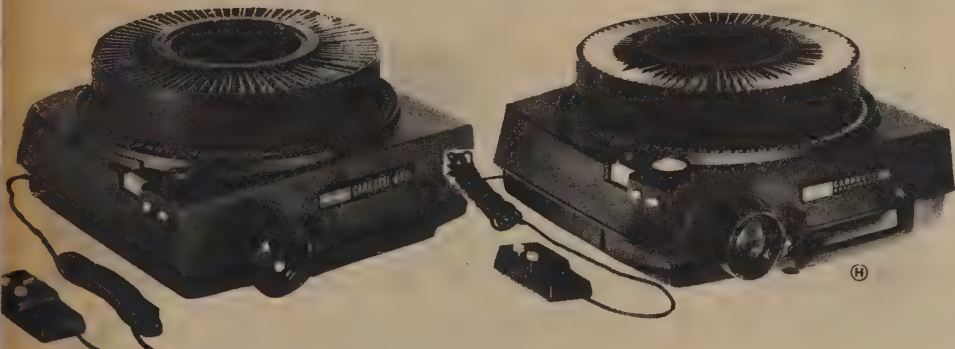
“Taking care of water pollution is money down the drain, says William Geissman, manager of technical services at National Lock Co., in Rockford, Ill. ‘It adds nothing to the product, and about all you can get out of it is a little goodwill in the town.’... He says his company has engaged a consultant and knows exactly what to put in to clean up its pollution. ‘But we’re trying to hold back as long as we can, hoping to find a more economical way.’”—BUSINESS WEEK.

**WHAT'S THAT THING** on the rear deck of this Mustang? It's an option called a “wing” or “spoiler” available for \$20. What does it do? On the Mustang, nothing useful. It's intended to keep the car's rear end down at high speeds. But it will work only at speeds far higher than anyone should drive on a public road. So a “spoiler” on the Mustang is simply a styling gimmick that may give day-dreaming drivers visions of Daytona while stuck in rush-hour traffic

Unity Buying Service

If my life I heard about factory prices, always mentioned in hushed tones or resentful tones, depending on whether one had been obtained or not. But I never saw one in person til this catalog came along, and, by god, there they are: factory prices, half or two-thirds of store prices. This catalog has slick pictures of mostly slickery items, with truthful store prices, and then—never here in this plain jane book—the factory prices for same. You add 5%, order, wait two weeks, and here comes all right stuff, righteous heap.

[Suggested by Muldoon Elder]



Kodak Carousels are THE standard of the image projection world. We've seen nowhere a better price than here.

**KODAK 800 CAROUSEL PROJECTOR WITH 5" F/3.5 LENS** Has 11 basic features plus fully automatic remote slide control: focus; advance; reverse; stop des by 12 ft. cord. Automatic slide change at 5, 8, or 15 second intervals for attended continuous projection. Slide change, forward and reverse by buttons projector. 4 position switch including Hi-Low brightness control. Ship. wt. 13 lbs.

99A13270 Store \$144.50; Unity \$ 91.51+ 5% = \$96.09

ME AS ABOVE WITH 4" TO 6" ZOOM LENS. 98A10980 Store \$174.50; Unity \$110.51 + 5% = \$116.04

**KODAK 850 CAROUSEL PROJECTOR WITH 5" F/2.8 LENS** Incorporates basic projector features with automatic focus. Focuses slides automatically over the first slide. 3 way slide control. Remote—change, forward, reverse, stop 12 ft. cord, push button controls at the projector and automatically at 5, 8, 15 second intervals. Tungsten-halogen (quartz) lamp for longer life. Ship. wt. 13 lbs.

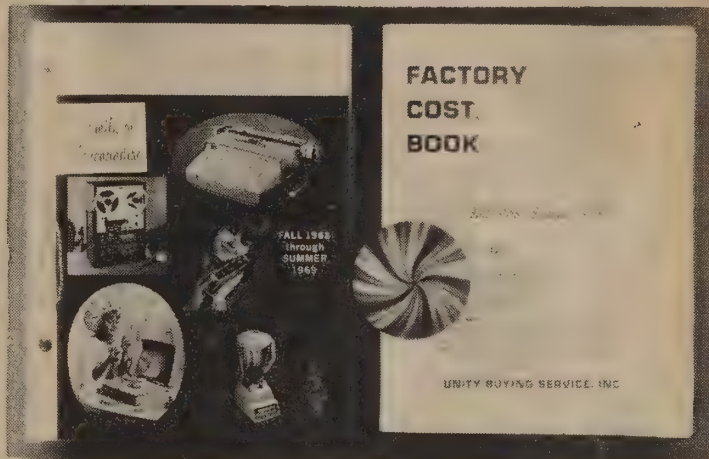
00A14400 Store \$189.50; Unity \$120.01 + 5% = \$126.02

ME AS ABOVE WITH 4" TO 6" ZOOM LENS. 701A16300 Store \$214.50; Unity \$135.85 + 5% = \$142.65



Ⓕ A HEAVY DUTY SWIVEL BASE MACHINIST'S VISE Jaws 4" wide open to 3 1/2". Ship. wt. 13 lbs. Size: 9 1/2" x 5 1/2" x 5 1/2".

2417A635 Store \$10.50 Unity \$3.98 + 5% = \$4.18



Unity Buying Service

Annual membership \$5.00

for membership from:  
Unity Buying Service, Inc.  
Mount Vernon, N. Y. 10551

Ⓖ **DRAFTSMAN'S DRAWING SET** Deluxe mechanical drawing set is an invaluable aid for everyone: student; artist; instructor; etc. 19 professional quality tools packed in a smart leatherette case. Special straightening device on compass and dividers. Set contains: 1-6" compass; 1-4 1/2" compass; 5/8" ruling pen; 6" Swedish detail ruling pen; 6" hairspring divider; 5" drop bow with pen and pencil parts; 3/4" steel spring bow pen, pencil and divider with center screw. Case size: 12 x 5 1/2 x 1". Store 6277A1650 Ship. wt. 2 lbs. \$ 30.00

- Office-size, 84-character keyboard
- Touch-Set margin controls
- Calibrated paper bail
- Rugged, all-metal construction

Economy portable comes with your choice of Pica or Elite type styles. Convenient “console” carrying cover included. Shipping weight 11 lbs. Attractive smooth gray finish. Store 6976A3900 Pica \$49.95 6977A3900 Elite \$49.95 Unity \$32.44 + 5% = \$34.06



Unity \$12.60 + 5% = \$13.23

Long Kong

You have the time (5 weeks or so), Hong Kong offers fantastic deals in cameras, tape recorders, motorcycles, binoculars, calculators, suits, etc. Prices generally include seamail costs. You pay import duty (like, \$15 on a \$118 Canon FT-QL—that costs \$280 in the States), and Customs obliterates the trademark. Catalogs are free.

[Suggested by Terry Link, Thomas Dixon, Jas Hayden, Anne]

Write to:  
Albert White & Co., Ltd.  
P.O. Box 3881  
Kowloon, Hongkong  
Universal Suppliers  
P.O. Box 14803  
Hong Kong

376	Nikon F Photomic FTn camera	262.00
	with f:2.0/50mm lens and case	275.00
377	with f:1.4/50mm lens and case	308.00
378	with f:1.2/55mm lens and case	234.00
379	Nikon F Photomic FTn camera body only	82.00
380	Spare Photomic FTn Meter-Prism Only	10.00
381	Spare eveready case	205.00
382	Nikon F Standard Prism Model	218.00
	with f:2.0/50mm lens and case	251.00
383	with f:1.4/50mm lens and case	177.00
384	with f:1.2/55mm lens and case	25.00
385	Standard Prism Model Body only	10.00
386	Spare Standard Prism only	176.00
387	Spare eveready case	190.00
388	Nikkormat FTn camera	223.00
	with f:2.0/50mm lens and case	145.00
389	with f:1.4/50mm lens and case	9.50
390	with f:1.2/55mm lens and case	148.00
391	Nikkormat FTn Body Only	115.00
392	Spare eveready case	
393	Auto-Nikkor lens 20mm f:3.5	
394	24mm f:2.8	

Portable Tape Recorders:—		
1082	Sony TC 100 Cassette recorder w/case	62.00
1083	Sony Easymatic 8FC 59-w Cassette Corder	48.00
1084	Sony Easymatic 8FC 69-w Cassette Corder	55.00
1085	Sony TC 124 CS 4 Track Stereo Cassette recorder	124.00
1086	Sony TC 125 Cassette Tape Deck	80.00
1087	National (Panasonic) RQ203 Cassette Recorder	42.00
1088	National (Panasonic) RQ204 Cassette Recorder	36.00
1089	National (Panasonic) RQ210 Cassette Recorder	78.00
1090	National (Panasonic) RS-255 Cassette Stereo	96.00
1091	National RQ231 Cassette recorder w/FM Radio	82.00
1092	National RF 7270 Cassette recorder w/FM Radio	88.00
1093	National RS-280S Stereo Cassette Recorder w FM Radio	190.00
1094	National RE-7060 Stereo Cassette Recorder w/FM Radio	160.00
1095	Uher 4400 Report Stereo Tape Recorder complete with 1 each M514 microphone, Z114 Mains connection unit and charging device for accumulator with No. K713 cable, Z211 Special Dryfit accumulator, K541 Stereo cable, empty reel and 1200 ft tape	266.00

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

from Albert White & Co. catalog

**Sears/Wards mail order**

If you live away from cities, where telephone calls and quick car trips aren't possible, the Sears and Wards catalogs are indispensable. Clothes, tools, building materials all via mail and service is rapid. Both catalogs are intelligently organized. Although we take such for granted, the Sears catalog was on display in the U. S. pavilion at the Brussels World's Fair and continually mobbed by people of other countries.

Both have farm catalogs, with contractor's and light industrial equipment and all types of farm equipment, including live poultry. Sears has a separate catalog of Craftsman tools, which are considered the best low-cost hand tools. Most electric tools have a year's guarantee and other tools are unconditionally guaranteed. If you break a hammer handle after three years' use, they'll give you a new hammer.

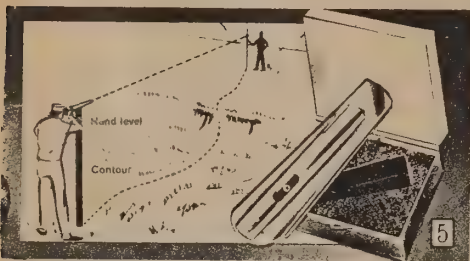
Order from nearest Sears or Wards store. Two catalogs a year: spring-summer and fall-winter. Free. To stay on the mailing list you must make two orders every six months.



Just dial width of groove desired with **CRAFTSMAN Adjustable Dado** •1999

Precision-cut adjustable hub lets you dial width from 1/4 to 1 1/2 inch without removing dado from saw. Calibrated in 16ths of an inch. Maximum depth of cut is 2 inches. Once dado is set following cut will not vary. Use to plough, dado, lap, groove, joint and rabbet.

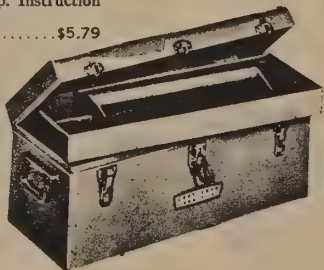
7-inch tempered, selected tool steel blade. 8 precision-ground carbide-tipped teeth... bevel ground on front face for free cutting on plywood, and crosscutting on all hard and soft woods. Also use on Formica® laminated plastic, other laminates and sensitive materials. 3/4-inch arbor with 3/4-inch bushing for use on 8, 9, 10, 12 and 14-inch radial arm and bench saws. 9 AT 3267—Shipping weight 2 lbs. 12 oz. .... \$19.99



**5 CRAFTSMAN Pocket Sighting Surface Level.** As a sighting level, can be used for grading, leveling, preliminary surveys. As a surface level, can be used for leveling shelves, refrigerators, counter tops and many other items. Objective window has center line plus line to determine pitch...stadia lines with 1:12 ratio to estimate distance. Built in sunshade. Only 5 inches long. Lightweight aluminum with steel tension clip. Instruction manual included. Plastic case. 9 AT 4624—Shipping weight 13 ounces. .... \$5.79

**Our best Tool Box •1899**

**3** Extra-heavy gauge steel body. Divided tote tray. Handle on top, both ends. Two 1-piece drawbolts. Center lock, 2 keys. Red-enamel finish. 24 1/2 in. long; 9 1/2 in. wide; 9 1/2 in. high. See the "Craftsman Commercial" story on page 8. 99 AT 65141C—Wt. 23 lbs. .... \$18.99



**Sears**



**CRAFTSMAN Bench Vises** •1399  
3 1/4-inch jaw  
Beam encloses screw... can't clog

Heavy-duty steel channel. Jaws can't wobble sideways or up and down. Convenient, built-in pipe jaws. Slanted swivel locking lever, angled away from vise. Vise swivels 165° and locks tight.

Screw handle tapered ends forged from handle stock... can't come loose. Zinc-plated handle, screw, lock nut. Fast-acting, Acme-threaded steel screw seated in replaceable malleable iron nut...

**Italian Bees**

... favorites for their industriousness and low price

2-pound package with Italian Queen Low as \$795

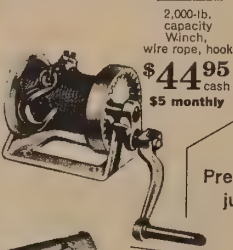


A 2 or 3-pound package of bees with bred queen gets your new hive off to a good start. And just watch it grow... in one season it's possible to multiply your original investment. Earnings from honey and beeswax can make beekeeping a profitable side line as well as a rewarding hobby.

Natural coloring of drone, queen and worker is black and yellow. Extra bees included with every package to cover natural losses in transit. From apiary in southern United States. See shipping note below. State date wanted.

2-lb. Package of Bees with one bred Italian Queen. Good choice for hobbyist. F32 KF 55441V—One Package. Postpaid. (Shipping weight 7 pounds)..... \$7.95

3-lb. Package of Bees with one bred Italian Queen. Excellent producers. F32 KF 55415V—One Package. Postpaid. (Shipping weight 8 pounds)..... \$9.95  
F32 KF 55416V—Ten Pkgs. Postpaid. (Wt. 80 lbs.) \$8.50 monthly. Cash \$89.00



2,000-lb. capacity Winch, wire rope, hook \$44.95 cash \$5 monthly

**8-quart Fruit Press**

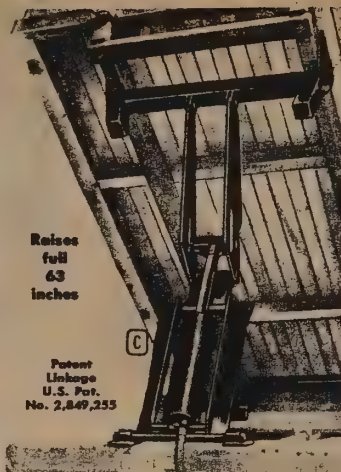
Presses most fruits into fresh, flavorful juices with no preservatives added

\$21.95 cash \$4 monthly

Press fruit at the peak of its flavor and can it or enjoy it right then at home. Extracts all juice with minimum waste. Even the kids have fun with this press. Pattered after the old familiar farm cider press. All wooden parts of western hardwood, specially chosen because of its moisture resistance... you get no taste transfer that way.

Rustic natural wood finish with red metal trimming. Built to take heavy pressure. Sturdy welded cast-steel frame. Tub of hardwood stays fastened by strong iron hoops. Heavy steel crosshead and press screw with accurately cut threads. 32 KF 80052K—Shipping weight 18 lbs. .... \$21.95

**Wards**



Raises full 63 inches

Patent Linkage U.S. Pat. No. 2,849,255

**6-ton standard hoist**

84.95 cash or \$5 a month

Wards low priced handyman

Full 63-in. lifting height. Has exclusive patented linkage described above. 5-qt. cylinder capacity—if tractor hydraulic reservoir is too small for capacity of cylinder, bolster hoists can be operated with either single or double action. Big 5-in. I.D. cylinder. Recommended for 10 and 12-ft. wagon boxes. Shipped same as (A) above. X89 FX 25901 F—Ship. wt. 220 lbs. 84.95

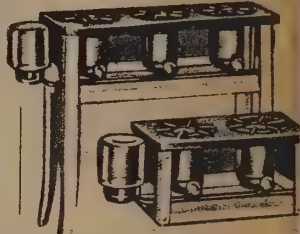
All wagon boxes, hoists fit Wards lo-loads, pages 50-51

Truckers' or larion rope for roping animals, tying loads, etc. Fines Manilla fibers are tightly laid for durability; treated to resist moisture, mildew, severe weather. 7/16 in. diameter. Cut to order. Ship wt. 6 lbs. per 100 ft. State length on your order. 84 FX 9648 H-3 Strand. Per ft. 7. 84 FX 9649 H-4 Strand. Per ft. 7.75

**Economy 6-speed blender**



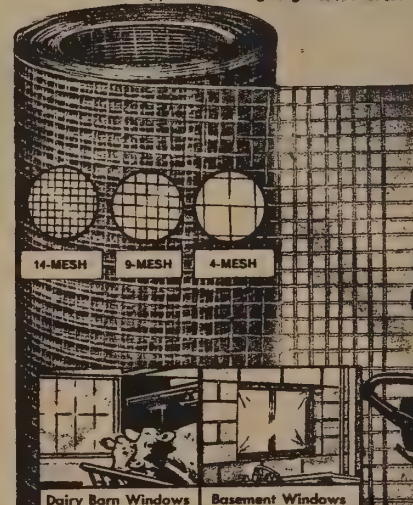
6-speed blender ranges from 11,500 to 16,000 RPM. Economically and efficiently mixes drinks, purees food for Baby or a special diet; also chops vegetables. 38-oz. clear plastic jar is graduated in 1/2-cups. Lifting 1 1/2-oz. measuring cap. Convenient pouring spout. Chrome-plated base, black plastic lid. No-mar feet. Cord. Abt 12 1/2 in. high. 316 watts. Wt. 5 lbs. 4 oz. 86 C 45818..... 19.49



**Portable kerosene stoves in 4 models**

Sturdy steel construction with durable black and white baked enamel finish. 4-in. burners have solid brass seated adjustable flame valves to regulate heat. Partially closed backs. Removable screw-end permits easy draining of fuel line. 2-qt. glass fuel bottle. 3-ply asbestos wicks. Both 3-burner stoves take full-size wash boilers. (6) 3-burner high-leg stove. 37Wx

12Dx28 1/2 in. high. 68 C 1155AAT—Ship. wt. 24 lbs. 16.9  
2-burner high-leg stove (not shown) 27Wx12Dx28 1/2 in. high. 68 C 1154AAT—Ship. wt. 19 lbs. 13.9  
(7) 2-burner table stove. 27 in. wide 12 in. deep, 10 1/2 in. high. 68C1144AT—Ship. wt. 13 lbs. 11.5  
3-burner table stove (not shown) 37Wx12Dx10 1/2 in. high. 68 C 1145 AT—Ship. wt. 18 lbs. 14.9



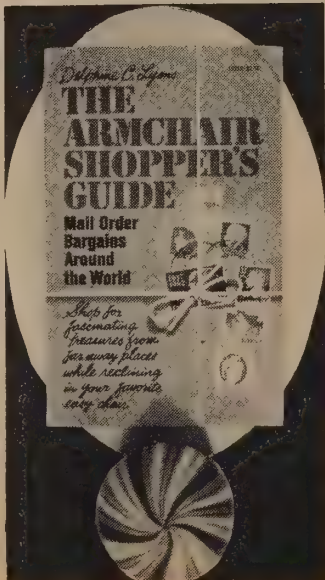
**Reinforced plastic, translucent**

Low as 5¢ per sq. ft. 100 ft. —extra strong

Mixes 8-cu. ft. batch—maximum crop. 1000 lbs. Like owning your own ready-mix truck, but even more versatile. Mount this 15-cu. ft. mixer on the back of your tractor, go places even a truck can't. Small enough to go through doors, into tight areas—pour after rain and in mud that would mire a truck. Fits standard 3-pt. hitch, no bolting; off in 3 minutes.

**The Armchair Shopper's Guide**

This cheerful book is an uncommonly practical compendium of access. Listed here are all of the major and many of the minor mail order shippers in the world. To a large extent the shippers carry items not available locally. Each source is very well described and compared with its competitors. The Armchair Shopper's Guide is more general than us, and geared to wealthier readers, but if you use the WHOLE EARTH CATALOG very much, you can almost certainly use the Shopper's Guide.



**The Armchair Shopper's Guide**

Delphine C. Lyons 1968; 218 pp.

\$1.50 postpaid

from: Essandess Special Editions Simon and Schuster, Inc. 630 Fifth Avenue New York, N. Y. 10020

or WHOLE EARTH CATALOG

You'll have to pay the sales tax if the mail-order house is located in your own state or municipality, but you aren't required to pay it to firms in other states, nor may they charge you their local sales taxes. Although this has always held true for most mail-order firms, in the past such big houses as Sears, Roebuck and Co. made a practice of collecting the various local sales taxes from their customers and passing them on to the state or city involved. However, a recent court ruling has declared this illegal. So, if you live in a place such as New York City you can save a pretty penny (5 percent) by buying by mail from out-of-state firms.

The Ollech and Wajs Watch Co., 8039, Zurich, Switzerland (catalog free) deals mainly in specialty watches for sportsmen and technicians. Men's watches begin at \$13 for a 17-jewel skindivers' shockproof model that has a revolving bezel for giving time in two zones simultaneously or for counting elapsed time. There's a watch that doubles as a slide rule and, most expensive of all, the 'SMT Robot 17-jewel Pilot and Diving Chronograph,' which looks like something out of the future with its revolving bezel, telemetric scale, five-minute yacht racing calibration, and whatnot, costing \$65. (Only one style is offered for women at this house, a 17-jewel diving watch at around \$13, \$33 if you want a self-winding model.)

Pine Hills Herb Farm, P. O. Box 307, Roswell, Ga. 30075 (brochure free) also has an extensive collection of herbs, all organically grown. In addition, they put out a book for tyro herbalists which is \$1 by itself or 50¢ with an order.

Orientalia Bookshop, Inc., 11 East 12th Street, N. Y., N. Y. 10003 (catalogs free): This house specializes in books on Asia and the East in all areas (and many languages).

If you're interested in cheeses from all over the world, as well as all domestic varieties, Cheese Unlimited, 1263 Lexington Ave., New York, N. Y. 10028 (catalog free) has one of the largest and most fascinating listings I've seen. Its catalog includes cheese recipes, hints for serving cheese, wines to serve with it, and all kinds of other information. Prices are astonishingly low. (I found some lower than at my local supermarket.) In addition to familiar cheeses, they have such exotic items as Bola from Puerto Rico, Krevi from Finland, Wenslydale from England, Ostiepa from Czechoslovakia, Kaskaval from Rumania, Sprinz from Argentina, Mizithra from Greece, Bushman from Australia, Kajmak from Turkey, Liptaur from Hungary, Tête de Moines from France, Kernheim Roomkase from Holland, and Piconcick from Michigan.

For used encyclopedias and other reference books, free price lists are available from The Reference Book Center, 159 West 33 St., N. Y., N. Y. 10001, and The Literary Mart, 1265 Broadway, N. Y., N. Y. 10001.

**Boffing Equipment**

We hereby nominate Jack Nottingham for a Nobel Peace Prize for the first significant advance in weaponry since the encounter group. As Gerd Stern used to say a lot, "contact is the only love," and these foam swords permit contact—with an un-pulled punch and no corporal damage. However, the release of interpersonal energy is only one of the uses of boffers. They are a fine game, builder of psychic and physical skill. For one thing you learn about temper: it's an obstacle and a hazard—you get cut to pieces every time. You learn about other stuff as well, no teacher required; the wisdom is inherent in the doing. As the inventor proclaimed at the end of a public boffing match at the Fillmore West: "The sword is mightier than the pen."

[Suggested by Heliotrope]



1 set boffing equipment  
(2 foam swords, 2 hand protectors, 2 goggles)

**\$11.00** postpaid

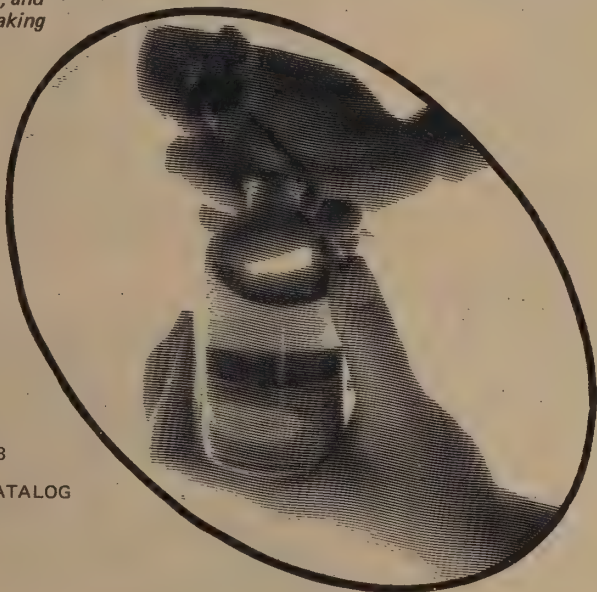
from:  
Jack Nottingham  
190 Emmet Court  
San Francisco, CA 94110

or **WHOLE EARTH CATALOG**



**Kama Sutra Oil**

This material lubricates, warms, feels good, smells good, and tastes good. It's for making love with.



**Kama Sutra Oil**  
4 oz. bottle

**\$4.25** postpaid

from:  
Kama Sutra Om  
1800 North Highland  
Los Angeles, CA 90028

or **WHOLE EARTH CATALOG**

**★ The Israel Army Physical Fitness Book**

Everybody I know's doing pushups. Kesey claims there's another wave of creativity coming, and he's doing pushups to get ready. Lloyd just finished editing his dome book, and he's doing pushups to get his head and body back in phase. I'm doing pushups out of some grotesque nostalgia for the Army (U.S.). Low-rent yoga, that's what it is. Sure enough, on a few square feet of prison cell or meditation hut, it can make you feel dedicated and well.

[Suggested by Whole Earth Access Company]



**The Israel Army Physical Fitness Book**  
Jesse Zel Lurie and Samuel Segev, Ed.  
1969; 127 pp.

**\$1.00** postpaid

from:  
Grosset & Dunlap, Inc.  
51 Madison Avenue  
New York, N. Y. 10010

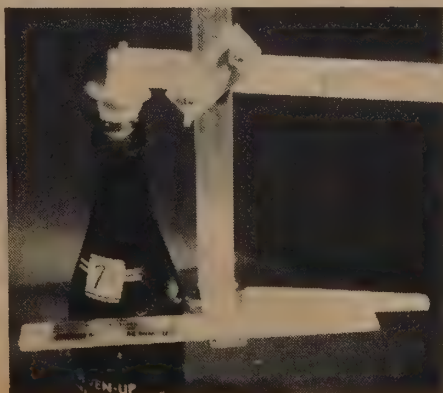
or **WHOLE EARTH CATALOG**



**★ Fleming Bottle and Jug Cutter**

The bottle cutter makes a practical tool. By following the instructions and with some practice anyone can turn out interesting glasses, mugs and vases. The kit will cut anything from an eight ounce bottle to a 5 gallon jug. We don't even take back bottles with deposits anymore. Wine bottles make interesting pilseners. Beer bottles make excellent glasses in sets of six, plus you get to drink the beer. We've given them as wedding presents and people really dig them. If you hate the thought of all that wasted glass like I do, you'll write to Floyd Fleming. His instructions are personable and informative.

[Suggested and reviewed by Pat Milberry]



The trick is to tap the bottle from the inside; that way the bottle doesn't break. (L to R): cutting, tapping, finished product.



**Jug & Bottle Cutter**

**\$6.85** postpaid

**Bottle Cutter**

**\$3.95** postpaid

both from:  
Fleming Bottle and Jug Cutter  
2110 S. W. 173rd Place  
Seattle, Washington 98166

or **WHOLE EARTH CATALOG**

**Starting Position:** Stand with feet apart, trunk bent forward, arms raised sideways.

**Movements:** 1) Bend your back and drop your head while crossing your arms downwards.

2) Back to starting position, bringing arms up sideways.

3-4) Rest in starting position.

**Explanation:** In the starting position, arms should be at the sides and pulled forward, in line with the head. Eyes front. When the arms are crossed downwards they should be fairly loose. Be careful to keep knees straight.



[Army Field Manual FM 21-20, Physical Readiness Training, is a lot more comprehensive. Order from the Government Printing Office. (See p. 100)]

**Teg's 1994**

We're generally down on Utopian thinking around here, holding to a more evolutionary fiasco-by-fiasco approach to perfection. Thus Walden Two, Island, Stranger in a Strange Land, and Rimmer's stuff have not been listed. They're well known enough anyway. One publication—relatively unknown—with a more structural brand of speculation is Theobald & Scott et al's Teg's 1994. The "book" is an on-going process that invites your participation.

[Suggested by Robert Theobald]

**Teg's 1994**  
Robert Theobald & J. M. Scott  
1989; 115 pp.

1-4 copies \$5 each postpaid  
5 or more \$3 each postpaid

from:  
Personalized Secretarial Services  
5045 North 12th Street  
Phoenix, Arizona 85014

We do not anticipate that any reader will find his ideal future society mirrored in this book because this is not a Utopian description. Teg's 1994 sketches a possible future world where the techno-system acts merely as infrastructure, expansion and growth are no longer goals and human society has reemphasized social interaction through worldwide decentralization into small, sub-cultural communities. But the process of change is continuing and we are witnesses to it through sharing Teg's thought and experiences throughout her year of travel of 1994.

During her year of travel as an Orwell Fellow, Teg learns that her contemporaries' concept of the "communication society" is increasingly flawed by interaction failures between diverging communities. A full expression of each community's sub-culture, or myth, has been achieved only at the cost of increasing mutual incomprehension, and even a re-emergence of an aggressive community ethnocentrism.

In the last decade of the twentieth century there is a growing awareness that maximizing social interaction is as much an avoidance of the individual's responsibility for full self-development as were earlier a reliance on the control-systems of the "economic mechanism" and later the "technological imperative." As the book ends we see Teg and her contemporaries beginning the struggle for full human awareness through reappraisal of communication techniques and a new understanding of the role of the individual as a member, not only of a face-to-face community, but also of the larger human society—terran society.

Some of the longer-term residents have begun to question this community myth of sea-use, and are proposing a change to a myth of sea co-existence. They wish to convert to a vegetarian sea-diet and prevent the eating of fish. Given the fact that pisciculture is presently essential to protein adequacy throughout the scarcity-regions the other residents think this is unrealistic.

There are also a few residents who want to change over completely to a myth of sea-adaptation. They propose surgical conversion of the human-being for water-breathing.

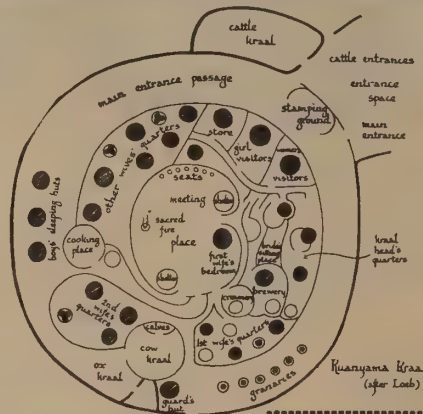
The human values of honesty, responsibility, humility and love are essential if synergetic spirals are to be predominant: if the Benedict synergy-effect is to occur. Effective communication depends on these values.

It appears to be primarily this understanding whose significance has not been fully comprehended in communities around the world. It is true that most people recognize that their own community interaction is only successful when based on these values but they have not generally perceived that inter-community interaction must also be based on them. Nor have they perceived that each individual is a member of the terran society, and needs to be involved in terran communication as well as effective communication within his community, immediate group and family.

**Village Planning in the Primitive World**

Successful small community design must fit the local physical environment and at the same time render clear the community's social system and its religious system. This book has 78 pictures and eight detailed written accounts of village systems that have worked for bushmen, Cheyenne Indians, Trobriand Islanders, the Yoruba, Mbuti pygmies, and others. The systems are diverse, compelling, and mind-opening for approaching the design of one's own community.

The Nias village plan is not merely modeled on the cosmos; it has all the symbolic attributes of the world. For example, the stone stairways leading to the village are carved with images of crocodiles, lizards, and other symbols of the lower world, some of them devouring fish, dogs, and other animals. This end of the village (jou) is regarded as 'downstream,' which is synonymous with death, commoners, aquatic animals, 'west' and 'north.' Sibaloi, or 'river source, upstream,' corresponds to life, chieftainship, aerial creatures, 'east,' 'south,' and the sun. The village axis is further conceived of as the sky-river, or world axis, which runs between upper world and underworld. This sky-river is both the cosmos and the world snake (i.e., the Milky Way) that rings the world (or village). The world tree grows at the center of the 'universe,' the Fuso Newali, at which spot the fusion of opposing forces is believed to take place. Such joinings or reconciliations characterize the climactic moments in Nias thought.



Another Cheyenne ceremony of comparable significance was the Sun Dance, which was known throughout the Plains. The purpose of this rite was world renewal. During the ceremonies the priest symbolically recreated the five worlds of the Cheyenne cosmology, beginning with a barren earth which has to be stocked successively with water, vegetation, buffalo, and healthy, happy Cheyenne. Another ritual, the Animal Dance, followed a similar pattern, although during it there was much clowning and good fun. These ceremonies were not necessarily given annually but depended on the presence of an individual who pledged himself (particularly when he or a relative faced death) to undertake the responsibilities of sponsoring a particular rite.



**Village Planning in the Primitive World**

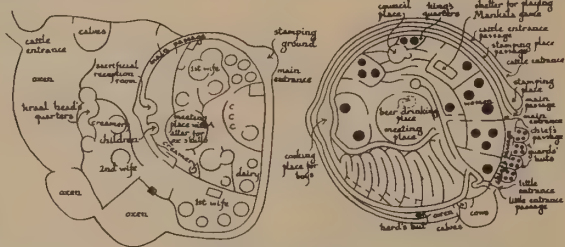
Douglas Fraser  
1968; 128 pp.

\$2.95 postpaid

from:  
George Braziller  
One Park Avenue  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

Authority in the Bushman band rests with a headman who is responsible for controlling food and water resources. Headmanship involves no special regalia, titles, military or juridical power, and the headman receives no particular rewards; the job is inherited by the previous headman's eldest son, unless the latter chooses to renounce it by moving to another band. The principal task of the headman, apart from that of controller of natural resources, is the choosing of the site for a new settlement and the kindling of the ceremonial fire there. If he is too young, too weak, or too old to exercise office, the actual role of leadership may devolve on another man of demonstrated ability. The headman of a Bushman band is therefore only first among equals, and in many ways his function is merely that of inventory-keeper in an area where the miscalculation of resources is tantamount to disaster.



**Enviom**

ENVIOM is a soft ring of lightweight inflatable pillows designed to bring people together in play, seminars, groups. Used by free schools, experimental colleges, encounter and sensitivity groups. ENVIOM offers a relaxing and inexpensive alternative to institutional furniture. Constructed of heavy duty 20 gauge vinyl it withstands the toughest use. Folds to blanket size, weighs 20 lbs. Seats twenty in comfort.

[Suggested and reviewed (and designed) by Sim Van der Ryn]



Enviom

\$60.00 each from:  
ENVIOM  
731 Virginia Street  
Berkeley, CA 94710

**Synergy**

Extraordinary publication. It's an on-going bibliography of the Subculture for libraries. Every two months there's an issue on a new subject—Women's Liberation, Communes, Ecology, Indians—with articles, pictures, and fine annotated bibliographies, the cheery fruit of solid research. As I understand it, the service is only available to libraries: free. So bug your local library, or, hrm, I wonder what it takes to start a library. Back issues of Synergy are worth getting. Also they answer questions on research problems.

[Suggested by William Hogan]



**Synergy**

via your local library

from:  
San Francisco Public Library  
Civic Center  
San Francisco, CA 94102

The Gateway to Survival is Storage. Available through Atlantis Enterprises, Ltd., P. O. Box 141, Glendale, Calif. 91209. 34 p. \$1.00.

Written for use by members of the Mormon Church for emergency situations. Much valuable, tested information for the retiree who wants to throw off the continuous, conspicuous consumption hassle.

The majority of the earlier communes were based on religion. The Shakers group is a good example of the many new sects who came to America, the land of "Liberty" and "Equality." The commune lasted for 150 years and made important contributions to American crafts and folk art. Their theology is very interesting because of their belief in celibacy; in addition, they had a unique theory of the bi-sexuality of God, the feminine counterpart of Jesus being a wonderful character named Mother Ann. (Appetite whetted for further study?)

All of the religious communes were not so successful, however, the majority of them only lasting the lifetime of their leader. The Woman in the Wilderness, for instance, composed of 40 men (40 seemed a magic number to many of them), had a theology based on astronomy, mathematics and astrology and failed soon after their leader died an ordinary death and didn't ascend into Heaven as he was supposed to. The Zoarites lasted as long as their members remained free from boredom, and failed when the young people of the sect began to squabble with the older members. Does this sound familiar?

Bellamy, Edward. *Looking Backward, 2000-1887*. Modern Library, 1951.

A wealthy Bostonian awakens to find himself in the year 2000 A.D. He falls in love with the great granddaughter of his Bostonian fiancée and with her tours the ideal socialistic commonwealth. Bellamy's utopia had tremendous impact on social reformers and had hundreds of imitators.

A recent discussion by three of the coordinators of the Mid-Peninsula Free University, one of the major ones in the Bay Area, printed in their publication, *The Free You*, produced this conclusion: the main purpose behind the Free University has been sidetracked, since it has never become an integral part of the community, but rather simply another form of entertainment. It is a "fun" night school which attracts many people both by its wide range of courses unavailable anywhere else and by its free and casual approach to learning. The Free University provides a stimulating evening out rather than a meaningful training experience for a new type of society.

Leopold, Aldo. *A Sand County Almanac*. Oxford University Press, 1968.

A classic, articulate work in ecological ethics.

Odum, Eugene. *Fundamentals of Ecology*. (2nd ed.) Saunders, 1959. \$8.50

A compendium of interesting ideas for ecosystem management, this text is useful both for understanding some possibilities for technically resolving our conflicts with nature and, more important, for understanding actual and potential strategies employed by ecosystem exploiters.

AUDUBON. National Audubon Society, 1130 Fifth Ave., New York, N. Y. 10028. Bimonthly. \$1.50; \$8.50 yr.

The granddaddy of them all, this conservation magazine is a delight to look at and to read. The articles are thoroughly professional, and the quality of the photography is unsurpassed. Features a "National Outlook" section and book reviews written by authorities. There are reviews of children's books in the natural science field. A relatively new section is "Death Row", which reports on areas threatened by "progress."

**Pyrotechnics**

This book "places in the hands of the beginner a working manual which will assist greatly in the production of every known piece of fireworks." Like dope, fireworks are illegal because they're fun and dangerous. When a good dope-naking book comes out (or Preparation of the Eucharist returns), we'll carry it. Meantime we're delighted to have this book on homemade pyrotechnics. I'll never forget July 4 at Lama last year. The rockets were old and rotten. They ascended to an altitude of three feet and then came lead at you.

[Suggested by Gladney Oakley]

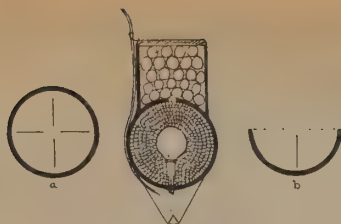


FIGURE 67  
Arrangement of Smoke Stars in Shell

**VOLCANO**

This very pretty little device, easily made and perfectly safe for use by small children is produced by rolling a stout cone, 3 to 4 inches long and 2 inches in diameter at its base, on a former similar to that shown for sky rocket cones. The tip is cut off so as to allow an opening about 1/8 inch, into which a stout piece of quickmatch is inserted. A ramming mold is now made from a 4 inch block of wood, into which a tapering hole, of the same taper as the volcano cone, is worked. A case is inserted and rammed with the following composition:

Salt peter	24
Sulfur	4
Mixed charcoal	4
Steel filings	10

A cardboard disk, somewhat smaller than the bottom of the cone, is now forced into the bottom of the volcano and secured with glue.



**Pyrotechnics**  
George W. Weingart  
1947; 244 pp.

\$8.50 postpaid

from:  
Chemical Publishing Company, Inc.  
200 Park Avenue, South  
New York, N. Y. 10003

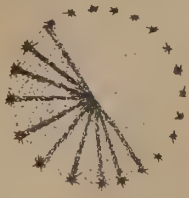


FIGURE 66d  
A Night Shell Effect

or WHOLE EARTH CATALOG

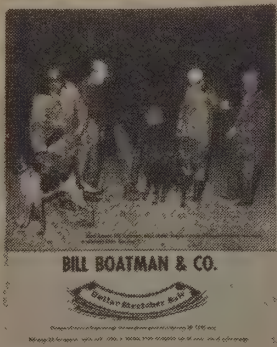
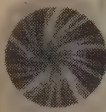
**Bill Boatman & Co.**

Hunting dog stuff. Collars, pens, training devices, medicines, and coonhunting paraphernalia, such as super flashlights.

[Suggested by Charley Kroner]

**Catalog**  
free

from:  
Bill Boatman & Co.  
Sainbridge, Ohio, 45612



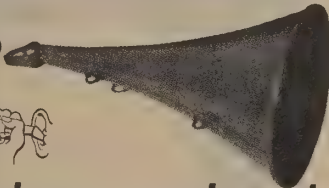
**BOATMAN'S BEST ROUND COLLAR**

The finest round collar made, it nestles into a dogs coat without causing a wild unkept appearance on long haired dogs. Features roller buckle and solid D-Ring. Its rolled and stitched from genuine Doco tanned leather. Holds its round shape permanently. Includes Solid Brass Personalized Nameplate. Give neck size or breed when ordering. Collar adjusts down 3" from size given.

# 435 only \$2.75 ea.  
4 for \$9.95

**B & B HEARING HELPER**

#710 \$5.95



**Helps you hear your hounds**

Bring the exciting sounds of the hunt in closer with the aid of a B & B Hearing Helper. Acoustically engineered, it funnels and concentrates the distant baying and barking of the pack right back to you. Designed by audio engineers to scientifically funnel all the distant sounds back through the stethoscope earpiece. For those of us whose hearing "ain't what it used to be", the B & B Hearing Helper can restore and renew the enjoyment of the hunt. Great for duck and deer hunters, too. Lightweight, only 3 1/2 ozs., yet made of sturdy high-impact plastic. Bright Safety Red color makes it easy to find.

#711 Snap-on Nylon Shoulder Safety Sling \$1.00

**RABIES VACCINE**

Now! One easily injected shot gives your dog probable protection against the terrible effects of Rabies for a year. Boatman's Rabies Vaccine is manufactured and distributed under the requirements of the U.S.D.A. Price includes current metal tags. Certificate to validate vaccination plus instructions.

# 336 3 dose Kit (5cc each) \$2.49  
# 333 10 does Kit (5cc each) \$5.95

**Full-Circle TIE OUT STAKE**

Gives more freedom than any other tie-out. Keeps your dog clear of buildings, shrubbery, flowers. Just drive the 20" steel rod into the ground and hitch your dog to the double swivel mount. No twist-

ing, turning, tangling! Stays firm, holds any dog, but can be pried straight up for easy moving. Smooth bell top stays flush to ground for easy mowing around. Green enamel finish.



\$2.29



#520 \$5.95

**#521 Deluxe Training Kit**

Includes two tubes of Genuine Game Bird Scent, two 12" Training Dummies, Acme Trainer's Whistle, 50-ft. Nylon Check Cord and Complete Instruction Booklet. Specify pheasant, quail, duck or grouse \$10.95

**Koehler Method of Dog Training**

What you train your dog to do and not do is up to you. How to train him is this book's entire concern. Koehler is over-argumentative, but his method is well-regarded for effectiveness.

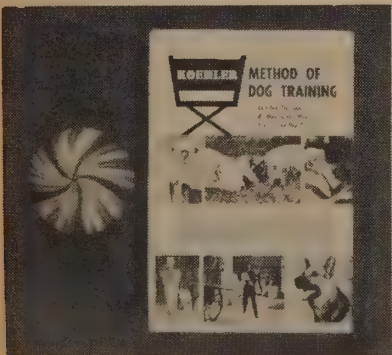
[Suggested by Raul's Pet Center]

**Koehler Method of Dog Training**  
W. R. Koehler  
1962; 108 pp.

from:  
Howell Book House Inc.  
845 Third Avenue  
New York, N. Y. 10022

\$4.95 postpaid

or WHOLE EARTH CATALOG



Make sure that your command is really a command, not a request, and that it is simultaneous with your first step. Again, he cannot learn to start on command if you stand there looking at him after you've told him to heel. You're moving, so keep your mouth shut and don't look back. No second commands, no invitational tugs; lock your leash hand to your body, keep your left hand off the leash, and walk. Yacking, backward glances, and coaxing gestures would merely postpone the lesson that your dog must ultimately learn—THAT HE MUST SOMETIMES DO THINGS THAT HE DOESN'T WANT TO DO. So, if you love your dog, let him learn this inescapable fact early and in the simplest way. Whether it goes against your teddy bear instincts or not, it's the truth.

**POISON PROOFING**

The vile names that his deeds call forth are probably taken as a compliment by the twisted mind of a dog poisoner. Convictions seem altogether too few and the sentences for the crime too light. The only source of satisfaction for a dog owner lies in poison-proofing his dog.

The materials you'll need are a low-priced battery-operated fence charger, and enough light, insulated wire to run from where you will conceal the unit to the different areas where you want to proof your dog against eating food. Regardless of the spots where you set the charger, the dog shouldn't see it or hear it and be warned that something strange is taking place. Both the fence charger and suitable wire can be obtained at a hardware store for a price that is small to one who feels the need to protect his dog.

At a place where the dog is particularly vulnerable to a poisoner, we'll make our first set-up in your yard. Lock your dog up so he cannot watch. Set the fence unit in a place of concealment, attach the ground wire to a pipe or a rod in the ground, and the live wire to the place designated. Run the other end of the charged wire to the spot where you feel someone might be likely to toss a bit of poisoned food. Bare half an inch or so of the end of this wire. On this bare end, stick a bit of meat, or other moist food that would appeal to your dog. Starting an inch back from the food, bend a couple of angles in the wire so that the bare part and the food will be held free of contact with the ground. Turn on the fence charger. Let the dog out into the yard.

Eventually your dog will find the food. If you are watching at his moment of discovery, you'll see that his first sniff will be met with a fat spark. He'll not be apt to try the second sniff, but keep some bait on the hot wire for at least two days. Then change the set-up to another part of the yard. If possible, conceal the wire in heavy grass or cover it with dirt, allowing the tip to protrude to hold the tid-bit free of the ground. This will make the food appear just as though it were tossed over the fence.



When your dog has had opportunity to develop resistance to food found in all areas where a poisoner might toss it, you can supply experience that will make him form an equal aversion to any food offered by hand. You'll need an outsider to help you. Possibly you can exchange services with another dog lover who might want to protect his pet. As with the case of something being found on the ground, run the bare tip of the live wire into the tid-bit. Now, however, it is offered in the person's hand, insulated from his skin by a rubber glove or a bit of cardboard, plastic, or other non-conductive material. Change situations and strangers until you feel that in or out of the house, no one could coax your dog to eat anything he might offer.

## Government Publications

This paperback is titled **Over 2000 Free Publications**: which is sort of true, but mainly gross boosting. Skip that. The book is a good, recent, cheap compendium of information easily available from the Government—inexpensive sometimes practical sometimes trivial sometimes precisely what you need for an important task. As far as we're concerned, this \$.95 book replaces the \$12 book on Government publications we used to list.

[Suggested by Michael Rosenthal]

**Over 2000 Free Publications**  
Frederic O'Hara  
1968; 352 pp.

**\$.95** postpaid

from:  
WHOLE EARTH CATALOG

**\$1.05** postpaid

from:  
The New American Library  
1301 Avenue of the Americas  
New York, N. Y. 10019



## Government Printing Office

O'Hara (left) doesn't begin to list all of what's available from the GPO. If you're really interested in a particular area, you might as well get the free list of publications in that area. Or you can get the free biweekly list of "Selected U. S. Government Publications." Or, for totality, for \$6, the "Monthly Catalog of U. S. Government Publications." All, all from Carper Buckley,

Superintendent of Documents  
U. S. Government Printing Office  
Washington, D. C. 20402

## Surplus Defense Supply

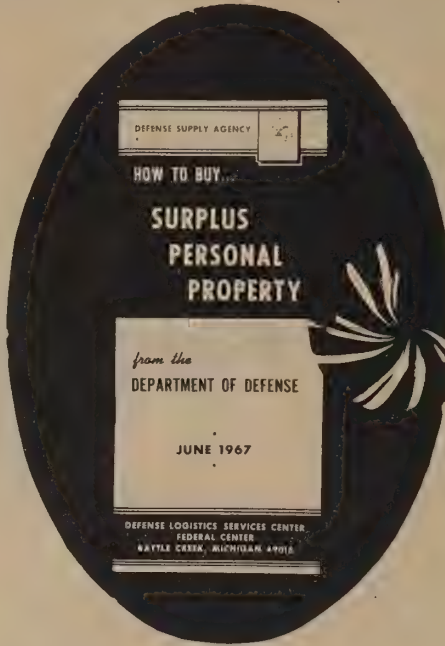
Surplus stores are a handy source of general purpose stuff. Even more economical is buying the stuff straight from Uncle: The Defense Surplus Sales Offices scattered hither and yon through the U.S. and world. Whatever you pay at the downtown surplus stores, you can expect to pay considerably less buying where they buy. Also you can bid on large fantasy items: a mile of cable, a dump truck, a landing craft, one lot assorted propellers, etc.

[Suggested by Alan Kalker]

Pamphlet  
**How to Buy Surplus Personal Property**

**\$0.20** postpaid

from:  
GPO bookstores



## Federal Domestic Assistance

The Catalog is a guide to Federal programs. It describes the purpose, eligibility requirements for an incredible variety of aids, along with the 'how-to-apply.'

I recommend it as a wishbook and as a tool. For the surprise is that many of the aids exactly fit the needs of the new communities (loans for home industries, for example, pp 27-28) and are specifically open to non-profit groups or low-income persons. Urban groups will find similar luck, I think, in linking their goals to an existing program.

The catalog has no cost. It can be requested from your Congressman/Senator or the Public Information Office in the Office of Economic Opportunity, HUD or HEW.

[Suggested and reviewed by  
Richard R. Reed]

**Catalog of Federal Domestic Assistance**  
1969; 619 pp.

free from:

OEO Regional Offices

72 West 45 Street  
New York, N. Y. 10036  
(Conn., Me., Mass., N.H., N. J., N.Y.,  
P.R., R.I., Vt., Virgin Islands)

Marsh Bldg.  
1832 M Street NW,  
Washington, D.C. 20506  
(Del., D.C., Ky., Md., N.C., Pa.,  
Va., W.Va.)

730 Peachtree Street, NE  
Atlanta, GA 30308  
(Ala., Fla., Ga., Miss., S.C., Tenn.)

623 So. Wabash Ave.  
Chicago, Ill. 60605  
(Ill., Ind., Mich., Minn., Ohio, Wisc.)

Lowich Bldg.  
314 W. 11 Street  
Austin, Tex. 78701  
(Ark., La., N.M., Okla., Tex.)

911 Walnut Street  
Kansas City, Mo. 64106  
(Colo., Idaho, Iowa, Kan., Mo., Mont.,  
Neb., N.D., S. D., Utah, Wyo.)

100 McAllister Street  
San Francisco, CA 94102  
(Alaska, American Samoa, Ariz., Calif.,  
Guam, Hawaii, Nev., Ore., Wash., Trusts)

## ADDRESSES OF SALES OFFICES DEFENSE SURPLUS SALES OFFICES AND GEOGRAPHICAL AREAS SERVICED

Mailing Address	Location
11. Defense Surplus Sales Office P.O. Box 8019, 30th Street P.O. Philadelphia, Pa. 19101	Building 652, U.S. Naval Base Philadelphia, Pa.
16. Defense Surplus Sales Office P.O. Box 660 Newport, R. I. 02840	Building #115 Naval Base, Gate 51 Portsmouth, R. I.
27. Defense Surplus Sales Office P.O. Box 13110 Columbus, Ohio 43213	Building 27, Section 6 Defense Construction Supply Center Columbus, Ohio
37. Defense Surplus Sales Office P.O. Box 6297 Fort Worth, Texas 76115	Corner Felix & Hemphill Sts. Building 2 Fort Worth, Texas
21. Defense Surplus Sales Office P.O. Box 644 Forest Park, Ga. 30050	Atlanta Army Depot Building 906 Forest Park, Ga.
23. Defense Surplus Sales Office P.O. Box 31261 Jacksonville, Fla. 32230	Building 450 U.S. Naval Air Station Jacksonville, Fla.
25. Defense Surplus Sales Office Bldg. SDA-224, South Annex Hampton Roads Branch Post Office Norfolk, Va. 23511	Naval Supply Center Building SDA-224, South Annex Norfolk, Va.

41. Defense Surplus Sales Office  
P.O. Box 58  
Defense Depot  
Ogden Station  
Ogden, Utah 84401
44. Defense Surplus Sales Office  
P.C. Box 4000  
Bayshore Station  
Oakland, Calif. 94623
46. Defense Surplus Sales Office  
937 N. Harbor Drive  
San Diego, Calif. 92132
49. Defense Surplus Sales Office  
P.O. Box 15035  
Tucson, Ariz. 85708

## OTHER SALES OFFICES

### Alaska

(Anchorage)  
Redistribution and Marketing Activity  
Elmendorf Air Force Base  
Anchorage, Alaska  
APO Seattle 98742

### (Kodiak)

Commanding Officer  
U.S. Naval Station  
FPO Seattle 98790

### Bermuda

Redistribution and Marketing Activity  
Kindley Air Force Base  
St. George, Bermuda  
APO New York 09856

### Canada

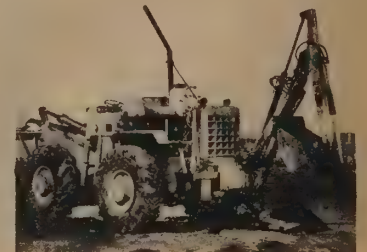
Crown Assets Disposal Corporation (CADC)  
219 Argyle Avenue  
Ottawa 2, Ontario, Canada

### (Argentia, Newfoundland)

Commanding Officer  
U.S. Naval Station  
FPO New York 09597

### Sample prices in Oakland:

Solid picnic table: \$5	Soft arm chair: \$2
Propane field kitchen: \$30	Plate glass 3 ft x 4 ft: \$2
Office arm chairs: \$3	Step ladder: \$2
Secretary chair: \$3	Foam rubber mattress: \$2.50
Wheel Chair, wood: \$15	Fatigue shirts: \$0.45
Wood desks: \$10	Overcoats: \$3
	Wool pants: \$2
	Parachute harness: \$2.50



TRACTOR SCOOP LOADER: 2 1/2 Yard, 1959, Hough Model H-90-D, Chassis 27 AC-1381, Tire size 1600 x 24, Cummins 6 cylinder diesel engine, Backhoe Model WRH90-R, USN 45-01137.  
Outside Bldg. 127 - Used - Fair Condition - Repairs Required.

★ **Encyclopedia of U. S. Government Benefits**

*The Fed does not advertise his programs very much. To find if you're eligible for some benefit or have access to some service you practically have to study up. This volume is the best source I know of. Often the staffers of some half-forgotten program are pleased and touched when you ask them for help—and they do help.*

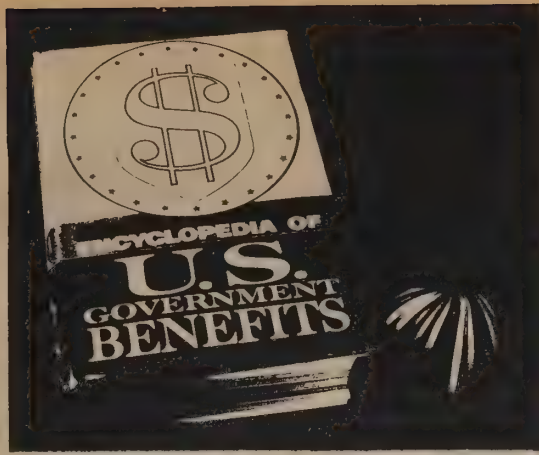
[Suggested by Craig Schensted]

There are no matching requirements in the air pollution grant program.

Additional Information may be obtained from the Division of Research Grants of the Public Health Service, National Institutes of Health, Bethesda, Md. 20014.

**LAND-CAPABILITY MAPS.** A detailed soil and land-capability map of a farm or ranch is available from a local Soil Conservation District—a service provided by the Soil Conservation Service.

See **SOIL; SOIL CONSERVATION DISTRICTS; SOIL CONSERVATION SERVICE.**



**\$10.40** postpaid from:  
Wm. H. Wise & Co., Inc.  
336 Mountain Road  
Union City, N. J. 07087

or **WHOLE EARTH CATALOG**

**FREE PORTS.** The Foreign Trade Zones Board publishes a booklet, available for 30 cents, *Laws, Regulations and Other Information Relating to Foreign Trade Zones in the United States*, which describes "free ports" all over the trading world. The idea of the free port is that goods deposited or manufactured in the free-port area are technically not considered to have entered the United States and therefore are not subject to import duty until they actually cross into the U. S. proper.

**BUSINESS LOANS.** The business loan program of the Small Business Administration (SBA) is designed to provide needed financing to creditworthy small businesses when loans are not available to them on reasonable terms from private lending sources.

The primary purpose of this financial assistance is to provide small firms with funds to purchase equipment and materials, to expand and modernize operations, or to use as working capital.

**AERIAL PHOTOGRAPHS.** The Department of Agriculture supplies aerial photographs for every region of the United States and its territories. Ownership of the Department's photographs is distributed among three of its agencies: the Agricultural Stabilization and Conservation Service (ASCS), the Forest Service, and the Soil Conservation Service. . . .

★ **Understanding Foundations**

*It tells you some about how to raise money and a lot about where to look.*

[Suggested by Larry McCombs]

**Understanding Foundations**

J. Richard Taft  
1967; 205 pp.

**\$2.95** postpaid



from:  
McGraw-Hill Book Co.  
Princeton Road  
Highstown, N. J. 08520

Manchester Road  
Manchester, Mo. 63062  
8171 Redwood Highway  
Novato, CA 94947

or **WHOLE EARTH CATALOG**

The desks of foundation officials around the country are piled high with applications characterized by verbosity, pomposity, and vagueness. Make your application short, simple, and clear, and it will stand out.

Most foundations have no standard form which applicants fill out. A good approach is a simple letter of one or two pages (even the most complex subjects can be boiled down to this length) or a short proposal accompanied by a covering letter of introduction. Sometimes it is worth calling a foundation first to discuss your project before going to the trouble of preparing a proposal.

Don't hem and haw on money. State figures and try to stick with them. If you need staff, you will need to pay them. How much? If you need office space and equipment, check out all costs before going to the foundation. If materials, transportation, or other items are involved, include them. If it is a one-time grant, say so. If not, make it a two-year, or three-year, or more, request. Foundation officials are money handlers and, as such, are most concerned with sound fiscal management. They cite poor financial administration as a key factor in grants rejection.

Every applicant wonders whether or not he should include endorsements in his proposal. By all means, if there are reputable people in the field who are familiar with your work, the organization, and its programs, endorsements are valuable. Foundations have a high regard for expertise. The backing of respected people puts a useful stamp of approval on any project.

After making your proposal or writing your letter, don't expect quick response. Most foundations are extremely busy and take a good deal of time before responding to letters or applications. Certainly do not expect an early grant. Foundations generally have board meetings several times a year, at which time those proposals which have passed the scrutiny of the executive director, the program administrator, or the person concerned with applications, are considered. It is infrequent that an applicant will receive funds in less than six months' time after his application.

Perhaps the greatest, most time-consuming, and least productive activity among fund raisers today is random foundation door-knocking. Amateurs, especially, are guilty of this. But professionals, who should know better, are offenders too.

Everyone who has ever applied or is about to apply to a foundation for a grant wonders whether there is some magic formula for a successful application. If there is one, it is simplicity.



For an ASCS photograph of a locality east of the Mississippi, write: Eastern Laboratory, Aerial Photography Division, ASCS-USDA, 45 South French Broad Avenue, Asheville, N. C. 28801.

For an ASCS photograph west of the Mississippi, write: Western Laboratory, Aerial Photography Division, ASCS-USDA, 2505 Parley's Way, Salt Lake City, Utah 84109.

Size	Scale	Price
10' x 10'	1 in. = 1667 ft.	\$1.00
14' x 14"	1 in. = 1320 ft.	\$2.30
18' x 18"	1 in. = 1000 ft.	\$2.50
26' x 26"	1 in. = 660 ft.	\$3.00
40' x 40"	1 in. = 400 ft.	\$7.00

Discounts are available for quantity orders.

★ **The Foundation Directory**

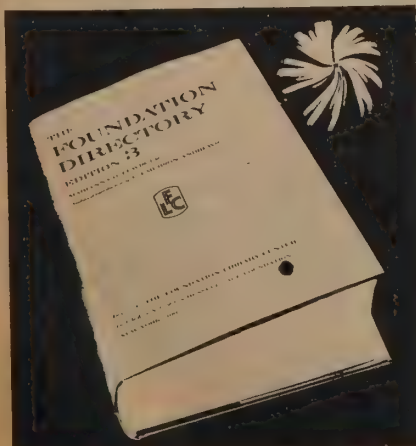
*The reference book of foundations. Gives addresses, finances, officers, purposes and activities. Foundations are listed by state, which is intelligent, since grants are usually given locally.*

**The Foundation Directory**

Marianna O. Lewis, Ed.  
1967; 1198 pp.

**\$12.00** postpaid

from:  
Russell Sage Foundation  
230 Park Avenue  
New York, N. Y. 10017



Many foundations have accepted the doctrine that their limited funds should be used chiefly as the venture capital of philanthropy, to be spent in enterprises requiring risk and foresight, not likely to be supported by government or private individuals. In their fields of special interest they prefer to aid research, designed to push forward the frontiers of knowledge, or pilot demonstrations, resulting in improved procedures apt to be widely copied.

Support for current programs, if it comes at all from foundations, must usually be sought from the smaller organizations, and especially those located in the area of the agency, well acquainted with its personnel and its needs. Most small foundations, and some larger ones, restrict their grants to the local community, or state. Immense variety exists; the interests and limitations of each foundation need to be examined before it is approached.

Where there is evidence that the applicant has not bothered to find out the field of interest of the foundation, or has made a general mailing, the cost of even a formal declination is scarcely warranted; wastebaskets are available in any required size.

**Sample listing:**

San Francisco Foundation, The  
351 California Street  
San Francisco, California 94104

Community foundation established in 1948 in California by resolution and declaration of trust.

**Purpose and Activities:** Grants principally for welfare and welfare planning, hospitals, education, health and mental health, culture and the arts, and conservation in the San Francisco area unless otherwise specified by donors. Report published annually.

**Financial Data** (year ended 30 June 1965): Active capital, \$6,736,824 (L); gifts received, \$686,287; expenditures, \$681,325, including \$639,793 in grants.

**Officer:** John R. May, Executive Director and Secretary.

**Distribution Committee:** S. Clark Beise, Chairman; Daniel E. Koshland, William H. Orrick, Jr., Vice-Chairmen; William R. Hewlett, Treasurer; Christian de Guigne, Mrs. Alfred McLaughlin, Emmett G. Solomon.

**Trustees:** Bank of America, The Bank of California, Commonwealth National Bank of San Francisco, Crocker-Citizens National Bank, First Western Bank and Trust Company, Golden Gate National Bank, The Hibernia Bank, Pacific National Bank of San Francisco, United California Bank, Wells Fargo Bank.

**On Free Money**

*From my limited experience, the realm of foundations and grants is one of the most cynical in the American economy. Generally when you approach a foundation they are friendly and half-receptive. They consider your project promising if a little naive, and they'd like you to write up a proposal on it. You spend a month learning how to write proposals and a month writing this one. They keep it six months. Your idea has died of dry rot. Then they request that you re-write the proposal to accommodate (whatever) and it might go through next time the board meets. Do this three times, and you have died of dry rot.*

*Most actual grants I know of were initiated by the donors, not the donees. The most effective way to get grant money is to be Highly Visible.*

*I don't know why foundation and government money is so often toxic to projects. Maybe because the process becomes so easily dishonest. Do me no favors, and I'll tell you no lies. Or is it the belief that there's such a thing as a free lunch that is the root lie?*

# Nomadics

## The Complete Walker

Some of them old boys are into making houses out of chicken wire and condoms. Some of them can gather you a salad right off the forest floor. Some can make you a computer out of old Stromberg-Carlson radio parts and have enough wire and tubes left over for two laser death rays and a UFO. But Colin is into walking. His two previous books are mainly about walks: In *THE THOUSAND MILE SUMMER* he tells about one he took up the entire Sierra range, and in *THE MAN WHO WALKED THRU TIME*, he walks the whole Grand Canyon. This one is about walking, not walks. It's not full of lore and woodsiness. It doesn't tell you how to get back to nature, or cast civilization from your back and wander out with a bowie knife and a jock-strap. It gives a little walk philosophy, and then proceeds to discuss, in just the right detail, how to put a nice little well-equipped house and its fittings on your back, how to be able to go out and walk for a long time without having to come back for more stuff.

Besides just the stuff, what to take and what to leave behind, it also takes you on a trip through Colin Fletcher, which is quite an outing all by itself. It's hard to imagine a book on backpacking technique that will make you laugh out loud all the way through, but he does it. He really loves poking fun at himself. He gets completely hung up describing some gadget or technique which he then admits he's never tried. He'll spend a whole page defending what seemed at first an impossibly fussy personal idiosyncrasy, and at the end you'll be dying to go out and try it for yourself. He actually has a sizable section on how to urinate and defecate in the outdoors, and it's a fine description. He includes a very complete appendix on suppliers, a list of walking organizations, and even a series of inspiring quotations to read while walking or thinking about walking.

Most important, though, it's the only backpacking book I've ever seen which, if read carefully, will actually tell you how to do it in great enough detail to enable you to just go out and do it. It's also the only one that will really make you want to go out and walk for absolutely no ulterior motive.

Be sure to dig pages 45-52, 123-132, 182-186, 213-218, the whole Furniture and Appliances section, and all the illustrations.

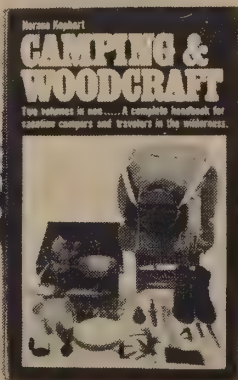
The only adverse comment I would make is that his food preferences seem pretty sanpaku. But he also quotes the old proverb about hell being a place where the politicians are French, the police German, and the cooks English.

[Reviewed by Roland Jacopetti]

First remove any obvious and rectifiable local irritant, such as a fragment of stone or a rucked sock. Then cover the tender place. Cover it even if you can see nothing more than a faint redness. Cover it, in fact, if you can see nothing at all. Being a 'hero' is being a bloody fool. The covering may only be needed for a few hours; if you take it off at night and let the air get at the skin you may not even need to replace it next morning. But if you do nothing at the first warning you may find yourself inside the hour with a blister that will last a week.

## Camping and Woodcraft

How could anything written in 1916 still be so useful? One, it is a masterwork. Two, in Kephart's day when you went camping you really disappeared, so there's a valid nostalgia factor. But the main thing is, the book survives on its wealth of specific practical lore. Game: find the information that is outdated, sort it from the information that is correct and available nowhere else.



Camping and Woodcraft  
Horace Kephart  
1917, 1921, 1967; 479 pp.

\$6.95 postpaid

from:  
The Macmillan Company  
Front and Brown Streets  
Riverside, Burlington County  
New Jersey 08075  
or WHOLE EARTH CATALOG

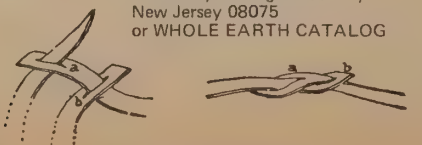
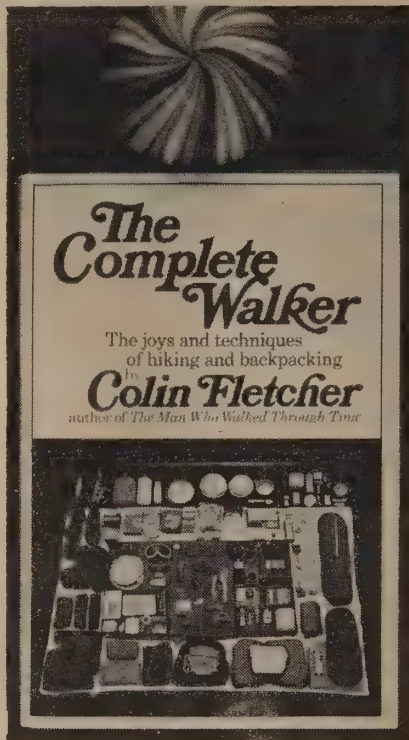


Fig. 185.—Splicing thongs

One of the surest ways to tell an experienced walker from a beginner is the speed at which he starts walking. The beginner tends to tear away in the morning as if he meant to break every record in sight. By contrast, your experienced man seems to amble. But before long, and certainly by evening, their positions have reversed. The beginner is dragging. The expert, still swinging along at the same easy pace, is now the one who looks as though he has records in mind. One friend of mine, a real expert, says, 'If you can't carry on a conversation, you're going too fast.'



The Complete Walker  
Colin Fletcher  
1969; 353 pp.

\$8.18 postpaid from:

Alfred A. Knopf, Inc.  
33 West 60th Street  
New York, N. Y. 10023

or \$7.95 postpaid  
from WHOLE EARTH CATALOG

There is a cardinal rule of travel, all too often overlooked, that I call the Law of Inverse Appreciation.

It states: "The less there is between you and the environment, the more you appreciate that environment."

Men working hard in the open, and exposed to the vicissitudes of wilderness life, need a diet rich in protein, fats (especially in cold weather), and sweets. This may not agree with theories of dieticians, but it is the experience of millions of campaigners who know what their work demands. A low-protein diet may be good for men leading soft lives, and for an occasional freak outdoorsman, but try it on an army in the field, or on a crew of lumberjacks, and you will face stark mutiny.

Rabbits are unfit to eat in late summer, as their backs are then infested with warbles, which are the larvae of the rabbit bot-fly.

Green Corn.—If you happen to camp near a farm in the "Roasting-ear" season, you are in great luck. The quickest way to roast an ear of corn is to cut off the butt of the ear closely, so that the pith of the cob is exposed, ream it out a little, impale the cob lengthwise on the end of a long hardwood stick, and turn over the coals.

Skilligalee.—The best thing in a fixed camp is the stock-pot. A large covered pot or enameled pail is reserved for this and nothing else. Into it go all the fag-ends of game — heads, tails, wings, feet, giblets, large bones — also the left-overs of fish, flesh and fowl, of any and all sorts of vegetables, rice, or other cereals, macaroni, stale bread, everything edible except fat. This pot is always kept hot. Its flavors are forever changing, but ever welcome. It is always ready, day or night, for the hungry varlet who missed connections or who wants a bite between meals. No cook who values his peace of mind will fail to have a skilfully simmering at all hours.

A woodsman, on the contrary, walks with a rolling motion, his hips swaying an inch or more to the stepping side, and his pace is correspondingly long. This hip action may be noticed to an exaggerated degree in the stride of a professional pedestrian; but the latter walks with a heel-and-toe step, whereas an Indian's or sailor's step is more nearly flat-footed. In the latter case the center of gravity is covered by the whole foot. The poise is as secure as that of a rope-walker.

It is not nearly so much the "make" of rifle as the load it takes that determines the gun's shooting qualities. So, choose first a cartridge, then a gun to handle it.

BENDING WOOD.—Small pieces of green wood can be bent to a required form by merely soaking the



Fig. 54.—Spanish Windlass (for bending wood)

pieces for two or three days in water, but if it is desired that they should retain their new shape, they should be steamed.

When crowds assemble in Trafalgar Square to cheer to the echo the announcement that the government has decided to have them killed, they would not do so if they had all walked 25 miles that day.

Bertrand Russell  
Nobel Prize Acceptance Speech

And the Lord said unto Satan, Whence comest thou? Then Satan answered the Lord, and said, From going to and fro in the earth, and from walking up and down in it.  
JOB 1, 7

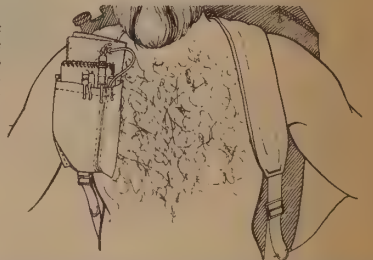


At this point, steam issues from the stew pot. You reduce the heat to dead-low or thereabouts (taking care not to turn the stove off in the process), stir the compound a couple of times, inhale appreciatively and replace the cover. While dinner simmers toward fruition you empty two ounces of dehydrated peaches and a little water into the small cooking pot and put it ready for breakfast, up alongside the pack. Then you jot down a few thoughts in your notebook, stir the stew and sample it, find the beans are not quite soft yet. So you study the map and worry a bit about the morning's route, put map and pen and pencil and eyeglasses and thermometer into the bedside boots, take off your shorts and slide halfway down into the mummy bag out of the wind, and stir the stew again and find all ready. You pour-and-spoon out a cupful, leaving the balance on the stove because the wind is blowing distinctly cool now. And then, leaning comfortably back against the pack and watching the sky and the black peaks meld, you eat, cupful by cupful, your dinner. You finish it—just. Then you spoon-scrape out every last possible fragment and polish-clean the pot and cup and spoon with a piece of toilet paper. You put the paper under the stove so that you can burn it in the morning. Then you put cup and spoon into the breakfast-readied small pot, pour the morning tea water into the big pot, set the big pot alongside the small one and the sugar and milk containers alongside them both, put the current day's ration bag into the pack (where it is moderately safe from mice and their night allies) and...

### Office-on-the-yoke

Because I so often walk without a shirt and therefore without a front pocket, I have had a five- by six-inch pocket sewn onto the front of my yoke strap, roughly where the shirt-pocket comes. Into it go notebook and map, and sunglasses when not in use. Pen, pencil, camel-hair lens brush (page 233), and metal-cased thermometer (page 259) clip onto the front of it. I cannot imagine how I ever got along without such a pocket. Mine is made of ordinary blue-jean material, but anything stout will do.

For which side to put your office, see page 64.



In Alaska, all animals leave for the snow-line as soon as the mosquito pest appears, but the enemy follows them even to the mountain tops above timber-line. Deer and Moose are killed by mosquitoes, which settle upon them in such amazing swarms that the unfortunate beasts succumb from literally having the blood sucked out of their bodies. Bears are driven frantic, are totally blinded, mire in the mud, and starve to death. Animals that survive have their flesh discolored all through, and even their marrow is reduced to the consistency of blood and water. The men who penetrate such regions are not the kind that would allow toil or privation to break their spirit, but they become so unstrung from days and nights of continuous torment inflicted by enemies insignificant in size but infinite in number, that they become savage, desperate, and sometimes even weep in sheer helpless anger.



Fig. 68.—A Masked Camp

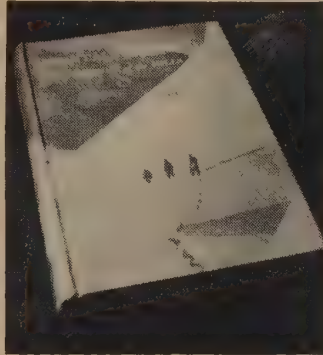
Trees and Lightning.—I have never seen, nor heard of, a beech tree that had been struck by lightning, although beeches are plentiful on many battle-scarred mountains where stricken trees of other species can be noted by the score.

One glance at a camper's fire tells what kind of a woodsman he is. It is quite impossible to prepare a good meal over a heap of smoking chunks, a fierce blaze, or a great bed of coals that will warp iron and melt everything else.

## Mountaineering: The Freedom of the Hills

By far the most complete and sensitive treatment of mountaineering available. Oriented around Pacific Northwest mountaineering, where trails often end miles before the peaks begin, it is particularly relevant to wilderness camping and travel. It is much more than a book on how to climb. Reflects several generations of respectful relationship with mountains. If you move (or sit) where there are trees, rocks, snow, and brush, it speaks to your terrain. One limitation: little about dry, arid areas—glaciers are the local functional equivalent of deserts.

[Reviewed by Michael Templeton.  
Suggested by everybody.]



**Mountaineering:  
The Freedom of the Hills**  
ed. Harvey Manning  
1960, 1967; 485 pp.

**\$7.50** postpaid

from:  
The Mountaineers  
P. O. Box 122  
Seattle, Wash. 98111

or **WHOLE EARTH  
CATALOG**

Mattresses often give a chill sleep on snow due to interior convection currents, and with age they develop leaks that let the sleeper down in the middle of the night. Convection can be reduced by inserting a few ounces of down; in this case a filter is needed on the inlet and the mattress must not be blown up by mouth because of the moisture thus introduced. Sheets of *foam plastic* are superior in every respect except their incompressibility and consequent bulkiness.

In recent years many a mountaineer has developed the habit or hobby of not only making his own passage invisible but of spending extra effort to obliterate evidence of his predecessors—most of whom were just ignorant and thoughtless.

If a skirmish with brush must be accepted there is no technique at all. Brushfighting is not a diversion for civilized, gentle folk. One cannot afford charity toward slide alder or devil's club; one must hate and punish and kill when possible.

The irregularity of a mountain range tends to break up a front, especially the narrow turbulence zone of a cold one. Instead of advancing in a solid line it may surge forward up a deep valley while held stationary by a high massif, this bulge perhaps being attacked by flanking air—little squalls breaking off and wandering about apparently at random. A party on one peak may experience lightning, hail; driving snow, pouring rain, and calm sunshine all within the space of an hour. On a nearby peak another party may spend the entire day undisturbed by so much as a drop of rain, using up all their camera film shooting the superb cloud structures.



### COOKING AND EATING UTENSILS

The least-expensive cooking utensils are tin cans in various sizes, junked (at home, not in the mountains) when rusty. Aluminum utensils cost a little more but are more durable. Bails are desirable for suspending pots over the fire, and lids to keep ashes out and steam in. Aluminum foil is versatile beyond description, under adept manipulation becoming a frying pan, oven for baking foods in a bed of coals, reflector oven for biscuits, and if need be even a cup or a pot.

With a poly bottle, or a canteen of anodized aluminum, a climber can enjoy fruit juices untainted by the toxic metal salts generated in containers of steel or untreated aluminum.

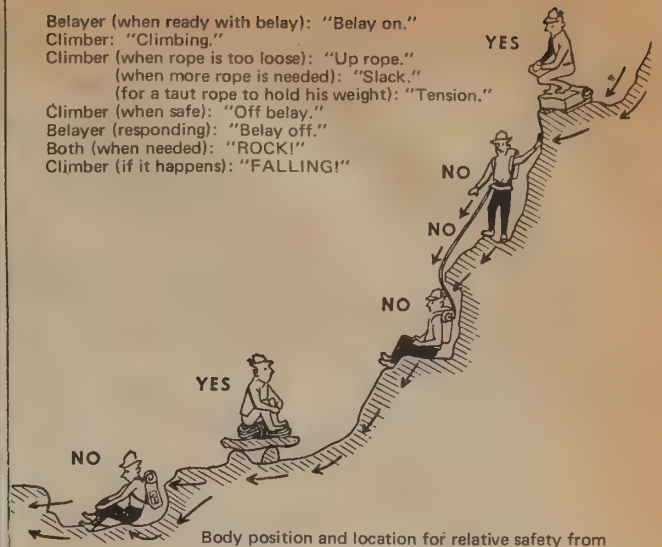
### BREAKFAST

If the climb begins in the middle of the night, breakfast is merely the first installment of lunch. A tiny can of fruit cocktail, or a doughnut and a swallow of milk, are typical menus. Some climbers are convinced their legs won't work without hot food; their neurosis can be quickly pampered with instant cereal or cocoa cooked by chemical fire.

### LUNCH

As soon as breakfast is completed the climber commences lunch, which he continues to eat as long as he is awake, stopping briefly for supper. He has food in his rucksack and knick-knacks in his pockets, main courses for the summit lunch, nibbles for rest-stops, and sweets to suck while walking.

Belayer (when ready with belay): "Belay on."  
Climber: "Climbing."  
Climber (when rope is too loose): "Up rope."  
(when more rope is needed): "Slack."  
(for a taut rope to hold his weight): "Tension."  
Climber (when safe): "Off belay."  
Belayer (responding): "Belay off."  
Both (when needed): "ROCK!"  
Climber (if it happens): "FALLING!"



Body position and location for relative safety from electrical ground currents. (Arrows indicate probable paths of flow.)



The quest of the mountaineer, in simplest terms, is for the freedom of the hills, to be fully at home in the high wilderness with no barriers he cannot pass, no dangers he cannot avoid.

## The Sierra Club Wilderness Handbook

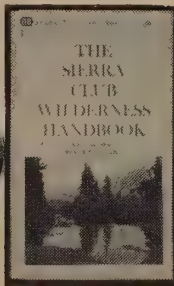
Practical information distilled through years and years of Sierra Club outings. Covers a wider range (women, burros, rivers . . . ) than Colin Fletcher.

**The Sierra Club Wilderness Handbook**  
David Brower, ed.  
1951, 1968; 317 pp.

**\$ .95** postpaid

from:  
Ballantine Books  
101 Fifth Avenue  
New York, N. Y. 10003

or **WHOLE EARTH CATALOG**



Fortunately the sources of streams in our wilderness areas are usually uncontaminated, and one need not sterilize the drinking and cooking water. However, if one is traveling in a semipopulated area or in a foreign country, it is safer to take the precaution of using Halazone tablets in the drinking water and of boiling the cooking water. One Halazone tablet is dissolved in one quart of water and allowed to stand thirty minutes. The iodine tablet "Bursoline" is considered superior to Halazone; one in one quart of water renders it potable in fifteen minutes.

Under the heading of "strictly feminine and personal" comes some advice regarding your menstrual period. Whatever your individual peculiarities may be ordinarily, they may be quite different on a mountain hiking trip. You may be thrown off schedule and you may need lots more or lots fewer sanitary napkins than usual. Tampons worn internally may be more comfortable for hiking and will prevent the chafing that may be your lot with externally worn napkins (but for your first trip by all means have a supply of the kind you are used to). And don't forget, there are no rest rooms with vending machines where you are going.

In addition to standard equipment, it will be wise with preschool-age children to take along some portion of the home environment whose value is purely emotional, even at the expense of inconvenience and irreparable damage to the articles; these might be, for example, teddy bears, toys, books, familiar clothes, or eating utensils.

Good pack horses and mules can carry a pay load of 200 pounds when expertly packed. One hundred and seventy-five pounds should be considered a maximum load on one's first trip. The pack train can be counted on for 15 miles a day on good trails if it keeps pushing. These animals walk at a good clip and, unless their handlers are fast hikers, all personnel should be mounted. This becomes more important as the size of the party increases. Mules are led singly by pedestrians or are tied in groups of not more than five animals and are then led by a man on horseback. This is the "string" of the professional packer.

## Manual of Ski Mountaineering

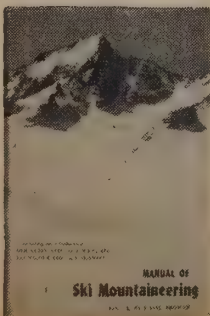
If you want the wilderness to yourself, go where it's high when it's cold. This book is a fine compendium of the technical knowledge you will need to make it.

**Manual of Ski Mountaineering**  
David Brower, ed.  
1962, 1969; 232 pp.

**\$4.75** postpaid

from:  
Sierra Club  
Mills Tower  
San Francisco, CA 90013

or **WHOLE EARTH CATALOG**



It is best to allow the snow to melt in the mouth before swallowing. A fruit drop or piece of fruit candy adds both flavor and sugar and dissolving it in the mouth with snow while traveling is a popular habit among experienced ski tourists.

**Two-step.**—One of the most useful maneuvers for attainment of speed on the level or on slight downhill gradients is the two-step, which uses the gliding ability of skis. If the two-step is to be used for long, it must be deliberate and rhythmic, slow enough to let the skier relax during the glide between thrusts.

Take a short step for propulsion, lean well forward from the waist, placing the poles well ahead, and lunge into a glide on the opposite ski by shifting the propelling thrust smoothly from the driving ski to a strong followthrough with the poles. Slowly bring the driving ski alongside the gliding ski in preparation for the next short step.

Occasionally two consecutive short steps are taken to change the glide from one ski to another. (this constitutes the three-step), and to tire out a new set of muscles.

**Lightning and the mountain.**—The urge to know more concerning the effects of lightning becomes stronger when one is on a peak with the static charge beginning to make its power felt. When every projection in the vicinity, and finally the climber himself, begins to spark and the air is filled with ominous hissing, the desire to be in camp becomes overwhelming. Since this desire cannot always be satisfied, it is well to know what to do at this time.

The reasons behind the classical warning to be off the summit and ridges in a lightning storm can be seen when the mechanics of the lightning discharge are studied.

★  
Ocaté Sleeping Bag

The ideal poor man's sleeping bag. Since it's made of polyurethane foam you've little need for a pad or air mattress; if you get rained on you stay warm—like in a wet suit. The material breathes okay, and by adjusting the hood and body tapes you can be comfortable from room temperature to 0°F. The six-foot bag weighs 4½ lbs. The 7 ft bag can accommodate one big cop or two friendly skinny hippies. Rolling the bag tight is difficult but possible. We're enthusiastic about the Ocaté bag.

[Suggested by mysterious stranger from New Mexico]



Ocaté Sleeping Bag

6 ft. **\$37.00** postpaid in U.S. (\$35.00 in Truck Store) blue or gold  
7 ft. **\$40.35** postpaid in U.S. (\$38.00 in Truck Store) blue or gold

from:  
WHOLE EARTH CATALOG  
4 ft. & 5 ft. models also available; takes longer.

They may be obtainable straight from Ocaté:

Ocaté Corporation  
P. O. Box 2368  
Santa Fe, NM 87501

You can get Ocaté at Abercrombie & Fitch, but it costs more.

Light Weight Camping Equipment and How to Make It

It's all here: design, patterns, assembly techniques, light weight materials, and sources of the materials. Because of good information on what's needed for various environments, it's a useful book even if you aren't making your own stuff. An indispensable book if you are.

[Suggested by Roland Jacopetti]

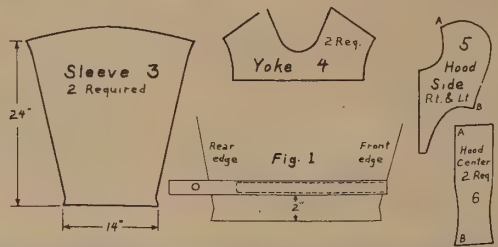
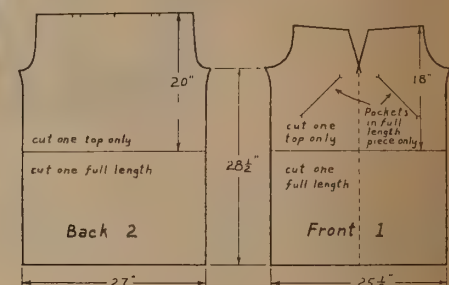
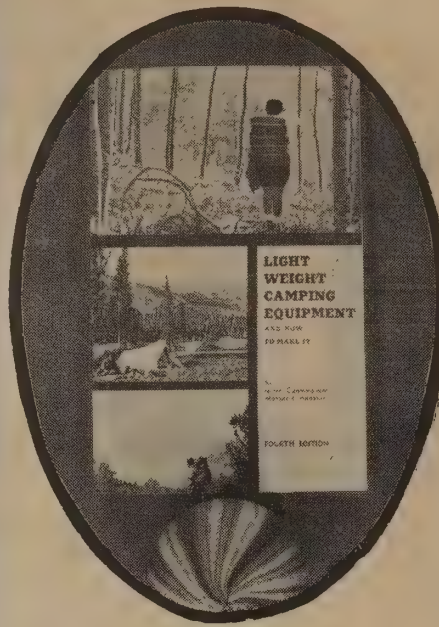
**Light Weight Camping Equipment**  
Gerry Cunningham, Margaret Hansson  
1959; 130 pp.

**\$2.00** postpaid

from:  
Alaska Sleeping Bag Co.  
710 N. W. Dawson Way  
Beaverton, Oregon 97005

or WHOLE EARTH CATALOG

Parka



Frostline Outdoor Equipment

Frostline Outdoor Equipment is the manufacturer of do-it-yourself kits of lightweight camping equipment: tents, down sleeping bags and clothing. They also sell the raw materials for making such equipment (pre-packaged down; zippers; nylon fabrics; velcro self-sticking nylon tape fastener; Dacron thread; etc. The company's service by mail has proven prompt and dependable, all of this reviewer's orders having been filled correctly.

This reviewer has made Frostline's "Big Horn" ("Winter") sleeping bag (2¼ lb. down filled overlapping tube design with no stitched through seams), stuff sack and poncho. She found each kit to be all that the manufacturer had claimed, the catalog description scrupulously accurate.

Frostline kits are complete; all they require is assembly with a sewing machine. This reviewer used a Singer Featherweight for the purpose.

Before deciding on the Frostline kits, this reviewer compared Frostline prices and specifications with those of other companies. (The Ski Hut, Recreational Equipment Inc., Thomas Black and Sons Inc., etc.) She concluded that the Frostline kits were the most economical product without any compromise in quality.

[Reviewed by Roberta Becker Marshall. Suggested by many]



Catalog  
free

from:  
Frostline Outdoor Equipment  
P. O. Box 1378  
Boulder, Colorado 80302

Sample prices:

2-man Rain Tent: \$49.95  
"Chamois" down sleeping bag: \$45.95  
"Tundra" down jacket: \$24.50  
Poncho: \$7.95  
Velcro: 30¢ per foot

L. L. Bean

The Bean catalog is the model for the WHOLE EARTH CATALOG. Mr. Bean had a directness and integrity that shows through his catalog, his products, his service. The catalog has excellent items, especially outdoor clothing. An uncommonly pleasant company to do business with.



"Ruff-Out" Leather Jacket

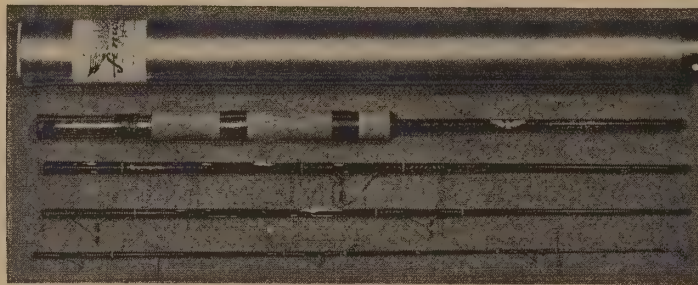
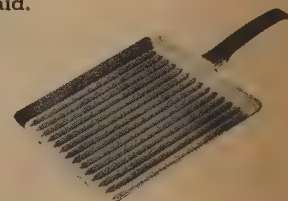
Made in England from de-grained steerhide. Strong, supple and specially tanned to a soft "velvet" finish.

Handsome Western styling. Waist length with sturdy snap front and side adjustments. Two flapped chest pockets. **Note:** Cut on trimly fitting patterns. Order one size larger than normal for more comfortable fit. Color, Golden Brown.

Men's sizes 38 to 46. Price, \$38.50 postpaid.

Ridge Grill

Grills meat without use of charcoal. As easy to use as a frying pan. High ridges sear steaks, chops, burgers and bacon. Deep grooves catch the fat. Meat never lies in grease. Excellent for bacon, less shrinkage and curling. Made from solid aluminum with heatproof handle. Easily cleaned. Size 10" x 10". Weight 1 lb. 15 oz. Price, \$5.95 postpaid.



Fenwick Spin-Fly Outfit

A versatile, balanced outfit for the "pack in" or traveling fisherman. Packs to 23½".

The No. SF74-4 Rod is made with the same ferruleless slip-joint construction and quality as the Fenwick rods described above. One-piece action in a four section rod. Cork grip handle has ring keepers for spinning reel and fly

reel seat as shown. Handles lures from ⅛ oz. to ¾ oz. and WF-7 fly line with ease.

Length 7 ft. Weight 3⅞ oz.

Price, No. SF74-4 Rod in cloth bag and aluminum case, \$34.75 postpaid.

The Reels are the No. 1494 Medalist Fly Reel shown on page 58, price \$11.35 postpaid; and the No. 100 Spinning Reel shown on page 45, price \$17.50 postpaid.

The Lines are our Floating Weight Forward "Double L" Fly Line, size WF-7-F shown on page 62, price \$8.10; and 200 yds. of our 6 lb. test "Double L" Spinning Line shown on page 47, price \$2.30 postpaid.

Price, Complete Outfit: Rod, Reels and Lines described above, \$67.00 postpaid.

Recreational Equipment, Inc.

"The Co-op" as it's called, probably offers the widest selection of camping and climbing gear available in the U. S. They carry many outstanding lines of gear; sometimes confusingly too many (their catalog shows 21 different ice axes!) I fully recommend the French Millet rucksacks (especially the ones with tough canvas sacks and leather bottoms) and their own line of Cruiser packs . . . both good values. Some of their "special imports" (from Japan) are cheap in quality besides price. For instance rubber water-proof coating peeled off scree gators after 2-3 uses but they took them back for full credit two years later.

Membership is \$1 and you get approximately a 10% dividend each year.

[Reviewed by Drew Langsner,  
Suggested by Roland Jacopetti.]

Catalog and Membership  
\$1.00

from:  
Recreational Equipment, Inc.  
1525 11th Avenue  
Seattle, Wash. 98122



[J]

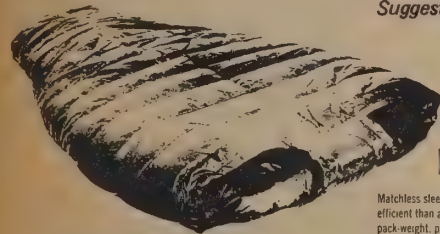
[J] Stanley Thermos Bottle. The unbreakable all-steel thermos with the five-year guarantee. Stainless steel lining, an insulated cup cap and leakproof stopper, plus a rugged outer case makes this a bottle that will take punishment and last a lifetime. Vacuum seal keeps food colder, hotter, longer. Grey enamel case.

- J305B23 1 Pint size, 2 lbs. . . . . 13.25
- J305B24 1 Quart size, 2 3/4 lbs. . . . . 14.95
- J305B25 2 Quart size, 4 lbs. . . . . 17.50

Sierra Designs

They are very, very nice people, and I truly believe they make the best available sleeping bags. Design, workmanship, materials, aesthetic beauty, all tops. Prices are high, but not that much higher than everyone else. If you're looking for the best, they've got it.

[Reviewed by Roland Jacopetti,  
Suggested by Sandra Tcherepnin]



DOUBLE MUMMY

Matchless sleeping comfort for two. Double Mummy is lighter, cheaper and more efficient than any combination of zipped together singles. Its 6 1/2 lbs. is a tolerable pack-weight, packed size of 11"x21" allows the Double to be carried on almost any good pack-frame and your partner is freed of the largest single part of her pack. Each side of bag has its own 66" nylon zipper, and separate draw closure hoods allow individual ventilation control. Double Mummy comes in a single length — for persons to 6'3". It's not designed for single use, but quite a few heavyweights buy it for that: it provides luxurious space for really hefty people. STUFF SACK INCLUDED

CONSTRUCTION: Shant wall, 6" tube width.  
Weight: 6 1/2 lbs.  
Filling: Prime Silver Gray goose-down.  
3 lbs. 6 oz.  
Stuffed Size: 11"x21"

Loft: 6" +  
Estimated Min. Temp.: 10  
Girth Shoulders: 99"  
Girth Hips: 90"  
Girth Foot: 57"

COLORS: Deep Blue or Forest Green. \$126.50

Catalog  
free  
from:  
Sierra Designs  
4th and Addison Streets  
Berkeley, CA 94710



SIERRA DESIGNS 69/70



[B] Primus 8R. This compact stove folds away in the integral box, pops out for easy use. Self cleaning device built-in. Burns white gas. Folds to 5" x 5" x 3". No pumping necessary. Weight 1 3/4 lbs.

H193A20 . . . . . 11.75



[B]

[C] Primus 96L. A completely collapsible stove which burns kerosene. Folds into a metal box 5 1/2" x 5 1/2" x 3 1/2". The stove stands 6 1/2" high and includes an air pump, windshield, primer can, wrench and cleaning pins, 2 lbs.

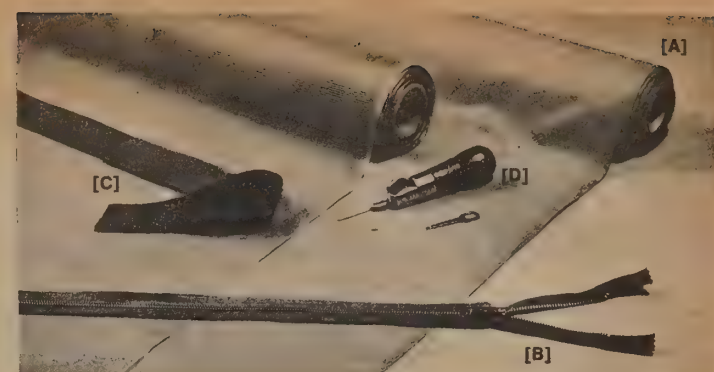
H193A2 . . . . . 12.75



[C]

[N] Nylon Auto-Camping Shovel. French made nylon shovel molded over a steel handle and blade, with hammer and pick on handle end.

L077H3 . . . . . 7.85



[A] Cloth

	Coated	Width	Weight*	Colors	Order	Price per yd.
Poly-Urethane Nylon	yes	55"	4 1/2 oz.	blue, yellow, intl. orange, Scotch mist	N626A1	2.00
Nylon Pack Cloth	no	40"	7.5 oz.	red, sage green	N643A11	2.25
Nylon Pack Cloth	yes	40"	9 oz.	red, sage green	N643A12	3.25
Reevair Cloth (Nylon)	yes	45"	4.5 oz.	blue, orange	N605A13	2.50
Pima Nylon Cloth:	no	37"	6.5 oz.	blue, yellow, red, green	N626A3	2.25
50% cotton/50% nylon						
Oxford Cloth Cotton	no	39"	6.5 oz.	dark navy	N626A4	1.50
Nylon Mosquito Netting	no	45"	1.7 oz.	O.D.	N626A7	.75
Nylon Mosquito Netting	no	64"	2 oz.	O.D.	N626A6	1.00
Rip-Stop Nylon	no	45"	3 oz.	blue, orange	N626A5	1.95

\*Weight per running yard.



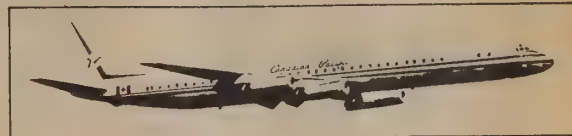
[N]

[C] French Candle Lantern. Made of aluminum with a glass chimney, it folds to 2"x4 1/2" long and includes a chain for hanging. Uses the excel candles by cutting about 1/2" off the bottom. Spring mechanism keeps the candle burning at a uniform height. Weight 4 3/4 oz.

L071C1 . . . . . 3.50



[C]



Charter Flights for Co-op Members

Fly via Canadian Pacific Airlines from Vancouver, B.C. to Japan or Europe and return. While abroad travel on your own via private automobile or train. Other trips are now being planned; before you travel, check for new domestic and international charters by airline or bus. Charter flights available only to Recreational Equipment, Inc. members of six months or more.

Japan	Vancouver-Tokyo	Tokyo-Vancouver	22 days	May 30-June 21	\$338
Europe No. 1	Vancouver-Amsterdam	Amsterdam-Vancouver	30 days	June 7-July 6	\$249
Europe No. 2	Vancouver-Amsterdam	London-Vancouver	58 days	June 8-Aug. 4	\$279
Europe No. 2A	As shown in Charter Flight Brochure	has been Sold Out.			
Europe No. 3	Vancouver-Amsterdam	Amsterdam-Vancouver	45 days	July 12-Aug. 25	\$269
Europe No. 4	Vancouver-Amsterdam	Amsterdam-Vancouver	29 days	Aug. 31-Sept. 28	\$249

For Reservations Contact:  
C. R. BROWN, P.O. Box 15272 Wedgwood Station, Seattle, Washington 98115  
Phone—Days: EM 2-3632 - Evenings: LA 2-0314

Ski Hut

What to say about Ski Hut? They're still a good wide-range West Coast supplier of outdoor equipment. Our relationship with them is muddled because they pressured one of their employees to stop writing about other outdoor suppliers in the Whole Earth Catalog because it was "unbusinesslike." He quit, and our review became ambivalent, and the staff felt muzzled. That's good business?

Ski Hut Catalog  
free  
from:  
The Ski Hut  
1615 University Avenue  
Berkeley, CA 94703

FOLDING HUNTER—Model 110  
4" blade pivots on 1/4" bearing and has positive lock in open position. Handle is golden-grain Macassar ebony wood with solid brass bolsters and liner cast in one piece. May be carried in pocket or sheath. An ideal heavy-duty outdoor knife for those preferring a folding blade. Overall length when closed is 5". Weight with sheath, 8 oz.  
1110 . . . . . \$16.00

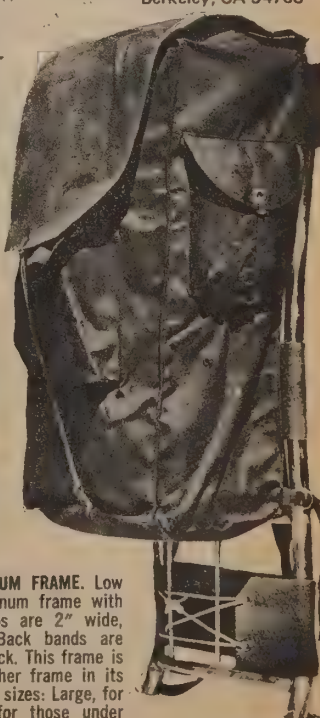


CRUISER #440 PACKSACK. Made of durable cotton duck, khaki in color. Two side pockets and one back pocket with tie-down cords. Sack fits on Cruiser frame in seconds. Two sizes fit the equivalent frame size.

Large #440 Packsack: 14" wide, 22" high, 7" deep. Wt. 20 oz. R401/L . . . . . \$8.00  
Regular #440 Packsack: 14" wide, 18" high, 6" deep. Wt. 18 oz. R401/R . . . . . \$8.00

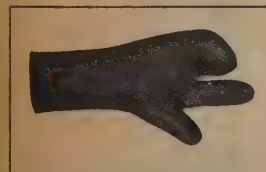
CRUISER CONTOURED ALUMINUM FRAME. Low cost serviceable model aluminum frame with welded joints. Shoulder straps are 2" wide, padded, and nylon-covered. Back bands are 4 1/2" wide, of heavy cotton duck. This frame is superior in comfort to any other frame in its price range that we know. Two sizes: Large, for people over 5'5"; Medium, for those under 5'5". Weight: 34 oz.

Large Cruiser Frame: R400/L . . . . . \$11.75  
Medium Cruiser Frame: R400/R . . . . . \$11.75



Eddie Bauer

Highly-regarded for their down products—parkas, sleeping bags, etc. Very affluent catalog. They developed a flotation wet-suit that I like a lot.



NAVY FROGMAN MITTS

Millions of tiny air cells, permanently trapped in foam rubber, retain moist heat and keep your hands warm, even when wet or in sub-zero weather. Texturized outer surface; lined with soft, stretchy Nylon jersey.

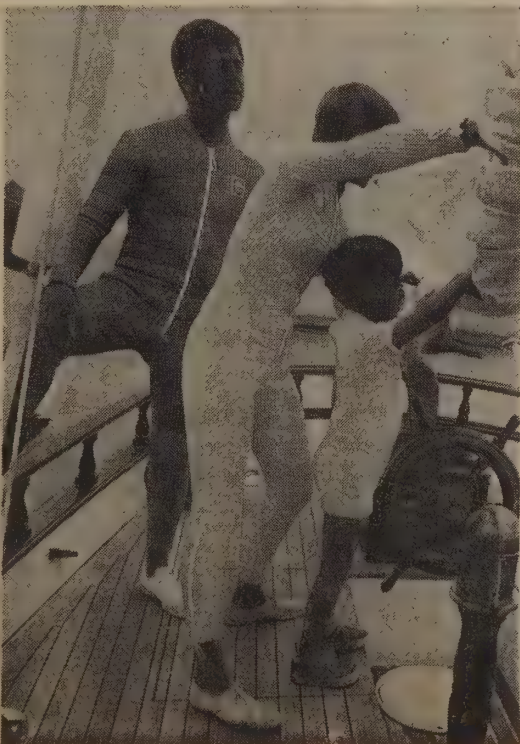
Sizes: S(7), M(8), L(9), XL(10).  
No. 2068 . . . . . ppd. \$6.95 ©

Catalog  
free

from:  
Eddie Bauer  
Expedition Outfitter  
1737 Airport Way South  
Seattle, Washington 98134

Men's Long Coverall AMPHIBIOUS† Sports Suits.  
Colors: Red, Navy, Orange. Sizes: S(34-36), M(38-40), L(42-44), XL(46).  
No. 2280 . . . . . ppd. \$99.50 ©

Women's Long Coverall AMPHIBIOUS† Sports Suits.  
Colors: Orange, Powder Blue, Red, Pink.  
Sizes: XS(7-9), S(10-12), M(14-16), L(18-20).  
No. 2281 . . . . . ppd. \$95.00 ©



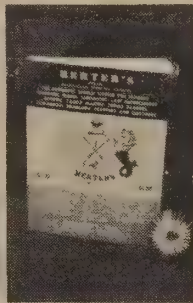
**Herter's**

If we gave a prize for most-suggested item, we would have to award it to Herter's, the people's choice (maybe 30 suggestions, 15 or so reviews). Everybody says their prices really are low and their quality good on a truly unusual range of products. And Herter's indeed puts out the most entertaining catalog in the business (\$1.00 until you're a regular customer; 656 pp). At mail order distance it's a giggle, all those inflated boasts and fierce gun and trap write-ups and between-the-lines patriotism. We visited their showroom in Minnesota a summer ago, and in the presence of their guards and threatening signs and shoddy goods on display—well, up close we stopped laughing. [By the way, I could see people doing very similar takes on the WHOLE EARTH CATALOG—we pretend to be a consumer service, but it's just a front for fuzzy-headed apologism for dope and sex and subversive activity. No wonder I'm freaky about Herter's. We're sisters under the skin.]

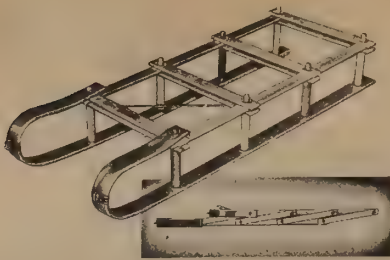
Herter's Catalog  
1970; 656 pp.

**\$1.00** postpaid

from:  
Herter's, Inc.  
Waseca, Minnesota 56093



**HERTER'S FOLDING YUKON SLEDS**



Ideal for transporting provisions, ice fishing gear, hunting gear and trapping gear over every type of snow. Has practically no drag and will carry a large load over snow and ice with little effort. Unique folding design converts sled from space-saving storaway size to a rugged carrier. Constructed of sturdy hardwood. Single metal rings securely fastened to each runner makes attachment to another sled or to team harness simple. 4 ft. long 7" high 17" wide.

**15-1035** Shpg. wt. 10 lb. **\$17.97**

**HERTER'S OAR LEATHERS AND BUTTONS**



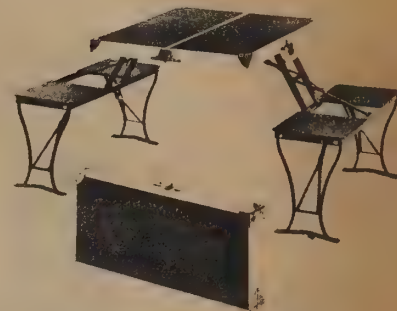
Our oar leathers and buttons are made of the finest quality russet leather. The leathers are 7 x 6 1/2 inches and the buttons are 1/2 x 13 inches. Complete leathers and buttons.

**PB1F** Shpg. Wt. 8 ozs. per pair **\$1.97**

**HERTER'S FOLDING CAMPER'S TABLE**

Ideal for campers, picnickers, fishermen, hunters and trailer campers. Stands on only four legs. Does not require level surface to stand firmly.

Folds quickly and compactly into self-contained carrying case weighing 32 1/2 lbs. stores in a space four inches wide. Seats 4 easily. Will not tip or tilt even though



only one side is occupied. Folded size: 33" long x 14 1/2" high x 4" wide; Open size: 33" x 29", overall length 60"; Table 27" high, seats 15 1/2" high.

**28-2000-H** Shpg. wt. 34 lbs. **\$27.97**

**The Smilie Company**

For those interested in traditional mule packing and log cabin living—or if you're just hung up on old time type stuff. Everything from sheepherders ovens to genuine heavy iron griddles. They also make those large semi-permanent encampment tents.

[Reviewed by Drew Langsner.  
Suggested by Jim Wayman]

Catalog  
**\$1.10**

from:  
Smilie Co.  
575 Howard Street  
San Francisco, CA 94105



**CAMP SEWING KIT**— This is a real camper's kit with needles, strong thread, scissors, and thimble all in compact rugged snap covered case. 3 1/2" x 3 1/2" x 1 1/4".

9130 Camp Sewing Kit Wt. 3 1/2 ozs. **\$1.25**



**SHEEPHERDERS WOOD CAMP STOVE** - It's the old time Sheepherders Stove, built for hard and long use. Of heavy sheet iron (20 ga.) with 5 piece telescoping pipe (16" lengths) which packs in fire box. Oven size 5" x 8" x 11" with bakepan. Overall size 12" x 9" x 27". Can be packed as top load on pack animal.

- 2-3405 Sheepherders Stove - Wt. 26 lbs. Shipping Weight 35 lbs. . . . . Not PP \$25.00
- 2-3428 4" Stove Pipe Damper . . Wt. 7 ozs. \$ .85
- 2-3429 5" Stove Pipe Damper . . Wt. 9 ozs. \$ .95
- 2-3426 4 1/2" Stove Pipe Tent Ring . . . . . \$2.25
- Asbestos Wt. 4 ozs.
- 2-3427 5 1/2" Stove Pipe Tent Ring . . . . . \$2.50
- Asbestos Wt. 5 ozs.
- 2-3425 6 1/2" Stove Pipe Tent Ring . . . . . \$2.75
- Asbestos Wt. 6 ozs.
- 2-3410 Extra Set Telescoping Pipe for Sheepherder Stove - 5 Pieces - Maximum Diameter 5" - Weight 6 lbs. . . . . Not PP. \$6.65



**PRESS TOP TINS** - These are useful for food storage as they are mouse and squirrel proof and waterproof. Two of these will slide nicely into a mule's pack box. Also with outside painted food can be color-coded. Not for use over fire since these cans have soldered bottoms. Size 9 1/4" square x 13 3/4" high. 7" Dia. opening, includes cover.

3920 Press Top, 5-Gallon Tin . . . Not PP. **\$1.95**  
Weight 2 1/2 lbs. Not Painted



**MOISTURE PROOF VINYLITE FOOD BAGS** - These bags will actually keep your food dry. Made round and stand up on their flat bottoms, with tie tapes. Of welded tough Vinylite.

No.	Capacity	Size	Wt.	Price
2-6210	1 lb.	2 3/4" Dia. x 9"	1/2 oz.	\$.45
2-6220	2 1/2 lbs.	4 1/2" Dia. x 11"	1 oz.	\$.55
2-6240	5 lbs.	6" Dia. x 12"	2 ozs.	\$.65
2-6260	15 lbs.	9" Dia. x 16"	3 ozs.	\$1.25
2-6261	25 lbs.	9" Dia. x 25"	5 ozs.	\$1.50



**JUMBO CAST IRON GRIDDLE** - This size for big mulepack parties. 13 1/2" x 25" surface with handles (30" overall).

2-3214 Jumbo Cast Iron Griddle . . Not PP. **\$15.95**  
Ship. Wt. 28 lbs. Without box. Wt. 25 lbs.

**Alaska Sleeping Bag Co.**

Another outdoor supplier. Some unique items. Main mail order service of Gerry Cunningham's outdoor stuff.

Catalog  
free

from:  
Alaska Sleeping Bag Co.  
701 N. W. Dawson Way  
Beaverton, Oregon 97005



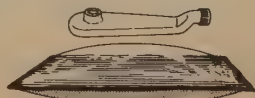
**3** Let Fido carry his own food • Sturdy nylon, waterproof zippered panniers • Leather reinforced corners.

Number: **P803**  
Weight: 11 ozs.  
Small—For dogs to 40 lbs.  
Large—For dogs over 40 lbs.  
**\$14.00**

**Alaska\* SOLAR WATER HEATER**

Hunt or fish all day and have two gallons of hot water ready for your clean-up the instant you return to camp . . . and do this without leaving an untended fire at your campsite.

**\$5.00** Postpaid



**Holubar**

Another outdoor supplier. Some unique items.

Catalog [Suggested by Craig Schensted]

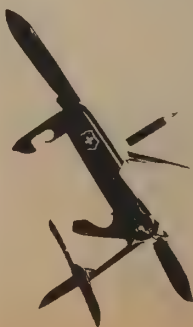
free from:  
Holubar  
Box 7  
Boulder, Colo. 80302

**ALUMINUM SKILLET**



Has folding handle. Use as skillet or plate. 8" diameter. Weight 6 oz. **\$1.75**

**TINY CAN OPENER**  
1 1/2" long.  
Weight 3/4 oz.  
**\$.10**



**SWISS VICTORINOX KNIFE**

The original and finest of the Army knives. The two stainless steel Swedish blades are extremely sharp and hold their edges. This model also has nail scissors, two regular and one Phillips screw drivers, bottle opener, can opener, file, awl, tweezers and toothpick. Knife also includes saw blade not shown in picture. With lanyard for tying a cord to prevent loss.

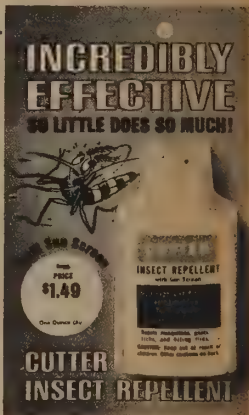
Weight 3/4 oz. **\$11.75**

**Eastern Mountain Sports, Inc.**

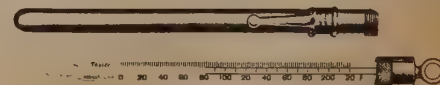
Another outdoor supplier. A few unique items. East coast.

Catalog  
free

from:  
Eastern Mountain Sports, Inc.  
1041 Commonwealth Avenue  
Boston, Mass. 02215



**CUTTER INSECT REPELLENT**  
Comes as a cream in a non-breakable (plastic) vial. Quite effective. 1 oz.  
E09L214 **\$1.49**



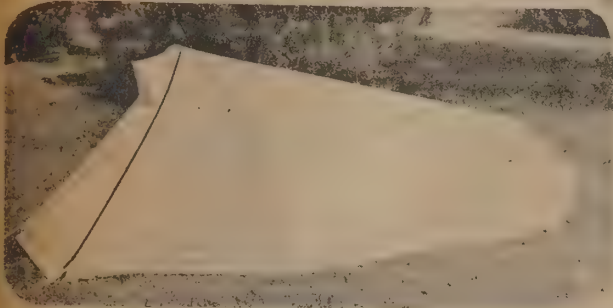
**POCKET THERMOMETER.** An accurate thermometer in an aluminum case with pocket clip. Legible from minus 50° to 125°F. Fun to have along and especially useful in checking snow temperatures for cross-country ski waxing.

Weight 1 oz. **\$3.25**

**Warmlite Tent**

The Stephenson Warmlite tent is the 2-3 man tent for backpacking and mountaineering. The basic Model 6—Single Wall Tent weighs 36 ounces complete with poles. It has been designed by Jack Stephenson, an aerodynamicist and mechanical engineer, who fabricates them as a part-time operation at home. The tapered hoop shape is very stable and doesn't flap in the wind. It also provides extra interior head room compared to conventional A-frame designs. Interior thermodynamics are designed to provide good ventilation and minimize heat loss. Length is over 10 feet, width of 5 feet. Fits in small size sleeping bag stuff sack. \$100-\$215.

[Suggested and reviewed by Drew Langsner]



Catalog  
free

from:  
Stephenson's  
23206 Hatteras Street  
Woodland Hills, CA 91364

**Barbour**

Here in California, Barbour all-weather gear looks hopelessly exotic. Appropriate dress for leaning against the straining helm or sneaking into East Germany in November and other romances. Outstanding for motorcyclists. Waterproof without condensation.

[Suggested by Jerome Skuba]



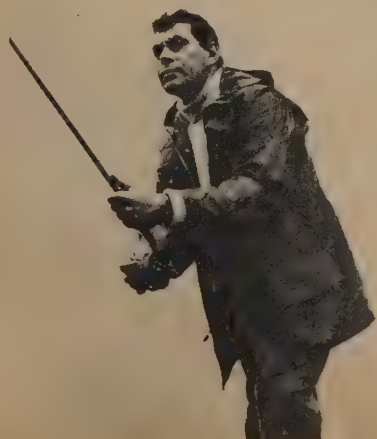
Catalog  
free

from:  
J. Barbour and Sons, Ltd.  
Simonside, South Shields  
Co. Durham, ENGLAND

L/W Thornproof  
Racing Oversuit  
\$22.00

"Probably the best known motorcycle suit in the world, the well proven Barbour is 100 per cent waterproof and extremely durable".  
Motorcycle

F/W Thornproof  
Durham Jacket  
\$21.00

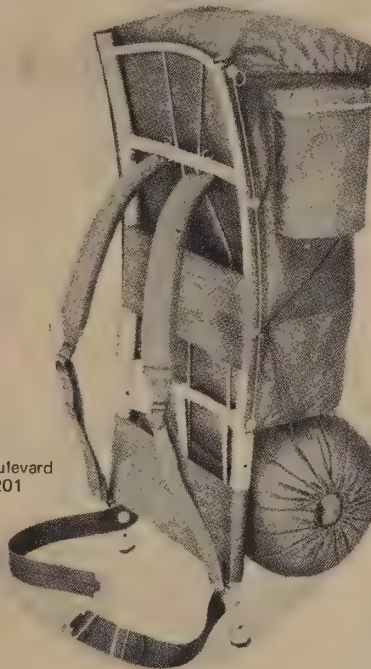


**Kelty Packs**

Famous packs.

Catalog  
free

from:  
Kelty Pack  
1801 Victory Boulevard  
Glendale, CA 91201



**KELTY PACK PRICES**

PACKFRAME MODEL — All Sizes —	PACKBAG MODEL — All Sizes — Both Colors				
	A2	A4	B2	B4	BB5
Mountaineer	45.25	49.50	41.50	45.25	53.50
Backpacker	43.00	47.25	39.25	43.00	51.25

**Camp and Trail**

The most beloved of the New York outdoor suppliers.

[Suggested by Annie Helmuth]

Catalog  
free

from:  
Camp and Trail Outfitters  
112 Chambers Street  
New York, N. Y. 10007



**No. 163. MALLORY POCKET FLASHLIGHT.**

Complete with two Penlite Alkaline Manganese batteries. 5 Hours continuous light, 8-1/2 hrs. intermittent. Has a 2 yr. shelf life, wt. 4 ozs. 4" long, 1-1/2" thick. \$1.98

Replacement batteries 50¢ each.



**No. 159. LENNAN RUBBER LIGHT.**

A 2 cell waterproof, damage proof flashlight. Has a very excellent switch. Wt. empty, 8 ozs. \$2.95

**Poptent**

The best roadside tent by far is the Thermos POPTENT® a dome shaped affair that erects in about one minute without ropes, poles, or stakes and will withstand bad weather remarkably well. Comes in two sizes with sewn in floor, screen door and window. Hexagonal floor about 6½ feet across the flats sleeping two and a child, and a larger one about 8½ feet and 6 feet high that will sleep four but with less wind stability. The smaller one is best, folding up into a bag 5 inches diameter and two feet long weighs 13 lbs. Prices vary from store to store, but expect to pay about \$60 for the small one; \$90 for the big one. Don't pay more. Cut urethane foam 2" thick to fit the floor and you have a good camp for a small car or motorcycle.

[Suggested and reviewed by J. Baldwin]



Poptent  
6½ ft., green

\$65.00 postpaid (\$60 in the store)

from:  
WHOLE EARTH CATALOG

**Black's**

Said to be the largest camping equipment supplier in England, Black's has an outlet in New York state.

[Suggested by Jerome Skuba]

Catalog  
free

from:  
Thomas Black & Sons  
930 Ford Street  
Ogdensburg, N. Y. 13669



**SPECIALISED STRING UNDERWEAR**

Very popular underwear which keeps the body at normal temperature in both hot and cold temperatures by providing an insulating layer of air next to the skin. Very comfortable and light. Made in Norway.  
Athletic Shirts. Weight 4 oz. \$2.95  
T Shirts. Weight 5 oz. \$3.50  
Shorts. Weight 4 oz. \$2.95  
Longs. Weight 8 oz. \$4.95



**The JOE BROWN 'EXTENDABLE'**

A new ski/climbing rucksack designed by the 'hard man' of British climbing. Combining the best qualities of traditional proofed cotton duck and proofed nylon it is rugged, light and waterproof. Special features include: (a) Large proofed nylon top flap with inner and outer pockets; (b) Top flap has elasticated sides to keep out wind and rain; (c) Detachable proofed nylon side pockets; (d) Securing straps allow skis to be carried behind pockets; (e) Quickly adjustable padded shoulder straps; (f) New easy action buckles on all straps allow adjustment while wearing mitts. Size: 13 ins. x 22 ins. x 6½ ins. Pockets: 5 ins. x 9 ins. Weight 2 lb. 12 oz. \$28.50



**Professional Guide's Manual**

If you're eating meat, deerhunting is about the most honest and economical way to go about it. This bargain book from Herter's—amazingly unhysterical for them—has all the information you need to find, shoot, and butcher your deer. It's also chock with tips on fishing, camping, storing stuff, and other sundry.

[Suggested by Peter Rabbit]

**Professional Guide's Manual**  
George Leonard Herter & Jacques P. Herter  
1966; 98 pp.

**\$.45** postpaid

from:  
Herter's, Inc.  
Waseca, Minnesota 56093

The hide of a deer, like that of other animals contains 75% of the odor of the animal. If you leave the hide on a deer the odor from the hide penetrates the meat, giving it a strong taste and smell. For the best eating venison, remove hide from the deer right after gutting it or at the latest, when you get the deer back to camp. All the meat houses strictly abide by this rule.

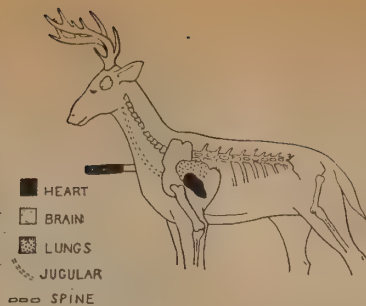
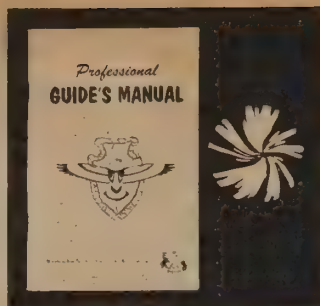


Figure 10.

To use the "Back Carry" method as shown in Figure 10, slit the skin through each hind leg as the illustration shows. Through these slits put the corresponding front legs. Put sharp sticks through the front legs to lock them in place. To get the deer on your back, set the deer up on his rump in a sitting position. Spread the hind legs apart and set between them. Grasp a front leg in each hand, lean backward and swing the deer up on your back. Put both arms through the loops formed by the legs. Now go on your hands and knees and lean forward. Bring up first one foot then the other until you are erect. Whistle and sing as you carry out the deer when using this method so no one can possibly mistake the deer on your back for a live one.

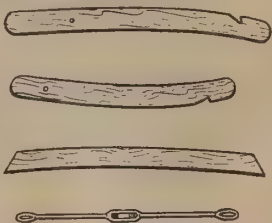
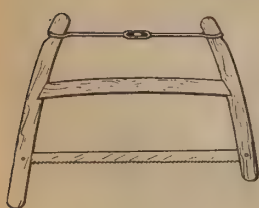
**HOW TO REMOVE PORCUPINE QUILLS STUCK IN A DOG**

When a dog has porcupine quills in it, do not let anyone go near the dog except its master. This precaution is necessary, as dogs with porcupine quills in them are apt to bite anyone that approaches them except their master.

Proceed as follows: Take a cupful of ordinary vinegar and add one tablespoon of baking soda to it. Stir well. Now sop this solution carefully on all protruding parts of the quills. Wait ten minutes. Then again sop with the solution. Again wait ten minutes. You then can pull out the quills from the dog with ease and without hurting the dog at all.

The reason this method works is as follows: Vinegar is a mild solution of acetic acid. Porcupine quills are made up of lime and calcium. The acetic acid softens up the lime in the quills causing them to soften, wilt, and become smaller.

**THE WOODEN BUCK SAW**



**HOW TO KEEP BACON FROM MOLDING**

Bacon is a must item for camp and trail food. It provides some strength giving meat but most important it provides you smoke flavored grease to cook wild game flesh, pancakes and other food items in.

Bacon regardless of the weather molds very easily. With the mold it becomes rancid and loses its good flavor entirely. To prevent bacon from molding take a clean cloth and wash it with vinegar. This will not only prevent it from molding but makes it retain its good fresh taste.

**Skills for Taming the Wilds**

Bradford Angier's outdoor books are generally thin, sketchy, and repetitive from book to book. This appears to be the least diluted one. Applicable mainly to northwoods, where indeed Angier has lived for many years.

Oleomargarine, largely because it keeps so well, is recommended for general wilderness use. To cut hard margarine or butter cleanly, use a knife that has been heated in hot water.

To protect yourself from popping hot fat, stop the spattering by sprinkling a bit of flour into the frypan. If the grease catches fire, throw a handful of flour on it or extinguish the flames by covering the burning fat and shutting out the air.

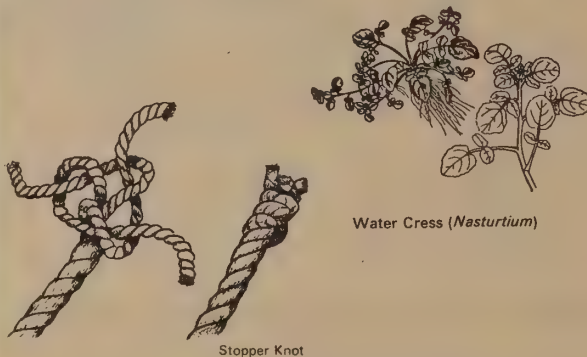
It usually requires a disproportionate amount of energy to travel straight up and down hills, as the trails of animals reveal they well know. You generally will do better in the long run either to zigzag or to slant off at a gradual pitch. Energy will be conserved if you can proceed without cutting across major drainage systems. As for resting, this is more beneficial when enjoyed frequently for brief periods. Hurrying ahead for long stretches and then taking prolonged breathing spells tends to cause the muscles to stiffen.

**Skills for Taming the Wilds**  
Bradford Angier  
1967; 280 pp.

**\$6.95** postpaid

from:  
Stackpole Books  
Harrisburg, PA 17105

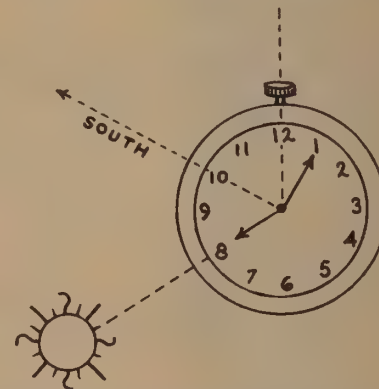
or WHOLE EARTH CATALOG



Stopper Knot

Water Cress (Nasturtium)

Pockets are so handy in the outdoors that special attention should be paid to their deepness and ruggedness when buying clothing for the woods. Because of the danger of losing your already limited essentials, it is well to get most or all of these with fasteners.



Telling Direction by Watch and Sun. When the hour hand points directly toward the sun, south lies midway along the smaller arc between the hour hand and twelve o'clock.

When campfire or cabin smoke, after lifting a short distance with the heated air, beats downward, it is a sign of approaching storm. On the other hand, steadily rising smoke prognosticates fair weather.

**Handbook for the Alaskan Prospector**

If utter independence is your bent, this astonishing book can introduce you thoroughly to Alaska, to practical geology and mineralogy, to prospecting, and to survival in country where old age is considered an accomplishment. Excellent section on use of the Brunton pocket transit.

[Suggested by N. E. Koponen]

**Handbook for the Alaskan Prospector**  
Ernest Wolff  
1969; 460 pp.

**\$6.00** postpaid

from:  
The Mineral Industry Research Laboratory  
University of Alaska  
College, Alaska 99701



Fig. 2-3. - Blowpipe Flame

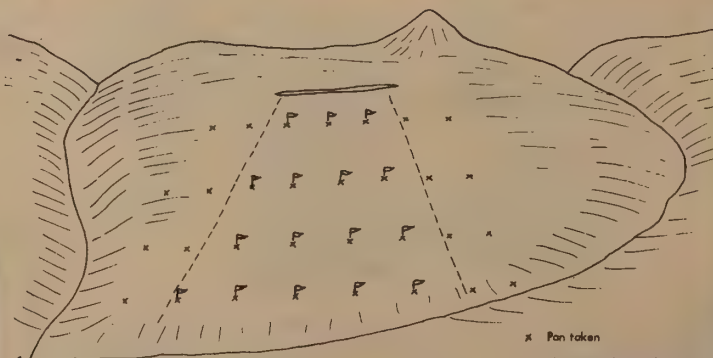


Fig. 10-3 - Locating Lode by Panning.

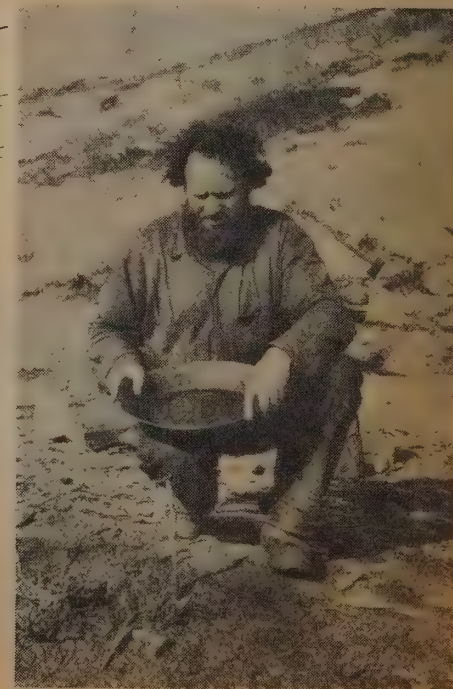
x Pan taken  
P Flag erected to mark spot at which colors were found in the pan.

**BLACKSMITHING**

The prospector is continually faced with the necessity of sharpening his digging tools, and he occasionally may need to produce iron or steel implements. For these reasons some knowledge of blacksmithing is essential.

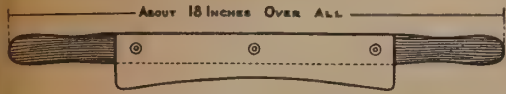
**Tools and Equipment**

A blacksmith must have a means of heating iron and steel, a means of working them, and a means of tempering. For the isolated prospector, these may be as simple as a wood fire, a hammer, a large stone, and a pool of water. Such an outfit allows him to sharpen picks or small handsteel occasionally, but if he is to sharpen anything larger, he needs a forge and an anvil, tongs, files, and a supply of coking coal or charcoal.



**Home Tanning and Leather Making Guide**

Best information on tanning we've seen. If you're eating deer or calf or dog or whatever and throwing the skin away, you don't need this book. Meathead.



TWO HANDED SCUDDING KNIFE

Used like Slicker, curved to fit beam. Brass, copper or slate edge, to avoid rust.

**Home Tanning and Leather Making Guide**

A. B. Farnham  
1950; 176 pp.

\$1.50 postpaid

from:  
Harding's Books  
2878 E. Main Street  
Columbus, Ohio 43209.



... pour the slaked lime into a clean barrel, add enough water to nearly fill and stir it up. See to it that hides are so hung that they are completely covered by the lime water and have as few folds and wrinkles as possible. Keep the barrel covered, except when you stir the lime water and plunge the hides three or four times a day until the hair will come out easily. Early in the liming it will be possible to pull the hair out, but this is not sufficient; by easily we mean until it will come off by rubbing over with the hand. This will require from six to ten days in warm weather and possibly as long as sixteen days in winter.

**Introduction to Caving**

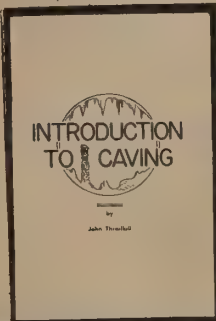
Take your heroic journey to the underworld. Return to all about it. This intro has an annotated bibliography if you get to liking that kind of adventure.

**Introduction to Caving**

John Thraillkill  
1962; 30 pp.

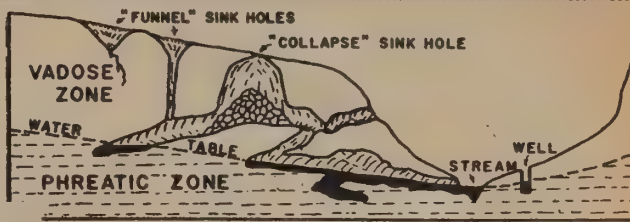
1.00 postpaid

from:  
Alpine Rec.  
Box 54  
Mount Vernon, N. Y. 10552



It is quite an experience to visit a cave that is heavily decorated with speleothems, and it is quite a temptation to remove just one or two small ones as mementos of the trip. Surely, you think, with all these stalactites no one will ever miss just one or two. Obviously you are right, no one will ever miss just one or two. But after a hundred people have removed just one or two, the loss of one or two hundred is all too apparent. Something beautiful has been destroyed. Utterly destroyed, for it will take many lifetimes for even the smaller stalactites to be replaced.

Falling rocks are one of the greatest hazards of spelunking. For this reason, hard hats should always be worn in caves where there is any climbing to be done. A falling pebble can be a murderous weapon, and extreme care should be taken to avoid dislodging loose rocks if there are people below. It is obvious that boulder piles should be treated gently, since they are often precariously stacked and a slide could prove disastrous to persons on and below them.



**Skin and Scuba Diving**

Don't expect to read this book and start scuba diving in a month or so. Scuba diving is fun and rewarding sport. But without proper training, it is very dangerous.

This book has grown in time along with the sport of scuba diving. Now in its newest edition, it is more complete than any other book ever written on this subject by anyone. So if you're interested in planning to be involved in this art, you would be best to buy this book; if you don't get it now, your instructor will tell you to later.

[Reviewed by Jay Bonner.  
Suggested by Jack O'Neill]



**The New Science of Skin and Scuba Diving**

1957... 1968; 224 pp.

\$2.45 postpaid

from:  
Association Press  
291 Broadway  
New York, N. Y. 10007



or WHOLE EARTH CATALOG



**Underwater Work**

If you're near the water, there's all manner of work to be done under it, and a well-paid shortage of men with the skills.

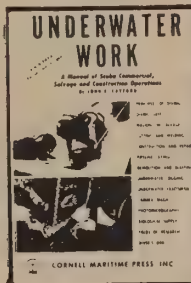
**Underwater Work**

John E. Cayford  
1966; 258 pp.

\$6.00 postpaid

from:  
Cornell Maritime Press, Inc.  
Cambridge, Maryland 21613

or WHOLE EARTH CATALOG



Hours	Pay Scale (Master Scuba Diver)
0-8	\$ 22.50 per hour
8-12	45.00 " "
12-16	100.00 " "
16-20	250.00 " "
20-24	500.00 " "
Over 24	1000.00 " "

MILLIONS IN SALVAGE



**Underwater Prospecting Techniques**

A vote for goldwater is a vote for fun.

**Underwater Prospecting Techniques**

Vaughn M. Greene  
1960; 65 pp.

\$2.00 postpaid

from:  
Vaughn M. Greene  
548 Elm Avenue  
San Bruno, CA 94066



**EQUIPMENT:**

U. S. Divers—for scuba is the only co. I would recommend. In 8 years of scuba diving I have used their gear time and time again and find it to be reliable and durable. Their regulators and wetsuits are for my money the best on the market. I will send you a 1970 catalog as soon as it comes out. They aren't cheap but most dealers give pretty good discounts.

U. S. Divers  
3325 West Warner Avenue  
Santa Ana, CA 92704

For shallower water (75'), which is arbitrary as to depth, Desco, Inc. makes an open-circuit-surface-supplied face-plate (the same plate is used by the U. S. Navy) that is out of sight but slightly limited as to vision for about \$120. Desco also makes a complete line of heavy gear from air-hats to commercial diving dress and accessories, none of which I can say yea or nay about as I have only used their shallow water mask.

The best deep-sea hard-hat is one made by Kirby-Morgan (A Division of U. S. Divers) and is called their Standard Air Hat. If you are buying or need to buy heavy-gear, I recommend (and have bought for myself) their Standard Air Hat above all others. It has the increased port area of most commercial hats for better visibility with the ruggedness and reliability of the Navy Mark V Hat.

As far as training facilities go for commercial diving there are two in Southern Cal. and one in Oakland. I investigated all of them before enrolling and finally wound up going to Universal Divers Lmt. in San Pedro. Universal is the only school that trains a man in all phases of commercial diving. Their instructors are all commercial divers of 10 or more years diving experience each and their facilities include a fully equipped commercial grade diving barge, a 40-50 foot ocean diving boat and complete classroom facilities. The course runs 10-12 weeks and at present costs \$795. It will go up to \$1000 as they will be adding a section on commercial abalone diving in the near future. This is still about \$250 cheaper than the other schools.

As to periodicals and books on commercial diving there really is only one book and that is the U. S. Navy Diving Manuals. They are available at most dive shops and are the final authority on all phases of diving. The manual is a must for all divers, commercial or otherwise. Only one periodical is out that specializes in commercial diving and it is called *Undercurrents*. It is so new I haven't got its address yet but as soon as I do I will send it along.

Sincerely,  
Michael Montenegro  
Los Angeles, CA

**New England Divers**

Underwater equipment at wholesale prices.

[Suggested by Warren Riess]

**Price List**

free

from:  
New England Divers Inc.  
42 Water Street  
Beverly, Mass. 01915



**3/4" SINGLE 71.2 CU. FT. PROFESSIONAL TANKS**

0185 QD	GALVANIZED WITH HIGH PRESSURE "K" VALVE	34 LBS.	90.00	60.30
0186 QD	SAFETY YELLOW WITH HIGH PRESSURE "K" VALVE AND TANK BOOT	34 LBS.	90.00	60.30
0195 QD	GALVANIZED WITH RESERVE "J" VALVE	34 LBS.	103.00	69.01
0196 QD	SAFETY YELLOW WITH RESERVE "J" VALVE AND TANK BOOT	34 LBS.	103.00	69.01

★ **Breaking and Training the Stock Horse**

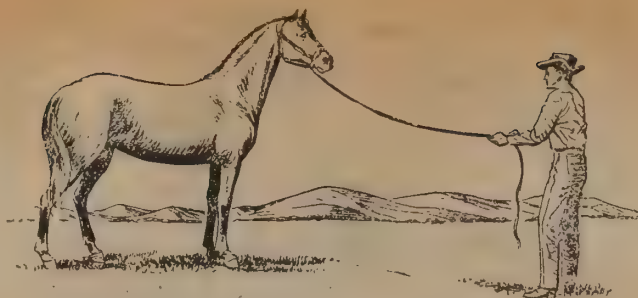
Most books on, and methods of, training the western type riding horse are a collection of anecdotal tricks and clever gimmicks with which you may force or frighten the horse into doing what you have in mind. Mr. Williamson's is not.

It is a concise, orderly, and complete explanation of how, with minimum paraphernalia, to condition the horse to interpret the most subtle movements and pressures of the legs, hands, and entire body and to turn these commands into movement with the freedom and ease of an unmounted horse. A horse well trained by this method can easily be ridden without a bridle. Williamson's method develops discipline and sensitivity in the trainer as well as in the horse.

Although intended primarily for the stock horse, its basic training principles can be applied to the training of any type of riding horse, including hunter, jumper, gaited, and high school dressage. There are also chapters on horsemanship, riding, and riding a bucking horse.

Mr. Williamson has been occupied with horses all of his life—the Cavalry in the First World War, running pack outfits, catching wild horses, and training and exhibiting. He now conducts a school in horse training and horsemanship in Hamilton, Montana.

[Suggested and reviewed by Paul Bandy]



Breaking the green horse. Never pull a steady pull on a horse whether mounted or working from the ground. Pull and slack. Stay slack when the horse is doing what you want.

... the use of weights, ropes, and other mechanical devices such as biting rigs, tie downs, tying a horse's head to one side to "limber up his neck" and other such practices are mechanics and not horsemanship and have no place in a course of this kind. Use of such practices makes a horse still more mechanical in his movements and if he ever "limbers up" it is through hard usage and then the horse learns it in spite of the rider, not with his help.

One of the chief objectives in learning good horsemanship is that of being able to have a horse perform and work with little use of the bit. A bit of any kind in the mouth of a horse is a very annoying instrument at its best and is an instrument of torture when in the wrong hands.

Contrary to the usual idea little equipment is necessary in the proper training of saddle horses.

A horse responds to training to relieve pressure on some part of his body. He follows you when you are leading him to relieve pressure on his poll. He goes forward when the legs are used to relieve pressure on his sides. He stops or slows when the reins are pulled backward to relieve pressure on his mouth. When he does what you want, if you do not slack and relieve pressure, he has no incentive to do the same thing again for you and finally gives up in disgust and carries you about in a listless or even defiant manner because he must.



A correct sliding stop on hind feet. Horse and rider relaxed, nose down, reins slack.

**Practical Western Training**

In an area where most of the horseshit does not come from the horses, Practical Western Training is a refreshingly useful and sensible book. Dave Jones is a working western horseman and he gives the reader the benefit of years of successful, practical experience. Most important he treads the fine line between senseless counter-productive brutality and letting the horse run the whole show.

[Reviewed by Michael S. Kaye]



**Practical Western Training**  
Dave Jones  
1968; 176 pp.

**\$5.95** postpaid

from:  
Van Nostrand-Reinhold  
450 East 33rd St.  
New York, N. Y. 10001

or WHOLE EARTH CATALOG

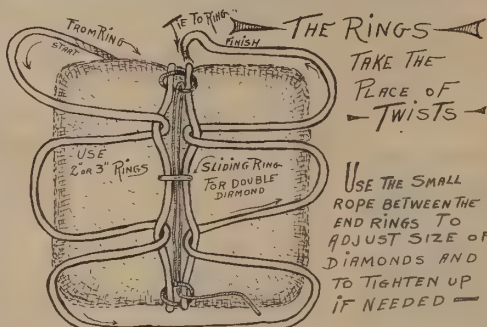
**Breaking and Training the Stock Horse**

Charles O. Williamson  
1950; 123 pp.

**\$7.50** postpaid

from:  
Charles O. Williamson  
Hamilton, Montana 59840

or WHOLE EARTH CATALOG



★ **Horses, Hitches and Rocky Trails**

Right. You got your land fifteen miles into nowhere from the nearest roadhead. You deplore noisy trail bikes and ATVs, and you can't afford a helicopter. Then you're into packing. Joe Back is a packer, and talker, and illustrator, and he can help you.

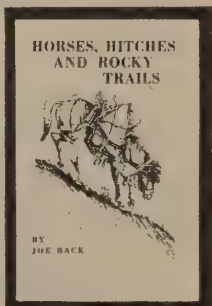
**Horses, Hitches and Rocky Trails**

Joe Back  
1959; 117 pp.

**\$4.00** postpaid

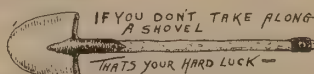
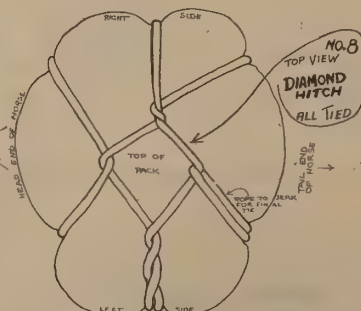
from:  
Swallow Press  
1139 South Wabash Avenue  
Chicago, Illinois 60605

or WHOLE EARTH CATALOG



If you don't balance each load, it's your hard luck. The handiest and cheapest tool you can buy is a fairly accurate spring or other scale that will take weights up to 100 or 150 pounds. It will last for years and you'll always use it. Some people like the style with a hook at the bottom and a ring or handle at the top. Seven or eight bucks for one will save you and your outfit a million dollars worth of grief.

Balance the two sides of each pack, being sure they weigh the same, whether they're panniers, side packs of any kind, mantled cargo, bedrolls, tents, or any daggoned ordinary pack you load.



Manila is the stuff. Most people, including me, like good manila rope for both pack and sling ropes (sling ropes 3/8 inch diameter, lash ropes 5/8 or sometimes 3/4 inch diameter: a good many times you will use a lash rope also for a picket rope, and will want it big for safety). Of course, you can use sisal, which is cheaper, and I think much weaker and less durable than manila. Cotton is good, but boy! when she gets wet and frozen you need a hacksaw blade for your knots. Nylon is a billionaire's dream, and say, Bud, try to splice one! Besides, you've seen the ads praising the stretch in milady's nylons; it's so, it never stops, you can't keep it tight.

**Horses**

When handling horses there is no substitute for experience, but this book is as close as you can get. In the first 115 pages the author presents encyclopedic information on all phases of horse management. The last fifty pages are devoted to a brief discussion of eastern riding and showing.

[Suggested and reviewed by Michael S. Kaye]

**Horses: Their Selection, Care and Handling**

Margaret Cabell Self  
1943; 170 pp.

**\$5.95** postpaid

from:  
A. S. Barnes & Co.  
Box 421  
Cranbury, N. J. 08512

or WHOLE EARTH CATALOG



★ **The Spanish Mustang Horse**

For anyone who needs a good, tough, dependable, intelligent, quick, sure-footed, little horse, the Spanish Mustang is the answer.

The horse of the Spanish conquerors, Indian pony, and original wild horse has suffered as bad a fate as his native American masters. Castrated, crossbred and shot for dog food, he is almost extinct. There is now a registry, founded by Bob and Ferdinand Brislaw, for the preservation of the mustang horse. Most of the foundation stock was caught wild in remote areas or found on Indian reservations.

They are small horses (12 to 14.2 hands). Their speed, endurance, and ability to withstand hard winters on little food is legendary. One Mustang, Yellow Fox, won the 100

mile Bitterroot, Montana, endurance ride at age eighteen. They come in conventional colors—bay, sorrel, black, chestnut—and in many others—blue and red roan, medicine hat, grulla, bluecorn, buckskin, claybank, overo paint, steeldust...

They make good pack, cart, children, saddle, or even light plow horses. Mustangs are priced from cheap (\$100 to \$150 for a registered colt) to expensive, depending on the breeder. Most breeders are old-timers and reasonable. We bought three last year in Wyoming and are very well satisfied. They are remarkably fast learners.

[Suggested and reviewed by Paul Bandy]

For information and breeders list write:

Information Headquarters  
Bob Racicot, Exec. Secretary  
Box 26, Thompson Falls  
Montana 59873

Kamawi, No. 115, black stallion

"His qualities are complete. Now he looks anxious; now to be losing the way; now to be forgetting himself. Such a horse prances along, or rushes on, spurning the dust and not knowing where he is."

Chuang-Tzu, Book XXIV, Part III, Section II, Trans. James Legge



**A Bicycle Page For You**



Good bicycles are light, with high quality construction for a reasonable price, gearing sufficient for all road conditions, and efficient design and construction.

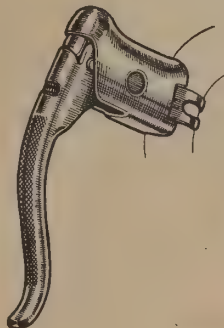
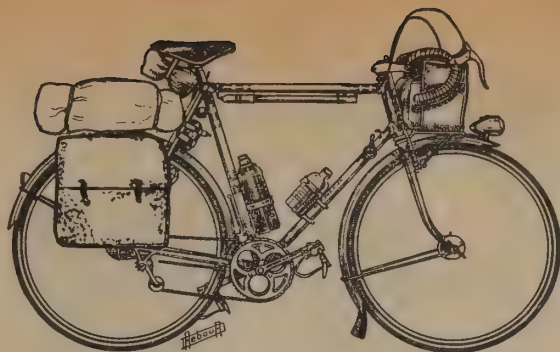
The touring bicycle configuration is the best by far. Touring cycles have drop bars (or "racing handlebars"), a narrow seat, derailleur gears, light weight frame and components, and a minimum of friction in all moving parts.

The drop bars and narrow seat setup put the cyclist in a natural forward leaning position that lowers the center of gravity, improves balance and handling characteristics, cuts wind resistance, and gains the maximum leverage from the legs. The narrow seat has little padding to keep the rider's ass from being rubbed off. Toe clips and straps are also standard, allowing the cyclist to apply power in the upstroke as well as the downstroke.

Derailleur gears are available in five, ten and fifteen speed combinations. Derailleurs give the widest range of gears in the most direct manner possible. Touring cycles also have narrow high pressure tires for less rolling resistance, therefore higher speeds, and high quality brakes (center-pull) for quick stopping.

Bicycles are small, inexpensive, require little maintenance, pleasurable to use, and smogless. If America traded in all their Detroit iron for bikes, a lot of problems would be solved.

SUGGESTED & REVIEWED BY SAGE



Cyclo-Pedia



# BASIC

The basic LIGHTWEIGHT TOURING BIKE must have

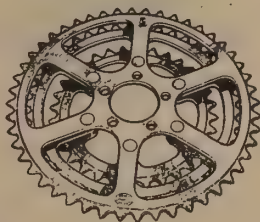
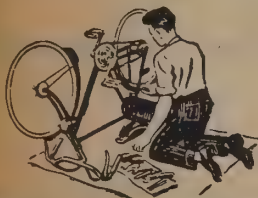
- drop bars
- center pull brakes
- derailleur gears (5, 10, 15 speeds)
- narrow leather seat

When buying a bicycle, be certain of the availability of parts from dealer. Also, remain wary of Japanese equipment under \$200, and Huret/Spring derailleurs, as they remain ripoffs for the quality offered.



The skilled cyclist thinks only in terms of pedalling speed... not bicycle speed. His object is to keep the same steady pedalling rhythm through the whole ride.

How to Improve Your Cycling



These publications are all nearly essential if you plan on checking out all available avenues before buying a ten-speed tourer.

*Bicycling!* (monthly magazine)  
H. M. Leete & Co.  
256 Sutter Street  
San Francisco, CA 94108

*Derailleur Lightweights*—  
*New Dimension in Cycling*  
available from  
Schwinn Bicycle Company  
1856 North Kostner  
Chicago, Illinois 60639

*League of American Wheelman Bulletin*  
L. A. W.  
5118 Foster Avenue  
Chicago, Illinois 60630

*Complete Handbook of Cycling*  
available for \$2.10 from  
Big Wheel Ltd.  
Department "K"  
310 Holly Street  
Denver, Colorado 80220



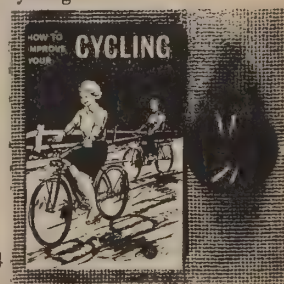
# OPTIMUM

The optimum LIGHTWEIGHT TOURING BIKE would have a lightweight steel alloy frame all around, the best brand being Reynolds 531 (see label above). It would also have lightweight alloy gears & other components, precision bearings (less friction, longer wear, stronger), sew-up high pressure tires, and a neat looking paint job. Most top of the line bikes made by major manufacturers have all these ingredients for about \$230 or more; their differences when choosing between the various brands would be the quality of component assembly, frame sizes available, and personal preference.

Reynolds decal is not a plug; they are the only people in the world who make decent frames. Literally.



How to Improve Your Cycling  
75¢



from:  
The Athletic Institute  
Merchandise Mart  
Room 805  
Chicago, Illinois 60654

or WHOLE EARTH CATALOG

## OIL every month

1. Levers.
2. Head Races and Crown Race.
3. Brake Joints, Front and Rear.
4. Wheel Hub, Rear.
5. Wheel Hub, Front
6. Chain - Remove and soak in oil every 3 months.
7. Bottom Bracket Bearings.
8. Pedals.

List, compiled by me and members of Turin Bike Co-op; is *not* a series of plugs—these are good stores that are better than most as far as ripping off goes. Turin of course is biased but other than Chicago stores on list they need not worry about competition. I personally feel the list is essential, as there are few shops in USA with the goods, and these are them.



### Bicycle dealers/distributors of note

Stuyvesant Distributors  
404 East 11th Street  
New York, N. Y. 10009  
(75¢ for catalog)

Turin Bicycle Co-op  
2112 North Clark Street  
Chicago, Illinois 60614

Thomas Avenia (east)  
131 East 119th Street  
New York, N. Y. 10035

Thomas Avenia (west)  
10205 Rio Hondo Parkway  
El Monte, CA

Big Wheel Ltd.  
Department "K"  
310 Holly Street  
Denver, Colorado 80220

Cupertino Bike Shop  
10080 Randy Lane  
Cupertino, CA  
95014

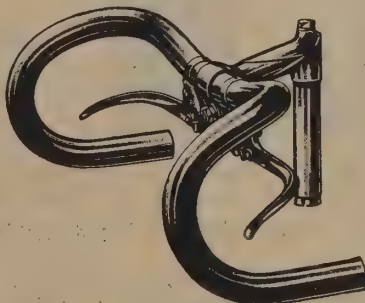
Cyclo-Pedia  
6447 Michigan Avenue  
Detroit, Michigan  
48210  
(\$1.00 for 60 page "handbook & catalog")

Pleasant Valley Shop  
P. O. Box 293  
Livingston, N. J. 07039  
(mail order specialist for Clement cycles)

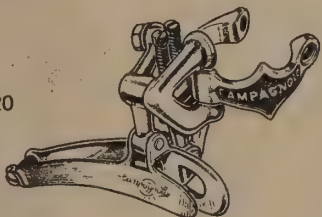
Hans Ohrt Lightweight Bikes  
9544 Santa Monica Boulevard  
Beverly Hills, CA 90210

Velo-Sport Cyclery  
1650 Grove Street  
Berkeley, CA

John's Custom Bicycle Center  
741 East Dixie Drive  
West Carrollton, Ohio



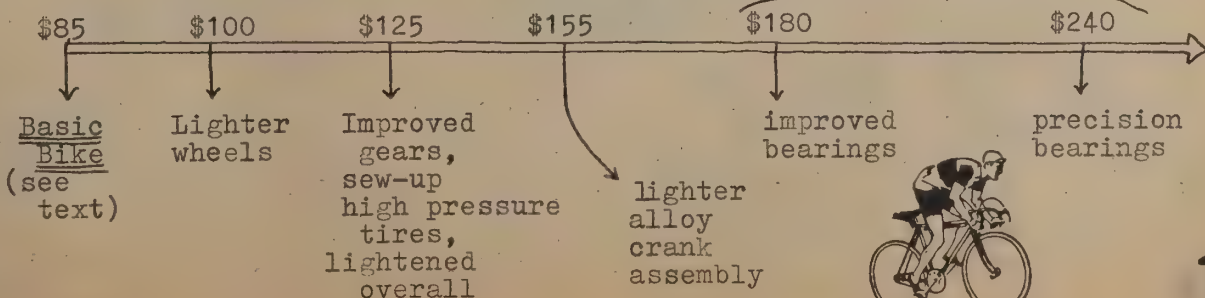
Cyclo-Pedia



## PRICE/BIKE GRAPH

(January 1970, compiled by Turin Bicycle Co-op staff with Sage)

(high quality-well worth price)



## Motor Trend Repair Manual

This manual is intended to be an introduction to automobile mechanics and the more professional shop manuals. It contains about all the amateur mechanic needs to know in order to diagnose, repair, and maintain domestic cars and VW 1954-1965. It is assumed that the mechanic has no experience at all. All major assemblies are well illustrated and explained both in principle and specifically, with note made of quirks found in certain models. There are chapters or remarks on tools needed and how to use them, working safely, junk yard technique, on-the-road repairs, and general money saving. There is a very good chapter on logical trouble shooting. "If this is wrong, try this first, this second, etc." Included is most likely diagnosis and prescription. Common repairs like "putting in new points" are covered neatly. Major jobs are presented so that the amateur mechanic can get most of the work done before calling in expensive expert help. It is clearly stated when to give up, and what not to attempt without expertise. They even tell you how much you will save, and how long it will take. This is a great book for that person trying to keep the oldie going and/or who wants to understand cars in general. It fits girls too. Well worth the money.

[Suggested and reviewed by J. Baldwin]

Motor Trend Basic Auto Repair Manual  
1968; 384 pp.

\$3.95 postpaid

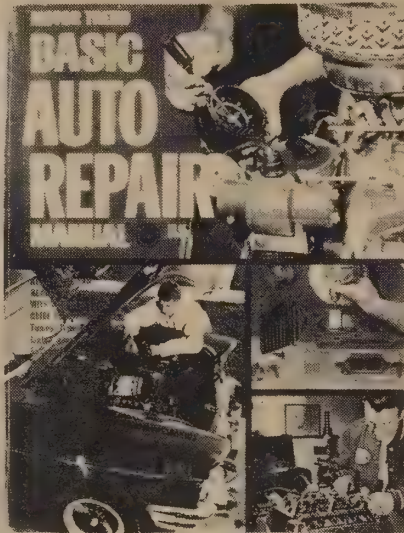
from:  
Petersen Publishing Company  
8490 Sunset Blvd.  
Los Angeles, CA 90069

or WHOLE EARTH CATALOG

After all the oil is poured in, the car should be driven with wide-open throttle under heavy load, such as climbing a steep hill at about 50 mph. If no hills are available, short acceleration bursts from about 30 mph up to 60 will do the job. This "blowing out" is especially effective on a car that has been driven around town. Don't blow out the engine after the tune-up, do it before. New spark plugs can be fouled by this procedure so that they must be replaced.

It's a good idea to use tune-up oil on every car to clean out deposits in the cylinders. The oil is poured into the carburetor air intake with the engine at a fast idle. If you can keep the engine running by opening the throttle wide but keep the rpm down to an idle by pouring the oil faster, you know the oil is doing its job properly.

All yard operators strip some fast-moving or valuable parts from a wreck and stock them for resale. Examples would be undamaged components from an air-conditioning system; batteries, tires and even engines and transmissions from late-model wrecks; and intact sheetmetal parts like hoods, trunk lids, bumpers and grilles. The biggest operators are tied together by a regional teletype system so that if one doesn't have the part, it can be determined in seconds whether anybody has it. In fact, if your needs are put on teletype and no one has the part, odds are that in a few days an accident will happen that will enable your order to be filled. A late model wreck, totalled from an insurance standpoint is by no means "junk." It will return at least \$500 if properly salvaged. Then, there are still countless rural yards that fill a cow pasture with derelict cars and let you prow around until you find the part you want. These are self-service stores in the true sense because you do your own dismantling, but it's a fascinating way to spend a Saturday afternoon.



## Volkswagen Technical Manual

There's unusual agreement among all the mechanics we've talked to that this is the best book on VW's. It's good prevention against getting burned by the Volkswagen agencies in Reno and Oklahoma City (name your favorite villain; those are mine) when a dismaying noise starts following you down the road and your trip shifts from 400 miles a day to nothing a week.

[Suggested by Don Burns]

Volkswagen  
Technical Manual  
Henry Elfrink  
1964; 256 pp.

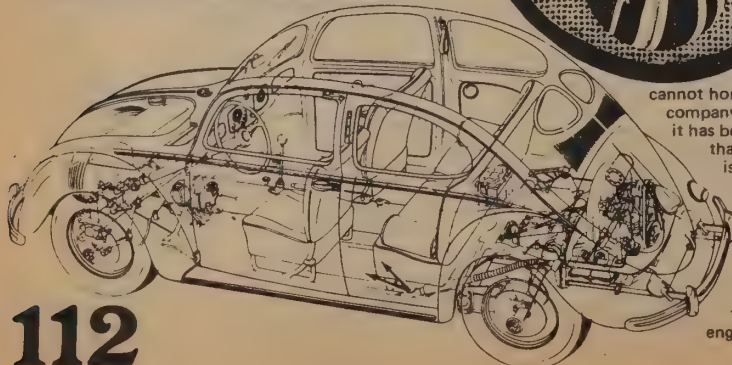
from:  
Henry Elfrink  
Automotive  
P. O. Box 20715  
Los Angeles, CA 90006

\$3.50 postpaid

or WHOLE  
EARTH  
CATALOG

The VW has often been compared to that 'other universal car' of many years ago: the model T Ford of which more than 15 million were built. There is a germ of truth in this comparison; both cars were built for the masses by geniuses in their field, but whereas the old model T was basically a simple car which could be repaired, so to speak by anyone with a screw driver and a pair of pliers, the VW is a high precision piece of machinery. The VW, although simple in its basic conception, actually in many ways is a subtle mechanism, as will be readily apparent after the following pages are perused.

The methods employed to boost the power output of the VW engine follow the usual speed-tuning pattern: dual carburetors, supercharging, high compression cylinderheads, high-compression pistons, long-stroke crankshafts, special camshafts, extra large cylinders and the various possible combinations of these methods.



The VW company does not favor speed-tuning, or any other modification for that matter. Although we cannot honestly blame the company for holding this view, it has been our experience that a mild power boost is not harmful, providing the car is sensibly driven. The VW engine—especially the latest type—is very rugged, and it has a greater built-in reserve strength than the majority of small engines built today.

TIRE CARE. the most important as well as the easiest single step in tire care is maintaining proper inflation. Pressures specified by Detroit in owner's manuals, ranging usually from 24 to 28 psi for normal driving, tend to favor comfort and quiet over tire life. A trained, conscientious tire salesman will more likely recommend 30 psi at all 4 wheels for maximum tire life.

Address requests for automotive catalogs to:

Sears Roebuck and Co.  
Local catalog order center

Montgomery Ward and Co.  
Local catalog order center

Spiegel Inc.  
Chicago, Illinois 60609

J. C. Whitney & Co.  
1917 Archer Ave.  
Chicago, Illinois 60616

Honest Charley, Inc.  
Honest St. at North Highway 11  
Chattanooga, Tenn. 37421



## Truck Repair Manual

If you have a truck, chances are marvelous you spend a fair amount of your time under it or in the front end of it. Judicious use of this book might save you some down-time. It covers the gamut of trucks and tractors, 1960-69, and has better than usual illustrations of how to get at what you're working on.

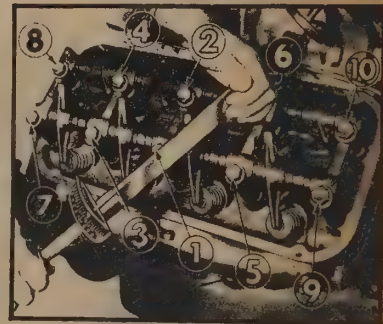


Fig. 1 Cylinder head tightening sequence Double rocker arm V8 engine

Motor's Truck Repair Manual  
1969; 1154 pp.

\$14.00 postpaid

from:  
Motor Book Department  
250 West 55th Street  
New York, N. Y. 10019

or WHOLE EARTH CATALOG

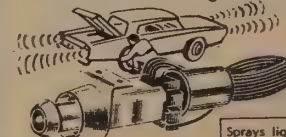
## J. C. Whitney Automotive Accessories & Parts

A really great catalog of car parts, not all of them above suspicion as far as usefulness goes, but on the other hand very complete and especially good for older cars, is the J. C. Whitney Catalog. They stock parts for such things as model A Fords and Borgwards, Jeeps and VWs, and offer used parts.

[Suggested and reviewed by J. Baldwin]

Catalog from:  
J. C. Whitney & Company  
1917-19 Archer Avenue  
Chicago, Illinois 60616

Convert Your Turn Signals to  
Emergency Warning Lights With  
Deluxe 4-WAY FLASHER  
for All Cars and Light Trucks



With Illuminated Pull Switch  
Heavy duty flashing system  
that operates as an independent  
circuit—cannot overload

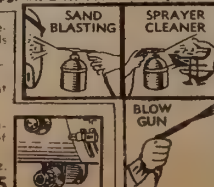
Car's existing signal light system. Modern design conforms to, or exceeds all SAE standards and state requirements. Features are:  
• Modern pull switch with flashing pilot light—audible click puts unit in operation.  
• Rugged, unbreakable mounting bracket that can be easily installed under dash  
• Heavy duty plug-in flasher and fuse  
• Self-insulating quick crimp connectors eliminate cutting, splicing, stripping and taping of wiring system  
• Complete instructions included. Shpg. wt. 12 oz.  
75-574—6 Volt. . . . . Each \$4.65  
16-141—12 Volt. . . . . Each \$4.65



3-in-1 Sand  
Blast, Spray  
& Blow Gun

For sand blasting small parts—removing rust and scale—also etching glass and metal.

Sprays liquids, oils, anything that pours. Use as blow gun for cleaning and drying parts. Operates off any air compressor. Operates on 60 to 150 lb. air pressure. With quart container, instructions. (Air hose not included.)  
74-5740—Shpg. wt. 2 lb. . . . . Each \$5.98



"Make Your Own Gaskets"  
Sheet Gasket Materials  
CORK—FIBRE—ASBESTOS

CORK GASKET SHEETS. Finest clean granulated cork and special treated binder are used in making this sheet cork resilient, flexible and strong. Shpg. wt. 8 oz.

SH. No.	Size	Each
34-094	12"x36"x1/16"	Each 59c
34-095	12"x36"x3/32"	Each 79c
34-096	12"x36"x1/32"	Each 29c
34-097	12"x36"x1/64"	Each 29c

ASBESTOS GASKET SHEETS. Used where extreme heat occurs, such as exhaust manifolds, headers, pipes, etc. Shpg. wt. 2 lb.  
34-098—10"x40"x1/32" . . . . . Each \$1.19  
34-099—10"x40"x1/16" . . . . . Each \$1.19

**How to Keep Your Volkswagen Alive**

John Muir has written what may well be your V.W.'s best friend. In this book you are invited to "Just take the book out to the car with your coversalls on for a guided tour."

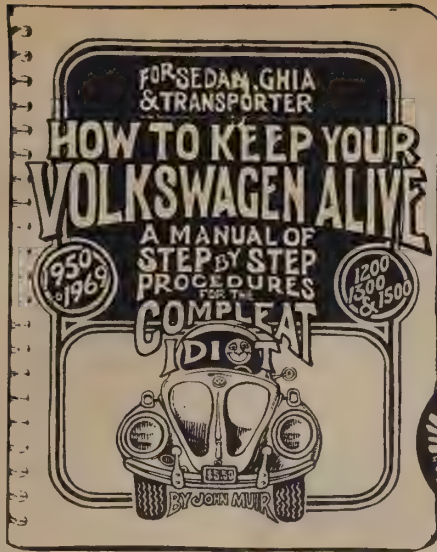
So I did. My guided tour of the car and the book's easily versed descriptions convinced me that it is the best I've encountered yet. It's written for the layman (us), and as such makes about 80% of the common V.W. ailments both clear and repairable.

If you take it literally, you will learn to "feel the car" and perform the necessary tasks with love. There are also many pages devoted to what you can do when hung up on the mud flats for one reason or another. While "Volkswagen Technical Manual" contains more pictures of the beast, "Volkswagen Alive" is what I would prefer to have when it's time to unroll the metric wrenches.

[Reviewed by Don Burns]

OK so here's a good book on how to fix your VW written in a chummy style that will not be too amusing the second time you read it. There's a real collection of tricks and pitfalls that to my mind is well worth the money. But some of them are rehashes of old wives tales that are not true (there's a bit about the VW Understeer. What makes the VW dangerous is Oversteer: it steers more than you tell it to. Also, some of the really damnable aspects of repairing old VWs such as headlights that are about as bright as birthday cake candles, are simply and groovily dismissed without telling you how to do anything about it. HOWEVER... an idiot can actually do major repairs on his VW with the aid of this book, and that, friends, is saying a lot. I would recommend that you have this and the Elfrink book at your side. John Muir also gives lists of tools you need, which hand to hold them in, and when to stop for a morale-building smoke. He also tells you when to quit and what not to attempt. Any VW owner should be able to save the price of the book within a week of getting it. Reading it will aid you in keeping your bug out of the shop in the first place. There's a "how to buy a used VW" chapter too! And he starts out "Come to kindly terms with your Ass for it bears you." Indeed. I'd call it indispensable.

[Reviewed by J. Baldwin]



**How to Keep Your Volkswagen Alive**

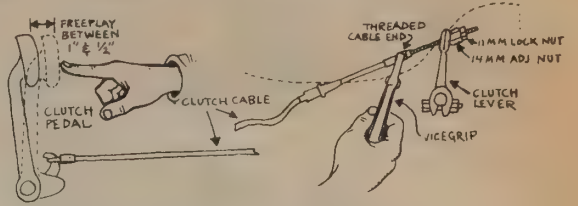
John Muir  
1969; 242 pp.

\$5.50 postpaid from:  
John Muir Publications  
Box 613  
Santa Fe, NM 87501

or WHOLE EARTH CATALOG

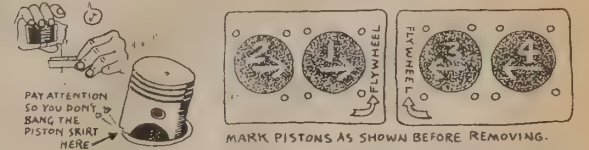
When the Volksie front end needs your tender attention, it'll let you know by feeling insecure, a not-unknown trip in any relationship. This insecurity can be evidenced in many ways: wandering mindlessly across the road, impulsively darting here and there, wearing tires out in funny patterns or making nerve-wracking noises on dirt roads. These are the symptoms and you are the doctor, at least almost a doctor. I've told you so many things to do, it's a real pleasure to tell you something not to do. *Don't rotate your tires!* It takes about 500 miles for a tire to get used to its position on a car, and changing it around just messes up its head. It will last as long or longer right where it is. The reason I tell you this now is that changing the tires around will sometimes make your front end feel insecure when there's nothing wrong with it.

Get away from the car and the owner or salesman to let your mind and feelings go over the car and the idea of the car. What has its Karma been? Can you live with the car? Walk around or find a quiet place, assume the good old Lotus and let the car be the thing. At this point some revelation will come to you and you will either be gently guided away from that scene and can start looking again, or you will still be attracted toward the car and can continue with your inspection. It is important that you neither run the motor or ride in the car until this preliminary scene has run its course. It also puts the owner-salesman up the wall because he has no idea of what you are doing and will be more pliable when the hard dealing time comes.



Take the hub cap off the wheel and check the brake lining in each wheel. You can see it through the adjustment hole with the flashlight. You may have to roll the car back and forth a little to get the lining in view, and if the outside light is strong, a jacket or cloth over the fender and your shoulders will cut the daylight so the lining can be seen. If the lining is about one-eighth of an inch thick, you have plenty, but if it is less than a sixteenth, you will soon have to reline the brakes and you should know that.

Again, this doesn't apply to those who already know they're going to buy new pistons and cylinders, but you others, mark the pistons.

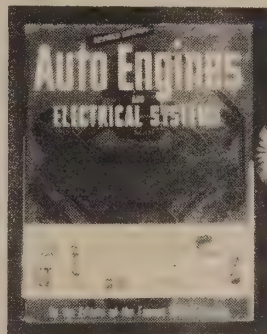


With a nail or file, scratch the number on the top of the piston, through that carbon, and draw an arrow pointing toward the flywheel, like I, II, etc. Start with #1, get it out as far as it'll go, and remember the WARNING.

**Auto Engines and Electrical Systems**

There are a number of books available on how to repair automobile engines, but not many which explain so well as this one does why each part is designed as it is, why a certain repair procedure is used, or what causes the wear on a worn part. I wanted a book which would help me to understand the details of engine design and construction instead of just how to fix them; and I was extremely pleased to find that this book does both. Its explanations are clear, concise, complete, and profusely and excellently illustrated. Its authors obviously know what they are talking about, and write well. There is no bullshit and no excessive technical jargon, just good solid information. It is practically oriented, written as a textbook for mechanics, to provide the groundwork of basic knowledge a mechanic should have.

[Suggested and reviewed by Marv Vickers]



**Auto Engines and Electrical Systems**  
\$9.95 postpaid

from:  
Motor  
250 W. 55th Street  
New York, N. Y. 10019

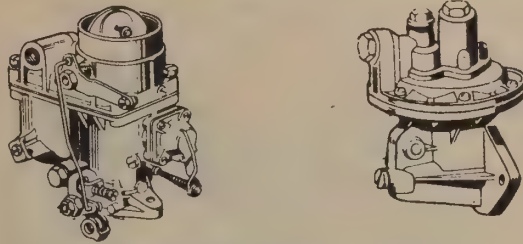
or WHOLE EARTH CATALOG

**Western Distributors**

Bug parts—at sensible prices. This small mailorder house offers the VW owner a chance to buy imported parts for his car at really fair prices. Not all parts are offered, but the ones most often replaced (cables, points, brakes, etc.) are there. Genuine Bosch sparkplugs are a bargain at 55¢ each postpaid. No minimum order, either. A few accessories, plus a VW Technical Manual complete the offering. Parts are listed for the Beetle as well as the Ghia, Bus, Fastback, Squareback, and Variant. Free catalog is offered. Service—good. Postage—all items are shipped postpaid.

[Suggested and reviewed by Gerard Ruch]

Catalog from:  
Western Distributors  
Box 316  
Cedar Crest, NM 87008



**1300-1500-1600 FUEL SYSTEM**

DESCRIPTION	ORDER NO.	PRICE
Fuel Pump (1300)	50-F-1	\$12.95 ea.
Fuel Pump (1500-1600)	50-F-2	13.95 ea.
Fuel Pump Kit (1300)	50-F-3	2.10 ea.
Fuel Pump Kit (1500-1600)	50-F-4	2.60 ea.
Carburetor (Must have carburetor number)	50-F-5	36.95 ea.
Carburetor Kit (Must have carburetor number)	50-F-6	4.25 ea.

**Motorcycle Troubleshooting Guide**

Nobody here rides motorcycles, but we know a good fix-it book when we see one. This is one.

**Motorcycle Troubleshooting Guide**

Ocee Ritch  
1966; 94 pp.

\$3.95 postpaid

from:  
Chilton Book Company  
401 Walnut Street  
Philadelphia, PA 19106

or WHOLE EARTH CATALOG



Put cellophane strip between closed points, tug gently and rotate flywheel to timing marks. Points should just open and release paper when marks coincide.

The carburetor is, if not the heart, at least the lungs of the motorcycle. It is tinkered with too much and not kept clean enough by most riders. There are only a few mechanics who understand carburetion enough to alter the factory settings and improve performance, yet nearly everybody takes the liberty to manipulate. Consequently, most carburetor trouble can be traced to the last "tune up" or the last time somebody fiddled with the carburetor.

Oil the chain once a week, after every wash job, and after riding in the rain. Use a medium weight oil with Molykote or some similar molybdenum disulfide additive. A worn chain can wear the sprockets by rising up and down. A worn sprocket can ruin a chain. Replace the whole set when wear is evident. To determine if a chain is worn, remove it and hold it out parallel to the ground to check sideways deflection.

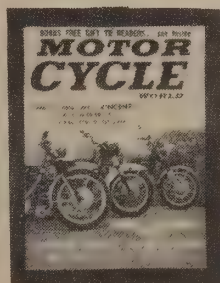
**Motor Cycle World**

If I were going to buy or trade a motorcycle, I'd spend some time with back issues of this magazine. Since they don't accept advertising, they are beholden only to their readers, and their test reports show it.

**Motor Cycle World**

\$3.00 /year (6 issues)

from:  
Motor Cycle World  
222 Park Avenue South  
New York, N. Y. 10003



U. S. series of BMW's utilize telescopic forks. This schematic illustrates the internal construction used. Good feature of BMW design is metering device that prevents full-mechanical lock-up.

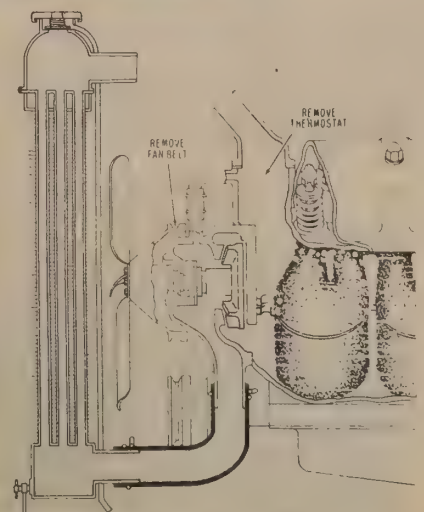


Fig. 38 Combustion leakage test of cooling system. Air bubbles in engine outlet with engine running confirms this

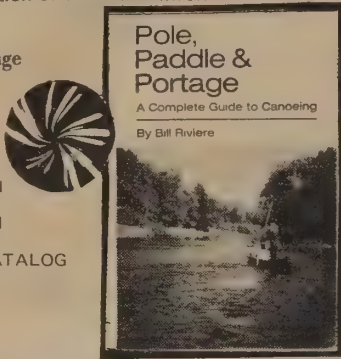
**\* Pole, Paddle & Portage**

This is the authoritative book on canoes and canoe-tripping. I paddled northern Wisconsin lakes and rivers for six summers without learning a fraction of the useful information here.

**Pole, Paddle & Portage**  
Bill Riviere  
1969; 255 pp.  
**\$6.95** postpaid

from:  
Van Nostrand Reinhold  
450 West 33rd Street  
New York, N. Y. 10001

or **WHOLE EARTH CATALOG**



One of the most frequent questions is, "How big a canoe shall I buy?" There is only one answer . . . the biggest one you can lift gracefully.

Dozens of uses are found for the rope: tying gear into the canoe, guying the tent against a stiff blow, rigging a clothes line, lining the craft through turbulent pitch, hanging food supplies out of reach of hungry critters, tying packs for portaging and emergency towing—to name only a few.

The Yukon's canoe routes are long and remote. With the reduction of commercial river traffic—most of this now going over the highways—the rivers are once more deserted. Waters in the Yukon average about 50 degrees even during a hot summer; lakes may not be ice-free until the middle of June and freezing temperatures and snow can be expected by the first of September. The rivers are large, supply points are few and far between. A canoe cruise should, therefore, include at least two, preferably three craft. Early September sees grizzlies feeding on salmon in the shallows so that the Department of Travel suggests that a rifle be carried during this period, to be used only in emergency. . . .

There are compensations for the difficulties, though. From Whitehorse to Dawson City, via the Yukon River, there are no portages during the 450-mile run and the river gradient is only 1 foot per mile! Since this is a former route of the majestic sternwheel steamers, there is available a published log of the river between Whitehorse and the Tanana River (see Appendix).

**\* A White Water Handbook for Canoe and Kayak**

That's what it is.

**White Water Handbook for Canoe and Kayak**  
John T. Urban  
1969; 76 pp.

**\$1.50** postpaid

from:  
Appalachian Mountain Club  
5 Joy Street  
Boston, Mass. 02108

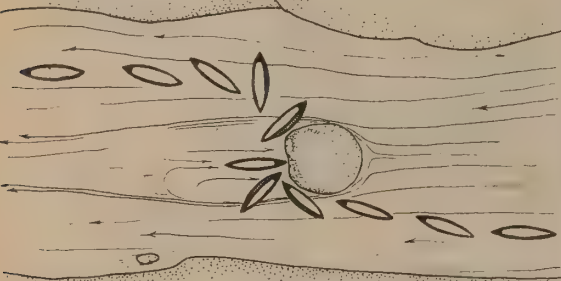
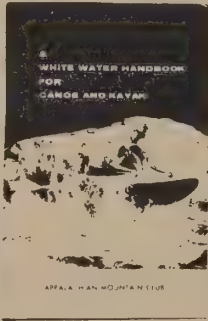


Fig. 14.

An eddy turn below a midstream boulder, followed by a turn downstream into the current on the opposite side.

**Eskimo roll.** Apart from the direct satisfaction that it brings, mastering the roll has some specific and important benefits. Since you can cheerfully court an upset when practicing bracing strokes and crossing currents, your practice and subsequent style will not be cramped through fear of capsizing; your ability to use the paddle for balance in rough water will be much enhanced; and finally, you will be able to recover from at least some upsets on the river.

Rolling is not the rare feat it was once thought to be. In a well-designed kayak little strength is required for a properly executed roll, and some experts can roll without a paddle using two hands alone, and in some cases, only one hand.

**\* Netcraft Fishing Tackle**

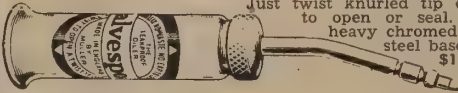
Most fishermen will reach for their checkbook after just one pass through this catalog. A real assortment of fishing paraphernalia is displayed on its pages. Unusual, but solid value items are featured. A precision oiler (\$1.50) that is really leakproof allows you to cure a squeaking reel on the spot, without worrying whether it will get oil all over the rest of the tackle box. For do-it-yourselfers, plug-making kits along with loose treble hooks are offered. Personal experience with their nylon minnow netting (4 feet wide) allows one to recommend it highly for your own net-making. Name brand reels are offered as well, but you will probably do best on these at your local discount store. 168 page catalog—free. Postage extra on orders. Service (2 orders) —above average.

Catalog [Suggested and reviewed by Gerard Ruch]  
**free**

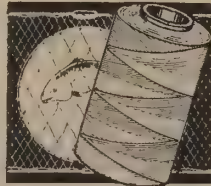
from:  
Netcraft Fishing Tackle  
3101 Sylvania  
Toledo, Ohio 43613

**Valvespout—Fisherman's Precision Oiler.....\$1.50**

PUTS A PRECISE DROP on gears, bushings and shafts. Guaranteed leakproof. No cap to lose, no cap necessary. Just twist knurled tip of Valvespout to open or seal. Solid brass, heavy chromed and stainless steel base. **THE FINEST \$1.50.**



**GILL NET NYLON—1/4 lb. Spools**



**NYLON CORD** for making and mending gill nets has certain advantages over linen—the former material. Nylon will not rot or decompose—has many times the life of linen. It is much, much stronger but best of all it "fishes" better as a result of its fineness of thread and lack of bulk. Ideal too as utility sewing and whipping cord wherever strength and lightness are desired.  
No. 2B-10R6A . . . 1/4 lb. . . . . \$1.85

**\* Avon**

Avon is the best of the inflatable boats. Also an excellent liferaft kit.

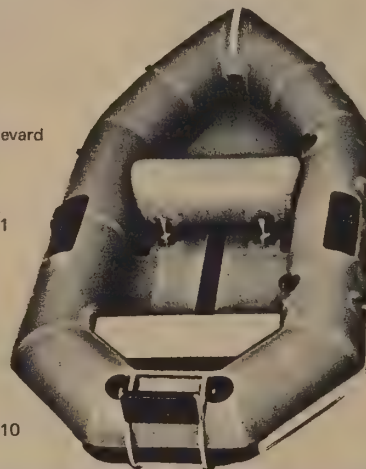
[Suggested by Vaughn Greene]

Catalog  
**free**

from:  
Seagull Marine Sales  
3107 Washington Boulevard  
Venice, CA 90291

Inland Marine Co.  
79 East Jackson Street  
Wilkes-Barre, PA 18701

The Imtra Corp.  
151 Mystic Avenue  
Medford, Mass. 02155



\$310

**\* Klepper**

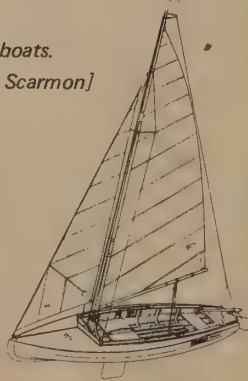
Klepper is the best of the folding boats.

[Suggested by Dee Scarmon]

Catalog  
**free**

from:  
Hans Klepper Corp.  
35 Union Square West  
New York, N. Y. 10003

Length overall: 14 ft. 4 in.  
Beam: 4 ft. 4 in.  
Mast Height: 18 ft. 6 in.  
Sail Area: 95 sq. ft.  
**\$1098**



**Nu-Way Sawhorse Brackets**

Good solid horses—set 'em up or take 'em down—FAST! Just cut regular two-by-four pieces to desired length and slip them into Sawhorse Brackets. No tricky cutting or fitting. Heavy gage steel—will really take it. No. 4A-98D Sawhorse Brkts. pr. \$2.25; 2 pr. for \$3.75

**\* Charts**

If you're travelling on the water, you're going to need something more than an Esso roadmap to tell you where you are. For United States waters the best charts (the only ones, really. All the others say something like "refer to the appropriate C & GS chart for navigation data") are the ones issued by various government agencies.

Where to get the charts depends upon where you want to go. Charts of the Atlantic, Pacific, and Gulf Coasts, and the Intra-coastal Waterway come from the Coast and Geodetic Survey. The Mississippi River and its tributaries are on Army Corps of Engineers charts, and the Great Lakes are handled by the Lake Survey.

Cost of individual charts varies, most run about a dollar or two, except for the rivers, which come in books. The Missouri River, for instance, comes in two parts and costs \$2.00 a book.

Index maps for the lakes and coasts are free from the appropriate agency. It's easier for the rivers—you tell the Corps which river you want, and they sell you the whole book.

Charts are frequently revised, and you should be using a current one, because the changes can sometimes be big ones. Catalogs are available free from:

Director, Coast & Geodetic Survey  
E. S. S. A. Washington Science Center  
Rockville, Maryland 20852

Lake Survey District, Corps of Engineers  
630 Federal Building and U. S. Court House  
Detroit, Michigan 48226

There's no central source for river charts. Appended list is where each can be gotten.

Nautical charts of foreign countries are issued by the U. S. Naval Hydrographic Office, Washington, D. C. 20390. Write to them about a catalog.

John M. Ross  
St. Louis, Mo.

**Upper Mississippi River**

District Engineer  
U. S. Army Engr. Dist., St. Paul  
1217 U. S. P. O. & Customhouse  
St. Paul, Minnesota 55101

District Engineer  
U. S. Army Engr. Dist., Rock Island  
Clock Tower Building  
Rock Island, Illinois 61202

District Engineer  
U. S. Army Engr. Dist., St. Louis  
906 Olive Street  
St. Louis, Missouri 63101

**Lower Mississippi River**

District Engineer  
U. S. Army Engr. Dist., Memphis  
668 Federal Office Building  
Memphis, Tennessee 38103

District Engineer  
U. S. Army Engr. Dist., Vicksburg  
P. O. Box 60  
Vicksburg, Mississippi, 39180

District Engineer  
U. S. Army Engr. Dist., New Orleans  
Foot of Prytania Street  
New Orleans, Louisiana

**Illinois Waterway**

District Engineer  
U. S. Army Engr. Dist., Chicago  
219 South Dearborn Street  
Chicago, Illinois 60604

District Engineer  
U. S. Army Engr. Dist., St. Louis  
906 Olive Street  
St. Louis, Missouri 63101

**Missouri River**

District Engineer  
U. S. Army Engr. Dist., Omaha  
6012 U. S. P. O. & Court House  
Omaha, Nebraska 68102

District Engineer  
U. S. Army Engr. Dist., Kansas City  
1800 Federal Office Building  
Kansas City, Missouri 64106

**Kanawha River**

District Engineer  
U. S. Army Engr. Dist., Huntington  
502 8th Street  
Huntington, West Virginia 25721

**Ohio River**

District Engineer  
U. S. Army Engr. Dist., Pittsburgh  
Federal Building  
1000 Liberty Avenue  
Pittsburgh, Pennsylvania

District Engineer  
U. S. Army Engr. Dist., Huntington  
502 8th Street  
Huntington, West Virginia 25721

District Engineer  
U. S. Army Engr. Dist., Louisville  
830 West Broadway  
Louisville, Kentucky 40201

**Green River**

District Engineer  
U. S. Army Engr. Dist., Louisville  
830 West Broadway  
Louisville, Kentucky 40201

**Allegheny & Monongahela Rivers**

District Engineer  
U. S. Army Engr. Dist., Pittsburgh  
Federal Building  
1000 Liberty Avenue  
Pittsburgh, Pennsylvania 15222

**Tennessee, Cumberland, Little, Clinch, Emory & Hiwassee Rivers**

District Engineer  
U. S. Army Engr. Dist., Nashville  
P. O. Box 1070  
Nashville, Tennessee 37202

**Other**

District Engineer  
U. S. Army Engr. Dist., Little Rock  
P. O. Box 867  
Little Rock, Arkansas 72203

District Engineer  
U. S. Army Engr. Dist., Garrison  
Administrative Building  
Riverdale, North Dakota

District Engineer  
U. S. Army Engr. Dist., Tulsa  
P. O. Box 61  
Tulsa, Oklahoma

District Engineer  
U. S. Army Engr. Dist., Mobile  
2301 Airport Boulevard  
P. O. Box 1169  
Mobile, Alabama 36601

Tennessee Valley Authority  
Knoxville, Tennessee

[These last are sources for reservoirs, man-made lakes and such. There's probably some other office for lakes in the Colorado. Check with your local office of the Corps of Engineers]

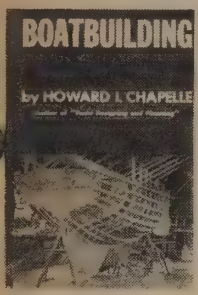
\$315.00



**★ Boatbuilding**

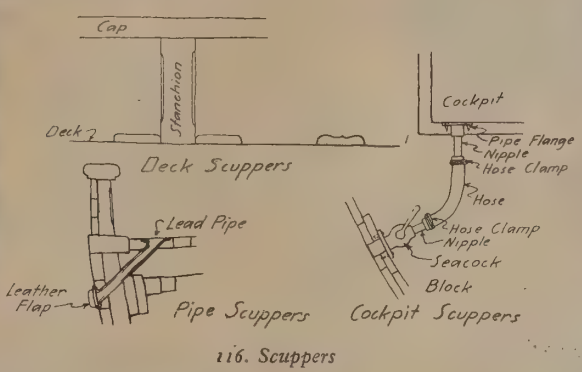
This is the book for the man who wants to put together a boat he can live in and with. Chapelle is full of ideas for getting the maximum use of the limited space on a boat. He is also the easiest way to avoid all the miserable pitfalls one can encounter: leaking hatches and deck seams, toilets that don't work on one tack, or back up and fill the bilge, storage that rots its contents or dumps them on the deck at the first wavelet. There is even a chapter on hand tools and how to use them. The book is generally considered the standard reference of the boatbuilder. Its single drawback is its age (first published in 1940) so it misses the latest developments in materials. Still, it's the best I've seen for staying out of trouble.

[Reviewed by Christopher E. Prael  
Suggested by everybody.]



**Boatbuilding**  
Howard I. Chapelle  
1941; 624 pp.

**\$15.00** postpaid from:  
W. W. Norton & Co., Inc.  
55 Fifth Avenue  
New York, N. Y. 10003  
or WHOLE EARTH CATALOG



94. Cabin Windows

116. Scuppers

**★ The Glénans Sailing Manual**

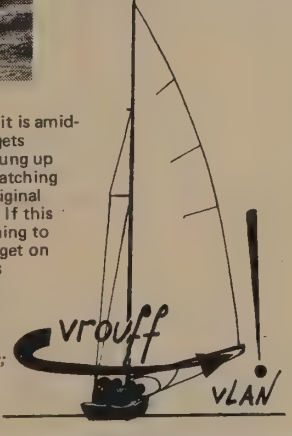
This is the closest we've seen to a definitive text on small-boat sailing. Clearly illustrated.



**The Glénans Sailing Manual**  
Philippe Harlé  
1961; 448 pp.  
**\$10.00** postpaid  
from:  
John de Graff, Inc.  
34 Oak Avenue  
Tuckahoe, N. Y. 10707  
or WHOLE EARTH CATALOG

**The Chinese gybe:**

if the sail manages to gybe before it is amidships, the bottom half of the sail gets across, while the upper half gets hung up by the cross-trees or by a batten catching on something, and stays on the original side. You can easily tear the sail. If this mishap befalls you, there is one thing to do, and only one—gybe back to get on the original tack. Anything else is bound to fail and will risk tearing the sail. (It may be noted that the term Chinese gybe is not a reflection on Oriental seamanship, which is of a very high order; the junk rig is designed to carry out a gybe in this manner without unpleasant consequences.)



**Defender Industries**

If boating is your bag & you are a self-help enthusiast you need the "Defender Industries" catalog of marine hardware & accessories. If it has to do with boats, they have it: engines to dacron sails, bilge alarms to fiberglass roving. Included are pages of information on new products, application procedures for some of the materials, construction & maintenance tips for boaters and apage devoted to "How to Build a Fiberglass Boat." Defender Industries claim that they are "one of the most complete marine supply firms in the world." They say their prices are competitive and "should be under-sold on any current standard materials, you may place your order at the lower price by merely including a tear sheet from the cheaper source, and we will fill your order."

[Suggested and reviewed by C. P. Christianson]

Catalog  
**\$5.00**  
from:  
Defender Industries, Inc.  
384 Broadway  
New York, N. Y. 10013

These sextants are brand new, and made of heavy gauge plastic to resist corrosion. The clearly marked Vernier reads to two minutes of arc. With your sextant you will receive a booklet that clearly explains:  
• Position finding by the sun • How to use the sextant as a pelorus • How to use sextant as a heliograph  
• How to take sights with the artificial horizon when far away from the sea • Equation of Time • Measuring the Sun's Altitude • Finding Longitude • The Complete Sight • Some Errors You Should Know About • More useful knowledge. Includes instruction booklet

**DAVIS SEXTANT**

H100-2  
**\$14.50 List \$10.75**

H100-3  
**Deluxe \$49.50 \$39.95**

**SAILORS H75-13 RIGGING KNIFE \$2.75**  
Stainless blade  
Black handle  
all stainless **\$1.75**

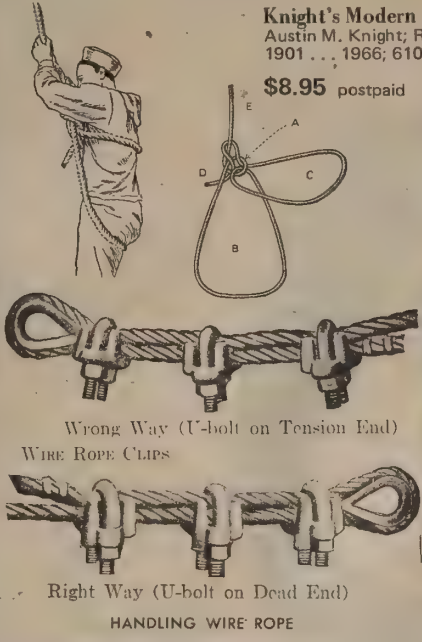
**★ Knight's Modern Seamanship**

If there's a single book to have on board at sea, this updated classic is probably it. Everything from mooring to an ice shelf to port-tack-yields-right-of-way to minimizing hover time for boarding helicopters.

**Knight's Modern Seamanship**  
Austin M. Knight; Rev. by Capt. John V. Noel, Jr.  
1901 . . . 1966; 610 pp.

**\$8.95** postpaid from:  
Van Nostrand-Reinhold  
450 West 33rd Street  
New York, N. Y. 10001

or WHOLE EARTH CATALOG



**CIRRUS** and cirrostratus. "Mare's tails" is the popular name given to well-defined cirrus clouds that thicken into cirrostratus, and then gradually lowering into water droplet altostratus. The clouds may resemble a mare's tail and may often be the forerunner of a storm as indicated in the old rhyme: "Mackerel sky and mare's tails, make tall ships carry low sails." The more brush-like the cirrus, the stronger the wind at that level.

**Ci 2**  
"MARE'S TAILS"

This type appearing after cirrus and followed by thickening lower clouds, increases probability of rain within 24 hrs.

**★ West Products**

To the boat owner/builder—or someone with a similar cramped living space such as a VW camper bus, trailer, dome or tree house—West Products offers an excellent chance to order high quality fittings, tackle, rope, etc. at extremely low prices. Compare the usual Yacht Store prices with West's for "Dacron" rope.

[Suggested and reviewed by Dr. Stephen Morris]

Catalog  
free from:  
West Products Corp.  
P. O. Box 707  
Newark, N. J. 07101

**SeaLine**  
100% DU PONT  
**"DACRON"**  
TYPE 67 FIBER  
MARINE ROPE  
LAID CONSTRUCTION

Sea/Line marine "DACRON" rope is available in any length you require: all orders are put up on shipping reels. Quantity price reductions usually occur for 300 and 600 foot increments. In-between lengths are priced accordingly.

catalog #	DIA.	average breaking strength	PRICE PER FOOT			shipping wt per 100 ft.
			1 ft. to 299 ft.	300 ft. to 599 ft.	600 ft. and over	
12-303	3/16"	1000 lbs.	3¼¢	3¼¢	3¼¢	2 lbs.
12-304	1/4"	1800 lbs.	4¼¢	4¼¢	4¼¢	3 lbs.
12-305	5/16"	2900 lbs.	7¼¢	7¼¢	7¼¢	4 lbs.
12-306	3/8"	3600 lbs.	11¼¢	11¼¢	11¼¢	6 lbs.
12-307	7/16"	5200 lbs.	15¢	14¼¢	14¢	8 lbs.
12-308	1/2"	6500 lbs.	18¼¢	18¢	17¼¢	9 lbs.
12-310	5/8"	10000 lbs.	30¢	29¼¢	29¢	13 lbs.
12-312	3/4"	14000 lbs.	42¢	41¼¢	41¢	19 lbs.

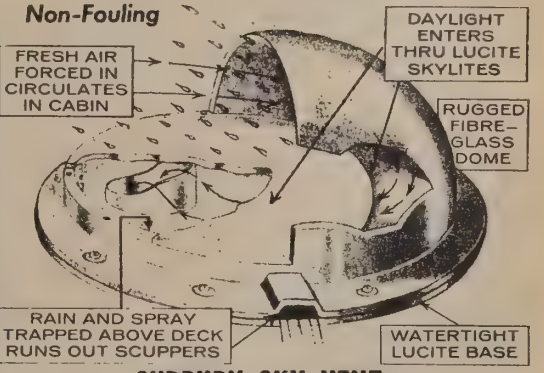
**Unsolved Oceanographic Problems of Interest to Mariners**

- How do some marine organisms used for food by man tolerate and store poisons at concentrations harmful or lethal to man?
- Why is the layer of unconsolidated sediments in the deep sea so thin (average 1000 ft thick)?
- Why are there no sea fossils older than 100 million years?
- What is the cause of the sudden increase in radium content in the oceans about 200,000 years ago?
- What are the enzyme systems that operate in the oceanic regions of high pressure and perpetual low temperature?
- How do microscopic plants and animals (plankton), apparently helpless in the face of water movement, maintain themselves so regularly in their own specific regions?

**★ STPA**

Another marine discount catalog.

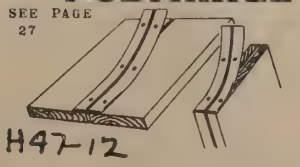
Catalog  
**\$50** from:  
Sportsman's Trading Posts  
of America, Inc.  
Box 419  
Rockville Centre, N. Y. 11571



**SUDBURY SKY VENT**  
Give your boat more light and fresh air. Install this new, practical creation—the Sudbury SKY-VENT. Rugged dome, molded of laminations of tough fibre glass, never needs painting unless you want to; is set over heavy plate of thick, transparent lucite that lets in light and air, yet keeps out rain and spray.

Stock #		L.P.	S.P.	Ship. Wt.
13958	9-inch Sudbury Sky-Vent — each	42.75	29.95	4 lbs.
13959	12-inch Sudbury Sky-Vent — each	71.25	54.95	6 lbs.
13960	18-inch Sudbury Sky-Vent — each	99.95	74.95	10 lbs.

**POLYHINGE**



New concept in hinge. Made of molded plastic that can be punched, nailed, drilled — easily cut — Over 1,000,000 flexes show that Polyhinge strength increases with use. Has millions of uses — Home, Marine & Industrial.

PRICE \$ .42¢ PER FOOT  
4 ft. for \$1.42

## Stick and Rudder

Subtitle: 'An Explanation of the Art of Flying.' This book was written in 1944 and is still, I understand, the basic flying book. Writing, illustration, comprehensiveness—it's a full-throated classic. I've never flown a plane, but I've flown other stuff, and every page glimmers with useful hints for every kind of flight. Maybe some Sufi pilot would like to do an allegorical review of this profound book.

Stick and Rudder  
Wolfgang Langewiesche  
1944; 389 pp.

\$8.95 postpaid

from:  
McGraw-Hill Book  
Co.

East:  
Princeton Road  
Hightstown, N.J.  
08520

Mid-continent:  
Manchester Road  
Manchester, Mo. 63062

West:  
8171 Redwood Highway  
Novato, CA 94947

or WHOLE EARTH CATALOG

On wings it is safe to be high, dangerous to be low; safe to go fast, dangerous to go slow. Generally speaking, if you want the airplane to go up, you point its nose up; but point its nose up a little too much, and you go down in a stall or a spin. In landing an airplane, to make it sink down on the runway and stay down, you move the controls much as for an extreme upward zoom. In the glide, if you want to descend more steeply, you point your airplane's nose down less steeply; if you want to descend less steeply, you point the airplane's nose down more steeply! And—most spectacular contrariness of all—in emergencies, when the airplane is sinking toward the ground in a 'mush' or falling in a stall or a spin, and you are afraid of crashing into the ground, the only way to keep it from crashing is to point its nose down and dive at the ground, as if you wanted to crash!

## So You'd Like to Buy an Airplane

A thorough run-down on new planes, prices, comparative performance, and what you'll be getting into for costs, trouble, and advantages with an airplane.



So You'd Like to Buy an Airplane!

Al Griffin  
1970; 330 pp.

\$7.95 postpaid

from:  
The Macmillan Company  
866 Third Avenue  
New York, N. Y. 10022

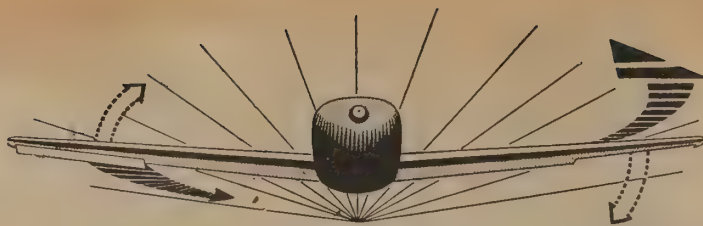
or WHOLE EARTH CATALOG

Cessna 180 and 185/Skywagon  
2,800 pounds (and 3,350 pounds) gross weight

The versatile 180 is variously used as a flying truck and as a six-place people plane. Powered by a six-cylinder 230 hp Continental O-470-R engine with a 7 to 1 compression ratio, the 1,535-pound high-wing with the tail wheel belies its old-fashioned looks, with a top speed of 170 mph, 1,215-mile maximum range, 1,090 feet per minute climb-out, and 19,600-foot service ceiling. The look-alike 185/Skywagon does even better, with its 300 hp Continental IO-520-D engine; it hits a top speed of 178 mph and is considerably better in useful weight capabilities—although it weighs only 40 pounds more than the model 180, the 185/Skywagon carries a remarkable 1,775 pounds compared to the 180's 1,265-pound payload.

Whether used as a flying bus or truck, the model is one of the toughest no-nonsense planes going. Appointments in the cabin are far from lush, but they are designed to last under hard usage. The model 180 is priced at \$17,950 and the 185/Skywagon at \$21,375. Either version is also available as floatplane, amphibian, or skiplane.

116



The adverse yaw effect. Ailerons have two effects. White arrows: rolling effect is what pilot wants. Black arrows: yawing effect is an undesired by-product of rolling effect. Here, the pilot banks to (his) left, presumably in order to turn to the left, but the airplane at the same time yaws to (pilot's) right. That's why this yaw effect is called "adverse." Pilot must kill this effect by using rudder.

Hence the Angle of Attack cannot be seen simply by looking out the window; in fact, it cannot be seen at all! For remember, Angle of Attack is the angle at which the wing meets the air—and we can't see air. That is perhaps largely why flying is so much of an art. In baseball the batter keeps his eye on the ball that he is going to hit. Flying is the art of batting the air down with our wings; but in flying, our trouble is that we can't see the air; hence we often fail to hit it right, and hence so many of us break our necks.

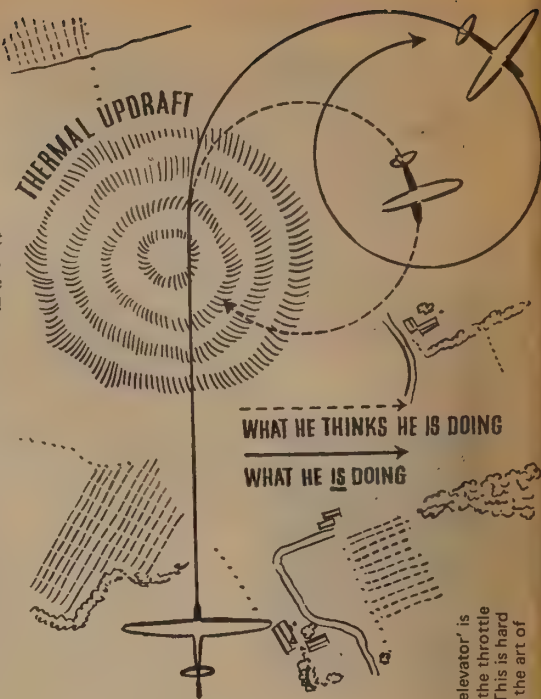
Take your hands off a good airplane's stick, and it will do a good job of flying all by itself. Take your feet off its rudder as well, and many airplanes will even then do a fair job. The airplane has a built-in will of its own, and generally speaking it wants to do whatever is necessary to maintain healthy flight.

In actual practice most airplanes have a tendency to hunt. This means that with the controls released, the ship will not fly at constant speed but will oscillate up and down, now dropping its nose, building up speed, diving for perhaps 10, 20, 30 seconds. Then, with its essential stability and better self asserting itself, it will catch itself, raise its nose, try to get rid of its excess speed, and go into a climb. In this climb, a bit too much speed is lost, and the ship noses down again, to repeat the process.

If an untutored person tries to fly an airplane and uses the controls in the manner that seems most 'natural' to him, responding most energetically and most quickly to those disturbances that 'naturally' impinge most sharply on his consciousness, the flight will almost certainly end in a spiral dive and a crash.

Flying is done largely with one's imagination! If one's images of the airplane are correct, one's behavior in the airplane will quite naturally and effortlessly also be correct.

The pitfall of glide control: when doing the right thing, you get the wrong result first, the right result only later. Nosing the airplane up steepens the descent, but first causes a temporary ballooning. Nosing the airplane down shallows the descent, but first causes an extra sink. Be patient for a few seconds.



As you approach the ground you must keep your vision relaxed and look all around; you must take in the whole scenery, the perspective of the hangars on the side of the field and the other airplanes on the field, the parked automobiles, the trees, the telegraph poles all around, the grass, the horizon; for it is from the perspective and apparent motion of such things that you will get a vivid perception of your height; and a staring eye will not see what matters. When you get tense, you will almost certainly stare; approaching the ground, most students do get tense; that is largely why the landing is so difficult for most beginners.

Stick and Throttle. The so-called 'elevator' is really the airplane's speed control, the throttle is really its up-and-down control. This is hard to believe but is one of the keys to the art of piloting.

## Aeronautical Charts

Mack Taylor is a friend who has a fondness for the blank places on other people's continents. He walks into them in his tennis shoes and makes friends with the chief and walks out and tells stories about how the main hazard in the jungle is dead-eye monkeys who shit on you from the trees. Mack says that often the only maps with information in the blanks are the ONCs—Operational Navigation Charts, available for 50¢ apiece. The Coast and Geodetic Survey Catalog of Aeronautical Charts has a map index for ONCs and sundry other flight maps and publications. The Catalog seems to be

free from:  
Distribution Division C-44  
Coast and Geodetic Survey  
Rockville, Md. 20852

## Used Plane Buying Guide

An objective rundown on what you can expect buying a used plane is what you can expect from this sensible book. Besides information on purchasing and maintenance it gives comparative data (including price range) on the common light planes in the used market.

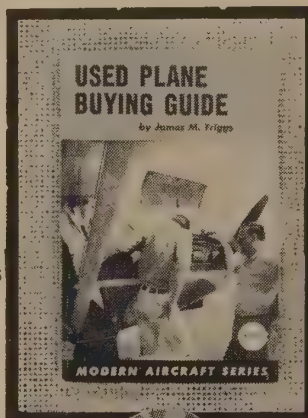
## Used Plane Buying Guide

James M. Triggs  
1962; 128 pp.

\$2.45 postpaid

from:  
Crown Publishers  
419 Park Avenue South  
New York, N. Y. 10016

or WHOLE  
EARTH  
CATALOG



For current buying information your best source is Trade-a-Plane, which carries equipment, materials, parts, etc., as well as airplanes.

\$4.00/yr. (3 times monthly)

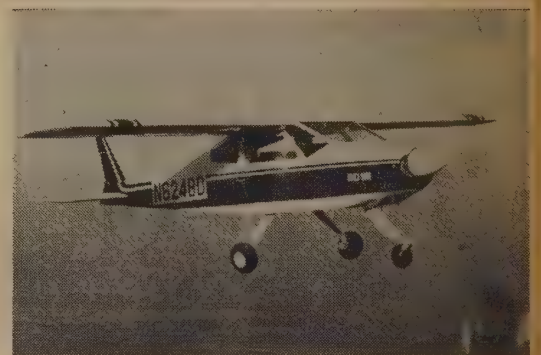
from:  
Trade-a-Plane Service  
Crossville, Tennessee



GUN  
CAMERAS  
Type A-1...  
Type A-2...  
Type A-3...  
Type A-4...  
Type A-5...  
Type A-6...  
Type A-7...  
Type A-8...  
Type A-9...  
Type A-10...  
Price - \$22.50  
Each Postpaid

## BD-4

All reports are that this is the best homebuilt airplane on the market. With the 150 hp engine it seats four, has a useful load of 870 lbs, cruising speed 170 mph, take-off run over 50 ft obstacle 900 ft, maximum range 1,200 miles. For a new tailormade with similar performance you'd pay \$10,000 more. The kit is intelligently designed.



Complete kit with 150 hp Lycoming engine:  
\$5680.00 plus shipping  
with 180 hp  
\$6350.00 plus shipping  
Information Kits \$3.50 postpaid

from:  
Bede Homebuilts  
355 Richmond Road  
Cleveland, Ohio 44143

## The Explorers Trademart Log

This magazine is a couple years old now. After a period of initial cuteness, it's begun to focus directly on usefulness. Like, exactly how to buy good surplus jeeps. Design of the Eskimo igloo. Economics of a private plane. How to buy public lands. Evaluation of canoes. Encouraging wildlife. Winterizing your tipi.

[Suggested by Mack Taylor]



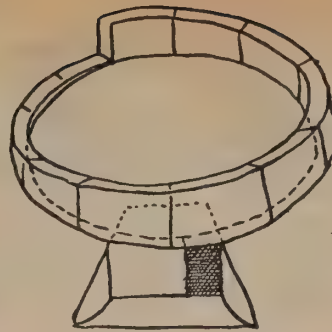
### The Explorers Trademart Log

\$3.00/year (bimonthly)

from:  
Explorers Trademart, Ltd.  
Post Office Box 1630  
Annapolis, Md. 21404



The address to which to write is:  
DoD Surplus Sales  
P.O. Box 1370  
Battle Creek, Michigan 49016



First tier of snowblocks laid in place. Note how tops of blocks are beveled inward. Hole has been dug before laying blocks to allow builder entry into igloo.



To the perennial question, "Is it cheaper to fly your own plane?" the answer is, "It can be, under certain selective circumstances." According to a new FAA report, "General Aviation Costs", if you own a single-engine four-seater and use it 200 hours a year with all seats occupied, the cost per passenger-mile (5.6 cents) may be slightly cheaper than almost any form of airline transportation. It is still about twice as expensive as operating an automobile (2.75 cents a seat/mile) assuming there are four persons in the vehicle.

## Be Expert with Map and Compass

This is the standard introduction to map use. I agree with Heinlein that a map, like money, is one of the most potent inventions of our Old Ones. The book includes a sample map for practice.

### Be Expert with Map and Compass

Bjorn Kjellstrom  
1967; 136 pp.

\$3.95 postpaid

from:  
Stackpole Company  
Cameron & Kelker Streets  
Harrisburg, PA 17105

or WHOLE EARTH CATALOG



Compare map with landscape: Log Chapel on correct side of road, road ahead bending in proper direction, etc. Map fits landscape, is "oriented."

## Hot Springs

It seems incredible that there would be such a book. Here are map locations of all the known hot springs in the world, along with information on temperature, rate of flow, mineral content, and whether commercial or wild. You could travel the rest of your days from spring to spring, stopping at the Tatapani springs, on the west bank of the Sunkasi river ("3 springs forming small pool") 50 miles northwest of Mt. Everest, or the Hamman Ouled Sidi Abdeli ancient Roman baths, still flowing at 500 liters/minute, 81 F, 50 miles southwest of Oran, Algeria.

Published by the U. S. Geological Survey for a song, this directory fails to mention the plastic ice-water afterlife that awaits those who mess up wild hot springs.

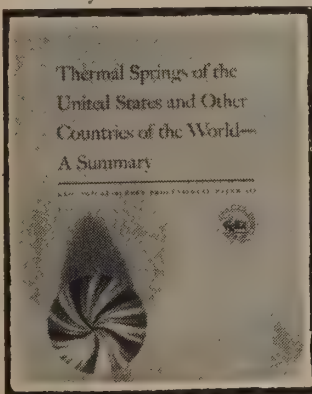
### Thermal Springs of the United States and Other Countries of the World—A Summary

Gerald Waring  
1965; 383 pp.

\$2.75 postpaid

from:  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, D. C. 20402

or WHOLE EARTH CATALOG



## U. S. G. S. Topographic Maps

If you're interested in buying land or visiting remote areas you'll be using any maps you can get your hands on. The United States Geological Survey publishes the most accurate and detailed maps generally available for the U. S. (and possessions). Although some are a little dated, they consistently pack a lot of information into a fairly understandable format. Besides contour intervals, these maps indicate type of earth surface, roads, train tracks and trails, buildings, mines and various land marks; plus a whole lot of other stuff.

Two series of maps are available—15 minute quadrants (approximately 1 inch equals 1 mile, with 80 feet contour intervals, covering an area 14 x 18 miles); and 7.5 minute quadrants (approx. 2" = 1 mi., 40' contour, covers 7 x 9 miles.). The 7.5 minute maps are more up-to-date but have not been prepared for the whole country.

[Reviewed by Drew Langsner.]

U. S. G. S. also has Distribution Centers at:  
ALASKA: Anchorage, Fairbanks, Juneau and Palmer  
CALIFORNIA: Menlo Park and San Francisco  
COLORADO: Denver  
TEXAS: Dallas  
UTAH: Salt Lake City  
WASHINGTON: Spokane

Canadian Topo maps from:  
Map Distribution Office  
Dept. of Mining and Technical Surveys  
615 Booth Street  
Ottawa, Ontario, CANADA

Maps cost 50¢ each and U. S. G. S. provides an index map of any state free.

from:  
Distribution Section  
U. S. G. S.  
Washington, D. C. 20242

Excellent 3-dimensional versions of the smallest scale U. S. G. S. maps are available at \$4.00 postpaid from:

Army Map Service  
San Antonio Field Office  
Building 4011  
Ft. Sam Houston, Texas 78234

### Thermal springs and wells in Argentina—Continued

No. on fig. 15	Name or location	Temperature of water (°C)	Flow (liters per minute)	Total dissolved solids (ppm)	Principal chemical constituents	Associated rocks	Remarks and additional references
55	El Saladillo de los Colorados.	34	Moderately large	4,560	Na, SO <sub>4</sub> , Cl	Precambrian(?) strata	1 main spring and several small flowing wells.
56	Surgente de Copal de Guayapa, 15 km southwest of Patquia.	22	Large	8,270	Na, SO <sub>4</sub> , Cl	do	Flowing well. Water used for drinking by cattle.
57	Totoritas, in La Rioja.	26		400; 356	NaHCO <sub>3</sub>	Paleozoic strata	Water used for bathing.
	Pismauta, 8 km west of Jaehal.	40; 45			Na, SO <sub>4</sub> ; free H <sub>2</sub> S		2 main springs. Water contains much FeO <sub>2</sub> and Al <sub>2</sub> O <sub>3</sub> . Ref. 912.
58	Quebrada de Huaco (Hedionda)	21-25	100	2,300-2,868	Na, SO <sub>4</sub> ; much free H <sub>2</sub> S	Paleozoic limestone	Several springs. Deposits of sulfur. Water used for bathing. Ref. 905.
59	El Volcan	27.1		Moderately high	Na, SO <sub>4</sub> , Cl; free H <sub>2</sub> S	Tertiary(?) deposits	Water used locally.

## Travelers' Directory

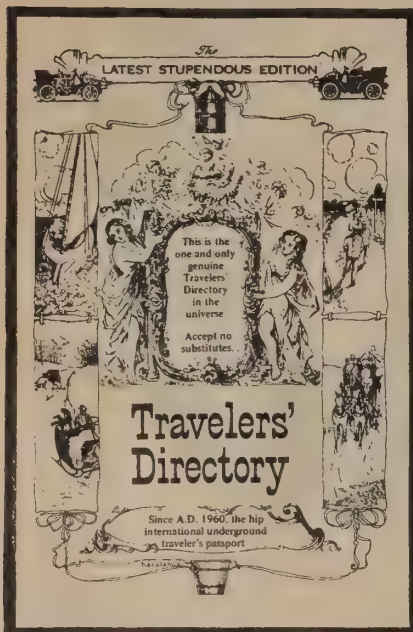
Works like this: you have a 56-page directory of other outlaws you can stay with during your travels, and since you're in the book (or you don't get one) they have access to you. Send a 100-word description of yourself and your services and \$3 is how to get into it. Listings are 2/5 female, 3/5 male.

[Suggested by David Schoengold]

### Travelers' Directory

\$3.00 postpaid

from:  
Peter Kacalanos  
51-02 39th Avenue  
Woodside, New York 11377



## Sole-Saver

Black gick you paste on the bottom of your shoes to make them last forever. Looks particularly useful for moccasins. We like it. I see one of the suppliers also recommends it for knee patches.

[Suggested by Leslie Schockner]

½ pint \$2.25  
Pint \$3.95  
Quart \$5.95

from:  
Carpet Products Company  
Central Square  
New York, N. Y. 13036

Manufacturer is Edward Schlosser Associates, Inc.,  
Ridgefield Park, N. J.



## Michelin Maps and Guides

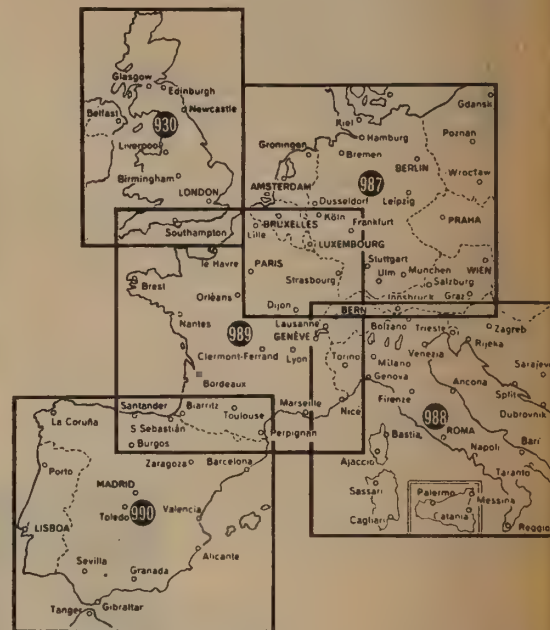
If you're gadding about Europe or Africa these are the standard maps (\$.75-\$1.50) and guides (\$3-\$4.50).

[Suggested by Joe Godwin]

### Catalogs

free

from:  
Michelin Tire Corporation  
P. O. Box 217  
Woodside, N. Y. 11377



## Cheap Travel

Two undistinguished but helpful books on international travel at low cost.

[Suggested by Nancy Schimmel]

Icelandic Airlines has been the pioneer of low-cost, Trans-Atlantic air transportation. Since 1952 Icelandic (Loftedir in the Icelandic language) has consistently offered the lowest fares of any regularly scheduled airline between the U.S.A. and Europe.

... I feel Icelandic's regular round-trip New York-Luxembourg fare of \$319 offered from August 4 through May 31 (to Europe) and September 25 to July 21 (returning) is a remarkable bargain and one of the best buys available anywhere. This bargain is good for a year with no minimum stay or weekend restrictions.

Air Travel Bargains



Air India Boeing 707

The new Japan Air Lines \$400 round-trip Bulk Inclusive Tour fare from the U.S. West Coast to Tokyo is an incredible bargain. There will be some real money saving tours to Expo 70 based on this fare.

Air Travel Bargains

## How to Travel Without being Rich

Norman D. Ford  
1969; 179 pp.

\$1.95 postpaid

from:  
Grosset & Dunlap, Inc.  
51 Madison Avenue  
New York, N. Y. 10010

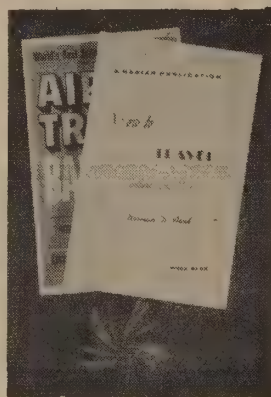
or WHOLE EARTH CATALOG

Air Travel Bargains  
Jim Woodman  
1970; 320 pp.

\$2.50 postpaid

from:  
Simon & Schuster, Inc.  
630 Fifth Avenue  
New York, N. Y. 10020

or WHOLE EARTH CATALOG



Rule: the travel value of any fare is determined by the number and variety of places you can visit at no extra cost en route to your destination. The more indirect and round-about your route, the greater value you receive from any fare.

How to Travel Without Being Rich

London-Istanbul: Direct Orient Express	\$70 second class
Istanbul-Ankara: Taurus Express	5 second class
Ankara-Erzurum, Turkey: local train	10 second class
Erzurum-Teheran, Iran: TBT or Mihantour bus	12
Teheran-Meshed, Iran: rail	8 second class
Meshed-Yousouf Abad, Iran: bus	1
Yousouf Abad-Herat, Afghanistan: Afghan Mail bus service	4
Herat-Kandahar-Kabul, Afghanistan: Afghan Mail bus service	4
Kabul-Peshewar, Pakistan: Afghan Mail bus service	3
Peshewar-Lahore, Pakistan: express bus	2.50
Lahore-Ferozepur, India: local buses	1
Ferozepur-New Delhi, India: Punjab Mail train	6.50 first class
New Delhi-Calcutta, India: Toofan Express train	13.35 first class
Calcutta-Madras, India: Howrah-Madras Mail train	15.20 first class
Madras-Penang, Malaysia: B.I. Line or Shipping Corp. of India	74
Penang-Bangkok, Thailand: International Express train	25 second class
Bangkok-Kobe, Japan: Messageries Maritimes Line	155 tourist class
Kobe-Tokyo, Japan: Kodama Express train	8 second class
Total: London to Tokyo	\$417.55

## Hitchhiker's Handbook

If you want to hitchhike around and about the U.S., here's a great guide. Most people think hitchhiking is illegal, but the author explains you're not breaking the law IF you stand on the road's shoulder. One chapter gives a summary of the hitching laws, state by state. Another is the diary of two 17-year-old thumbers. It gives you an idea of the problems you'll have, the fun, and what types of people you'll meet. The paperback tells you how to hitchhike successfully, where to sleep, what to carry, and how to enjoy an American thumbing tour. Hitchhiking girls will get some ideas too. The author has been hitchhiking for 11 years.

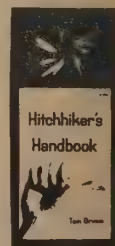
[Suggested and reviewed by Mike McFadden]

Hitchhiker's Handbook  
Tom Grimm  
1970; 72 pp.

\$1.95 postpaid

from:  
Vagabond Press Ltd.  
P. O. Box 83  
Laguna Beach, CA 92652

or WHOLE EARTH CATALOG

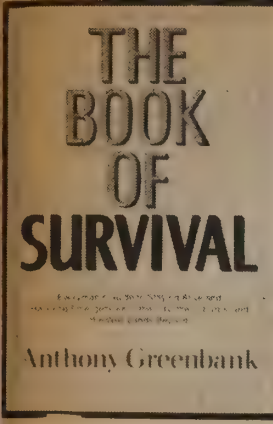


Don't use your thumb to hitchhike. Use a sign instead. Before drivers stop they like to identify the hitchhiker and know where he is going. Put the fact in words—and indicate your destination. For example, "Student to California". That tells a driver what he wants to know, and you will get more rides.

... There are many ways to make a sign. I think the best type is made of oilcloth. You can buy a 1 x 4 foot piece at any hardware, variety or dime store for less than 50 cents. Then make the letters on the sign with a roll of colored self-sticking tape, or buy a can of quick-drying paint. An oilcloth sign will be waterproof and will not be ruined when it rains.

Besides your sign, the next best thing for getting a ride is a smile. That's right, a smile. Too many hitchhikers look bored and unhappy. Instead, try to look like you are enjoying what you're doing, even if the weather is hot, the road dusty, and you have been waiting for an hour for a ride.

Don't wear sunglasses while trying to get a lift. A motorist likes to see your eyes. And be sure to look directly back at him.



**The Book of Survival and The Survival Book**

One barometer of people's social confidence level is the sales of books on survival. I can report that sales on The Survival Book are booming; it's one of our fastest moving books. What's weird is that it's almost pure romance to buy The Survival Book, which is an excellent handbook for Air Force pilots downed in remote regions. The other book we list, The Book of Survival, is far more practical and far better organized. The threats it deals with are closer and realer: burning buildings, freaked humans, speeding cars, dogs, floods, electricity, poison—genuine homely hazards. From what we can see, people are less interested in survival and more interested in the return of the frontier or maybe a sudden desert island. Fat chance.

**The Book of Survival**  
Anthony Greenbank  
1967, 223 pp.

**\$.95** postpaid from:  
The New American Library, Inc.  
1301 Avenue of the Americas  
New York, N. Y. 10019



Kidney and head protection

When lying on the ground and being kicked try to keep rolling, shielding parts being kicked with arms. BUT always protect head as priority. Clasp base of skull with both hands, bring wrists across ears and side of head and press elbows together. Bring knees up, crossing ankles to save genitals.

In all attacks it pays to shout/gasp/yell more than you need: Feign pain. Especially when on receiving end (lying on ground and being kicked). Attacker may be satisfied sooner when you appear in agony.



FIG. 64: Making footgear

**FIGHTING DRUNK**

Humor.

If involved in brawl, drunks can offer astoundingly strong grip. Hit hard in stomach and this may make him sick.

**SELF-PRESERVATION**

**Crushed in crowd**  
Aim to ride like buoy in rough sea -- where tide is extremely powerful. To go under means drowning from suffocation and trampling. Brace like a powerful spring (as shown).



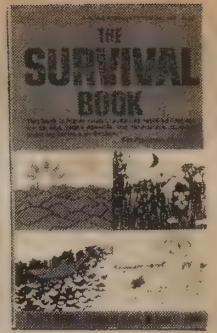
FIG. 10: Spring and buoy position in surging crowd

- Final consolation: a REAL ghost ...
- (a) Will disappear if you approach it.
  - (b) Can do you no physical harm because it leaves nothing earthly--not even messages or footprints.
  - (c) Will not cast a shadow; will look quite substantial rather than misty; will not ignore you; will not carry its head tucked under an arm.
  - (d) Is all in YOUR mind anyway.

**The Survival Book**

Paul Nesbitt,  
Alonzo Pond,  
William Allen  
1959; 338 pp.

**\$1.95** postpaid from:  
Funk and Wagnall's  
380 Madison Avenue  
New York, N. Y. 10017



or WHOLE EARTH CATALOG

**EXPECTED DAYS OF SURVIVAL AT VARIOUS ENVIRONMENTAL TEMPERATURES AND WITH VARYING AMOUNTS OF AVAILABLE WATER**

	Max. daily in shade temperature, °F	Available water per man, U.S. quarts					
		0	1	2	4	10	20
<b>NO WALKING</b>	120	2	2	2	2.5	3	4.5
	110	3	3	3.5	4	5	7
	100	5	5.5	6	7	9.5	13.5
	90	7	8	9	10.5	15	23
	80	9	10	11	13	19	29
	70	10	11	12	14	20.5	32
	60	10	11	12	14	21	32
50	10	11	12	14.5	21	32	
<b>WALKING AT NIGHT AND RESTING THEREAFTER</b>	120	1	2	2	2.5	3	
	110	2	2	2.5	3	3.5	
	100	3	3.5	3.5	4.5	5.5	
	90	5	5.5	5.5	6.5	8	
	80	7	7.5	8	9.5	11.5	
	70	7.5	8	9	10.5	13.5	
	60	8	8.5	9	11	14	
50	8	8.5	9	11	14		

**DO'S AND DON'T'S FOR THE TRAVELER IN ARABIAN DESERTS**

Here are a few of the most important don't's. In general they apply to the deserts everywhere.

- Don't reprimand an offender in front of other people.
- Don't draw sand pictures or maps with your foot--stoop down and draw with your right hand.
- Don't swear at a native.
- Don't expose the soles of your feet to others. Sit tailor fashion or on your heels.
- Don't ask about a man's wife.
- Don't throw a coin at a man's feet. That is insulting.
- Don't try to gamble. It is forbidden.
- And here are a couple of Do's worth remembering.
- Do have patience when dealing with desert people.
- Do act friendly.

**Survival Evasion and Escape**

Here's one for our customers who plan to jump bail or escape from jail. Thoughtfully prepared by the U. S. Army. Three-fourths of the book is about living off the land, with edible plants illustrated in color. Pretty damn good book.

**Survival, Evasion, and Escape**  
1957, 1965; 1969; 430 pp.  
FM No. 21-76

**\$3.50** postpaid

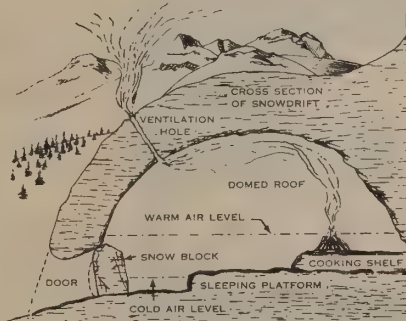
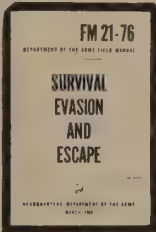
from:  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, D. C. 20402

or WHOLE EARTH CATALOG

**Casting**

Frequently the duplication of buttons, insignia, seals, medals, etc., is necessary to complete an evasion disguise. Casting these items in soft metal generally is the best method, and the procedures involved require very simple materials.

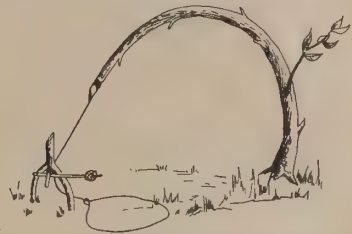
a. Lead, solder, and zinc are the easiest and most common materials to work with. Lead can be obtained from pipe or plumbing fittings, from around underground electrical wire, and from leaded window frames. Solder may be melted from the seams of tin cans. Zinc



Snow caves.

frequently is used on washbowls, metal fittings, metal containers and some window and roof construction.

b. Make a mold by using clay, soap or a large potato. The material used is cut in half, and half of the design is cut into each piece so that when fitted together the hollowed-out parts will have the form desired. In all molds, a hole must be made in one side through which to pour the metal; a small hole is made in the other side to allow air to escape. Molds made of clay should be baked to harden. After being poured and allowed to cool, finish the casting by trimming with a knife or file and painting or polishing as appropriate.



**Life Support Technology, Inc.**

The most sophisticated survival kits and equipment. Designed for bush pilots and the like.

[Suggested by Alan Kalker]

**Catalog**

free

from:  
Life Support Technology, Inc.  
4530 S. E. Roswell St.  
Portland, Oregon 97206



M2/f "Economy" Aeronautic Life Support Unit \$89.50

**CONTENTS**

- Canvas Carrying Case (Converts to Cold Weather Mukluks)
- Felt Pads (2 - 12" x 12")
- Freeze-dry Rations (5 cans)
- Hard Candy (5 packages)
- Cooking Container (1)
- Snare Wire (15 feet)
- Matches (20)
- Plastic Match Box (1)
- Repair Tape (10 feet)
- Sharpening Stone (1)
- Nails (3)
- Boy Scout Pocket Knife (1)
- Plastic Whistle (1)
- 550 Parachute Cord (50 feet)
- Gill Net (1)
- Fire Start (3)
- Aluminum Foil (15" x 24")
- Wire Saw (1)
- Hudson Bay Hatchet (1)
- Plastic Canteen (1)
- Pilots Signal Mirror (1)
- Silva Compass (1)
- Mosquito (insect) Repellent (1)
- Mosquito Headnet (1)
- Tissue (1)
- Plastic Spoons (2)
- Candle (1)
- Plastic Sheeting (9' x 12')
- Fishing Kit (1)
- Sewing Kit (1)
- Surgical Tubing (4 feet)
- Hacksaw Blade (1)
- Pencil (1)
- Rescue Blanket (1)
- Slingshot Pouch (1)
- "tinyMIGHT" Aerial Signaling Device w/6 Aerial Flares
- Fusee Flares (2)
- Wilderness Survival Manual (1)
- Shipping Weight: 11 pounds



\$7.50

1.0 Ounce Standard Model

**Bibliography of Basic Survival**

For survival buffs.

**An Annotated Bibliography of Basic Survival, Combat Survival, and Counterinsurgency**

Donald T. Krizek and Edward V. Saunders  
1963; 158 pp. ADTIC Publication G-110

**\$2.60**

from:  
Arctic, Desert, Tropic Information Center  
Aerospace Studies Institute  
Maxwell Air Force Base  
Alabama 36112

U. S. Army. *Camouflage: Basic Principles and Field Camouflage.* FM 5-20. Department of the Army. Washington 25, D. C. Jan. 1959. 253 p. incl. illus., maps, figs., tables, refs., index.

The latest publication prepared on the subject of camouflage and intended as a guide for military personnel on camouflage doctrine and on methods of applying camouflage in the field.

The manual covers the basic principles of camouflage; the factors of recognition; geographic factors affecting camouflage; and methods of camouflage. Methods for applying camouflage in the field are described and expedients are suggested for camouflaging the following items: individuals, weapons, vehicles, aircraft, anti-aircraft and field artillery, guided missile firing positions, installations, pioneer and hasty airfields, landing sites, bivouacs, supply points, field fortifications, and other objects and installations. In addition, information on camouflage nets and net sets, drape-type, including component parts listings and erection procedures is presented.

The manual also describes the basic principles and methods for the effective use of camouflage to deny essential target information to the enemy. The material presented is applicable to both nuclear and non-nuclear warfare.

# Learning

## ★ How to Parent

So many child psychology books leave an unsure new parent more anxious or even guilty feeling. This one builds confidence.

**How to Parent** is both a practicable review of child psychology and an excellent catalog of toys, books, records, equipment, parental survival, and inexpensive do-it-yourself materials and projects useful in a child's physical, emotional and intellectual development.

The text concentrates on the different stages of development from birth to six years, offering the most basic findings of behavioral science in relation to each stage, and usable advice on how to help a child structure his self-concept to become a self-regulating person. Most important, the author insists the application of these findings and advice be guided by the feel of childhood—a contact with the child within you that you once were, and that parents must have the wisdom to follow their own hearts, no matter what the "experts" say.

[Reviewed by Faye Kesey]

Note: When you get this book, disregard the publisher's remarks on the dust jacket. They are false.

**How to Parent**  
Fitzhugh Dodson  
1970

\$6.95 postpaid

from:  
Nash Publishing  
9255 Sunset Boulevard  
Los Angeles, CA 90069  
or WHOLE EARTH CATALOG

You may be able to toilet train a child who is less than a year old, but you are going to have to pay a psychological price for training that early. Personally, I don't think the price is worth it.

Let's be very clear: *you cannot spoil an infant.* Cuddle your infant as much as you want; you won't spoil him. Feed him as often as he's hungry; you won't spoil him. Sing and coo to him as much as you want; you won't spoil him. Pay attention to him as often as he cries; you won't spoil him. The best things that can happen to your baby, psychologically speaking, is to have as many of his needs gratified and to have as few frustrations as possible. His ego or sense of selfhood is too tender and immature to be able to cope with much frustration now. There will be plenty of time for life to teach him about frustrations when he is older.

Books are far inferior in effectiveness to what a mother can do to stimulate the language development of a child. Continue the "label the environment" game that you started in the stage of infancy. You can do this wherever you are with him. Point to objects in the house and name them for him. When you are riding in the car, you can point out and name objects that you are passing: truck, tractor, house, church.

We may say, "Now that was a bright thing to do, wasn't it?" or "How could you be so dumb?" or "Haven't you got any sense?" Each time we unleash one of these belittling statements we are chipping away at our child's self-concept.

Threats deal with the future, but children live in the present. Therefore, threats are useless in improving the future behavior of a child.

Mother is hurt and furiously accusatory: "Willie—you promised!" She doesn't know that promises are meaningless to children. A promise, like its older brother, a threat, deals with the future. But small children live only in the present. If a child is a sensitive youngster, extracting a promise from him will merely teach him to feel guilty if he breaks it. Or, if he is not so sensitive, it will merely teach him to be cynical, and substitute verbal behavior for true behavior change.

## DR. DODSON'S WHIZ-BANG, SUPER-ECONOMY PARENT'S SURVIVAL KIT

If you have skimmed over this entire list of books, your reaction right now may be: "Wow! I'd like to buy scads of those books, but my family budget won't stand it!" I have considered that very important financial factor and come up with the following list of thirteen paperback books which will form a basic home library for parents at the relatively modest cost (considering today's inflation) of only \$11.60 for all of them. Here they are:

1. *Baby and Child Care*, Benjamin Spock (Pocket Books), \$.95.
2. *How to Give Your Child a Good Start in Life*, Leland Glover (Collier, 1962), \$.95.
3. *The Intelligent Parents Guide to Raising Children*, Eve Jones (Collier, 1961), \$.95.
4. *How to Guide Your School-Age Child*, Leland Glover (Collier, 1965), \$.95.
5. *Between Parent and Child*, Haim Ginott (Avon, 1969), \$1.25.
6. *Child Behavior*, Frances Ilg and Louise Bates Ames (Dell, 1960), \$.60.
7. *Your Child's Play*, Arnold Arnold (Essandess Special Edition, 1968), \$.50.
8. *Play Therapy*, Virginia Axline (Ballantine, 1969), \$1.25.
9. *A Parent's Guide to Children's Reading*, Nancy Larrick (Pocket Books, 1969), \$.50.
10. *A Parent's Guide to Children's Education*, Nancy Larrick (Pocket Books, 1963), \$.50.
11. *Summerhill*, A. S. Neill (Hart, 1966), \$1.95.
12. *Accident Handbook*, Children's Hospital (Children's Medical Center [300 Longwood Avenue, Boston, Massachusetts], 1950), \$.25.
13. *A Parent's Guide to Better Baby-sitting*, Faye Cobb (Pocket Books, 1963), \$.50.

TOTAL COST: \$11.60

## Creative Playthings Community Playthings ★ Childcraft ★ Childlife EduVision

Five free catalogs of kid stuff. free

Creative Playthings Catalog

from:  
Creative Playthings  
Princeton, New Jersey

## Community Playthings Catalog free

from:  
Community Playthings  
Rifton, N. Y. 12471

Childcraft Catalog  
free

from:  
Childcraft Education Corp.  
P. O. Box 94  
Bayonne, N. J. 07002

## Childlife Catalog free

from:  
Childlife Play Specialties, Inc.  
1640 Washington Street  
Holliston, Massachusetts 01746

Edu Vision Catalog  
free

from:  
Edu Vision Co., Inc.  
682 Union Avenue  
Westbury, N. Y. 11590



### Hammer Ball™

Bright-colored wooden balls, hammered from the top, drop into the box and reappear in the chute below, ready to be replaced on top and pounded down again and again.  
1 lb. 8 oz. UT802 \$4.50

### Baby Pool Seat

The child sits comfortably in this pool seat, able to kick and splash in complete safety. Polystyrene foam with fabric suspension seat.  
4 lb. UP605M \$5.50



Items shown here are from the Creative Playthings Catalog.

## How Children Learn

This rambling series of innocent everyday happenings to a bevy of pre schoolers is described, digested, and given educational depth by an extremely observant and articulate educator, Mr. Holt. The great strength of his book is its readability. His use of preschooler learning situations is ingenious, since it is a common reference point to all teachers and parents. Anyone who doesn't see toddlers in a different light after reading this book probably ought to write a book himself.

[Reviewed by Carol Guyton Goodell]

**How Children Learn**  
John Holt  
1967; 192 pp.

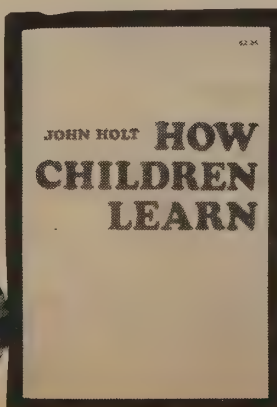
\$2.25 postpaid

from:  
Pitman Publishing Corp.  
20 East 46th Street  
New York, N. Y. 10017

or WHOLE EARTH CATALOG



My aim in writing it is not primarily to persuade educators and psychologists to swap new doctrines for old, but to persuade them to look at children, patiently, repeatedly, respectfully, and to hold off making theories and judgments about them until they have in their minds what most of them do not now have—a reasonably accurate model of what children are like.



One of my earliest recollections—actually by now I remember the telling of it rather than the event itself—was of playing in the park with a friend my own age—about three, perhaps four—who out of a clear blue sky hit me in the head with his toy shovel. We had been playing peacefully; I never understood, then or later, why he hit me. Perhaps it was this same overpowering urge to see what would happen.

Bill Hull once said to me, "If we taught children to speak, they'd never learn." I thought at first he was joking.

When, through such play and fantasy, the children had taken these materials into their minds, mentally swallowed and digested them, so to speak, they were then ready and willing to play very complicated games, that in the more organized and businesslike situation had left other children completely baffled. This proved to be so consistently true that the experimenters made it a rule always to let children have a period of completely free play with the materials, before asking them to do directed work with them.

Year after year we would see the same thing happen. Here would be a boy in the third or fourth grade who seemed so hopelessly clumsy, unathletic, and ignorant of all the rules and skills of baseball that it looked as if he could never learn to play. Two years later that same boy would be a competent and often an expert player—and many of them did almost all their playing at school. They learned, as I say, by watching the older boys who did it best, and trying to do what they did.

As a matter of fact, they learned, on the whole, much better than the boys at another school, at which I taught, where there was far more play space, more time given to sports, and where teachers tried to teach softball. The boys in this school spent a good deal of their sports time standing around watching while someone 'explained' something to them.

**How to Live with your Special Child**

*No sweet romance here. Written mainly for teachers & mainly about children suffering from various forms of weirdness, it speaks to us all. Peculiar & powerful. Refreshingly skipping the theory in this book, he tells you what to do to make kids act better. Simple. Far out. Offensive! I ain't sure why, but I do think everyone should read it; in fact I downright ache for revolution in our schools, he makes it seem so possible, and because*

I remember all those thousands of hours that I spent in grade school watching the clock, waiting for recess or lunch or to go home.

Waiting: for anything but school.

My teachers could easily have ridden with Jesse James for all the time they stole from me.

Richard Brautigan  
*Rommel Drives on Deep Into Egypt*

[Reviewed by Diana Shugart,  
Suggested by George von Hilsheimer]

**How to Live with your Special Child**  
George von Hilsheimer  
1970; 272 pp.

**\$7.50** postpaid

from:  
Acropolis Books  
Colortone Building  
2400 17th Street, N.W.  
Washington, D.C. 20009

or WHOLE EARTH CATALOG



There is very good evidence that reducing the pressures on childish and adolescent offenders reduces the incidence of their failures. For example, kids who drop out of school are *arrested* more often while they are in school. Dropouts do *not* commit more crimes than kids who remain in school. There are more juvenile crimes committed on school nights than on weekends. The evidence indicates that the successful middle class child who also commits crimes carries out much more destructive and serious offenses than dropouts and lower class offenders.

An ideal elementary classroom has at least two teachers, and often involves as many as ten at one time (by teachers of course I mean volunteers, aides and "real" teachers—all used to advance the transactions of learning and not just for janitorial, nursing and secretarial tasks). The number of students can be more than thirty or so. The room should be large and ideally has an easily accessible half-second-story for reading and solitary quiet study or withdrawal for sleep or sloth. ("Il dolce far niente"—sweet do nothing, is really *useful* in the class.) The main room is organized with formal foci—messy corners, neat book corners, production corners and display corners. A separated or semi-separated area for noisy, messy corners, neat book corners, production corners and display corners. A separated or semi-separated area for noisy, messy, destructive and constructive shop work, biology or what have you is also ideal.

We have been impressed by the almost total inability of troubling adolescents to express or accept positive emotions. We have been amazed to see how seldom such children touch themselves or others, at how little physical flexibility even the best of them have, at how limited is their ability at nonverbal kinetic communication, how poor their mimetic ability, and how congested their emotions. We are often sent children with histories indicating many rage experiences. We never see this behavior more than once or twice at our centers (probably because we simply restrain and ignore it in a very blunt and matter of fact way) and the few initiating times we do see it, it appears to us much more as display and histrionics than emotional expression. . . .

We believe that touching is so important that we actually run a "love-up" rota of staff in our elementary residential programs. Even the most wooden staff member is received with delight. Each child is tickled, rubbed, fondled, patted and kissed good-night with special words of affection and joy. I am always impressed at the willingness of otherwise tough and aloof teenage criminals to accept this "baby" treatment. Our experience is sufficiently convincing that we persist in touching those teenagers who strongly reject touching. The weaker staff is not encouraged to take on these kids but strong staff members will tease and ridicule the aloofness and pursue and persist in touching.

The important principle is to bring new experiences, or present old experiences from a new angle. Don't wall them in with words by talking about the experience, analyzing, or introducing. Encourage the children to talk, talk, talk, describe, describe, write, write, write after the experience. Don't grade the productions. What you are trying to teach is responsiveness, transaction with the environment, observation analysis, reportage. Accuracy, style and grammar will come. Very quickly too.

**The Lives of Children**

*For some months, when speaking to teachers or to anyone else concerned with education, I have said that while there were many recently published books on education (my own among them) that I thought they should read, if they felt they had time for only one it should be The Lives of Children. It is by far the most perceptive, moving, and important book on education that I have ever read, or indeed ever expect to. For while I hope that in years to come we may learn much about human growth and development that we do not now know, I doubt that any one book will advance our understanding as much as this one.*

*It describes the lives of twenty-three children in the small private school in New York in which Dennison taught, and which has since been disbanded. They were black, white, and Puerto Rican in equal proportions. All were poor, half were on welfare, and about half "had come to us from the public schools with severe learning and behavior problems." This school, spending no more money per pupil than the city's public schools, did not fail. The children got well, grew, learned.*

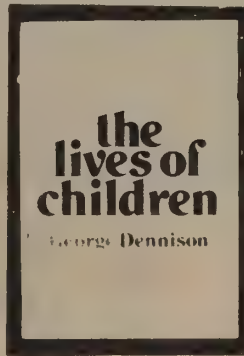
[Suggested and reviewed by John Holt. This review is excerpted, at John Holt's request, from his review in Oct 9 N. Y. Review of Books.]

**The Lives of Children**  
George Dennison  
1969; 308 pp.

**\$6.95** postpaid

from:  
Random House, Inc.  
201 East 50th Street  
New York, N. Y. 10022

or WHOLE EARTH CATALOG



. . . [the children's] self interest will lead them into positive relations with the natural authority of adults, and this is much to be desired, for natural authority is a far cry from authority that is merely arbitrary. Its attributes are obvious: adults are larger, are experienced, possess more words, have entered into prior agreements among themselves. . . .

When all this takes on a positive instead of a merely negative character, the children see the adults as protectors and as sources of certitude, approval, novelty, skills. In the fact that adults have entered into prior agreements, children intuit a seriousness and a web of relations in the life that surrounds them. . . . These two things, taken together—the natural authority of adults and the needs of children—are the great reservoir of the organic structuring that comes into being when arbitrary rules of order are dispensed with.

Difficult children can be induced to enjoy Basic English by giving them something pompously moralistic to translate; or first show them a translation of some pompous moralizing, then give them another to have a go at. Translating the ideas of politicians and educational philosophers is always great fun.

*Conditioned Acceleration of Responses by Relief of Aversion (CARRA).* We use CARRA with a simple electric stimulator. We tell the pupil that we are going to turn on a mild tingle and then increase it. We will turn it off when the pupil makes a new response to the category we are asking for. For example: "I want you to tell me something you might say to your mother when you wake up in the morning. Each time tell me something different."

When we get a response that is not a repetition we immediately turn the current off. It can be done without electric stimulation but no one seems to mind very much and it works a great deal more quickly. For many kids, switching on a red light seems to work just as well (inward kids who are quiet, with downcast eyes, and sullen kids mostly). For others, simply driving an answer with verbal encouragement and direction will work. The advantage of electric reinforcement is that it is simple, matter of fact, unavoidable, and does not require verbal skill on the part of the teacher or aide. Also we seem to build up a tolerance for electric stimulation which in general seems to correlate quite well with general stability in the nervous system. In addition, the conditioning model is more precise and we seem to get a spill-over of conditioning for anxiety relief and a sense of being in control of the anxiety-producing stimulus.

The routine goes only about five minutes and any category is stopped as soon as it becomes a bit sticky for the student to think of something new. We are not trying to punish the child or test him.

Charles Stack has been having Puerto Rican janitors (preferably with little or no English) bring teaching machines into cells with young criminals. The janitor gets it across that the machine is supposed to teach the kids. He also gets it across that since it is the machine's job to *teach*, if the kid makes a mistake the machine will give him a dime for having wasted his time.

Nearly everyone rubs their eyes at this point. *The machine gives the student a dime if the student makes a mistake* because the machine has not done its job and taught him. These young criminals do not work to make mistakes or to make dimes. No one has to con these kids into the advantages of knowing. They do quite well for themselves if the social consequences and structures of the *teaching* process are changed. Many of these hoods work for hours at a time on the machines and graduate from jail to college.

**Making the Human Garden Work**

BIOLOGICAL inventory and regulation. It is stupid if not immoral to fail a hypoglycemic patient by not regulating his glucose supply. His brain had better be able to function before we offer him the choice of setting his own bedtime, regulating his own diet or learning how to read. A remedial diet often tells the whole story.

BOUNDARIES that are firm, clear, consistent and real. The child *knows* what and whom he can depend upon. It really doesn't seem to matter very much if the boundaries are actually fair, although it is nicer if they are. Sometimes, as the farmer said, a muleheaded client requires an attention-getting device like a two-by-four applied suddenly between the eyes. Tough, honest language often does it. After gaining his attention we give him a list of things to do, and we say, "Choose one." (At last analysis about ten per cent of our students were mules.)

TIME to relax, regularize, recuperate. The patient is almost certainly under chronic high arousal, has difficulty sleeping, is quick to startle, overreacts and has a badly regulated metabolism.

A good deal of doing nothing is often the first prescription.

GOOD SLEEP.

COMPETENT people who are warm, touching, friendly.

Everything else is aesthetics.

Here we come to one of the really damaging myths of education, namely, that learning is the result of teaching, that the progress of the child bears a direct relation to methods of instruction and the internal relationships of curriculum. . . . To cite these as the effective causes of learning is wrong. The causes are in the child. When we consider the powers of mind of a healthy eight-year-old—the avidity of the senses, the finesse and energy of observation, the effortless concentration, the voracious memory—we realise immediately that these powers possess true magnitude in the general scale of things. . . . Why is it, then, that so many children fail? Let me put it bluntly; it is because our system of public education is a horrendous, life-destroying mess.

There is no such thing as learning (as Dewey tells us) except in the continuum of experience. But this continuum cannot survive in the classroom unless there is reality of encounter between the adults and the children. The teachers must be themselves, not play roles. They must teach the child, and not teach "subjects." . . . The continuum of experience and reality of encounter are destroyed in the public schools (and most private ones) by the very methods which form the institution itself. . . .

Jose's reading problem is Jose. Or to put it another way, there is no such thing as a reading problem. Jose hates books, schools, and teachers, and among a hundred other insufficiencies—all of a piece—he cannot read. Is this a reading problem?

A reading problem, in short, is not a fact of life, but a fact of school administration. It does not describe Jose, but describes the action performed by the school, i.e., the action of ignoring every thing about Jose except his response to printed letters.

My own demands were an important part of Jose's experience. They were not simply the demands of a teacher, nor of an adult, but belonged to my own way of caring about Jose. And he sensed this. There was something he prized in the fact that I made demands on him. This became all the more evident once he realized that I wasn't simply processing him, that is, grading, measuring, etc. And when he learned that he *could* refuse—could refuse altogether, could terminate the lesson, could change its direction, could insist on something else. . . . we became collaborators in the business of life. . . . It boils down to this. . . . we adults are entitled to demand much of our children. . . . The children are entitled to demand that they be treated as individuals, since that is what they are.

**Drownproofing**

*The product of most warnings about water is: "Well, I've fallen in the water, now I'm supposed to start drowning."*

*New program. "No need to drown." Sinkers, non-swimmers, cripples, children; cramped, exhausted, injured, no rescue in sight. "No need to drown."*

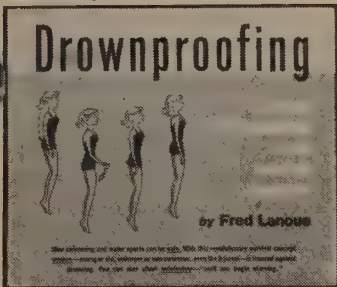
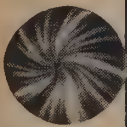
*The book is sufficient for you to learn or teach the techniques appropriate for floaters, sinkers, and sundry special circumstances. Good medicine for anxious parents. Teach your kids and yourself and stop worrying.*

**Drownproofing**  
Fred Lanoue  
1963; 112 pp.

**\$4.95** postpaid

from:  
Prentice Hall  
Englewood Cliffs, N. J. 07632

or WHOLE EARTH CATALOG \$3.66 from Blackwell's (see p. 79)



Panic makes you throw your head back, reach up, make gurgling noises, horrible faces and kick and wave your arms frantically. None of these moves will do you the slightest good. Now is the time to learn the following, because *this is what really makes drownproofing work:*

Whether your nose and throat are full of water from lips to stomach, the stroke or the kick will *always* get you to the surface. . . .

If you do it in the same manner as you had been doing it, if you blow out through your nose, with your lips clamped tightly together as you break the surface with another kick or stroke, whether air or water comes out, you will be somewhat relieved and you will be ready for the inhale.

If your eyes are open and if you inhale through your mouth, whether you end up with all air, half air and half foam, you will be better off, and if you continue the cycle, *no matter how much water you shipped*, things will get better much sooner than you think.

If this procedure is stuck to and mastered, 90 percent of those involuntary swallows of water will be forgotten three cycles (15 seconds) later. The other 10 percent may take 10 cycles to completely recover from, but if you force yourself to repeat the cycle properly, you are sure to be all right. What counts is that you get yourself out of trouble.



Scissors kick

★ **Humanitas Curriculum**

Some time this summer we are due to get a letter from an educator, beginning "Well, I see you people have swallowed von Hilsheimer, hook, line, and charisma." This letter we will ignore.

The letter we're waiting for is: "Well, I tried the Humanitas goodies on my kids, and . . ." This letter we will probably print.

Meantime, we're printing George von Hilsheimer's own remarks about Modern Reading:

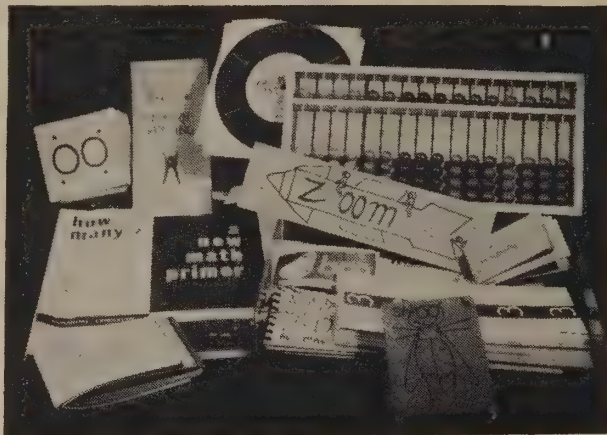
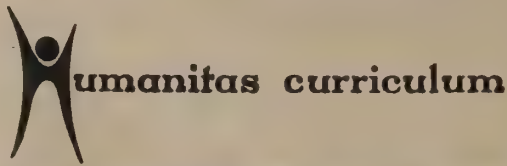
Our unbelievable MONEY BACK GUARANTEED first reading program (3 minutes' classes for six weeks and your weenie is reading Dr. Seuss, P.D. Eastman, or McGuffey, depending on your hangup—no failures yet, and no readiness criterion—slum kids, nonverbal amentated kids, all kinds of crazy kids, "normal" 4 year old, non reading 14 year olds, you name it. \$27.23.

Humanitas also puts out *How Many?*, a math primer (\$1.50), *A First Abacus* (and special abacus—price unknown), and a remarkable line of pamphlets on such subjects as "Eliminating the Smoking Habit", "The Self-Regulating Child", "How to Run an Effective Conference" and etc.

A further word about eating that introduces another topic. "Finish your beans or you can't have your dessert." Shoot that woman! In the first place you shouldn't be having a sugar base dessert. In the second, never, never, never, never reward a child for accomplishing necessary acts. "What a nice poopy. Here's a piece of candy for the good boy." Bang! One more customer for the laxative industry. "If you're quiet you can stay up another half hour." Wheel! Future struggles about bedtime.

Second, if you must work around a schedule make it clear that it is your convenience that demands it. Be consistent in that schedule and *don't bargain*. "I'll count to ten." "Well, ten more minutes." "If you, then I'll." Never make the schedule a function of your supposedly superior knowledge about your child. "You are hungry." "You have to go to the bathroom." "You are sleepy."

*The Self Regulating Child*



**MODERN READING**

PRIMERS	\$17.25
RECORDS (2) 33 1/2 RPM	5.99
TEACHING GUIDE	3.99
<b>TOTAL CLASS COST</b>	<b>\$27.23</b>

Humanitas Curriculum

from:  
Humanitas Curriculum  
A Division of Green Valley School, Inc.  
P. O. Box 606  
Orange City, Florida 32763

**Initial Teaching Alphabet**

As everyone knows, the English language is inconsistent. For instance, here are four different pronunciations of the letter A:

ape apple arm all.

I.t.a. eliminates all such inconsistencies by spelling with a separate symbol for each "a" sound:

æp appl arm aul

Eliminating contradictions in spelling and pronunciation makes learning to read and write a logical process. Anyone whose mind can grasp logic—and this includes three and four year olds—can learn to read with i.t.a. There are none of the complicated rules of the normal alphabet. Capitals in i.t.a. are just the regular size i.t.a. symbols written or printed a little larger. Each sound has its own symbol; there are 44 altogether.

After learning to read in i.t.a., the switch can be made to the conventional alphabet easily. The irregularities are not troublesome at this point, because the reader can read whole words at a time—not letter by letter—and can read for content.

I.t.a. is great for pre-school age children who want to read. At that age, kids get frustrated easily. The i.t.a. alphabet prevents the frustration by its consistency. We taught our 4 year old the sound of i.t.a. letters. Then we showed him how words could be made by blending sounds together. It took a while before he was able to blend the sounds by himself. But when that happened, he was then able to read.

I.t.a. is also good for teaching English to foreigners (many foreign languages also have one symbol or one group of symbols for each sound) and for remedial reading instruction. It is also a good tool for writing: once all the sounds of the symbols are learned, one can write anything he can say.

[Reviewed by Lora Ferguson]

þær wox næ wind tō blæ him nærer  
tō the tree sœ þær hœ stæð. hœ cōð see  
the huny, hœ cōð smell the huny, but hœ  
cōðn't kwiet reeþ the huny.

after a littl whiel hœ cauld doun tō yō.  
"Cristofer robin!" hœ sed in a loud  
whisper.

"hallœ!"  
"ie thiŋk the bees suspect sumþiŋ!"  
"whot sort ov thiŋ?"

"ie døen't næ. but sumþiŋ tells mee  
þat þær's suspifhius!"  
"perhaps þæ  
thiŋk that yō'r  
ifter þær huny?"

"it mæ bæe þat.  
yō never can tell  
with bees."

þær wox anuther littl sielens, and then  
he cauld doun tō yō agæn.  
"Cristofer robin!"  
"yes?"



**Cuisenaire Rods**

The first rod is a small wooden cube with a 1 centimeter side. The second is twice as long with the same cross section. The third is three times as long as the first. Each length has its own color. With these rods, a child can learn arithmetical operations and mathematical relationships even though he recognizes no mathematical symbols. (Children are capable of grasping mathematical concepts before they have the mechanical ability to write. Therein lies one of the great advantages of Cuisenaire rods.) For example, if a child puts the first (white) and the second (red) rods end to end he can see that together they are equal in length to the third (green) rod. Once he realizes that a white and a red always equal a green, he has learned something quite general about addition and equality. If, later, the numeral "1" is associated with the first rod, "2" with the second rod and "3" with the third, he will be in a position to grasp at once that  $1 + 2 = 3$ . But the rods have no absolute numerical value so that if the value "1" were assigned to the third rod rather than the first, the truth  $1/3 + 2/3 = 1$  would also be forthcoming as "proved" by the general rule that the child discovered with the rods.

What is happening here is that algebra (the general case) is being learned before arithmetic (specific cases), as logically, it should be.

This is undoubtedly one of the best pieces of teaching equipment ever invented. But it is important that you don't show children the truths that the rods demonstrate. They must be allowed to discover these themselves or it won't work.

[Suggested by Virginia Baker  
Reviewed by Jane Burton]

**Catalog free**

Basic classroom kit for 25 kids \$59.95 postpaid  
Cuisenaire Home Mathematics Kit \$12.50 postpaid  
from:  
Cuisenaire Co. of America, Inc.  
12 Church Street  
New Rochelle, N. Y. 10805  
Home Mathematics Kit available from  
WHOLE EARTH CATALOG

**The ITA Handbook for Writing and Spelling**  
Mazurkiewics and Tanyzer  
1964; 50pp.  
\$2.00 postpaid  
from:  
Initial Teaching Alphabet Publications, Inc.  
20 East 46th Street  
New York, N. Y. 10017  
or WHOLE EARTH CATALOG  
Free literature about i.t.a. is also available from:  
Foundation for Educational Technology  
World Building  
Silver Springs, Maryland  
20910

**discovering mathematical relationships with RODS**

Fig. 1  
Fig. 2  
Fig. 3  
Fig. 4  
Fig. 5

Cardinal  
Ordinal  
Composites  
Factors  
Division without a remainder  
Fractions  
Product  
Cross to represent product

**Children's Games in Street and Playground**

Suppose you were trying to replace war. Would you be interested in "games in which children may deliberately scare each other, ritually hurt each other, take foolish risks, promote fights, play ten against one, and yet in which they consistently observe their own sense of fair play." (dust jacket blurb). The games are not learned from adults but passed on through the generations of children. This study comes from England, which looks to have a much richer game cycle than American kids usually experience. A product of ten years' research, the book thoroughly describes the rules of play and the popularity of more than a thousand fascinating games.



**Children's Games in Street and Playground**

Iona and Peter Opie  
1969; 370 pp.

**\$9.50** postpaid

from:  
Oxford University Press  
16-00 Pollitt Drive  
Fair Lawn, N. J. 07140

or WHOLE EARTH CATALOG

Addi, addi, chickari, chickari,  
Onnie, poonie, om pom alarie,  
Ala wala whiskey,  
Chinese chunk.

One-erie, two-erie, tickerie, seven,  
Allabone, crackabone, ten or eleven;  
Pot, pan, must be done;  
Tweedle-come, tweedle-come, twenty-one.

**KINGY**

This fast-moving game has all the qualifications for being considered the national game of British schoolboys: it is indigenous, it is sporting, it has fully evolved rules, it is immensely popular (almost every boy in England, Scotland, and Wales plays it), and no native of Britain appears to have troubled to record it.

"Kingy" is a ball game in which those who are not He have the ball hurled at them; without means of retaliation, and against ever-increasing odds, an element that obviously appeals to the national character. Anyone who is hit by the ball straightway joins the He in trying to hit the rest of the players. Those who are throwing may not run with the ball in their hands, but pursue their quarry by passing the ball to each other. Those being thrown at may run and dodge as they like, and may also punch the ball away from them with their fists. For this purpose players sometimes wrap a handkerchief round their hand, as "fisting" the ball can be painful. The game continues until all but one have been hit and are "out," and this player is declared "King." When the contestants are skilled (and boys of fifteen and sixteen readily play the game), the ball gets thrown with considerable force; it shoots back and forth across the street or playground, and the game can be as exciting to watch as a tennis match.



As befits a sport in which so much energy is expended, the preliminaries are sometimes wonderfully ritualistic. At Bishop Auckland, for instance, one person shouts "King" to start the proceedings, and two others follow up by crying "Sidey." The players then form a circle round the King, with the two who shouted "Sidey" standing on either side of him like heirs-apparent. The players making the circle stand with legs apart, each foot touching the foot of their neighbour on either side. The King picks up the ball and bounces it—three times in the ring, and then lets it roll. Everyone watches to see whose legs it will go through. If it does not roll through anybody's legs the King picks it up and bounces it again, and if his second turn fails he has a third try. If the ball still has not passed between anyone's legs, he hands it to the first sidey (the "foggy-sidey") who, as necessary, repeats the performance—for the moment the ball does pass between someone's legs that person is "on," and everyone runs. At the end of the game whoever becomes King takes the place in the centre of the ring to start the next game, and the first two people to shout "Sidey" stand beside him.

**The Rules.** Although the ways of choosing the chaser are numerous, the game itself is played with little variation. Reports from more than fifty places have been so similar, it is as if a mimeographed sheet of rules was carried in every grubby trouser pocket. Such a set of rules would read as follows:

1. The number of players shall be not less than six or more than twenty: the best number is about twelve.

2. The boundaries of the game shall be agreed on before the game begins. A flat area of 20 x 20 yards, or a length of street of about 20—30 yards, depending on the number of players, is ample.
3. One person shall be chosen chaser, and the game shall start immediately he is chosen. The chaser shall, however, bounce the ball ten times before he throws it at anyone, to give the players time to scatter.
4. The chaser may not run with the ball; but while he is the sole chaser he may bounce the ball on the ground as he runs.
5. A player shall be "out" when the ball hits him on the body between his neck and knees (or, as may be agreed, between his waist and ankles). It shall be determined beforehand whether a hit shall count if the ball has first bounced on the ground or ricocheted off a wall; or whether only a direct hit shall count.
6. As soon as a player is "out" he shall assist the chaser in getting the other players out.
7. When there are two or more chasers they may not run with the ball, but may manoeuvre as they wish by passing it to each other.
8. Players being chased may take what action they like to avoid being hit by the ball, including "fisting" it, i.e. punching it away with their fist. They may also pick up the ball between their fists and chuck it away.
9. Should a chaser catch the ball when it has been "fisted", or touch a player while he is holding the ball in his fists, the player shall be "out."
10. Should a player kick the ball, or handle it other than with his fists, he shall be "out."
11. Should a player run out of bounds when trying to avoid being hit by the ball he shall be "out."
12. The last player left in shall be "King," and shall officiate at the selection of the next chaser.

Some times I kill Some One and Some One kills me but my'men release me and I release them Back.

**Split the kipper**

In this contest, which, as one boy admitted, "takes quite a lot of nerve, the two adversaries stand facing each other a yard or so apart, with their feet together. The first boy throws a knife, preferably a sheath knife, so that it sticks in the ground not more than twelve inches to the left or right of one of his opponent's feet. The other boy, without moving his feet, plucks the knife out of the ground, and moves his nearest foot to the place where the knife went in. In this position he makes a return throw (most boys specify that the knife must be thrown by the blade), and the first boy, likewise, moves his foot to where the knife stuck in. However, should the point of the knife not stick into the ground, or should it stick in more than twelve inches away from the person's foot ("if more than a span," says a Durham lad; "if over two knife lengths," says a Fife boy), the player does not have to move his foot, and the throw is lost. The object of the game is to force the opponent to stretch his legs so far apart that he cannot move them further, and gives in, or falls over while attempting the stretch. In this form "it is a short game and suitable for short breaks at school." But in many places, particularly in the north, a player is allowed to "split" his opponent. If a person's legs are uncomfortably wide apart, and his opponent's likewise, or at least moderately open, he may attempt to throw the knife so that it sticks between his opponent's legs, and if he succeeds in this, may close his own. Usually "splitting" is allowed only once, twice, or three times, otherwise the game can "go on for ages". Alternatively in Scotland, including the Isles, if the knife sticks between the opponent's legs, that person has to turn round, and thereafter throw less surely, and undoubtedly more dangerously, with his back to the other player.

This game, or ordeal, which is sometimes played with a dart, iron spike, or geometry dividers, has become popular only during the past decade.

**Piaget**

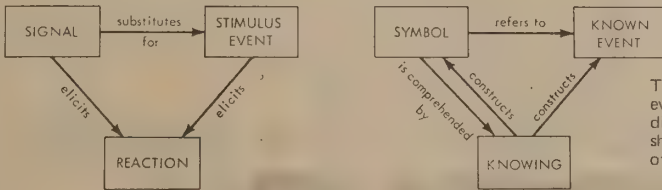
**Piaget and Knowledge: Theoretical Foundations** Hans G. Furth

Piaget's work is so extensive and so unique that no one's thought up a good name for it yet. There's Behavior Theory, Psychoanalysis, Personality Theory, etc. . . . and Piaget. This book is an introduction to his thought and a good one. He's heavy, and while he covers many aspects of growing up, it's the development of the mind that really intrigues him and he tends to see other areas of growth in the light of what he has learned about mental processes. And that's an incredibly rich bunch of data around which he has erected a formidably tight theory. This book has the advantage of including many of the original observations that led Piaget to his conclusions, and it presents readings both from Piaget's early and recent work.

**The Psychology of the Child** Piaget & Inhelder

This is Piaget's own summary of his life's work, and it is a packed, concise little volume, but somewhat lacking in the humor and color of his earlier, less organized writings. Clearly an intellect of some proportion, he presents the end result, the conclusions he has reached, and does so in grand style. Hopefully one might be intrigued enough by his ideas to read some of his earlier stuff and find out how he got there. He's so good, nobody argues with him—there's no issue about whether he's right, only about whether or not he's really covered it all.

[Reviewed by Diana Shugart]



Sign relations: The difference between signals and symbols.

It has long impressed me that Piaget deals with biological intelligence and not with the intelligence referred to in the studies of individual differences or learning theories to which most of us are accustomed. I am unable to see how one can feel at home with his model of intelligence unless one sees intelligence as a prolongation of organic development. Without a biological basis, Piaget's formal logical model becomes what to many it unfortunately appears: a cold, artificial system of ratiocination that has no relevance to full-blooded real life. In like manner, a notion like equilibration must remain incomprehensible if one's gaze extends no further than the external factors that influence the growth of intelligence. And if equilibration is an internal factor, as Piaget stresses, it surely does not start with the birth of the human baby.

For Piaget, the operative process by which we construct reality-as-known and the symbolic process by which we re-present known reality are functionally different and possess a different reality status. A corresponding distinction is proposed for Piaget's term interioriser: while symbols derive from a real interiorization of accommodated external actions, the functional interiorization of operations refers to the increasing dissociation between general form and particular content, not to something that was first overt and then becomes covert. In contrast to current representational theories of knowledge, Piaget's model is unique in incorporating the two competing and often confused meanings attached to the word "representation."

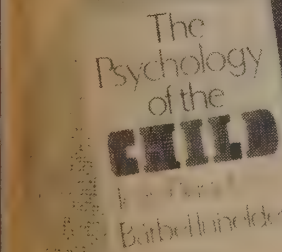
Since, for Piaget, perception without operative knowledge is inconceivable, it follows that perception is simply one manifestation of intelligence in its total development.

The young subjects behave as if they were expecting to see everything, even with aberrant centerings, whereas the adults look more actively, directing their exploration by means of a strategy whereby the shifts of fixation obtain a maximum of information with a minimum of loss.

Symbolic play is the apogee of children's play. Even more than the two or three other forms of play which we shall discuss, it corresponds to the essential function that play fulfills in the life of the child. Obligated to adapt himself constantly to a social world of elders whose interests and rules remain external to him, and to a physical world which he understands only slightly, the child does not succeed as we adults do in satisfying the affective and even intellectual needs of his personality through these adaptations. It is indispensable to his affective and intellectual equilibrium, therefore, that he have available to him an area of activity whose motivation is not adaptation to reality but, on the contrary, assimilation of reality to the self, without coercions or sanctions. Such an area is play, which transforms reality by assimilation to the needs of the self, whereas imitation (when it constitutes an end in itself) is accommodation to external models. Intelligence constitutes an equilibration between assimilation and accommodation.

A little girl who while on vacation had asked various questions about the mechanics of the bells observed on an old village church steeple, now stood stiff as a ramrod beside her father's desk, making a deafening noise. "You're bothering me, you know. Can't you see I'm working?" "Don't talk to me," replied the little girl. "I'm a church."

A first general observation is that the child's whys bear witness to an intermediate precausality between the efficient cause and the final cause. Specifically, these questions seek reasons for phenomena which we see as fortuitous but which in the child arouse a need for a finalist explanation. "Why are there two Mount Saleves, a big one and a little one?" asked a six-year-old boy. To which almost all his contemporaries, when asked the same question, replied, "One for big trips and another for small trips."



**The Psychology of the Child**  
Jean Piaget and Bärbel Inhelder  
1969, 173 pp.

**\$5.95** postpaid

from:  
Basic Books, Inc.  
104 Park Avenue South  
New York, N. Y. 10016

or WHOLE EARTH CATALOG

**Piaget and Knowledge: Theoretical Foundations**

Hans G. Furth  
1969; 270 pp.

**\$5.95** postpaid

from:  
Prentice-Hall, Inc.  
Englewood Cliffs, N. J. 07632

or WHOLE EARTH CATALOG

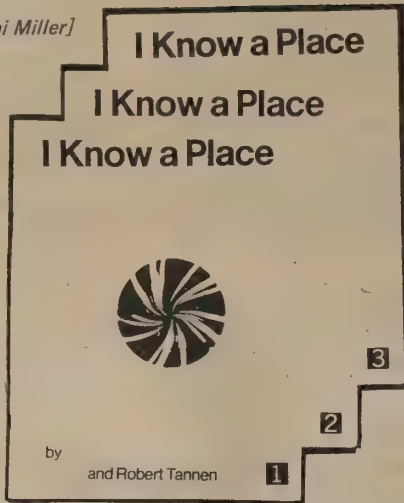
Piaget and Knowledge: Theoretical Foundations

The Psychology of the Child

**I Know A Place**

Good simple idea, good simple book; pure mirror: you write and illustrate a book whose subject (not object) is you. Kids groove. Me too.

[Suggested by Joni Miller]



**I Know A Place (Vols. 1,2,3)**

Robert Tannen  
1969; 134 pp.

**\$3.40** postpaid (20% off to schools) per set

from:  
City Schools Curriculum Service, Inc.  
60 Commercial Wharf  
Boston, Mass. 02110 [Spanish edition is forthcoming.]

or **WHOLE EARTH CATALOG**

I know a person. A picture of this person is on the next page.

The name of this person is

The person was named

because

- Looking and Seeing**
1. Pattern and Space
  2. The Development of Shape
  3. The Shapes We Need
  4. The Shape of Towns

This series of 4 books was designed for use in British schools. They are absolutely first-rate.

As befits such books, they are filled with excellent illustrations and the text is very explicit. While it would seem to have the 12-16 year olds in mind, the books are packed with stuff of interest to anyone who wants to know about the visual world and isn't too proud to read simple English.

The author's view is,

We have learnt to exert a certain amount of control over our world, over our surroundings and the lives we lead within them. But although we have gained much we have probably lost even more. We no longer possess the knowledge and the understanding to judge the things we make: our houses and factories, our implements and machines, our cities and roads. Because of this failure in judgement, we often find ourselves surrounded with such ugliness as would have horrified men of past ages. . . . It is now more important than ever that we should learn to understand the basic laws of the world around us, the man-made world and the world of nature. (bk. 1, p. 2)

The illustrations are widely drawn, but are consistently relevant to man. Traditional crafts, modern building, technology, graphics, ergonometics, D'Arcy-Thomson-like discussion of structure, social influences and industrial design are all dealt with.

One small foible—not all the illustrations are fully identified, except in the teachers' handbooks which are put out as small companions to the 4 books. These also deal with the short exercises which are set at the end of each section in the books.

[Suggested and reviewed by David and Lyn Roessler]

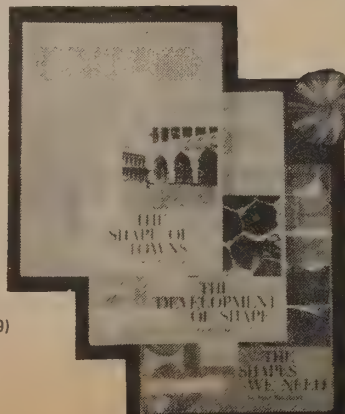
**Looking and Seeing Books 1-4**  
Kurt Rowland  
1966; 130 pp. each

**\$4.50** each postpaid

from:  
Van Nostrand-Reinhold  
450 West 33rd Street  
New York, N. Y. 10001

or **WHOLE EARTH CATALOG**

\$1.56 from Blackwell's (see p. 79)



**Follow Through Project**

Education Development Center has far the best list we've seen of recommended instructional aids, materials, and supplies for the primary grades. Prices and suppliers are given with the items. The list (36 pp.) apparently is free.

[Suggested by John Holt]

from:  
Follow Through Project  
Educational Development Center  
55 Chapel Street  
Newton, Mass. 02160



The same author has another excellent series, for younger children: 48 pp. each.

**Learning to See (Vols. 1-3)**  
1968

**\$1.95** each (75¢ workbook for each available)

from:  
Van Nostrand Reinhold  
450 West 33rd Street  
New York, N. Y. 10001

or **WHOLE EARTH CATALOG**

**Pioneer Posters**

Cheap, good, educational, weird. They're a whole other kind of history than book history and better posters than most posters. Immense variety.

**Catalog**

**\$ .10**

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Pioneer Historical Society  
Harriman, Tennessee 37748

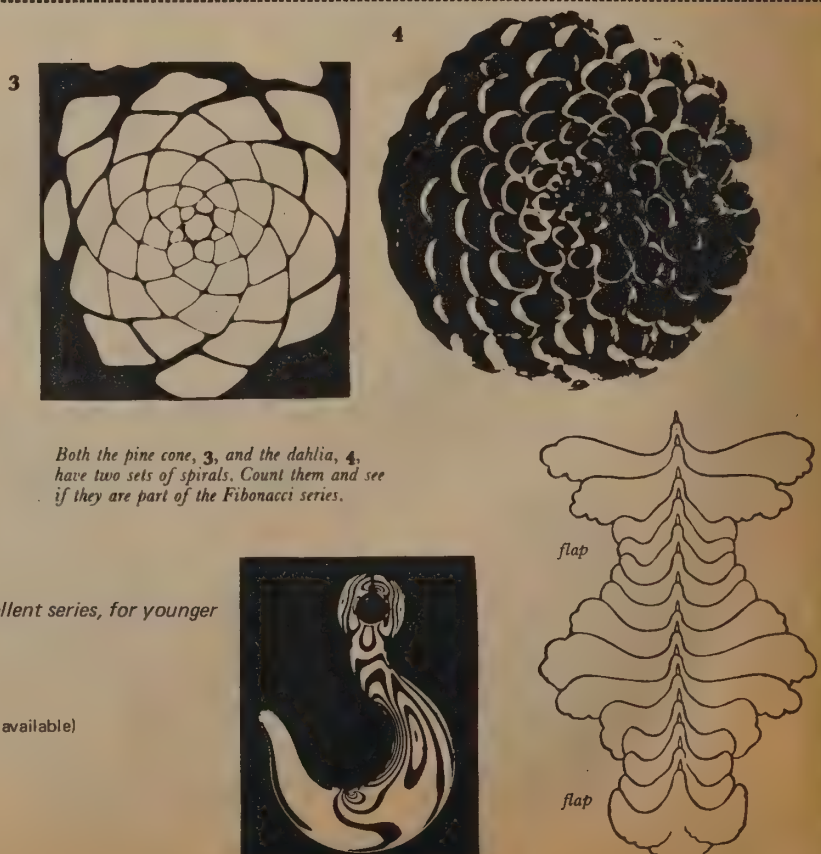


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- C164—STAR SPANGLED B Rare 15¢
- C165—NORMON BROADSH strations—circulated
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- C168—GUSTERS LAST ST white, pat. medicine
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- C171—BROADSIDE—dated rare 65¢
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- C173—AUCTION POSTER—

**A GRAND EXHIBITION**  
OF THE EFFECTS PRODUCED BY INHALING  
NITROUS OXIDE, EXHILERATING, OR  
**LAUGHING GAS!**  
WILL BE GIVEN AT *The Mason Hall*  
Saturday **EVENING, 15<sup>th</sup>** 1846.

50 GALLONS OF GAS will be prepared and administered to all in the audience who desire to inhale it. MEN will be invited from the audience, to protect those under the influence of the Gas from injuring themselves or others. This course is adopted that no apprehension of danger may be entertained. Probably no one will attempt to fight. THE EFFECT OF THE GAS is to make those who inhale it, either LAUGH, SING, DANCE, SPEAK OR FIGHT, &c. &c. according to the leading trait of their character. They seem to retain consciousness enough not to say or do that which they would have occasion to regret. N. B. The Gas will be administered only to gentlemen of the first respectability. The object is to make the entertainment in every respect, a genteel affair. Those who inhale the Gas once, are always anxious to inhale it the second time. There is not an exception to this rule. No language can describe the delightful sensation produced. Robert Southey, (poet) once said that "the atmosphere of the highest of all possible heavens must be composed of this Gas." For a full account of the effect produced upon some of the most distinguished men of Europe, see Hooper's Medical Dictionary, under the head of Nitrogen.

didate—woman—official  
s yet interesting list of  
ston for London, picture  
l of illustrations; chart  
then but humorous now  
ception 15¢  
it 20¢, old scarce 20¢  
t, men, women filling  
ns—illustrated—15 1/2 x  
100—very scarce 20¢  
rated, 22 1/2 x 5 1/2 50¢  
b, 14 1/2 x 11 1/2 30¢  
184—\$15. week for lead-  
two" 25¢  
it rated, advertises salve,  
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yes 1862, 4 pages with-  
luty of Ghent—historical  
pn's last letter—stirring  
N POSTER—shows Clevel-  
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Both the pine cone, 3, and the dahlia, 4, have two sets of spirals. Count them and see if they are part of the Fibonacci series.

**Golden Handbooks**

I think the handbooks and nature guides from Golden Press are wonderful, and by no means just for kids. They're economical in size and cost, intelligently researched and edited, well illustrated in color, thoroughly indexed with good bibliographies. In any of their subject areas, I'd start with the Golden book.



**Weather**  
Paul E. Lehr, R. Will Burnett, Herbert S. Zim  
1957, 1965; 160 pp.

**Guide to Fresh and Salt Water Fishing**  
George S. Fichter and Phil Francis  
1965; 160 pp.

**Sky Observer's Guide**  
R. Newton Mayall,  
Margaret Mayall,  
Jerome Wyckoff  
1959, 1965; 160 pp.

**\$1.25** each, postpaid

from:  
Golden Press Division  
Western Publishing Co., Inc.  
1220 Mound Avenue  
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or **WHOLE EARTH CATALOG**

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| Gamebirds                   | Sea Shells of North America |                                  |                               |
| Zoology                     |                             |                                  |                               |

**Seasonal Lag**

August is hotter than June even though the sun is more nearly overhead and the day is longest on June 22. In terms of solar radiation reaching the earth, May, June, and July should be our warmest months. But June, July, and August actually are. Why?

During the year the earth, as a whole, loses precisely the same amount of heat it receives from the sun. But as the sun moves north in spring, our part of the earth gains heat faster than heat is lost. On June 22 it is receiving maximum solar radiation. The heat gain continues to exceed heat loss until maximum warmth is reached, usually in late July. Heat gain continues to exceed heat loss, at a diminishing rate, until about August 31. Then our part of the earth starts to lose heat faster than it receives it, and begins to cool down. The process is like starting a fire in a stove: the roaring fire heats the room slowly, but the room will stay warm for a while after the fire has died down. The same heat lag accounts for the fact that the warmest time of day is usually about 3 p.m.—not noon, when the sun's rays are most intense.

*Weather*

**Weather will generally remain fair when:**

The wind blows gently from west or northwest (p. 66).  
Barometer remains steady or rises (pp. 85-88).  
Cumulus clouds dot the summer sky in the afternoon (p. 20).  
Morning fog breaks or "burns off" by noon (evidence of clear sky above).

**Rainy weather or snow may come when:**

Cirrus clouds thicken and are followed by lower clouds (p. 88). (Particularly true if barometer is dropping.)  
There is a ring around the moon (pp. 17 & 88). (Particularly true if barometer is dropping.)  
Puffy cumulus clouds begin to develop vertically (p. 20).  
Sky is dark and threatening to the west (p. 85).  
Southerly wind increases in speed with clouds moving from west (p. 85).  
The wind—particularly a north wind—shifts in a counterclockwise direction—that is, from north to west to south (pp. 85-88).  
The barometer falls steadily (pp. 85-88).

**Weather will generally clear when:**

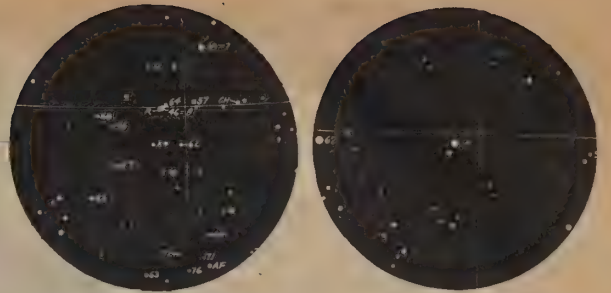
Bases of clouds show steady rise to higher types (p. 85).  
The wind—particularly an east wind—shifts to the west (p. 85).  
The barometer rises rapidly (pp. 85 and 88).

**Temperature will usually fall when:**

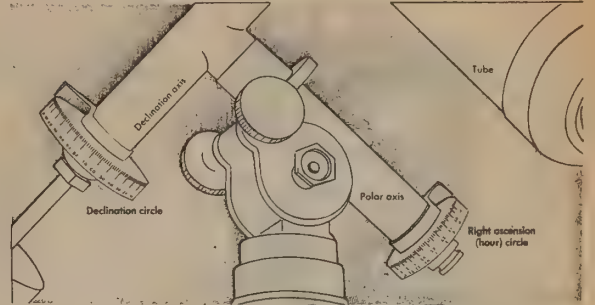
Wind blows from—or shifts to—north or northwest (p. 85).  
Night sky is clear and wind is light (pp. 9 and 14).  
The barometer rises steadily in winter (p. 85).

**Temperature will usually rise when:**

Wind is from south, particularly with cloud cover at night or clear sky during the day (pp. 9 and 88).

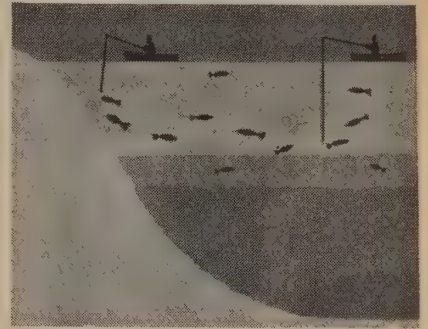


**Effect of increasing power:** At left is a 7° field in Cygnus as seen with 7x50 binoculars. At right, centered on the same star, is the reduced and inverted field seen through a small telescope at about 35X. Numbers on map indicate magnitudes of stars (decimal point before last digit omitted).



**Setting circles:** With these, a telescope is easily sighted.

*Sky Observer's Guide*



In summer, the surface water warms to well above 39.2°F, and floats on the heavier water below. Mixing ceases, and lake stratifies into 3 layers. Fish are found in warm top layer, which is rich in oxygen, and a few in or near the middle layer, a zone of rapidly descending temperature. The bottom layer is cold and low in oxygen.

*Fishing*

**HOW TO SURF CAST**

Before attempting a cast with a revolving-spool surf reel, wet your line. This prevents it from burning your thumb on the cast. Shift reel into free spool and put thumb firmly on the spool. Let out 2 or 3 feet of line, and hold the rod pointed low opposite the direction of your cast, the sinker resting on the ground. Now bring the rod up with a powerful overhead sweep, pulling downward with your left hand and pushing upward with your right. As the rod comes up past the vertical, ease your thumb pressure and let the spool turn. Let the line run out under your thumb; removing your thumb will cause a backlash. As the sinker hits the water, thumb spool hard. Surf spinning is done with same motions, using forefinger instead of thumb to control line.

**American Boys Handy Book**

Dan Beard's American Boys Handy Book was first published in 1882. Out of print for a long time, Tuttle has finally reprinted it. This is barefoot-boy-with-cheek-of-tan stuff, detailed on how a boy may make his own world. Extraordinary book, highly recommended for lanky schools or communities, especially if woods are handy.

[Suggested by Arthur Brand]

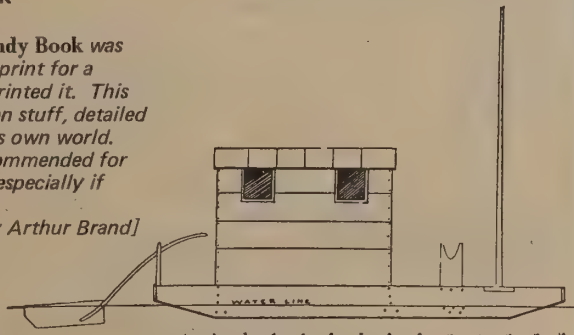


FIG. 81.—Side View of Flat-Boat.

Set a seat in front of the rowlock with a hole in it for the "jack-staff" to pass through. The jack-staff should be made so that it can be taken out and put in at pleasure.

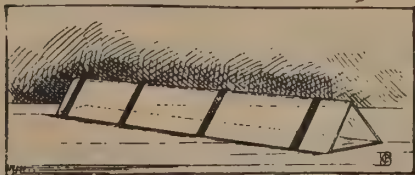


FIG. 213.—Kaleidoscope.

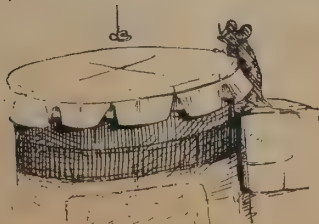


FIG. 116.—A Mouse Trap.

**Fieldbook for Boys and Men**

The Scouts continue their tradition of excellent feedback from an increasingly enormous membership. The Second Edition (1967) of the Fieldbook may well be the best value around. Of course, the context is short term camping out in the continental U.S., but much more is afoot. In taking us sure-handedly from the root-hog-or-die survival situations through toward gourmet ecology, the Fieldbook shows how far we've come and certainly what to do next. The spirit of the Boer War appears to be giving way to that of enlightened naturalism (don't go blazing trees—the landowner will never have us back). Full of recipes, checklists, buying guides, patterns and plans, close-up photographs in how-to-do-it sequence. If you'll need to know something, it's there.

Having put us at home outdoors, the book opens up into biology, geology and astronomy, and what to do about them. I especially like two sections: one has pictures of wild plants to eat where you're starving to death, and the page that tells you not to apply the tourniquet except as a last resort.

[Reviewed by Dave Guard  
Suggested by Eugene Schoenfeld]

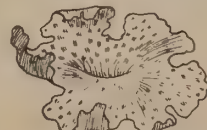
**Fieldbook for Boys and Men**  
Boy Scouts of America  
1967; 565 pp.

**\$1.95**

from your local Boy Scout Dealer  
or  
Publication Services, B.S.A.  
New Brunswick, N. J.

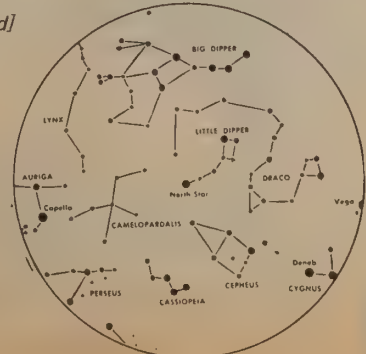


No time to wait to bring victim to shore. Start rescue breathing immediately. Tilt victim's head far back. Cradle his head with one hand and grasp his jaw with the other. Open your mouth wide and take a deep breath. Blow air into the victim through nose or mouth. Keep it up as you bring him to shore.



Rock Tripe (*Gyrophora dillenia*) can be scrambled like egg in a little water or fat.

Nosebleed is usually from a small vein in the middle partition of the nose. Fold a clean piece of paper into a pressure pad and tuck it under your upper lip. If the blood continues to flow, add to the thickness of the pad and press your index finger across your upper lip.



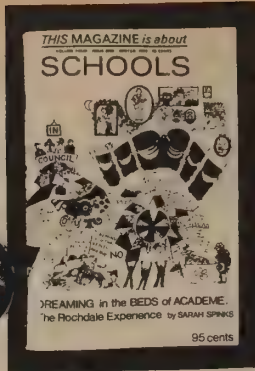
## This Magazine is about Schools

and it's better at it than anyone. Funky and alive and intelligent and youthful—and probably thrifty, brave and reverent. Frontier cream.

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\$3.50 /year (4 issues)

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This Magazine is about Schools  
56 Esplanade Street East, Suite 301  
Toronto 215, Ontario, CANADA



### "The Risk of Being a Social Scientist in Canada Is that One May Die Laughing."

The Coach House represents what Rochdale was striving for. It moved into an old garage in a back lane behind the building, with the first floor housing all the old wooden trays of small metal types and a different assortment of presses. In the centre is a designing area with layout desks, plastic triangles and paraphernalia. The ceiling is low, the walls are painted in bright colours and all over are posters, poems and postcards, some dug up and copied from old art books at the Central Library. Long-haired, bespectacled Rochdalers walk around, setting type, making plates—with a sense of order and neatness that defies the categorization of sloppy hippies. There is a quiet deference to Stan Bevington, the man who started the Press. He wanders about in his blue denim smock, and usually answers questions with "Well, try it. What do you think will happen?" Or he'll startle you by suddenly looking at the tube of ink you're using and the paper you're about to print on, saying, "The acid content of that paper is much too high. We've been given a bum lot of paper." And sure enough a week later, the load of paper will come back from Domtar or some other company with profuse apologies.

#### HOW TO SOFTEN YOUR HARD SCHOOL

1. **USE THE CORRIDORS.** Sell the steel lockers for scrap and use the money to buy cushions. Scatter the cushions around the corridors and let the students lie around on the floor. Have the floor cleaned very seldom but leave brooms about.
2. **TAKE ALL THE AV EQUIPMENT OUT OF THE STOREROOM AND PUT IT IN THE CORRIDORS.** Let the students use it when they feel the need for it. Let them break projectors, tape-recorders and viewers. Let them take machines home, steal tapes.
3. **HIRE A XEROX MACHINE AND PUT IT IN THE CORRIDOR.** Place no restrictions whatever upon its use. Find a kid willing to keep it running. Put a thermofax copier in the corridor too. With a mountain of paper and acetate.
4. **OPEN UP THE LIBRARY.** Take the doors off their hinges. Roll up the carpet and sell it. Let the students cut up the books with scissors. Provide scissors, paste, paper. With the money provided by the sale of the carpet, buy:
  - a. A bucket full of magazines.
  - b. A bucket full of comics.
  - c. A bucket full of newspapers.
  - d. Several incomprehensible thick medical tomes. Try McAlush, Toronto.
  - e. A number of books in Chinese, Japanese, Sanskrit and other languages.
  - f. A barrow-load of old books from the Old Favorites Bookstore, Toronto.
  - g. Photographs, maps, geological plans, blueprints, research papers.

*Going from the sunshine into the shade during a forest run, is like leaving a few words of twigs, and entering an eucalyptus lullaby.*



Photo: Tamio Wakayama

#### HOW TO HARDEN YOUR SOFT SCHOOL

1. **ESTABLISH A SYSTEM FOR SUPPLYING THE SCHOOL WITH MATERIALS.** On several occasions I have walked into a free school and been bitterly disappointed by the lack of materials. No school dedicated to making a decent mess should open its doors before it has obtained two truck loads, say 5 tons, of begged, borrowed and stolen information in the shape of string, glue, magnets, records, magazines, books, paints, test-tubes, chemicals, transistors, advertisements, felt pens, catalogues, newspapers, fossils, rocks, microscopes, herbs, wire, acetate, slide-rules, typewriters, tapes, film stock, stuffed owls, old pieces of machinery, cloth, thread, animals, bones, fishing flies, photographs, paintings, slides and films. Treat information like water from a tap.
2. **PUT YOUR FINANCES UPON A SOUND FOOTING.**
3. **ORGANIZE A FEW BOOKS.** Wade into the sea of information, clear a few shelves, and arrange thirty reference books in alphabetical order. Stick numbers on their spines, stamp them **NOT TO BE REMOVED** and chain them to the shelf. While you are in the mood, padlock a few doors and windows.
4. **MAKE A HARD ROOM.** Set aside at least one room to represent the organized side of life. If you can afford it, build a laboratory with identical stools, gas taps, electrical outlets and small sinks for washing retorts. Have a ten-week course in the laboratory for which interested students have to sign in advance and attend at regular times. If you have no science teacher, immediately appoint a meticulous chemist.
5. **STOP CHOOSING NEW STUDENTS** to fit the community. The next person whom you choose should be unlike anyone else you've ever had before.

## Teaching As a Subversive Activity

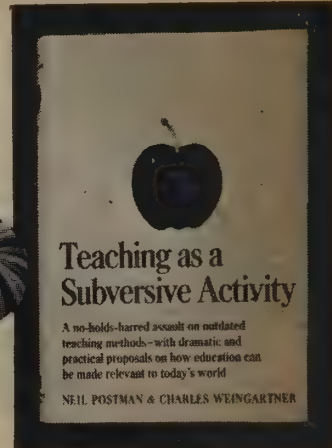
You may have noticed that schools are society's goat just now, and the blame machine revs on and on. The authors of this handy de-crisis book take a nice clean no-blame revolutionary approach to things: what works this minute and doesn't work this minute. In their experience (high-school), instruction in authoritative subject matter doesn't work very well. What does work is an experience-based inquiry approach to learning to learn and learning to selectively un-learn: i.e. basic survival strategy in an environment of change. What's nice is they aren't just threatening: they have gathered and published a strong collection of technique.

Teaching as a Subversive Activity  
Neil Postman and Charles Weingartner  
1969; 219 pp.

\$5.95 postpaid

from:  
Delacorte Press  
750 Third Avenue  
New York, N. Y. 10017

or WHOLE EARTH CATALOG



The new education, in sum, is new because it consists of having students use the concepts most appropriate to the world in which we all must live. All of these concepts constitute the dynamics of the questing-questioning, meaning-making process that can be called "learning how to learn". This comprises a posture of stability from which to deal fruitfully with change. The purpose is to help all students develop built-in, shockproof crap detectors as basic equipment in their survival kits.

What we confront, at this juncture, is a most difficult problem in education: helping students to unlearn much of what they "know." Josh Billings said it almost a century ago: "The trouble ain't that people are ignorant; it's that they 'know' so much that ain't so." What are some of the things these students know that "ain't so?" Well, for example, they "know" that 1) the more "content" a person "knows," the better teacher he is; 2) that "content" is best "imparted" via a "course of study"; 3) that "content" is best kept "pure" by departmentalizing instruction; 4) that "content" or "subject matter" has a "logical structure" or "logical sequence" that dictates how the "content" should be "imparted"; 5) that bigger schools are better than smaller schools; 6) that smaller classes are better than bigger classes; 7) that "homogeneous grouping" (with students "grouped" on the basis of some real or fancied similarity) makes the learning of subjects more efficient; 8) that classes must be held for "periods" of about an hour in length, five days a week, for about 15 weeks in order for a "course" in a "subject" to happen.

It comes as a shock to the students that there is no evidence to support any of these contentions. On the contrary, there is massive evidence to confute them. It takes some doing, however, to help students to recognize the fact that most of their deeply internalized assumptions about "education" are based on misinformation rather than information.

The instructor brought to class a black attaché case. He told the students that inside the case there was a small computer which was capable of producing the answer to any question anyone asked. "What questions," he asked, "do you want it to answer?"

The teacher rarely tells students what he thinks they ought to know.

His basic mode of discourse with students is questioning.

Generally, he does not accept a single statement as an answer to a question.

He encourages student-student interaction as opposed to student-teacher interaction. And generally he avoids acting as a mediator or judge of the quality of ideas expressed.

He rarely summarizes the positions taken by students on the learnings that occur.

His lessons develop from the response of students and not from a previously determined "logical" structure.

Generally, each of his lessons poses a problem for students.

He measures his success in terms of behavioral changes in students.

Perhaps you have noticed that most examinations and, indeed, syllabi and curricula deal almost exclusively with the past. The future hardly exists in school. Can you remember ever asking or being asked in school a question like "If such and such occurs, what do you think will happen?" A question of this type is usually not regarded as "serious" and would rarely play a central role in any "serious" examination. When a future-oriented question is introduced in school, its purpose is usually to "motivate" or to find out how "creative" the students can be. But the point is that the world we live in is changing so rapidly that a future-orientation is essential for everybody. Its development in schools is our best insurance against a generation of "future shock" sufferers.

## Start Your Own School

Sure enough, a lot of the nuts and bolts information is here, turning an impossibility into a mere nuisance. So you can transfer your attention to the more important impossibility, education.

—Records. It would be a good idea to keep a record for each employee of taxes and stuff for each paycheck. Something like this: a page for each employee with columns for: Name; Soc. Sec. No.; exemptions claimed; pay period; basic pay; Fed. Income tax withheld; FICA withheld; State disability withheld; Net pay . . . ; FICA paid by school; State Unemployment paid by school. It might be good to keep a running total of "money owed to governments".

Once the first flurry of forms is over, it's not so bad, really. Don't panic, and call the IRS office for the smallest reason. They have nothing better to do.

We just wanted to work with some kids.

## Start Your Own School

Donation (if possible)

\$1.00

from:  
New Directions Community School  
445 Tenth Street  
Richmond, CA 94801

## New Schools Exchange

A much needed service, the New Schools Exchange functions as an access switchboard for individuals and organizations trying alternatives to the big gray schoolhouse. The Exchange publishes a directory of all the new schools and educational reform groups, and they put out a weekly newsletter describing new school attempts (8-10 a week).

[Suggested by Jim Fadiman]

New Schools Exchange  
Harvey Haber, Cass Sperleng, eds.

\$10 /year; \$5/5 months minimum.

from:  
New Schools Exchange  
2940 Hidden Valley Lane  
Santa Barbara, CA 93193



## \* The Open Classroom

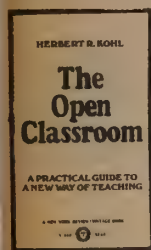
The Open Classroom is written for anyone with the courage (or foolishness) to want to be a decent teacher within the public school system. It's a good book. It persuaded me that this is possible. It is surprisingly concrete. It describes exactly what "successful" teachers do to establish control over their classes. (These things are quite subtle, and worth knowing about. If you have a child who has to go to a typical public school, you can prepare him for the brain-washing he's going to get.) It also describes concretely what a teacher must do if he wants to have an honest relationship with his students, if he wants them to learn something (really), and he does not want to use authoritarian methods. (It's not always so easy not to fall back on authoritarian methods, no matter how idealistic we are.) It goes on to describe and warn of the problems that an "open classroom teacher" will have with other teachers, principals, supervisors. They are almost certain to be severe. It gives ways of saving your job while maintaining an open classroom, and it discusses when it is wisest to sacrifice your job.

Herbert Kohl has been through all of this himself. If you don't know what it's like inside the system, his book can tell you some things that will make your hair stand on end.

If you want to be a public school teacher, *The Open Classroom* is an indispensable handbook. If you don't, it's an excellent critique anyway, and it will make you feel good, because it constitutes a realistic plan for recovering some value from the public schools—from within.

[Reviewed by Jane Burton]

This book is a handbook for teachers who want to work in an open environment. It is difficult to say exactly what an open classroom is. One almost has to have been in one and feel what it is. However there are certain things that it is not. It is important not to equate an open classroom with a "permissive" environment. In an open classroom the teacher must be as much himself as the pupils are themselves. This means that if the teacher is angry he ought to express his anger, and if he is annoyed at someone's behavior he ought to express that, too. In an authoritarian classroom annoying behavior is legislated out of existence. In a "permissive" classroom the teacher pretends it isn't annoying. He also permits students to behave only in certain ways, thereby retaining the authority over their behavior he pretends to be giving up. In an open situation the teacher tries to express what he feels and to deal with each situation as a communal problem.



**The Open Classroom**  
Herbert R. Kohl  
1969; 116 pp.

\$1.65 postpaid

from:  
Viking Press  
625 Madison Avenue  
New York, N. Y. 10022

or WHOLE EARTH CATALOG

## Educator's Guide to Free Films

This is an invaluable reference if you are interested in film education. The book has indices of contents, film listings, cross-index; titles, subject, and source and availability. The source and availability index saves hours of time, although it does not indicate whether or not you need a special order form. It also indicates whether you pay mailing cost one-way or two-way. Every school or proto-school should have a copy.

[Suggested and reviewed by  
Chip Chappell]

**Educator's Guide to Free Films**  
1968; 784 pp; 49443 films

\$10.75 postpaid

from:  
Educators Progress Service  
Randolph, Wisconsin 53956

**CONQUEST OF LIGHT** (1964) 16mm Sound 10 min.

This film tells the story of the laser (sometimes called an optical maser), a device with almost unlimited potential in many areas. Although the film explains basically how a laser works and what it is, it does so in language clearly understandable to a non-technical audience. (Not cleared for TV)

Bell System Telephone Offices

**CIRCLE OF THE SUN** 16 mm Sound 29 min.

This film, in full color, records one of the last gatherings of the Blood Indians of the Blackfoot Confederacy. It shows the sun dance, but it also reflects the predicament of the younger generation—those who have relinquished their ties with their own people but have not yet found a firm place in the changing world. (Available from the Boston, Chicago, Detroit, Los Angeles, New Orleans, and Washington offices. See Source Index for addresses and areas served by each.) (Not cleared for TV)

Consulate General of Canada

A teacher in an open classroom needs to cultivate a state of *suspended expectations*. It is not easy. It is easy to believe that a dull class is dull, or a bright class is bright. The words "emotionally disturbed" conjure up frightening images. And it is sometimes a relief to discover that there are good pupils in the class that is waiting for you. Not reading the record cards or ignoring the standing of the class is an act of self-denial; it involves casting aside a crutch when one still believes one can't walk without it. Yet if one wants to develop an open classroom within the context of a school which is essentially totalitarian, such acts of will are necessary.

There are no simple ways to give up deeply rooted expectations. There are some suggestions, however:

- talk to students outside class
- watch them play and watch them live with other young people
- play with them—joking games and serious games
- talk to them about yourself, what you care about
- listen

In these situations the kids may surprise you and reveal rather than conceal, as is usual in the classroom, their feelings, playfulness, and intelligence.

There is a way a teacher can experiment with non-authoritarian teaching and be free of other teachers and supervisors. That way is to work with problem students—those students the school system has given up on.

## Kaiser Aluminum News

*Don Fabun is doing very well at his job of making Kaiser appear comprehensive and futuristic. The Kaiser Aluminum News that he edits comes out several times a year, each issue devoted to one large topic, such as communication, transportation, food crisis, etc. They are excellent compendiums of current thought, vividly illustrated and laid out. Best of all, they're free if you write Kaiser for single copies.*

Inquire for their list from:

Public Affairs Department  
Kaiser Aluminum and Chemical Corporation  
Kaiser Center 866  
Oakland, California 94604

I have yet to see any problem, however complicated,  
which, when you looked at it the right way,  
did not become still more complicated.

POUL ANDERSON

A hundred years ago a chemical theory was  
uncovered that retains broad significance. It is  
known as the "Law of the Minimum."

Under ideal circumstances, a reaction will  
continue until restrained by exhaustion of whatever  
essential ingredient is present in least supply.

What is our essential ingredient in least supply?

And how much of it do we possess?

We do not know.

S. P. R. CHARTER / "Man on Earth"

According to legend . . . the Worm  
Ouroboros ate its own tail, and thus  
was a symbol of a world that sur-  
vives by endlessly devouring itself.



A compendium of 6 issues of *Kaiser Aluminum News* about the next 20 years has been published in hardcover under the title *The Dynamics of Change*. The book costs \$6.95 from Prentice-Hall, Englewood Cliffs, N. J. 07632.

## Index to 16 mm Educational Films

For those who want to know what the whole situation is this index compiled by the National Information Center for Educational Media (NICEM) contains ca. 26,000 titles. These are recent films from the lists of the Library of Congress and film distributors.

[Suggested and reviewed by  
Chip Chappell]

## Index to 16 mm Educational Films

2nd edition, May 1969

ca. \$50.00 postpaid from:  
McGraw-Hill, or at Libraries, film distributors

from:  
Rathon, Ind.  
2931 Irving Blvd., Suite 103  
Dallas, Texas 75247

or WHOLE EARTH CATALOG

## Media & Methods

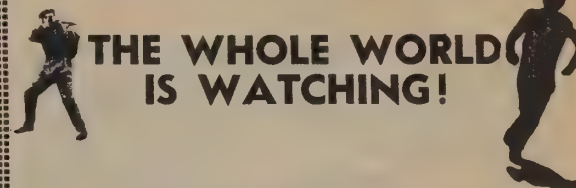
A slick good education magazine. I can see that running a soft magazine in the hard-sell education media market is difficult, but Frank McLaughlin is doing all right.

Media and Methods  
Frank McLaughlin, ed.

\$5.00/yr. (nine issues)  
\$6.00 in Canada

from:  
Media & Methods  
134 North 13th Street  
Philadelphia, PA 19107

"One doubt can start a hating;  
One dream can set us free."



*Zero for Conduct*, (Brandon) \$32.50.  
(Dir: Jean Vigo) An innovative, poetic and surrealist evocation of youth and its rebellion against the system.

*Village of the Damned*, (Films, Inc.) \$22.00. (Dir: Wolf Rilla) An eerie tale about a group of super-intelligent and hyper-bizarre blond children who freak a peaceful English village. A simple horror story or a significant allegory, depending on your mood.

## A HANDY LIST OF 16MM DISTRIBUTORS SUITABLE FOR FRAMING

AUDIO FILM CENTER, 34 MacQueten  
Pkwy So., Mt. Vernon, N.Y. 10550

BRANDON FILMS, 221 West 57th Street,  
New York, New York 10019

CONTEMPORARY FILMS, (McGraw Hill/  
Contemporary), Princeton Road, Hights-  
town, NJ 08520

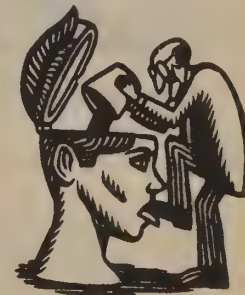
FILMS INC., 4420 Oakton Street, Skokie,  
Illinois 60076

JANUS FILMS, 24 West 58th Street, New  
York, NY 10019

UNIVERSAL 16, 221 Park Avenue South,  
New York, NY 10003

UA/16, 729 Seventh Avenue, New York,  
NY 10036

The feeling of contempt so many college professors feel toward high school teachers and high school teachers in turn feel toward elementary teachers is shot through with irony. What has been consistently borne out in my experience is that the best teaching takes place at the elementary level (especially nursery school through 3rd grade). The best environments for learning are reflected in these "elementary" situations, the most natural employment of media are demonstrated, and the most humane relationship between adult and child exist.



Look, listen, talk, sing, dance,  
act, record, photograph—find,  
share, but don't tell.

—George Wright



"I would rather learn from one bird how to sing  
Than teach ten thousand stars how not to dance."

**LIFE Science Library**

After two years of looking at everybody's nifty books, I'd say that the two sets of books to have around your place for pick-up education of young and old are the Golden Handbooks (see p. 125) and these science books from Time-Life. They're available only by mail, and they come one every month or so. If you don't like what you got, you can send it back. We haven't sent any back.

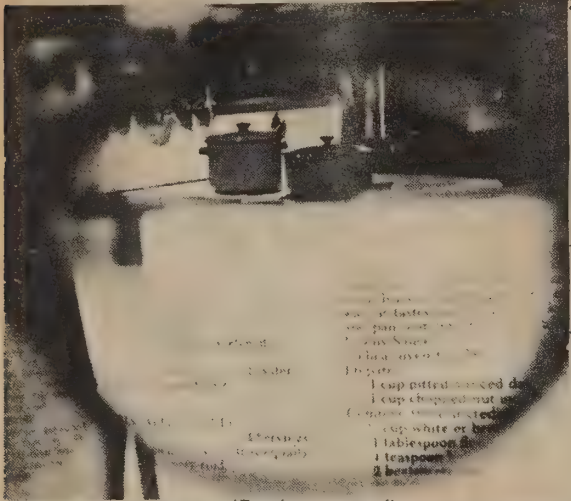
Most popular science books are badly behind the times. This series puts special emphasis on recent developments.

**LIFE Science Library**

from:  
Time-Life Books, Inc.  
Retail Sales Dept.  
540 N. Michigan Avenue  
Chicago, Illinois 60611

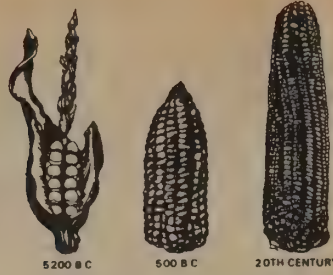
**TWO LENSES IN ONE**

Bifocals—introduced to America in the 18th Century by Benjamin Franklin—help older people with rigid lens structure to focus at both near and far distances. The upper half of the spectacle lens gives slight correction for distant viewing. The lower half is for close-up work; it provides the increased refraction needed to compensate for the increasing rigidity—and the inability to focus—of the aging lens.



**Light and Vision**

**THE EVOLUTION OF CORN** to the modern fruitful version required 7,000 years of radical change, as indicated by these three samples. The inch-long ear of wild maize (left)—a Central American plant now extinct—dates from around 5200 B.C.; it has only eight rows of kernels with five to six kernels on each row. By 500 B.C., Mexicans were growing four-inch-long ears called Nal-Tel (center) that had some 11 rows of small kernels per cob. Today, one of the most widely cultivated corn plants in Mexico is Chalqueño (right), eight inches long, with 17 rows of narrow kernels.



The dangers of leaching were pointed out as recently as the 1920's, when public-health officials were puzzled by the strange pattern of malnutrition in the South. Impoverished sharecroppers there ate poorly—grits, corn mush and molasses, greens, with a bit of fatback. The diet for white and Negro sharecroppers was much the same. But, oddly enough, the whites suffered more severely from deficiency diseases; the Negroes, also ill-fed, were relatively unaffected. The mystery was not solved until the scientists learned that both whites and Negroes boiled their staple foods for long periods to improve the palatability of the somewhat tasteless provender. But then the whites threw away the cooking water; using the so-called potlikker was socially unacceptable. With the discarded liquid went the nutrients that had been leached away by long boiling. The Negroes, uninfluenced by the social stigma attached to potlikker, drank it and used it to soak corn bread, recapturing the essential vitamins and minerals.



**WHAT'S WRONG WITH THIS PHRASE?** At first glance, seemingly nothing. But with closer reading the repetition of the word THE becomes obvious. Because we generally read rapidly in word patterns rather than slowly a word at a time, it is easy for the eye to skip over the extra THE and register the familiar phrase "correctly." **Light and Vision**

**A Concise Guide to Library Research**

*In my hairiest dope-fiend days, whenever I drove past a library I'd experience waves of gratitude to those inside who were doing what I knew I could not: opening the library on time, keeping track of the books, patiently explaining again how to use the card catalog, daily dispensing invaluable free information, all without fanfare. This here is a book of what's in a library and how to get at it.*

[Suggested by Craig Schensted]

**The Concise Guide to Library Research**

Grant W. Morse  
1966, 1967; 214 pp.

**\$.75** postpaid

from:  
Washington Square Press, Inc.  
630 Fifth Avenue  
New York, N. Y. 10020

or **WHOLE EARTH CATALOG**



**B238 General works and histories of science**

- A Guide to the History of Science*, by G. Sarton, 1952, Chronica Botanica Co. Includes a classified bibliography of the subject.
- A History of Technology*, 5 vols., 1954-1958, Oxford. Scholarly and readable account of the development of technology from earliest times, chronologically arranged.
- Introduction to the History of Science*, by G. Sarton, 3 vols., 1927-1948, Williams & Wilkins. From Homer to the fourteenth century, including good biographies and bibliographies.
- McGraw-Hill Encyclopedia of Science and Technology*, 15 vols., 2nd ed., 1965, and yearbooks, 1961-, McGraw-Hill. Very comprehensive. One should use the index volume.
- Smithsonian Institution*, 1847-(annual). U. S. Government Printing Office. Very useful and authoritative.
- Van Nostrand's Scientific Encyclopedia*, 3rd ed., 1958, Van Nostrand.

**Build-it-yourself Science Laboratory**

My youthful science investigations went about as far as the tameability of wild animals and the thermo-dynamics of breaking glass. Some kids go a lot further, and this book is for them. Stay out of the lab unless invited.

[Suggested by Fernando L. Nevarez]

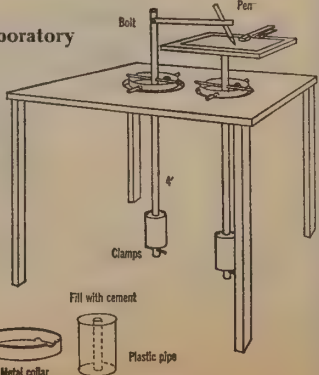
**HARMONOGRAPH**

**Purpose:** Harmonic motion is a movement or motion that repeats itself. A pendulum is a good example of harmonic motion. When two forces work together, the result is a pattern of movement that combines the movements of both forces. The harmonograph records such movement in pleasing and unusual designs.

**Materials:** Wood for stand, piece of plywood, two wooden rods about 5' long, two metal collars, two cans, two clamps for the rods, four spikes, cement for the cans.

**Build-it-yourself Science Laboratory**  
Raymond E. Barrett  
1963; 339 pp.

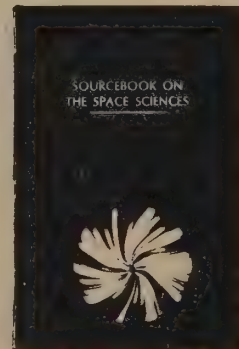
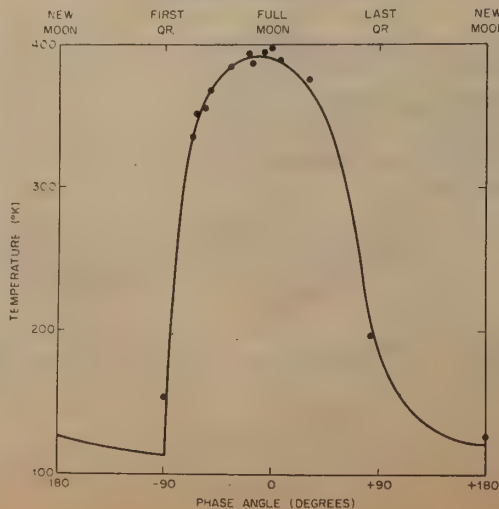
**\$5.95** postpaid



**Sourcebook on the Space Sciences**

If your plan includes getting off the planet, and you don't care to be just an inert passenger or dumb tourist, this book is the most useful—if a little outdated—single volume you'll find. Rockets, orbits, propulsion, guidance, Earth as planet, other planets, sun, extraterrestrial man. When you get out there where Nothing is, say hello to it, will you?

[Suggested by E. G. Valens]



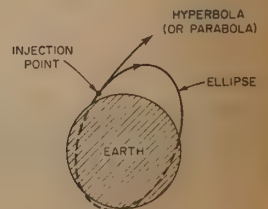
**Sourcebook on the Space Sciences**

Samuel Glasstone  
1965; 937 pp.

**\$9.95** postpaid

from:  
Van Nostrand-Reinhold  
450 West 33rd Street  
New York, N. Y. 10001

or **WHOLE EARTH CATALOG**



If a spacecraft is launched near to, i.e., within a few hundred miles of, Earth's surface into an elliptical orbit that extends out to 10 Earth radii,  $R_{per}/2R_{app} = 1/20$ ; the required injection velocity ( $v_{per}$ ) is then as much as 95 percent of the escape velocity. For a launch to the Moon, some 60 Earth radii distant,  $R_{per}/2R_{app}$  is about 1/120 and the injection velocity is over 99 percent of the escape value.

Variation of surface temperature at center of Moon's disc during a lunation; points observed by W.M. Sinton and by R.W. Shortill, full curve calculated by W.M. Sinton

## 700 Science Experiments for Everyone

This book grew out of a smaller volume called *Suggestions for Science Teachers in Devastated Areas* whose production was sponsored by UNESCO right after World War II. It was meant for use in schools whose buildings and labs had been destroyed and soon found its way into the hands of people who had never had these things to begin with. Thus it solves the problem of schools, communities—people—who want to do 'live' science without money or equipment. There isn't any experiment in it which would be too costly for any of us to do. The book tells you how to put together the equipment you need: real clever ways of making glass cutters, balances, burners, telescopes, microscopes, etc. A lot of what you need to do the experiments is just stuff you'd have around the house. The rest can be gotten [very low cost stuff] at the drugstore, hardware, junk yard, etc.

Also the book is unusually well written. There's no bullshit in it and it doesn't talk down to the reader. Just very straightforward instructions with illustrations that are highly readable. In most cases you aren't told the outcome of the experiment, an aspect which makes you much more interested in doing it.

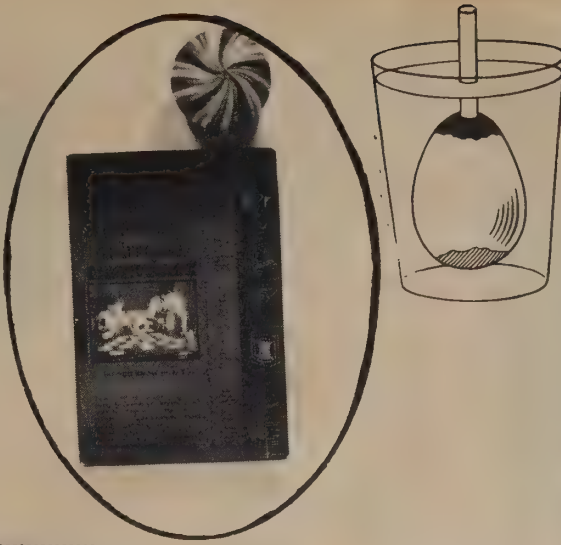
[Reviewed by Jane Burton]

700 Science Experiments for Everyone  
1958; 250 pp.

\$4.50 postpaid

from:  
Doubleday & Company, Inc.  
501 Franklin Avenue  
Garden City, L.I., N.Y. 11531

or WHOLE EARTH CATALOG  
or Edmund Scientific

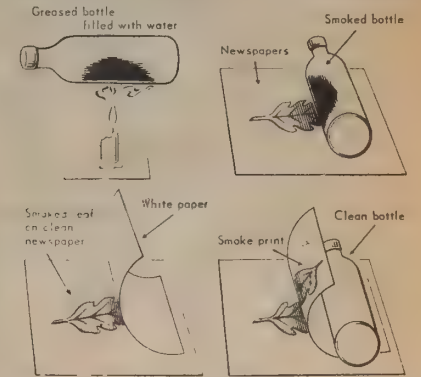


### An egg osmometer

Place some dilute hydrochloric acid or strong vinegar in a shallow dish, such as a saucer, to a depth of about one centimetre. Hold the large end of an egg in the acid until the shell has been eaten away on the end leaving the thin membrane exposed. Rinse the acid from the egg. With a sharp instrument work a small hole through the shell at the other end. Insert a soda straw or a length of glass tubing through the hole into the interior of the egg. Seal the opening around the tube with household cement or sealing wax. This must be absolutely tight. Place the osmometer in a glass of water and let it stand for a few hours.

### Making smoke prints of leaves

Smoke prints of leaves may be easily made by following the four steps shown in the diagrams.



Cover the side of a smooth, round bottle with a thin layer of grease or vaseline. Fill the bottle with cold water and cork it tightly. Hold the bottle over a candle flame until it is covered evenly with soot. Place a leaf, vein side up, on a layer of newspaper and roll the sooty bottle over the leaf. Remove the leaf and lay it vein side up on clean newspaper. Cover the leaf with a sheet of white paper. Next, roll over the white paper and leaf with a clean round bottle or other roller.

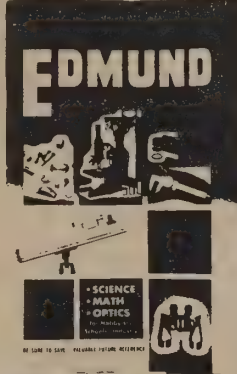
## Edmund Scientific

Edmund is the best source we know of for low-cost scientific gadgetry (including math and optics gear). Many of the items we found independently, such as Dr. Nim, 700 Science Experiments, Geo-D-Stix, Spilhaus Space Clock, etc., turned up in the Edmund Catalog, so we were obliged to recognize that in this area we've been preceded. They list 4,000 items, they ship, and their catalog is free.

### EASILY BEND WIRE INTO USEFUL SHAPES

Turn wire, coat hangers, etc. into peg board hardware, stakes, springs, tools, toys, art. Cast aluminum jig with cutting blade, fulcrum & bending pins handles up to 1/4" steel wire. 100 illustrated projects.

No. 40,870 \$2.00 Ppd.



Order from:  
Edmund Scientific Company  
100 Edscorp Building  
Barrington, N. J. 08007

### Another way to show that water pressure increases with depth

Find a tall tin can. Punch holes up the side of the can about 3 cm apart. Put a strip of adhesive or plastic tape over the row of holes and fill the can with water above the top hole. Hold the can over a sink and strip the tape from the holes beginning at the bottom. Observe the streams and note the distances travelled outwards from the can.

### Water pressure is the same in all directions

Punch holes around the base of a tall tin can with a nail. Cover the holes as above with a strip of tape. Fill the can with water and strip off the tape while holding it over a sink. Observe and compare the distance the streams shoot out from the holes all around the can.

### HAVE FUN WITH SCIENCE OF SOAP BUBBLES

Create endless complex shapes, study and enjoy their fascinating behavior. Learn about liquid skins, pressures, jets, electrical conduction and the membrane theory of stress distribution. Chemist designed kit includes special, longer-lasting, lower-cost bubble formulation (makes several gallons). Sticks with poly connectors and wire bending jig to make bubble frames, plus 190-pg. book on subject by C. V. Boys. Complete instructions. No. 70,742 \$6.00 Ppd. Formulation only. No. 40,782 \$3.00 Ppd.

### "THINK STICKS" THE MODERN KITS FOR INDUSTRIAL, EDUCATIONAL, FUN USES... VISUALIZE IN 3 DIMENSIONS

Here is the ideal visualizing and demonstration tool for teachers; learning aid for students in mathematics, physics, chemistry, design, and architecture. Excellent for Science Fair projects. Hobbyists and artists find them fascinating and extremely useful.

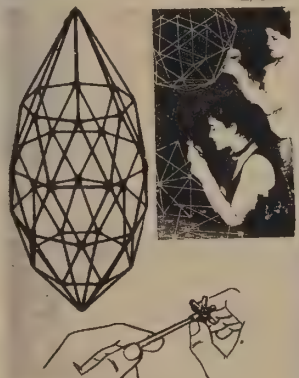
In mathematics, Think-Sticks Kits are used to construct geometric figures ranging from triangles and cubes to such multiple sided figures as icosahedrons and dodecahedrons. In design classes, models are made to determine functional and esthetic efficiency. Architectural and engineering instructors mock up girders, trusses, towers, frameworks; and demonstrate the nature and effect of stress. The State University of Washington, for example, is now using these in its Architectural and Engineering Laboratories.

Professional uses aside, Think-Sticks open new horizons of fun, knowledge and experimentation for any youngster. Ease of use and durability make Think-Sticks much superior to old-fashioned wood or metal kits. 1/4" diameter plastic or birch sticks fit smoothly into 1" polyethylene joints having 1/8" sleeves—form rigid structures. (Connectors can now be bought separately. T-connector supplied only with KIT No. 70,211.) Complete instructions included. Money-back guarantee.

KIT No. 70,200. Ideal introductory set. 220 pieces... 5, 6, & 8-sleeve connectors; 2, 3, 4, 5, 6, and 8" colored Think-Sticks. For all geometric structures and many artistic designs. \$3.00 Postpaid

KIT No. 70,210. Ideal for assembly of models, transmission towers, and for anyone with advanced interests. 370 pieces including 5, 6, 8-sleeve connectors; 2, 3, 4, 5, 6, 8, 10 and 12" colored Think-Sticks. Complete kit. \$5.00 Postpaid

KIT No. 70,211. Adequately fills the needs of schools, architects, designers, any group at the professional level. 452 pieces include 5, 6, and 8-sleeve; and T-connectors. (T-connector allows Think-Stick to pass clear through); 2, 3, 4, 5, 6, 8, 10 and 12" colored Think-Sticks; and long length of unpainted Think-Sticks which can be cut to any size required for your own designs. \$7.00 Postpaid



### SEPARATE CONNECTORS, UNPAINTED STICKS

No.	Type	Pkg. of	Price
P-60,108	(A) 5-sleeve	50	\$2.45 Ppd.
P-60,109	(B) 6-sleeve	50	2.45 Ppd.
P-60,110	(C) 8-sleeve	50	2.45 Ppd.
P-60,111	(D) T-conn.	50	2.45 Ppd.
P-60,112	24" Sticks	100	2.00 Ppd.



## Elementary Science Study

ESS has developed (and is developing), a number of interesting science units for elementary-school-age children. Some of these are in commercial publication through McGraw Hill. Others are in the form of highly informative and useful "working papers" available from ESS for nominal fees (i.e. \$.50). Even some of the commercial stuff is cheap. Those units—and there are several—requiring only teacher's manuals and some ingenuity in locating materials are frequently the most interesting and the cheapest. The manuals are usually \$1 or \$1.50. In addition ESS will send you their free newsletter. It usually has some feedback reports on the success (or lack of it) of their Science materials, good recommendations of books and stuff in the field of education, news of interesting projects tried by individual science teachers, and advance notice about ESS research. For any of the above, write to:

Elementary Science Study  
Education Development Center, Inc.  
55 Chapel Street  
Newton, Mass. 02160

[Suggested and reviewed by Mrs. W. B. Mohin]

## Scientific American Offprints

Consistently the best science writing and illustrating appears in Scientific American. For 20¢ (2/ in England) you can get a full color copy of any article. The catalog of offprints is well organized and gives a good capsule description of each article (700 to choose from).

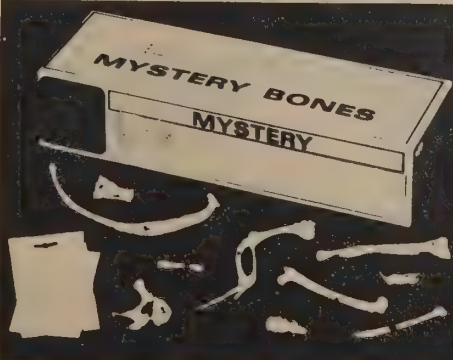
[Suggested by Jane Burton]

## Catalog

free from:  
W. H. Freeman & Company  
660 Market Street  
San Francisco, CA 94104

Leonard Berkowitz THE EFFECTS OF OB SERVING VIOLENCE  
Frank Barron, Murray E. Jarvik & Sterling Bunnell, Jr. THE HALLUCINOGENIC DRUGS  
John R. Nichols HOW OPIATES CHANGE BEHAVIOR  
Lawrence Zelic Freedman "TRUTH" DRUGS  
Burke M. Smith THE POLYGRAPH  
John B. Calhoun POPULATION DENSITY AND SOCIAL PATHOLOGY  
Robert Rosenthal & Lenore F. Jacobson TEACHER EXPECTATIONS FOR THE DISADVANTAGED  
Marshall D. Sahlins THE ORIGIN OF SOCIETY  
Walsh McDermott AIR POLLUTION AND PUBLIC HEALTH  
A. J. Haagen-Smit THE CONTROL OF AIR POLLUTION  
William L. Langer THE BLACK DEATH  
Bernard Berelson & Ronald Freedman A STUDY IN FERTILITY CONTROL

Charles F. Hockett THE ORIGIN OF SPEECH  
William W. Howells THE DISTRIBUTION OF MAN  
Robert J. Braidwood THE AGRICULTURAL REVOLUTION  
Robert M. Adams THE ORIGIN OF CITIES  
Herbert Butterfield THE SCIENTIFIC REVOLUTION  
Edward S. Deevey, Jr. THE HUMAN POPULATION  
Theodosius Dobzhansky THE PRESENT EVOLUTION OF MAN



The commercial ESS materials (as well as materials of Experiences in Science: Time, Space, and Matter; and Fossils) are described and listed in the McGraw-Hill Science Materials Catalog, available from:

Webster Division  
McGraw-Hill Book Company  
Manchester Road  
Manchester, Mo. 63011

**Catalog for Learning Things**

All manner of dandy low-cost tool kits, materials, animal cages, and funky classroom furniture.



Catalog  
free

from:  
The Workshop for Learning Things  
55 Chapel Street  
Newton, Mass. 02160

Several years ago, the Workshop ran across triple-thick corrugated cardboard for the first time. We began to design and build with it, wondering how many conventional building materials—lumber, plywood, masonite—it might replace. Since then, we've used thousands of sheets of it, much of it in workshops working with people using it for the first time. It has given us all a part in shaping learning environments.

This laminated cardboard is three layers thick and comes in very large sheets. It is inexpensive, compared to plywood, yet it is strong. Used with a good eye for its strengths and shortcomings, it can be as durable in a classroom as more expensive materials. Furthermore, it can be worked with simple tools and requires few or no woodworking skills. The inventory of things made by teachers in recent workshops is endless... chairs, carts, tables, easels, playhouses, jungle gyms, boats, giant globes, cages, aquariums, desks, carrels, seesaws, sandboxes... This combination of cardboard, tools, techniques, and people we call Cardboard Carpentry

**BASIC CARDBOARD CARPENTRY TOOL KIT**

- 5 10-point carpenter saws
- 2 keyhole saws
- 3 double bladed hack saws
- 2 paring knives
- 2 wooden mallets
- 2 point hole punches (3/4")
- 1 3/4" hole cutter
- 6 yardsticks
- 2 wooden wrenches
- 8 dowels (1/4" by 36")
- 1 die
- 2 spring clamps
- 40 threaded wooden nuts
- 15 dowels (3/4" by 36")
- 10 threaded dowels (3/4" by 36")
- 2 rolls cloth tape (2")
- 1 bottle white glue

**\$75.00**  
weighs 20 pounds

**Architecture**

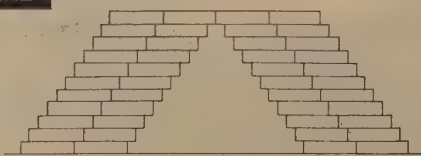
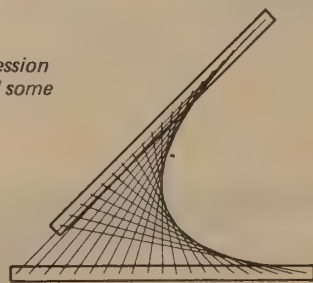
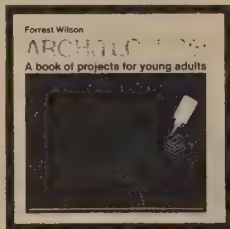
I don't know that architecture is a useful term or profession any more. This book gets a kid into building stuff and some of the traditional considerations in doing that.

**Architecture**  
Forrest Wilson  
1968; 96 pp.

**\$6.95** postpaid

from:  
Van Nostrand-Reinhold  
450 West 33rd Street  
New York, N. Y. 10001

or WHOLE EARTH CATALOG



**PROJECT 4 - BUILD A CORBEL**

**Materials:** Box of sugar cubes.

**Procedure:** Place cubes on top of each other with the end cube of each course (row) projecting about one third of its length over the front edge of the cube beneath it. You will notice that unless there are enough cubes behind the projecting end cubes the construction will fall forward. You will also notice that it is possible to stack the cubes higher if the projection is shorter. There is a relationship of projection to height in a corbel the same as there was in the column.

If you construct two such corbels opposite each other, ten or eleven cubes high and about five inches apart so that the top cubes meet each other, you will have a pyramidal opening. This is how corbels are used to span openings.

When you have made the structure, hold it in your hand and gently squeeze. If it does not feel rigid but moves in your hand look for the configurations that move. You will find that these invariably are not triangulated. Glue toothpicks across their corners to make them rigid.

**Simple Working Models of Historic Machines**

Far-out ingenuity revisited.

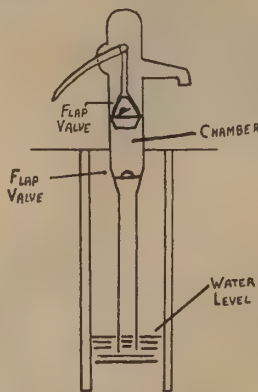
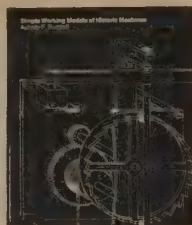
**Simple Working Models of Historic Machines**

Aubrey F. Burstall  
1968, 1969; 79 pp.

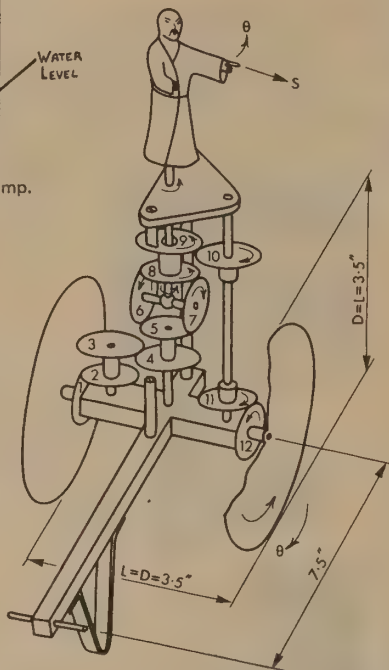
**\$3.95** postpaid

from:  
The M. I. T. Press  
50 Ames Street, Room 765  
Cambridge, Mass. 02142

or WHOLE EARTH CATALOG



The Suction Pump.



Wheels 1,2,5,6,7,8,11,12:- Bevel gears, 1:1 ratio  
Wheels 3,4,9,10:- Spur gears, 1:1 ratio

**The Chinese South-pointing Chariot**

A full-scale machine of this kind was used in ceremonial processions in China between A.D. 120 and 250. It seems that its purpose must have been simply to cause awe and wonder in the onlookers since whichever way the chariot was turned the figure on the top always pointed in the same direction. This intriguing result was obtained by means of differential gearing, very similar to that used in the back-axle of the present-day motor vehicle. Possibly pin gears were used in the originals, though this is not certain.

**The Attractive Universe**

Soundly written, brilliantly illustrated guide to the interactive dominion of gravity. If I were orbiting the moon, I'd want my understanding to be able to swim in this element like a fish.



**The Attractive Universe**

E. G. Valens  
1969; 187 pp.

**\$5.95** postpaid

from:  
The World Publishing Company  
2231 West 110th Street  
Cleveland, Ohio 44102

or WHOLE EARTH CATALOG



If we allow Star B to orbit for a longer time, something else occurs.

Star B is falling into an elliptical orbit, but in addition, Star A itself begins to move. Why?

Star B responds to a bending of space caused by Star A. But Star B itself, by virtue of its very existence, causes an additional curvature in space, and this in turn affects Star A. Furthermore, Star B is moving, and it literally carries the additional curvature along with it. The shape of space is now changing constantly and the originally stationary star is thus set in motion.

**Plants and Man**

**Plants and Man**

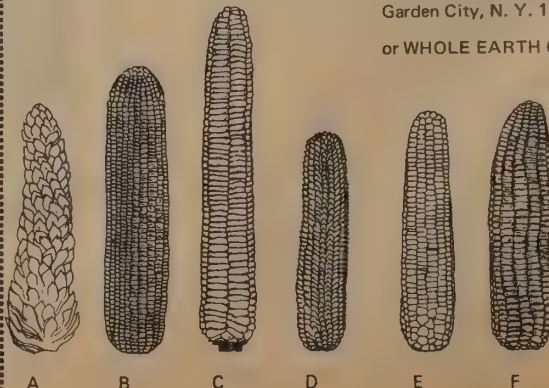
This is a terrific book about plants and agriculture. We haven't seen the other books in the Nature and Science series from Natural History Press, but if they're as good, they've got something.

**Plants and Man**  
H. L. Edlin  
1969; 253 pp.

**\$6.95** postpaid

from:  
Doubleday & Company, Inc.  
501 Franklin Avenue  
Garden City, N. Y. 11531

or WHOLE EARTH CATALOG



The six principal types of maize. (A) pod corn, a probable ancestor of modern corn; (B) dent corn; (C) flint corn; (D) popcorn; (E) flour corn; (F) sweet corn.

As food for humans, corn is inferior to wheat and some other cereals because it contains very little protein. The absence of protein means that cornstarch does not form gluten when it is mixed with water, and so corn bread has a rougher texture than wheat and rye loaves made from the "stretched" dough (full of air pockets) that gluten provides. Even so, corn has formed the principal diet of many peoples in Central and South America for several thousand years.

★ **Directory of Accredited Private Home Study Schools**

Care to study up on diamond-cutting at home? Electronic organ repair? Truck maintenance? Paper making? Penmanship? Radio? Tractor repair? Calculus? Welding? Concrete engineering? Sign lettering? Plastics? This amazing catalog lists all the subjects available and what schools carry them and where to write the school. From here on, we need your evaluation: are these correspondence courses worth it? How much do they cost? Who's best for quality or low-cost?

[Suggested by D. Mayerson]

★ **Directory of Accredited Private Home Study Schools**

free from: National Home Study Council, 1601 Eighteenth Street, N. W., Washington, D. C. 20009

Cleveland Institute of Electronics, 1776 East 17th Street, Cleveland, Ohio 44114. Founded 1934. Electronics Technology; Electronics Technology with Laboratory; Broadcast Engineering; First-Class FCC License; Electronic Communications (including 2nd Class FCC License); Carrier Telephony; Electronics Engineering; Electronic Slide Rule and Operation; Industrial Electronics and Automation.

Coast Navigation School, 418 East Canon Perdido, Santa Barbara, California 93101. Founded 1966. Courses in Air navigation; Coastwise navigation and piloting; Celestial navigation; Celestial air navigation; and the Elements of boathandling, seamanship, and sailing.

★ **How to Solve It**

This is the best book I know of for lining up a problem for a logical solution. The emphasis is on math, but it is simple logic and can easily be applied to all forms of problem identification and analysis. Better yet is that the methods shown really work even on personal decision-making binds. Essentially it's a head-straightener.

[Suggested and reviewed by Jay Baldwin]

How to Solve It, G. Polya, 1945; 253 pp.

\$1.45 postpaid

from: Doubleday and Co., 501 Franklin Street, Garden City, N. Y. 11531

or WHOLE EARTH CATALOG



**First.**

You have to understand the problem.

**What is the unknown? What are the data? What is the condition? Is it possible to satisfy the condition? Is the condition sufficient to determine the unknown? Or is it insufficient? Or redundant? Or contradictory? Draw a figure. Introduce suitable notation. Separate the various parts of the condition. Can you write them down?**

**DEVISING A PLAN**

**Second.**

Find the connection between the data and the unknown. You may be obliged to consider auxiliary problems if an immediate connection cannot be found. You should obtain eventually a plan of the solution.

Have you seen it before? Or have you seen the same problem in a slightly different form? Do you know a related problem? Do you know a theorem that could be useful? Look at the unknown! And try to think of a familiar problem having the same or a similar unknown. Here is a problem related to yours and solved before. Could you use it? Could you use its result? Could you use its method? Should you introduce some auxiliary element in order to make its use possible? Could you restate the problem? Could you restate it still differently? Go back to definitions.

★ **Penn State Correspondence School**

Penn State is Number One, at least in correspondence courses that have relevance to agriculture. Cornell University recommended them to me and am I glad. All the courses have "x" pages of written material followed by a "test" that is "graded" by someone in State College (if you desire) and returned. Naturally, with so many courses, the quality is varied. I've read maybe two dozen of them. They are extremely valuable in areas where the reader has absolutely no knowledge. The Penn State introduction obtained with no small degree of authority enables one to more intelligently choose more advanced material (which is not always necessary) without waste of too much time and money in shotgun searches through libraries and/or bookstores. I recommend particularly their survey on Poultry Keeping.

[Suggested and reviewed by John E. Schultz]

**Catalog**

**free**

from: Correspondence Courses, The Pennsylvania State University, 202 Agricultural Education Building, University Park, PA 16802

97. FARM MANAGEMENT. This course covers the field of farm management in general terms. It is useful to the nonfarmer who wants to improve his understanding of the business of farming; to the beginning farmer as an outline of knowledge he should have and as an efficient approach to farm management; to the farmer as a review and summary. 8 Lessons, 10 Study Points

103. POTATO GROWING. Eight lessons provide information on factors concerned with potato production. History and importance of the potato on a worldwide basis are explained. The present-day varieties to use are described, as well as the various steps in growing and marketing the crop. The uses and food value of the tubers are discussed and also how to store and care for seed and eating tubers. 8 Lessons, 11 Study Points

105. DAIRY GOATS. These lessons treat the origin, characteristics, and adaptation of the breeds of milk goats. Breeding and feeding are fully covered, and special attention is given to care and management. Excellent illustrations of equipment and housing are enclosed. 8 Lessons, 10 Study Points

Inventor's paradox. The more ambitious plan may have more chances of success.

This sounds paradoxical. Yet, when passing from one problem to another, we may often observe that the new, more ambitious problem is easier to handle than the original problem. More questions may be easier to answer than just one question. The more comprehensive theorem may be easier to prove, the more general problem may be easier to solve.

**HOW TO SOLVE IT**

**UNDERSTANDING THE PROBLEM**

**DEVISING A PLAN**

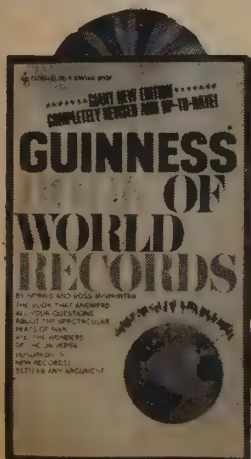
★ **Guinness Book of World Records**

Guinness book of World records

\$1.00 postpaid

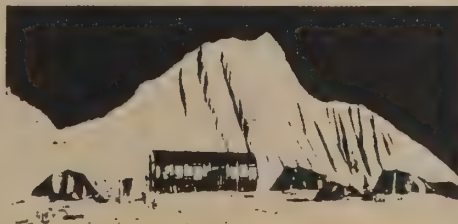
from: Lantam Books, Inc., 71 Madison Ave., New York, N. Y. 10016

or WHOLE EARTH CATALOG



An astonishing amount of conversation in the Western World is spent agreeing or disagreeing on the extremes of experience. Maybe it's some primordial urge to know where we are in the universe. Whatever, it's deep. This book is automatic conversation; whoever's reading it has to start reading aloud. And whoever's around has to listen and respond. Weird. Painless education though.

**Highest Income.** The highest gross income ever achieved in a single year by a private citizen is an estimated \$105,000,000 in 1927 by the Chicago gangster Alphonse ("Scarface Al") Capone (1899-1947). This was derived from illegal liquor trading and alky-cookers (illicit stills), gambling establishments, dog tracks, dance halls, "protection" rackets and vice. On his business card Capone described himself as a "Second Hand Furniture Dealer." Henry Ford, the first (1863-1947) earned about \$70,000,000 per annum at his peak.



**HIGHEST HABITATION:** This "silver hut," a prefabricated laboratory erected at an altitude of 18,765 feet in the Ming Bo Valley of the Himalayan mountains of India, was inhabited for four months in 1960-61.

**Lowest Incomes.** The poorest people in the world are the 42 surviving Pintibu (or Bindibu) found in the Northern Territory of Australia in July, 1957. They subsist with water from soak holes and by eating rats. In September, 1957, Chinese Government sources admitted that in some areas of the mainland the average annual income of peasants was 42 yuans per head. In 1964, China's average income per head was estimated at \$70 and the daily caloric intake at 2,200 (see page 298 for highest intake).

**Return of Cash.** The largest amount of cash ever found and returned to its owners was \$240,000 in unmarked \$10 and \$20 bills found in a street in Los Angeles, by Douglas William Johnston, an unemployed Negro, in March, 1961. He received many letters, of which 25 per cent suggested that he was insane.

**Handshaking.** The world record for handshaking was set by Theodore Roosevelt (1858-1919), as President of the U.S.A., when he shook hands with 8,513 people at a New Year's Day White House Presentation on January 1, 1907. Outside public life, the record is 37,500 hands in 7 hours 15 minutes 18 seconds by George Borkowski, in London on February 22, 1967.

**Pill Taking**

It is recorded that among hypochondriacs Samuel Jessup (born 1752), a wealthy grazier of Heckington, Lincolnshire, England, has never had a modern rival. His consumption of pills from 1794 to 1816 was 226,934, with a peak annual total of 51,590 in 1814. He is also recorded as having drunk 40,000 bottles of medicine before death overtook him at the surprisingly advanced age of 65.

**Hiccoughing**

The longest recorded attack of hiccoughs was that afflicting Jack O'Leary of Los Angeles. It was estimated that he "hicked" more than 160,000,000 times in an attack which lasted from June 13, 1948, to June 1, 1956, apart from a week's respite in 1951. His weight fell from 138 lbs. to 74 lbs. People sent 60,000 suggestions for cures, of which only one apparently worked—a prayer to St. Jude, the patron saint of lost causes.

**Sneezing**

The most chronic sneezing fit ever recorded was that of June Clark, aged 17, of Miami, Florida. She started sneezing on January 4, 1966, while recovering from a kidney ailment in the James M. Jackson Memorial Hospital, Miami. The sneezing was stopped by electric "aversion" treatment on June 8, 1966, after 155 days. The highest speed at which expelled particles have been measured to travel is 103.6 m.p.h.

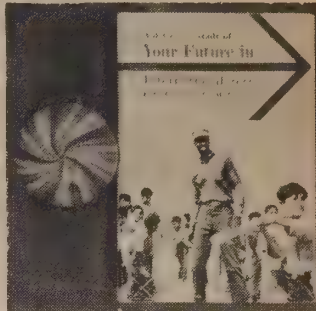
★ **Your Future In . . .**

"Career" is too heavy a word anymore. Fewer and fewer people are spending a lifetime on only one kind of work. Still, when you go into something—publishing, music, computer science, what have you—chances are you'll spend a few years at least doing little else. This series looks to be very useful for checking out what you're in for, and for getting into the thick of it quickly. The one we've seen is about International Service, and it's solid with information. It cost \$4. If you're only browsing, check this series in a library.

**Catalog**

**free**

from: Richards Rosen Press, Inc., 29 East 21st Street, New York, N. Y. 10010



**Careers Covered In This Series**

- Accounting
- Advertising
- Aeronautic Engineering
- Aerospace
- Agriculture
- Air Conditioning
- Air Force
- Air Transportation
- Airline Stewardess
- Architecture
- Army
- Atomic Science
- Automobile Industry
- Aviation
- Banking
- Beauty Culture
- Book Publishing
- Chemical Engineering
- Civil Engineering
- Coast Guard
- Commercial Art
- Credit Field
- Dental Assisting
- Dental Hygiene
- Dietitian
- Direct Selling
- Drafting
- Electronic Computing
- Electronic Engineering
- Elementary School Teaching
- Fashion Design
- Fashion World
- Flying
- Food Retailing
- Food Technology
- Foreign Service
- Forestry
- Geology
- Government
- Home Economist
- Hospital Administration
- Hotel Management
- Industrial Engineering
- Interior Design
- Insurance
- Investments
- Journalism
- Law
- Law Enforcement
- Library Work
- Magazine Publishing
- Marine Architect
- Marines
- Marketing
- Mathematics
- Mechanical Engineering
- Medical Technology
- Merchant Marine
- Metallurgical Engineer
- Meteorology
- Mining Engineer
- Modeling
- Movies
- Music
- Navy
- Nuclear Energy
- Nursing
- Occupational Therapy
- Optometry
- Own Business
- Personnel
- Pharmacy
- Photography
- Physician
- Physics
- Politics
- Printing
- Public Relations
- Railroading
- Real Estate
- Religion
- Restaurant
- Retailing
- Research
- Secretarial Work
- Securities
- Social Work
- Space Technology
- Sports
- Stereophones
- Teaching
- Television
- Theater
- Trucking
- Veterinary
- Medicine
- X-Ray Technology

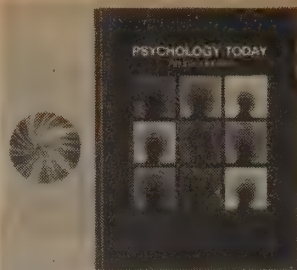
★ **Psychology Today: An Introduction**

*My god, they've done it—and I'm stunned. After spending more years than I care to remember dealing with this sort of subject matter, I expected to skim through this book, and I tried—for hour after hour after hour. First off, it's the most fantastic visual presentation I've ever encountered in a textbook; every page is arresting and imaginative and many are clearly and simply beautiful. It's the first time I've ever seen such consistent remembering that the subject under study is that of me and you and our fellows. This would surely be the book to start with for anyone interested in finding out what psychology is all about. There are eight major sections, each representing a main branch of the field, and each being covered clearly and thoroughly. There are two companion volumes, the Instructor's Guide, and the student's workbook, Involvement in Psychology Today. The Instructor's Guide lists appropriate films and suggests demonstrations for each section. "Involvement" is designed to do just that—the suggested projects are unusual and look like fun. There are good bibliographies here too, for those interested in pursuing particular subjects further, including a lot of wonderful books that didn't used to be considered proper.*

*These things about the content especially impress me: The scientific study of behavior is treated cogently so that anyone can learn the basics of scientific methodology. And this without the usual accompanying tone that only what's measurable is worth studying, a tone that so pervades many textbooks that as an undergraduate I despaired of learning anything interesting or meaningful about human beings. This stuff really turned me on to human behavior and the study of it. The sections on drugs and craziness are also impressive in that the subjects are tackled head-on; there's no evasiveness and no apparent prejudice. There is lots of good information and, best of all, a powerful feeling conveyed of what it's all about.*

*The authors have clearly attempted to make this book super-relevant to today's world. They have succeeded.*

[Reviewed by Diana Shugart]



**Psychology Today: An Introduction**  
1970; 707 pp.

**\$16.95** postpaid

from:  
Communications/Research/Machines, Inc.  
Del Mar, CA 92014

or WHOLE EARTH CATALOG

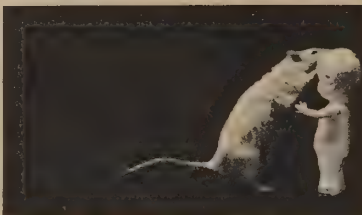
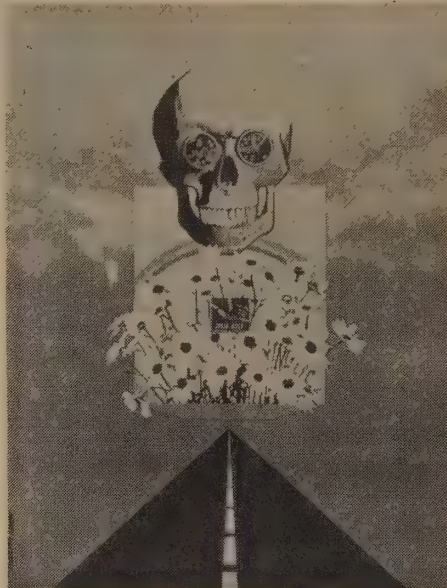
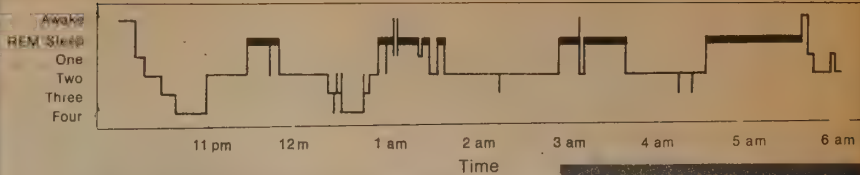


Figure 7.14  
Aggression elicited by shocks may be displaced to a doll if another rat is not present.



Speed kills

May hypothesizes that when a culture is moving toward integration and unity, it has a system of symbols, myths, and values that give integration to the members of society, and people are then relatively free from psychological breakdown. But when a culture is in the process of disintegration, it loses first of all its myths and symbols, then its system of values that have been based on these myths. Subsequently, people in large numbers come to seek psychological help. May believes that therapy will remain a critical part of our cultural scene until society discovers new myths and symbols to replace those we are currently losing.



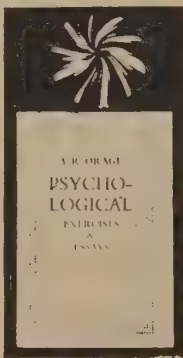
★ **Psychological Exercises**

*Orage, who edited "New Age" in the 'thirties, knew everyone. His favorites, like Pound, Gurdjieff and Ouspensky, were certainly worth knowing. Those were the days when intellectuals thought they could change the world just by pointing out what was right and what was wrong. Hah! Anyway, Orage had a secret kick, too, and it was exercising the grey matter. For example: while reciting "Jack and Jill" write down "Mary Had a Little Lamb". For example: while you are talking to someone, or reading this, count from 100 to 0 backwards by three's. You'll find that with some practice you really can do these things, just like learning to pat your stomach while rubbing your head. And then where are you? Fun.*

[Suggested and reviewed by Stephan Chodorov]

Read at sight the following unspaced passage in which each second word has been spelled backwards:

AsnoosasehtsermonsifinishedyobonpresumesotstirrlitSirregoRise  
nogoutfothehruc. Thehthginkwalksnwodfromsihseatithelec  
nahcbetweenadoubleworofsihtenantstahstandgniwbtomihon  
hcaeside,dnaeverywonandnehtinquireswohsuchnaone'sefiwor  
reh tomornosorreh tafdo, mohwhesodnoteesathcruhc—which  
siunderstoodsaatercesprimandothenosrepthatsiabsent.



**Psychological Exercises & Essays**  
A. R. Orage  
1930 . . . 1968; 121 pp.

**\$2.50** postpaid

from:  
Samuel Weiser  
734 Broadway  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

Let some prepared incident be staged and played before a group of students, who shall afterwards report it correctly.

E.g., the lights are suddenly turned off. Student A. blows a police whistle. He scuffles with Student B. and some noisy conversation takes place between them. Student B. escapes, making some remark as he bangs the door behind him. The lights are now turned up; and the rest of the students are called upon to report fully, accurately and in proper sequence the events of the episode.

Arrange the following sentences in order of their intellectual content; and give reasons for your arrangement.

- Where law ends, tyranny begins.
- The road to Hell is paved with good intentions.
- A desire in psychology has the same status as a force in physics.
- Our antagonist is our helper.
- The world is a comedy to those who think, a tragedy to those who feel.
- Man's character is his destiny.
- A stitch in time saves nine.

★ **The Savage Mind**

*Claude Levi-Strauss is the most famous — I mean, all the anthropologists recommend — He's so — I mean, so what if he's French — The most profound — Sartre couldn't — structural anthropology was what — Primitive doesn't mean — I mean, they knew what they were doing — So when — It looks crazy to us of course — They were just abstracting in a different — But you can analyze it once you — So you see, ritual is the — If you never — The Indians always — I mean, what makes you think you're so logical?*

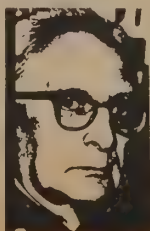
[Suggested by Michael Harner.  
Not reviewed by Lily Tomlin.]

**The Savage Mind**  
Claude Lévi-Strauss  
1962, 1966; 290 pp.

**\$3.25** postpaid

from:  
University of Chicago Press  
11030 South Langley Avenue  
Chicago, Illinois 60628

**132** or WHOLE EARTH CATALOG

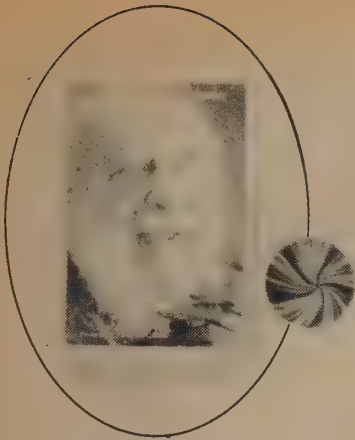


Several thousand Coahuila Indians never exhausted the natural resources of a desert region in South California, in which today only a handful of white families manage to subsist. They lived in a land of plenty, for in this apparently completely barren territory, they were familiar with no less than sixty kinds of edible plants and twenty-eight others of narcotic, stimulant or medicinal properties (Barrows). A single Seminol informant could identify two hundred and fifty species and varieties of plants (Sturtevant). Three hundred and fifty plants known to the Hopi Indians and more than five hundred to the Navaho have been recorded.

The real question is not whether the touch of a woodpecker's beak does in fact cure toothache. It is rather whether there is a point of view from which a woodpecker's beak and a man's tooth can be seen as "going together" (the use of this congruity for therapeutic purposes being only one of its possible uses), and whether some initial order can be introduced into the universe by means of these groupings. Classifying, as opposed to not classifying, has a value of its own, whatever form the classification may take.

A native thinker makes the penetrating comment that "All sacred things must have their place" (Fletcher 2, p. 34). It could even be said that being in their place is what makes them sacred for if they were taken out of their place, even in thought, the entire order of the universe would be destroyed. Sacred objects therefore contribute to the maintenance of order in the universe by occupying the places allocated to them. Examined superficially and from the outside, the refinements of ritual can appear pointless. They are explicable by a concern for what one might call "micro-adjustment" — the concern to assign every single creature, object or feature to a place within a class.

We have had to wait until the middle of this century for the crossing of long separated paths: that which arrives at the physical world by the detour of communication, and that which as we have recently come to know, arrives at the world of communication by the detour of the physical. The entire process of human knowledge thus assumes the character of a closed system. And we therefore remain faithful to the inspiration of the savage mind when we recognize that, by an encounter it alone could have foreseen, the scientific spirit in its most modern form will have contributed to legitimize the principles of savage thought and to re-establish it in its rightful place.



**Gestalt Therapy Verbatim**  
★ In and Out the Garbage Pail

Fritz Perls is not nearly as deceased as he seems. These two books preserve his power for all to tap and use. They also, to my mind, revolutionize the book industry. **Gestalt Therapy Verbatim** is made of tapes from Fritz' seminars and workshops at Esalen—and seldom will you find conflict, funk, truth and accomplishment so thick in a book. **In and Out the Garbage Pail** is Fritz' application of his methods to himself, through the very writing. It's autobiography, theory, poetry, and Fritz' many voices hassling each other through impasse into growth. The illustrations by Russ Youngreen raise the book by at least a dimension.

But all of this is derivative from Fritz Perls' main accomplishment. His psychology and his therapy . . . work.

[Suggested by Barry Stevens]



**Gestalt Therapy Verbatim**  
Frederick S. Perls, M.D., Ph.D.  
1969; 279 pp.

**\$3.50** postpaid

from:  
Real People Press  
939 Carol Lane  
Lafayette, CA 94549

or WHOLE EARTH CATALOG

**In and Out the Garbage Pail**  
Frederick S. Perls, M.D., Ph.D.  
1969; 280 pp.

**\$4.00** postpaid

from:  
Real People Press  
939 Carol Lane  
Lafayette, CA 94549

or WHOLE EARTH CATALOG



Helpers are con men, interfering. People have to grow by frustration —by skillful frustration. Otherwise they have no incentive to develop their own means and ways of coping with the world.

F: Okeh. Withdraw into your body, to your anxiety.

G: My—I can feel my heart pounding, and my pulse is—and my arms, and my legs, and my neck . . . Actually it's not a bad feeling.

F: Enjoy it.

G: It's a good strong heart . . . I feel the warmth of the fire on my back—that's nice, too.

F: Now come back to us. —

G: I'm not so scared now—it works every time, Fritz.

Look at the difference between the words "I am tensing myself" and "There's a tenseness here." When you say "I feel tenseness," you're irresponsible, you are not responsible for this; you are impotent and you can't do anything about it. The world should do something—give you aspirin or whatever it is. But when you say "I am tensing" you take responsibility, and we can see the first bit of excitement of life coming out. So stay with this sentence.

As soon as you say, "I want to change"—make a program—a counterforce is created that prevents you from change. Changes are taking place by themselves. If you go deeper into what you are, if you accept what is there, then a change automatically occurs by itself.

You see how you can use *everything* in a dream. If you are pursued by an ogre in a dream, and you *become* the ogre, the nightmare disappears. You re-own the energy that is invested in the demon. Then the power of the ogre is no longer outside, alienated, but inside where you can use it.

You never overcome *anything* by resisting it. You only can overcome anything by going deeper into it. If you are spiteful, be *more* spiteful. If you are performing, increase the performance. Whatever it is, if you go deeply enough into it, then it will disappear; it will be assimilated. Any resistance is no good. You have to go full into it—swing with it. Swing with your pain, your restlessness, whatever is there. Use your spite. Use your environment. Use all that you fight and disown.

Gestalt Therapy Verbatim

One remark that I get makes me embarrassed and angry: "When will the book come out?"

"Will you please leave me alone and let me do my thing! I am glad that I am excited and eager to write. I am glad to do something that integrates your needs and mine. So, don't push the river; it flows by itself!"

But I am holding onto my credo: "I am responsible only for myself. You are responsible for yourselves. I resent your demands on me, as I resent any intrusion into my way of being."

I know I am holding on just a bit too tight.



Topdog: Stop, Fritz, what are you doing?  
Underdog: What do you mean?

Cope and withdraw, contract and expand, implode and explode—like the heart imploding, contracting, and then exploding, opening to be filled. Permanent contracting leads to quick death, as does permanent extension.

In and Out of the Garbage Pail

Now let's take another step. You come up here and talk to me—just say anything. (as the person speaks, Fritz imitates his words, voice inflection, and facial expressions) Pair up and do this, and again try to really get the feel of being this other person. . . .

Now I want each one of you to transform yourself into something a little bit more different. Say, transform yourself into a road. . . .

Now transform yourself into a motorcar. . . .

Now transform yourself into a six months-old baby . . .

Now transform yourself into the mother of that baby . . .

Now transform yourself into that same baby again . . .

Now the same mother . . .

Now the same baby . . .

Now be two years of age . . .

Now transform yourself into your present age, the age you are . . . Can everyone perform that miracle?

Q: What is your opinion about meditation?

F: Meditation is neither shit nor get off the pot.

★ **Love and Will**

Here's a book to disabuse you, and you, and you of any notions you might have about there being anything very special in your sufferings; or anything terribly unique about your dilemmas and your fuck-ups. May describes our external and internal environments in their relationship to each other with a mind-blowing accuracy that evokes recognition—"Yes, that's me, all right, and that's just the way it is these days". Far from being brought down, one feels embraced by a warm intelligence, and relieved that there are minds like May's around. A sort of psychological ecologist, May points to the price we pay for every step of "social progress", and suggests that if perhaps we have unwittingly but consistently thrown out the baby with the bath water, then maybe it's time to find the hell some other way to get clean.

[Reviewed by Diana Shugart]

Sex can be defined fairly adequately in physiological terms as consisting of the building up of bodily tensions and their release. Eros, in contrast, is the experiencing of the personal intentions and meaning of the act. Whereas sex is a rhythm of stimulus and response, eros is a state of being. The pleasure in sex is described by Freud and others as the reduction of tension; in eros, on the contrary, we wish not to be released from the excitement but rather to hang on to it, to bask in it, and even to increase it. The end toward which sex points is gratification and relaxation, whereas eros is a desiring, longing, a forever reaching out, seeking to expand.

All this is in accord with the dictionary definitions.



**Love and Will**  
Rollo May  
1969; 352

**\$6.95** postpaid

from:  
W. W. Norton & Company, Inc.  
55 Fifth Avenue  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

If we repress the daimonic, we shall find these powers returning to "sicken" us; whereas, if we let them stay, we shall have to struggle to a new level of consciousness in order to integrate them and not be overwhelmed by impersonal power. And (what a refreshingly honest motto to put up in a psychotherapist's office!) *either way will hurt.*

We cannot ignore or slough over Freud's discoveries without cutting ourselves off from our own history, mutilating our own consciousness, and forfeiting the chance to push through this crisis to a new plane of consciousness and integration. Man's image of himself will never be the same again; our only choice is to retreat before this destruction of our vaunted "will power" or to push on to the integration of consciousness on new levels. I do not wish or "choose" to do the former; but we have not yet achieved the latter; and our crisis of will is that we are now paralyzed between the two.

Just as the individual is feeling powerless and plagued with self-doubts about his own decisions, he is, at the same time, assured that he, modern man, can do anything. God is dead and are we not gods—for have we not re-enacted Genesis by splitting the atom in our own laboratories and over Hiroshima? Of course, we did it in reverse: God made form out of chaos and we have made chaos out of form, and it is a rare human being who is not, in some secret place in his heart, scared to death that we shall not be able to turn chaos into form again before it is too late.

If will remains protest, it stays dependent on that which it is protesting against. Protest is half-developed will. Dependent, like the child on parents, it borrows its impetus from its enemy. This gradually empties the will of content; you always are the shadow of your adversary, waiting for him to move so that you can move yourself. Sooner or later, your will becomes hollow, and may then be forced back to the next line of defense.

This next defense is *projection of blame*. We find an illustration in every war of this unwitting confession of failure to integrate the daimonic. In the Vietnam war, for example, Secretary Rusk and the Administration blamed the Viet Cong for the escalation, and the Viet Cong—and those in this country opposed to the war—blamed Rusk and our own Administration. The self-righteous security that is achieved by means of this blaming of the other gives one a temporary satisfaction. But beyond the gross oversimplification of our historical situation which this exhibits, we pay a more serious price for such security. We have tacitly given the power of decision over to our adversary.

## ★ Valtox Drug Identification Kit

In three minutes, at about a nickel a test, you can selectively identify benzedrine, dexedrine, methedrine, opium, heroin, codeine, morphine, barbiturates, cocaine, LSD, marihuana, hashish, STP, peyote, and drugs such as aspirin, antihistamines, etc. The manufacturer prefers to do business with police departments, schools, and hospitals.



Valtox Master Kit

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Valley Toxicology Service  
P. O. Box 1048  
Davis, CA 95616



## ★ The Hallucinogens

You wouldn't nose out onto the freeway if you didn't know how to drive, and you damn well shouldn't go playing "eat me" and "drink me" unless you know what you're about. Here, in a book ostensibly for the medical profession, is the whole story to date. Hoffer and Osmond know more about this field than anyone else in the world, and their aim is to investigate it further. Osmond is one of the unsung sages of our times, working quietly in his own way to find out the nature of human nature. (He is a leading researcher into schizophrenia, the coiner of the word "psychedelic", the doctor who gave Huxley his mescaline, and is into a hundred other interesting things, including the reliability of the Jungian personality types. There are at least a few pages on every hallucinogen you've ever heard of, and on a lot you haven't; e.g.: the "dream fish" *kyphosus fuscus*, and the plants the ancient Norse used to induce the state of "berserk" (and why it became, among themselves, illegal.) Where previous experimenters have used themselves as guinea-pigs, their diaries are reprinted, e.g.: Wasson's trips with *psilocyba* mushrooms. In most cases, Osmond has tried the stuff himself; and he is a very patient, understanding and aware guinea-pig indeed. For people who remember their college chemistry, the molecular diagrams are here, for people who want to read more an exhaustive index shows you the way. This is a source book of knowledge, but by the by Osmond has two main observations of a philosophical nature: 1) man has been looking for hallucinogens from the beginning, and has been finding them, and 2) you don't get something for nothing. You can believe this man; he has smoked with the best of them, and popped things into his mouth that haven't been tried in a few centuries.

Warning: not reading this book may be injurious to your health.

[Suggested and reviewed by Stephan Chodorov]

## The Hallucinogens

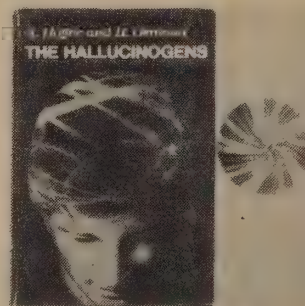
A. Hoffer and H. Osmond  
1967; 626 pp.

\$25.00 postpaid

from:  
Academic Press  
111 Fifth Avenue  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

Perhaps nutmeg pastry is popular because of the myristicin it contains. A feeling of well-being, following the ingestion of these cakes, might easily lead to a conditioned reaction to this pastry. In the same way it is likely that adrenoxy! is used by surgeons because of the feeling of well-being it induces in their patients, and not because it is a valuable hemostatic agent (Hoffer and Osmond, 1960). The euphoric or relaxant properties of nutmeg and of myristicin should be examined carefully. Too little attempt has been made by modern man to discover safe plant antitension and euphoric remedies.



*Acorus calamus* is a plant known in Asia, Europe, and North America for its medicinal properties. It was also known as flag root, rat root, and sweet calomel. During the great depression of the 1930's it was chewed in England by people unable to buy tobacco.

Recently one of our informants well acquainted with the habits of the Indians of northern Canada, reported his personal experiences with rat root collected in northern Alberta by the Cree. He reported that nearly all the Indians over age 40 used rat root regularly but the younger Indians were unfamiliar with it and its use was discouraged by physicians who practiced there. Rat root users seemed to be healthier, and were not subject to alcoholism. The Indians used rat root (a) as an antifatigue medicine (they chewed about 1 inch of the dried root which had a diameter equal to a pencil); (b) as an analgesic for relieving toothache, headache, etc; (c) for relief of asthma; (d) for oral hygiene, and (e) to relieve hangover.

Our informant had over the years tested these medicinal qualities and generally confirmed them. It was particularly effective for alleviating fatigue. On one occasion, he walked 12 miles in the northern woods to fight a forest fire. He was out of condition and was exhausted at the end of the march. He chewed and swallowed 2 inches of rat root. Within 10 minutes the fatigue vanished and on the return march he seemed to be walking 1 foot above the ground and felt wonderful. The effect was very unlike amphetamine. On his return home he was very exhausted but after a night's sleep was normal.

LSD was used not only in "Island," but in Chicago to relieve pain. It has powerful analgesic properties. Kast and Collins (1964) gave LSD to a group of patients many of whom knew they were dying of terminal cancer. In addition to their relief from pain some of the patients developed a peculiar disregard for the gravity of their situation. They spoke freely of their impending death with much less depression than they had had previously. The newer attitude to death lasted much longer than the analgesic action. It is likely those who have a visionary, psychedelic or transcendental reaction may equate this with life after death. This would account for the new more beneficial frame of mind for those patients who were dying.

One of our subjects recently told us that since his psychedelic experience several years ago, he no longer feared death.

There is a difference between LSD and other hallucinogenic compounds. LSD seems in small doses to act as a stimulant not unlike amphetamines, in larger doses it seems to possess a depressant effect. Other hallucinogenic compounds tend to have depressant effects at all the dose levels.

We had, as we later learned, merely hit upon a solution to alcoholism which the Native American Church of North America, or its antecedent groups, had used long before. According to Slotkin (1956) the Indians believed peyote took away the desire for strong drink and claimed that hundreds of drunkards had been "dragged from their downward way." The small band of Indians in Saskatchewan who allowed us to observe their ceremonies one night, explained that their religion based upon God and the use of peyote to reach Him included three important principles: (a) The member must be a good man, (b) he must educate himself, and (c) he must not drink. Thus we can only conclude that the peyote religion is the chief variable. Several Indians related to us how they had achieved sobriety only after this church.

The bark of the root of *Tabernanthe iboga* contains about 12 alkaloids (Downing, 1962). Of these the best known is ibogaine, a tryptamine derivative. This plant, named in 1889 by Baillon, was used by the natives of West Africa and the Congo to increase resistance against fatigue and tiredness and as an aphrodisiac. Dybowski and Landrin (1901) extracted the psychologically active alkaloid which they named ibogaine. They reported that the natives considered the plant equivalent or similar to alcohol, that it was a stimulant which did not disturb the thought processes of the user.

## ★ Drugs from A to Z

This is a dope-to-English dictionary, amazingly thorough (if occasionally astray) and surprisingly useful. I wonder if there will soon be Berlitz courses in the language.

### Drugs from A to Z: A Dictionary

Richard R. Lingeman  
1969; 277 pp.



\$2.95 postpaid

from:  
McGraw-Hill Paperbacks  
Princeton Road  
Hightstown, N. J. 08520  
Manchester Road  
Manchester, Mo. 63062  
8171 Redwood Highway  
Novato, CA 94947

or WHOLE EARTH CATALOG

loaded. [from the sense of *load*, a heavy weight; one who is "carrying a load" is "burdened" by a heavy intoxication] in a state of drug intoxication (not limited to alcoholic intoxication).

loco. MARIJUANA. Compare MEXICAN LOCOWEED.

long con. a major, elaborately plotted confidence game. Compare SHORT CON.

lophophorine. one of the alkaloids found in the hallucinogenic PEYOTE cactus.

Lorfan. [LEVALLORPHAN tartrate, Roche Laboratories] a synthetic NARCOTIC antagonist which acts to reverse the effects of the OPIATE analgesics. Lorfan is customarily injected along with the opiate in order to lessen the danger of respiratory depression from the latter without impairing analgesia. Used alone, Lorfan may itself induce severe respiratory depression; hence, it is recommended that it be administered in conjunction with an opiate except in emergencies. It is also valuable in cases of accidental or deliberate narcotic overdoses resulting in respiratory depression (along with other medical measures). Lorfan is not effective against BARBITURATE-induced respiratory depression. Compare NALORPHINE, NALLINE.

## ★ Megavitamin Therapy

Word has been drifting around for some while now about the use of massive doses (like 3 grams) of niacin (vitamin B-3) as a sanity drug. For example, to help terminate or lighten a bum LSD session. To alleviate anxiety states. To accomplish, with time, possible cure of schizophrenia. This pamphlet has all the basic information you need, including suppliers of niacin.

### Megavitamin Therapy

20 pp.

\$ .25 postpaid

from:  
Better Health Center  
5629 State Road  
Cleveland, Ohio 44134

The megavitamin therapy is *not intended to cure vitamin deficiencies*. For that, generally, much lower dosages are needed, and natural vitamin preparations are recommended. Physicians using the megavitamin therapy know that the illnesses treated by it are not vitamin deficiencies.

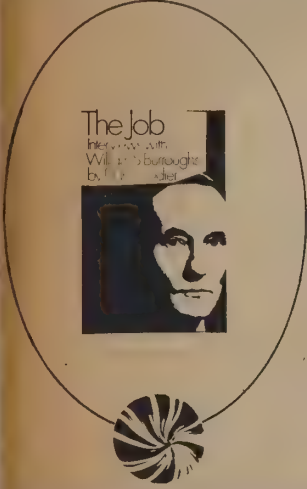
The megavitamin therapy is used for schizophrenia, neurosis, hypoglycemia, alcoholism, anxiety states, malaria, arthritis, senility, hyperlipemia, hypercholesterolemia, coronaries and LSD poisoning.

In the megavitamin therapy the vitamins are used to *balance the faulty body chemistry*. They were selected because they are inexpensive, can be taken orally, and have no dangerous side effects, even if taken in large dosages for a short period, or continuously in the maintenance dosages.

**The Job**

Burroughs' domain is the interface of individual mind and social mind—control. When social controls become demented, suicidal, the individual must break from them and find his own health. This book is a discussion of the control-busting techniques Burroughs has explored: Scientology's E-meter, word-subversion, violence, doing nothing, tape recorders, apomorphine, contradictory commands. All methods of seizing the social tools and turning them against themselves.

It's important research in a critical, invisible realm. My only carp would be Burroughs' assumption of crafty, subtle, efficient intellects behind society's controls... which describes Burroughs but hardly describes the tired men I've seen earnestly coping with the top jobs in the Pentagon and the Department of the Interior. Their main activity is trying not to fall over their own feet.



**The Job: Interviews with William S. Burroughs**  
Daniel Odier  
1970

**\$5.95** postpaid

from:  
Grove Press, Inc.  
80 University Place  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

*"Navigare necesse es. Vivare no es necesse."*

"It is necessary to travel. It is not necessary to live." These words inspired early navigators when the vast frontier of unknown seas opened to their sails in the fifteenth century. Space is the new frontier. Is this frontier open to youth? I quote from the *London Express*, December 30, 1968: "If you are a fit young man under twenty-five with lightning reflexes who fears nothing in heaven or on the earth and has a keen appetite for adventure don't bother to apply for the job of astronaut." They want "cool dads" trailing wires to the "better half" from an aqualung. Doctor Paine of the Space Center in Houston says: "This flight was a triumph for the squares of this world who aren't hippies and work with slide rules and aren't ashamed to say a prayer now and then." Is this the great adventure of space? Are these men going to take the step into regions literally unthinkable in verbal terms? To travel in space you must leave the old verbal garbage behind: God talk, country talk, mother talk, love talk. You must learn to exist with no religion no country no allies. You must learn to live alone in silence. Anyone who prays in space is not there.

The last frontier is being closed to youth. However there are many roads to space. To achieve complete freedom from past conditioning is to be in space. Techniques exist for achieving such freedom. These techniques are being concealed and withheld. In *The Job* I consider techniques of discovery.

Why then does the subject when he is trying most desperately to make a good impression make the worst impression possible? Because he also has the goal to make a bad impression which operates on an involuntary automatic level. This self-destructive goal is such a threat to his being that he reacts against it. He may be conscious or partially conscious of the negative goal but he cannot confront it directly. The negative goal forces him to react. The Reactive Mind consists of goals so repulsive or frightening to the subject that he compulsively reacts against them and it is precisely this reaction that keeps these negative goals in operation.

We take karate and Aikido training in the schools scattered through large cities of the world, our Scientology training at Scientology centers. Other courses are provided by a network of institutes and foundations often short-lived. The training is often interrupted. Three months of karate then Scientology take up all my time and just before the advanced Scientology courses I am shifted to Cairo for an intensive course in Egyptian hieroglyphs. This center is closed down by the government. After that there is a weapons course financed by a rightist billionaire in East Texas where we learn to use every weapon from a crossbow to a laser gun, a seminar in black magic of Africa sponsored by an ethnology institute in London that is always short of funds, a volunteer experiment in prolonged sense withdrawal set up by the U. S. Navy which ended in a Congressional investigation of brainwashing, a free fall club in North Dakota, skin diving and just when I am getting used to the aqualung we are thrown out of Ceylon where the program is and I do a Yoga stint in Northern India.

The aim of academy training is precisely *decontrol* of opinion, the students being conditioned to *look* at the facts *before* formulating any verbal patterns. The initial training in non-chemical methods of expanding awareness would last at least two years. During this period the student would be requested to refrain from all drugs including alcohol since bodily health is essential to minimize mental disturbance. After basic training the student would be prepared for drug trips to reach areas difficult to explore by other means in the present state of our knowledge.

The program proposed is essentially a disintoxication from inner fear and inner control, a liberation of thought and energy to prepare a new generation for the adventure of space. With such possibilities open to them I doubt if many young people would want the destructive drugs. Remember junk keeps you right here in junky flesh on this earth where Boot's is open all night. You can't make space in an aqualung of junk.

the more people we can get working with tape recorders the more useful experiments and extensions will turn up why not give tape recorder parties every guest arrives with his recorder and tapes of what he intends to say at the party recording what other recorders say to him it is the height of rudeness not to record when addressed directly by another tape recorder and you can't say anything directly have to record it first the coolest old tape worms never talk direct

After the baptism of silence the student moves with ease in the soundless medium but words are at his disposition when he needs them to be used with absolute precision.

Society makes all these criminals quite deliberately, these great concentration camps, where they dump people known as criminals. Many of them are psychopaths, that is, they are refractory to control. As soon as they become criminals, there will be no more trouble from them at all. They're right in that game of cops and robbers for life, in a concentration camp. But now they've begun extending this concentration camp, extending it and extending it, by making more laws and making more people criminals, if all the laws were enforced, they'd have practically everyone in the concentration camp, and everyone else would be necessary to guard them. They have reached an impasse: they must either admit that the whole thing is a farce and that laws are not meant to be enforced, or change them, or enforce them.

*Q: The Scandinavian countries are often cited as examples of successful countries.*

*A: It's an easy job; it's smaller. For example, in Denmark, they've got 4 million people, who are more or less homogeneous. They don't have a crime problem, you can't commit a crime in Denmark, everyone would know about it right away. They don't have any slums. They don't have any underworld, no place where people could dispose of stolen goods, they've really made crime, on any scale, impossible there. Of course, they have a very enlightened penal system for the people who do commit crimes, the occasional murder, same as in Sweden. They're simply smaller, more homogeneous countries and it's much easier to control the factors. There's no poverty there, you're not allowed to be poor. People are not very happy, but they're certainly well taken care of.*

*Q: Are they happy anywhere?*

*A: They're certainly happier in Spain with all the poverty than they are in Sweden with all the prosperity and their high living standard.*

**Aikido and the Dynamic Sphere**

Aikido is the most recent and most brilliantly conceived of the Japanese martial arts. A superb fighting technique, it is scarcely interested in fighting—it doesn't even have matches, just training. You train to put your mind and body in the same place for once—the one-point at your center of gravity. You train to acquire and direct Ki—energy (not strength, but coherent energy: when it's flowing you don't have to move). You train to blend with your opponent and use his energy to unhinge his attack. I find this book by two Americans to be far more useful for learning aikido than the numerous texts by Japanese students of the original master Morihei Ueshiba. The illustrations here are profoundly better than the usual photographs. They depict the mental image—which is the heart of aikido technique. An editor can use aikido, a general, an actor, a craftsman, a politician, a designer. What the body learns and practices becomes useful in any realm.



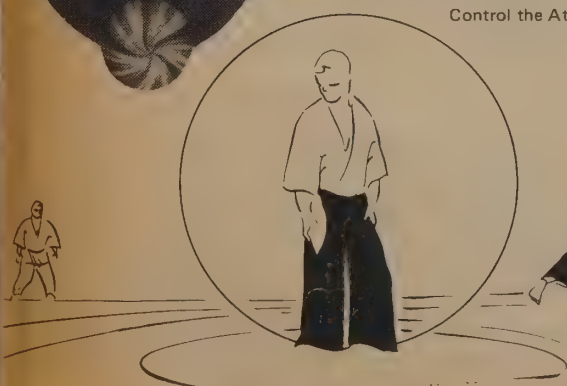
**Aikido and the Dynamic Sphere**  
A. Westbrook and O. Ratti  
1970; 375 pp.

**\$8.50** postpaid

from:  
Charles E. Tuttle Co.  
Rutland, Vermont 05701

or WHOLE EARTH CATALOG

Be stably centralized, inwardly and outwardly, in the lower abdomen!



Control the Attack by Leading it.



Your Centre may be located almost directly beneath him or at his side, but it is always the Centre of a dynamic circle along whose fringes your attacker will be forced to spin without any possibility of controlling his motions.

Ki is accumulated, in fact, in the Centre, where its full coordination is achieved. The two concepts—that of the Centre and that of intrinsic, inner, or total energy—are thus really one: —the Centre, vitally active and ever expanding through this form of energy; the energy, fully coordinated and stabilized in the Centre (centralized energy). The entire body of the student seems to become a compact source of power, without undue emphasis upon individual parts of that body acting or performing on their own. In this context, ki can also be qualified as "global" energy, "total extension," or "full coordination of powers."



A blow may be delivered to your head (attack no. 13, *shomen uchi*). You will pivot and kneel down, so that you are facing the same direction as your opponent. Your arm(s) will not "block" in the sense of stopping his motion, but will be extended so as to protect yourself. At the same time you will guide his motion (via his wrist or even sleeve) from the inside, lead him in full, circular extension forward and then down. This can be accomplished almost without touching him.

There is no pulling, no dragging; it is just a smooth, simple, circular lead, synchronized perfectly with your attacker's own movements. It is blended dynamically with them and, therefore, almost unnoticed until he is in flight. He falls, but yet does not know precisely how he came to fall.

**Humanitas Systems**

John Holt recommended their *New Math Primer*, so I wrote for it, and here came a catalog of very far out gear—a motion sensor (\$40), galvanic skin response meter (\$50), random light box (\$25), radar surveillance system (\$795), signal delay device (\$50), audible alpha wave sensor (\$225).

Catalog

free

from:  
Humanitas Systems  
Green Valley School, Inc.  
Box 606  
Orange City, Florida 32763

**Psychophysics Labs**

Another source for physical feedback and control devices. Their skin galvanometer is \$45, their alpha wave sensor is \$170. They have a shocker for \$55. All prices postpaid.

[Suggested by Alta Remail]

from:  
Psychophysics Labs  
31 Townsend Terrace  
Framingham, Mass. 01701

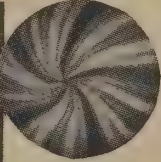


**Man's Presumptuous Brain**

*Dr. Simeons spent 18 years in India (had brilliant successes with malaria there). Is that why he's written the most useful yoga book to originate in the West? It's not a yoga book, of course, it's an investigation of psychosomatic disease (which will probably kill you and is certainly killing Us). Simeons' contention is that our brains, cerebral cortex specifically, have evolved clear out of coordination with the rest of our nature, body especially. It is the arrogant cortex that permits us to burn holes in our stomachs and in each other.*

*The book would be worth reading just for its central theme, but a whole lot more than just that is going on in Simeons and in the book. Unique document.*

[Suggested by Steve Baer]



**Man's Presumptuous Brain**  
A. T. W. Simeons, M. D.  
1961; 290 pp.

**\$1.75** postpaid

from:  
E. P. Dutton & Co., Inc.  
201 Park Avenue South  
New York, N. Y. 10003

or WHOLE EARTH CATALOG

Psychosomatic ailments account for the bulk of urban man's ill-health and are the most frequent cause of his death. Man shares this kind of affliction with no other living creature.

The reptilian brain is so organized that it must respond to all incoming messages from the senses. On the ground these messages lead to purposeful actions, for instance burrowing for food or safety; but in the trees many of these actions became pointless. A reptile's behaviour is governed entirely by automatic reflexes. Its actions are not subject to reason. It does not have to make a choice between different ways of reacting. All its actions are due to sensory messages putting an ingrained reflex into operation, and over this process the reptile has no control.

A reptile, taking to the trees, carried with it all the ancient reflexes which it had acquired in millions of years on the ground. These reflexes which the change of habitat rendered useless must have been a terrible harassment to an already overworked reptilian brain. In the slow course of evolution these reflexes would have gradually changed into more suitable ones. But so desperate was the situation of the tree-living reptile that it would have become extinct long before normal evolutionary trends could have brought about a better adjustment to the new environment. Some sort of evolutionary shortcut was needed if the species was to survive.

The shortcut was biologically evolved out of just the right mutations occurring at this dramatic moment. It consisted of a mechanism which blocked useless messages from the nose and thus prevented them from reaching those centres of the brain which would have been obliged to react to them. In the olfactory lobes a few cells took over the function of a screening device, a sort of censorship or filter by which incoming olfactory messages were either suppressed or allowed to pass, according to their vital importance. This sorting or classifying of smells relieved the reptilian brain of the exhausting need to react to every message from the nose and thus, in the trees, proved to be an efficient labour-saving device.

The instinct-conflicts which produce an ulcer are usually concerned with sex or family relationships. The modern cortex refuses to admit such conflicts and to expose them to the processes of reasoning. Guilt of this type, therefore, continues to build up behind the censoring screen and forces the diencephalon into the drastic action which causes the ulcer.

This interpretation of the peptic ulcers suggests an obvious psycho-therapeutic approach. Censorship at the level of consciousness must be so far relaxed that the conflicting instincts, and the emotion of guilt which they engender, can be ushered into conscious awareness. Thereafter the psychological situation becomes identical with that of a person who has a guilty conscience on account of something he knows he has done, a situation which never produces an ulcer. If such a psychotherapeutic manoeuvre is successfully accomplished, ulcers may heal with surprising rapidity, often in a matter of days, and do not recur unless an entirely new guilt-provoking situation arises.

One of the most remarkable things about the growth of the cortex was the incredible acceleration of this process. While the earlier phases took tens of millions of years to evolve, the later phases were covered in a few hundred thousand years. It seems to be a general law of evolution that once a trend towards a single successful specialization has become firmly established, the speed with which this specialization develops gets faster and faster and may even develop of its own accord beyond the limits of usefulness. Meanwhile, the rest of the body continues to evolve at a slow and steady pace, so that after a while a stage is reached in which all the other evolutionary trends are left far behind the outstanding specialization.

In modern man this development has already gone so far that there are signs of an evolutionary regression in the body in favour of a still more freakish growth of the brain. Modern man's body no longer reaches its full evolutionary maturity, as it did in Neanderthal Man. Though the modern brain develops further than that of Neanderthal Man, modern man's body remains behind in an earlier embryonic stage. He carries certain embryonic features on into adult life. An example of this has already been mentioned in connection with the distribution of human hair, but there are many other instances. One that interests us here is the relationship between the brain and the rest of the body.

In the light-skinned human races the development of the body is sharply braked in the last stages of pre-natal life, while the growth of the cortex is accelerated. There is some evidence to suggest that the negro's body is better adjusted to his brain. He is physically more mature at birth, and under ideal environmental conditions he averages a larger body. From an evolutionary point of view this makes his brain-body ratio more balanced.

A tendency to self-destruction seems to be inherent in the over-developed human brain. It is a situation similar to that in which a parasite thrives so exuberantly that it destroys its host, thereby bringing about its own undoing. As the host can survive if the parasite's rapacity is kept within tolerable limits, so man will survive longer if he can release his body and his diencephalon from the cruel cortical grip to which civilization is increasingly subjecting him.

In psychosomatic disease urban man is already paying a heavy price for his civilization, but he now has the means substantially to reduce the price if he will but make full use of them and realize to what extent his cortical presumption, deluding him that he has full control over his animal nature, prevents him from doing so. Western man will eventually go about the solution of his most pressing biological problems through a better understanding of psychosomatic mechanisms and will not adopt the only alternative, which is to give the cortex full rein; for if he did this, all his behaviour would become governed by rigidly conditioned reflexes. His mating and breeding, his drinking and feeding and all his many emotions would then have to conform to a fixed pattern applying to everybody; this would be entirely contrary to the way of life which he has so far followed.

**The Three Pillars of Zen**

*This is a book for practitioners, not buffs. It teaches you how to sit and how to open your sitting and some of what you are opening to. The book combines elements from both the Soto and Rinzi sects.*

**The Three Pillars of Zen**  
Philip Kapleau, Ed.  
1965, 1967; 363 pp.

**\$2.45** postpaid

from:  
Beacon Press  
25 Beacon Street  
Boston, Mass 02108

or WHOLE EARTH CATALOG

Once a man was invited to his friend's house. As he was about to drink a cup of wine offered him, he believed he saw a baby snake inside his cup. Not wishing to embarrass his host by drawing attention to it, he bravely swallowed it. Upon returning home he felt severe pains in his stomach. Many remedies were applied but in vain, and the man, now grievously ill, felt he was about to die. His friend, hearing of his condition, asked him once more to his house. Seating his sick friend in the same place, he again offered him a cup of wine, telling him it was medicine. As the ailing man raised his cup to drink, once again he saw a baby snake in it. This time he drew his host's attention to it. Without a word the host pointed to the ceiling above his guest, where a bow hung. Suddenly the sick man realized that the "baby snake" was the reflection of the hanging bow. Both men looked at each other and laughed. The pain of the sick man vanished instantly and he recovered his health.

What we call life is no more than a process of transformations. If we do not change, we are lifeless. We grow and age because we are alive. The evidence of our having lived is the fact that we die. We die because we are alive. Living means birth and death. Creation and destruction signify life.

Just before he passed away, at the age of sixty, Bassui sat up in the lotus posture and, to those gathered around him, said: "Don't be misled! Look directly! What is this?" He repeated this loudly and then calmly died.



**Centering**

*m. c. richards is an east/west potterpoet and philosopher. she makes ideas like tassajara porcupines make love, slowly, gently, carefully. i read her that way, opening up to an idea, reading until i'm asleep, munching around the edges, letting come together whatever falls together, centering. we are what is and what is--is what we are. the world is one. center us, center it. if it is centered, we are too. pull clay around the void, transform it, use it, turn it into a pot. m. c. richards may be just a touch too much of a poet.*

[Reviewed by J. D. Smith  
Suggested by Kelly Yeaton]

Because I am a potter, I take my image, centering, from the potter's craft. A potter brings his clay into center on the potter's wheel, and then he gives it whatever shape he wishes. There are wide correspondences to this process. Such extensions of meaning I want to call attention to. For centering is my theme: how we may seek to bring universe into a personal wholeness, and into act the rich life which moves so mysteriously and decisively in our bodies, manifesting in speech and gesture, materializing as force in the world the unifying energy of our perceptions.

Our studies of Eastern philosophy teach us to let go, to drop it. To surrender our attachments, our mentation. To free ourselves from ignorance and suffering. Our studies of Western philosophy teach us to surrender our minds to perception. Pure thinking has its source at the center. Thus Idealism is our Western knowledge: to surrender reflections for the evolving forms toward which matter is continuously casting itself, a dynamic thinking which generates rather than mirrors. And Western empiricism, which brings us back always sharply to the edges of a particular moment. There is only the moment, and yet the moment is always giving way to the next, so that there is not even Now, there is Nothing. True, true. There is nothing, if that is the way to understanding how much there is.



**Centering**  
M. C. Richards  
1962, 1964; 159 pp.

**\$2.45** postpaid

from:  
Wesleyan University Press  
Middletown, Conn. 06457

or WHOLE EARTH CATALOG

**Meditation Cushions and Mats**

*Traditionally designed softness for your hard edges.*

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from:  
Alaya Stitchery  
455 14th Street  
San Francisco, CA 94103



Zafu \$5.95 Available in 5-6" height, or to order. Fabric is traditional black or brown.  
Zabuton (mat for added height and ease on knees) \$6.95.

**Lucis Trust Library**

*Here's an annual freebie: a mail library of magical books. The catalog lists 1600 titles from ABC of Jung's Psychology to Zoroastrianism: The Religion of the Good Life. You can borrow two books at a time for a month. Lucis is a nice service that subsists on contributions; it probably is fragile to exploitive use.*

[Suggested by Gerald Thatcher]

Seven Human Temperaments, The . . . . .	Geoffrey Hodson
Seven Principles of Man, The . . . . .	Annie Besant
Seven Rays, The . . . . .	Ernest Wood
Seven Seventy-Seven . . . . .	Anonymous
Seventy-Fifth Anniversary Book of the Theosophical Society	Josephine Ransom
Sex Worship . . . . .	Clifford Howard
Shadow Forms . . . . .	Manly Hall
Shinto, The Unconquered Enemy . . . . .	Robert O. Ballou
Shri Ramakrishna . . . . .	T. L. Vaswani
Signs and Symbols of Primordial Man, The . . . . .	Albert Churchward
Signs and Symbols . . . . .	George Oliver
Simple Method of Raising the Soul to Contemplation, The . . . . .	Francois Malaval
Simple Study in Theosophy, A . . . . .	Michael J. Witty
Simple Way, The . . . . .	W. Gorn Old
Simplified Scientific Astrology . . . . .	Max Heindel

## A Yaqui Way of Knowledge

This book records the experiences of an anthropology student who becomes the apprentice of Don Juan, a Yaqui indian "man of knowledge" who is also a "diablero," a black sorcerer. It is a profoundly disturbing book since it opens up areas and ideas we usually dismiss or deny. Don Juan, over a period of five years, teaches the author a little of his knowledge. He teaches through giving his apprentice various psycho-active plants: peyote, datura, and a mixture of psilocybin mushrooms, genista canariensis, and other plants. Each of these plants has its own way of teaching, its own demands and its own kind of power. For those of us who thought we understood psychedelic effects this book reveals the rudimentary state of our knowledge. For those of us who have dismissed magic as a combination of hypnotism and stage effects we are confronted with powerful and effective magic which seems irrefutable.

Don Juan himself appears as a powerful, indecipherable, wise man whose knowledge is both extensive and alien to our own. He offers to each of us the possibility of dealing with other realities, but he makes it clear that all these ways are dangerous, difficult and once entered, cannot be put aside as simply another experience.

The goal of his teaching is partially expressed as follows:

The particular thing to learn is how to get to the crack between the worlds and how to enter the other world. There is a crack between the two worlds, the world of the diablos and the world of living men. There is a place where these two worlds overlap. The crack is there. It opens and closes like a door in the wind. To get there a man must exercise his will. He must, I should say, develop an indomitable desire for it, a single-minded dedication. But he must do it without the help of any power or any man . . .

Not a book to be read for pleasure, a book which will affect you more than you may wish to be affected.

[Reviewed by James Fadiman]

(Why not read it for pleasure? It's frontier Boswell and Johnson. —SB)

"Don't get me wrong, Don Juan," I protested. "I want to have an ally, but I also want to know everything I can. You yourself have said that knowledge is power."

"No!" he said emphatically. "Power rests on the kind of knowledge one holds. What is the sense of knowing things that are useless?"

He looked at me for a long time and laughed. He said that learning through conversation was not only a waste, but stupidity, because learning was the most difficult task a man could undertake. He asked me to remember the time I had tried to find my spot, and how I wanted to find it without doing any work because I had expected him to hand out all the information. If he had done so, he said, I would never have learned. But, knowing how difficult it was to find my spot and, above all, knowing that it existed, would give me a unique sense of confidence. He said that while I remained rooted to my "good spot" nothing could cause me bodily harm, because I had the assurance that at that particular spot I was at my very best. I had the power to shove off anything that might be harmful to me. If, however, he had told me where it was, I would never have had the confidence needed to claim it as true knowledge. Thus, knowledge was indeed power.



### The Teachings of Don Juan: A Yaqui Way of Knowledge

Carlos Castaneda  
1968; 276 pp.

\$ .95 postpaid

from:  
Ballantine Books  
Simon and Schuster, Inc.  
630 Fifth Avenue  
New York, N. Y. 10020

or WHOLE EARTH CATALOG

Once a man has vanquished fear, he is free from it for the rest of his life because instead of fear, he has acquired clarity of mind which erases fear. By then a man knows his desires; he knows how to satisfy those desires. He can anticipate the new steps of learning, and a sharp clarity surrounds everything. The man feels that nothing is concealed.

And thus he has encountered his second enemy: Clarity! That clarity of mind, which is so hard to obtain, dispels fear, but also blinds.

"I say it is useless to waste your life on one path, especially if that path has no heart."  
"But how do you know when a path has no heart, Don Juan?"  
"Before you embark on it you ask the question Does this path have a heart? If the answer is no, you will know it, and then you must choose another path."  
"But how will I know for sure whether a Path has a heart or not?"  
"Anybody would know that. The trouble is nobody asks the question; and when a man finally realizes that he has taken a path without a heart the path is ready to kill him. At that point very few men can stop to deliberate, and leave the path."  
"How should I proceed to ask the question properly, Don Juan?"  
"Just ask it."  
"I mean, is there a proper method, so I would not lie to myself and believe the answer is yes when it really is no?"  
"Why would you lie?"  
"Perhaps because at the moment the path is pleasant and enjoyable."  
"That is nonsense. A path without a heart is never enjoyable. You have to work hard even to take it. On the other hand, a path with a heart is easy; it does not make you work at liking it."

You have the vanity to believe you live in two worlds, but that is only your vanity. There is but one single world for us. We are men, and must follow the world of men contentedly.

"But is this business of the dog and me pissing on each other true?"  
"It was not a dog! How many times do I have to tell you that? This is the only way to understand it. It's the only way! It was 'he' who played with you."

"Let's put it another way, Don Juan. What I meant to say is that if I had tied myself to a rock with a heavy chain I would have flown just the same, because my body had nothing to do with my flying." Don looked at me incredulously. "If you tie yourself to a rock," he said, "I'm afraid you will have to fly holding the rock with its heavy chain."

## Altered States of Consciousness

If you're doing anything with meditation, dope, hypnosis, dreams, subjective exploration of any kind, this is a useful book. John Lilly borrowed our review copy and returned it with particular recommendation for these articles:

A Special Inquiry with Aldous Huxley into the Nature and Character of Various States of Consciousness	Milton H. Erickson
Toward the Experimental Control of Dreaming	Charles Tart
A Study of Dreams	Frederik van Eeden
The "High" Dream	Charles Tart
Mutual Hypnosis	Charles Tart
The Effects of Marijuana on Consciousness	Anonymous
Subjective Effects of Nitrous Oxide	William James
Attitude and Behavior Change Through Psychedelic Drug Use	Joseph Downing
Psychedelic Agents in Creative Problem Solving	Harman, McKim, Mogar, Fadiman, Stoloroff
Guide to the Literature on Psychedelic Drugs	Charles Tart
An Electroencephalographic Study on the Zen Meditation	Kasamatsu, Hlral
Operant Control of the EEG Alpha Rhythm and Some of Its Reported Effects on Consciousness	Joe Kamiya

Elsewhere in the CATALOG is a book called Direct Use of the Sun's Energy. Tart's book is moving toward Direct Use of the Mind's Energy.

1. The first three to five hours are usually individual, to try to relax and let go.
2. Spouses' problems; usually we like spouses separate for first group treatments. If both are present, it is better if you start in different areas, but if you both want to be together, okay.
3. Don't be surprised at anything you may see the therapist doing—he knows what he is doing.
4. A person who is having trouble breaking through needs something to resist against—the therapist may hand wrestle, or be on top and have three to six others on top as well. The person then can exert all his strength to break loose.
5. Anytime you are in trouble, don't hesitate to ask for help.
6. As people make break-through you'll hear laughing, crying, screaming. Don't worry about it, or get concerned.
7. Nothing is expected of you, don't expect anything of yourself—most people have a glorious trip.
8. Try to avoid impressing anybody—you'll have a better trip.
9. Around three to four hours after beginning, a stimulant will be brought around to keep your energy level up.
10. Anytime you want to stop the trip, take some niacin, 500 to 1000 mgm at a time. Niacin is good for bad re-entry, will make it easier.
11. During the experience, if you want to come together, touch the other person or ask him. He may shake his head 'no,' or else turn and touch you. Don't have hurt feelings, or guilt if they don't want to be with you, be free to be yourselves. ●

The most coherent and articulate sentence which came was this:

There are no differences but differences of degree between different degrees of difference and no difference.

The change that then came over Bill was dramatic. He began mumbling typical induction suggestions about relaxing, but over the course of a few minutes his voice became dramatic and forceful. He suggested that Anne see a diamond in her hand and concentrate on it and then almost immediately suggested that it would disappear and her mind would go blank. Then he very forcefully suggested physical relaxation as he counted her into hypnosis: when he reached 20 his whole manner changed and became relaxed and soothing. Anne reported a depth of 22.

Bill then began talking about a 'hallucinatory' journey that he and Anne were on together. His voice was confident, smooth, relaxed, and completely convincing that he was describing actual events that were happening rather than anything 'unreal.' They were standing on a mountain slope, in front of the entrance to a tunnel. They walked hand-in-hand down this tunnel, with the explicit suggestion by Bill that they would be going deeper into hypnosis as they walked deeper into the dark tunnel. It was quiet in the tunnel, all outside noises had vanished, and an ineffable feeling of pleasantness and significance pervaded the tunnel. Anne reported a depth of 35 after a few minutes of this, and Bill continued describing their walk down the tunnel.

The tunnel was absolutely real to Anne and Bill (and to Carol), as real as any experience in life. Although it was dark they could 'see' its walls in a strange way: Anne said it felt as if she had a 'light' coming out from under her eyebrows, and "...it wasn't illuminating anything I was seeing, yet it helped me to know that things were there without seeing them." Both Ss reported feeling the texture of the rock walls, which ranged from soft and slippery at places where it seemed moss-covered to quite hard where the bare rock was exposed.

Anne and Carol were intensely curious as to what lay at the end of the tunnel, the end that Bill would not let them reach. This resulted in an interesting aftermath. About a month after this session, Anne was a subject in a group hypnosis test. As she knew what the induction procedure was, she decided to 'go' back to the tunnel and explore it as soon as she was hypnotized but before the suggestibility test items were administered. She found herself running along the tunnel, hurrying to reach the end before the test items. At the end of the tunnel she found a cave, blazing with brilliant white light, and occupied by an old man of angelic appearance. The room was filled with music from an unseen source. Anne repeatedly asked him what this experience meant: he ignored her at first, and finally told her, very sternly, that he could not answer her question because Bill was not with her. Anne then found herself back at the group hypnosis testing.

I asked the Ss about their perceived bodies during the experience and found that they were curiously disembodied much of the time. They mentioned having heads or faces but no bodies at times, and Anne reported that they walked through each other sometimes. When Bill commanded Anne to give him her hand so he could lead her back, Anne reported that she had to "crawl back into my body, sort of. It was almost as if we were moving around with just heads. When Bill said give him my hand, I had to kind of conjure up a hand."

Anne and Bill read the transcripts over and were both shocked. They had been talking about their experiences to each other for some time, and found they had been discussing details of the experiences they had shared for which there were no verbal stimuli on the tapes, i.e. they felt they must have been communicating telepathically or that they had actually been 'in' the nonworldly locales they had experienced. This was frightening to both Ss, for what had seemed a lovely shared fantasy now threatened to be something real. ●

Wonderingly, but with outward calm, I undertook to arouse Huxley from the trance state by accepting the partial clues given and by saying in essence, "Wherever you are, whatever you are doing, listen closely to what is being said, and slowly, gradually, comfortably begin to act upon it. Feel rested and comfortable, feel a need to establish an increasing contact with my voice, with me, with the situation I represent, a need of returning to matters in hand with me not so long ago, in the not so long ago belonging to me, and leave behind but AVAILABLE UPON REQUEST practically everything of importance, KNOWING BUT NOT KNOWING that it is AVAILABLE UPON REQUEST. And now, let us see, that's right, you are sitting there, wide awake, rested, comfortable, and ready for discussion of what little there is."

As he watched, he became annoyed with me since I was apparently trying to talk to him, and he experienced a wave of impatience and requested that I be silent. He turned back and noted that the infant was growing before his eyes, was creeping, sitting, standing, toddling, walking, playing, talking. In utter fascination he watched this growing child, sensed its subjective experiences of learning, of wanting, of feeling. He followed it in distorted time through a multitude of experiences as it passed from infancy to childhood to school days to early youth to teenage. He watched the child's physical development, sensed its physical and subjective mental experiences, sympathized with it, empathized with it, rejoiced with it, thought and wondered and learned with it. He felt as one with it, as if it were he himself, and he continued to watch it until finally he realized that he had watched that infant grow to the maturity of 23 years. He stepped closer to see what the young man was looking at, and suddenly realized that the young man was Aldous Huxley himself, and that this Aldous Huxley was looking at another Aldous Huxley, obviously in his early fifties, just across the vestibule in which they both were standing; and that he aged 52, was looking at himself, Aldous, aged 23. Then Aldous, aged 23 and Aldous aged 52, apparently realized simultaneously that they were looking at each other and the curious questions at once arose in the mind of each of them. For one the question was, "Is that my idea of what I'll be like when I am 52?" and, "Is that really the way I appeared when I was 23?" Each was aware of the question in the other's mind. Each found the question of "Extraordinarily fascinating interest" and each tried to determine which was the "actual reality" and which was the "mere subjective experience outwardly projected in hallucinatory form."

When I have been flying in my dreams for two or three nights, then I know that a lucid dream is at hand. And the lucid dream itself is often initiated and accompanied all the time by the sensation of flying. Sometimes I feel myself floating swiftly through wide spaces; once I flew backwards, and once, dreaming that I was inside a cathedral, I flew upwards, with the immense building and all in it, at great speed.

## Altered States of Consciousness

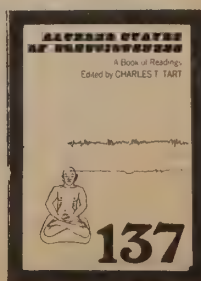
Charles Tart, ed.  
1969; 575 pp.

\$9.95 postpaid

from:  
John Wiley & Sons, Inc.  
One Wiley Drive  
Somerset, N. J. 08873

Western Distribution Center  
1530 South Redwood Road  
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## Plans and the Structure of Behavior

*What I know is that this book and Act of Creation taught me most of what I know about using my head.*

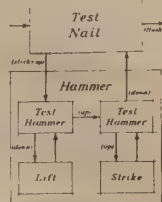
*The result of a year-long conversation by the authors in California in 1958-59, the book discards Stimulus-Response psychology (which never helped my head, or probably anybody's) and wades into cybernetics instead. The book is cheerful, if academically. From it the notion of being programmed, and self-programming, emerges as a convenience rather than a threat. That Plans (programs) operate hierarchically rather than single-file is clearly an enormous saving in trouble and trivia. The constant checking of feedback loops (called TOTE units) yields a nice connectedness to the environment. The consideration of contradictory or interrupted Plans gives insight into the uses and misuses of frustration. A handy book, this, of simple concepts for understanding the subtle realm.*

[Suggested by Preston Cutler]

**Plans and the Structure of Behavior**  
George A. Miller, Eugene Galanter, Karl H. Pribram  
1960; 226 pp.

**\$8.50** from:  
Holt, Rinehart and Winston, Inc.  
383 Madison Avenue  
New York, N. Y. 10017

or WHOLE EARTH CATALOG



As you brush your teeth you decide that you will answer that pile of letters you have been neglecting. That is enough. You do not need to list the names of the people or to draft an outline of the contents of the letters. You think simply that today there will be time for it after lunch. After lunch, if you remember, you turn to the letters. You take one and read it. You plan your answer. You may need to check on some information, you dictate or type or scribble a reply, you address an envelope, seal the folded letter, find a stamp, drop it in a mailbox. Each of these subactivities runs off as the situation arises—you did not need to enumerate them while you were planning the day. All you need is the name of the activity that you plan for that segment of the day, and from that name you then proceed to elaborate the detailed actions involved in carrying out the plan.

**Plan.** When we speak of a Plan in these pages, however, the term will refer to a hierarchy of instructions, and the capitalization will indicate that this special interpretation is intended. A Plan is any hierarchical process in the organism that can control the order in which a sequence of operations is to be performed.

A Plan is, for an organism, essentially the same as a program for a computer, especially if the program has the sort of hierarchical character described above. . . .

**Execution.** We shall say that a creature is executing a particular Plan when in fact that Plan is controlling the sequence of operations he is carrying out. When an organism executes a Plan he proceeds through it step by step, completing one part and then moving to the next. The execution of a Plan need not result in overt action—especially in man, it seems to be true that there are Plans for collecting or transforming information, as well as Plans for guiding actions. Although it is not actually necessary, we assume on intuitive grounds that only one Plan is executed at a time, although relatively rapid alternation between Plans may be possible. An organism may—probably does—store many Plans other than the ones it happens to be executing at the moment.

**Image.** The Image is all the accumulated, organized knowledge that the organism has about itself and its world. The Image consists of a great deal more than imagery, of course. What we have in mind when we use this term is essentially the same kind of private representation that other cognitive theorists have demanded. It includes everything the organism has learned—his values as well as his facts—organized by whatever concepts, images, or relations he has been able to master. . . .

The central problem of this book is to explore the relation between the Image and the Plan.

If this description of hammering is correct, we should expect the sequence of events to run off in this order: Test nail. (Head sticks up.) Test hammer. (Hammer is down.) Lift hammer. Test hammer. (Hammer is up.) Test hammer. (Hammer is up.) Strike nail. Test hammer. (Hammer is down.) Test nail. (Head sticks up.) Test hammer. And so on, until the test of the nail reveals that its head is flush with the surface of the work, at which point control can be transferred elsewhere. Thus the compound of TOTE [Test-Operate-Test-Exit] units unravels itself simply enough into a coordinated sequence of tests and actions, although the underlying structure that organizes and coordinates the behavior is itself hierarchical, not sequential.

—Planning can be thought of as constructing a list of tests to perform. When we have a clear Image of a desired outcome, we can use it to provide the conditions for which we must test, and those tests, when arranged in sequence, provide a crude strategy for a possible Plan. (Perhaps it would be more helpful to say that the conditions for which we must test are an Image of the desired outcome.)

We see, therefore, that a person who is caught between conflicting Plans is in a somewhat different situation from the person caught between conflicting motives. He is almost necessarily unaware that his Plans conflict, whereas he may be painfully conscious of his incompatible desires. There is almost certain to be a large penumbra of confusion surrounding the incompatible Plans; the person seems to be deliberately frustrating himself, but cannot discover why. He knows something is wrong, but cannot discover what it is. The two Plans may be isolated from one another in such a way that it never occurs to the person to contrast one with the other.

Human institutions exist primarily for the purpose of executing plans that their members, as individuals, would be unable or unwilling to execute. When the plans that form their *raison d'être* are taken away—finished, frustrated, outlawed, outgrown, completed, whatever—the group may disband. Sometimes they may hold reunions to swim in an ocean of emotion, but then they have become social groups with corresponding changes in the plans they execute. But many planless groups disappear and are never heard from again. In this respect groups are like computers, 90 percent plan and 10 percent image. Individuals, on the other hand are about 75 percent Image and 25 Percent Plan.

The means-ends analysis runs something like this: First, see if you know any way to transform the given into the desired solution. If no way is known, then try to reduce the difference between them; find some transformation that reduces the difference, and then apply it. Then try the first step again—see if you know any way to transform the new version of the given into the desired solution. If not, search again for a way to reduce the difference, etc. Each time the difference is reduced, the problem gets a little easier to solve.

A second very general system of heuristic used by Newell, Shaw, and Simon consists in omitting certain details of the problem. This usually simplifies the task and the simplified problem may be solved by some familiar plan. The plan used to solve the simple problem is then used as the strategy for solving the original, complicated problem.

## \* Meditation in Action

*The Venerable Trungpa Rinpoche was some kind of a high abbot over a district of monasteries in Tibet, so you can expect a book of his talks to be some kind of esoteric and too profound for us surface-dwellers.*

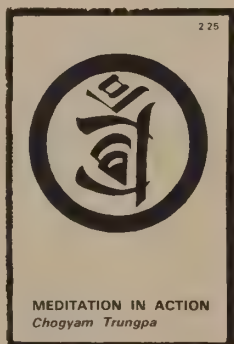
*If it's esoteric, he's cleverly hidden that fact, and surface dwellers are being sucked in from all over the map. I've never seen so much good sense in so little space on the subject of meditation. As a book, it trends toward the very goal: singularity.*

**Meditation in Action**  
Chogyam Trungpa  
1969; 74 pp.

**\$2.25** postpaid

from:  
Shambala Publications  
2010 Seventh Street  
Berkeley, CA 94710

or WHOLE EARTH CATALOG



The point is that whatever one is trying to learn, it is necessary to have first hand experience, rather than learning from books or from teachers or by merely conforming to an already established pattern. That is what he found, and in that sense Buddha was a great revolutionary in his way of thinking. He even denied the existence of Brahma, or God, the Creator of the world. He determined to accept nothing which he had not first discovered for himself.

. . . He developed the creative side of revolution, which is not trying to get help from anyone else, but finding out for oneself. Buddhism is perhaps the only religion which is not based on the revelation of God nor on faith and devotion to God or gods of any kind. This does not mean that Buddha was an atheist or a heretic. He never argued theological or philosophical doctrines at all. He went straight to the heart of the matter, namely, how to see the Truth. He never wasted time in vain speculation.

If we are meditating at home and we happen to live in the middle of the High Street, we cannot stop the traffic just because we want peace and quiet. But we can stop ourselves, we can accept the noise. The noise also contains silence. We must put ourselves into it and expect nothing from outside, just as Buddha did. And we must accept whatever situation arises. As long as we never retreat from the situation, it will always present itself as a vehicle and we will be able to make use of it. As it is said in the Scriptures, "The Dharma is good at the beginning, the Dharma is good in the middle and the Dharma is good at the end." In other words the Dharma never becomes out-of-date, since fundamentally the situation is always the same.

So the skilled Bodhisattva will acknowledge and accept all these negative things. And this time he really knows that he has all these terrible things in him, and although it is very difficult and unhygienic, as it were, to work on, that is the only way to start. And then he will scatter them on the field of Bodhi. Having studied all these concepts and negative things, when the time is right he does not keep them any more, but scatters them and uses them as manure. So out of these unclean things comes the birth of the seed which is Realisation. This is how one has to give birth.

The whole point is to cultivate the acceptance of everything, so one should not discriminate or become involved in any kind of struggle. That is the basic meditation technique, and it is quite simple and direct. There should be no deliberate effort, no attempt to control and no attempt to be peaceful. This is why breathing is used. It is easy to feel the breathing, and one has no need to be self-conscious or to try and do anything. The breathing is simply available and one should just feel that. That is the reason why technique is important to start with. This is the primary way of starting, but it generally continues and develops in its own way. One sometimes finds oneself doing it slightly differently from when one first started, quite spontaneously. This is not classified as an advanced technique or a beginner's technique. It simply grows and develops gradually.

Where there is an external person, a higher Being, or the concept of something which is separate from oneself, then we tend to think—that because there is something outside there must be something here as well. The external phenomenon sometimes becomes such an overwhelming thing and seems to have all sorts of seductive or aggressive qualities, so we erect a kind of defence mechanism against it, failing to see that that is itself a continuity of the external thing. We try to segregate ourselves from the external, and this creates a kind of gigantic bubble in us which consists of nothing but air and water or, in this case, fear and the reflection of the external thing. So this huge bubble prevents any fresh air from coming in, and that is "I"—the Ego. So in that sense there is the existence of Ego, but it is in fact illusory.

Q. For meditation, would a student have to rid himself of Ego before he started, or would this come naturally as he is studying?

A. This comes naturally, because you can't start without Ego. And basically Ego isn't bad. Good and bad doesn't really exist anywhere, it is only a secondary thing. Ego is, in a sense, a false thing, but it isn't necessarily bad. You have to start with Ego, and use Ego, and from there it gradually wears out, like a pair of shoes. But you have to use it and wear it out thoroughly, so it is not preserved. Otherwise, if you try to push Ego aside and start perfect, you may become more and more perfect in a rather one-sided way, but the same amount of imperfection is building up on the other side, just as creating intense light creates intense darkness as well.

Perhaps the word Awareness is a little ambiguous, since it often connotes self-consciousness or just being aware of what you are doing, but in this case awareness is simply seeing the situation accurately. It does not particularly mean watching yourself speaking and acting, but rather seeing the situation as a whole, like an aerial view of a landscape which reveals the layout of the town and so on. So patience is related to discipline, which in turn is connected with awareness.

One should try to develop theoretical knowledge without being concerned with the past or the future. At first one's theories may be inspired by reading books, so we do not altogether dismiss learning and studying, which are very important and can provide a source of inspiration. But books can also become merely a means to escape from reality; they can provide an excuse for not really making an effort to examine things in detail for oneself.

## \* Toward a General Theory of the Paranormal

*The title is accurate. The book offers some conceptual handles toward a communicable understanding of mystical and clairvoyant experiences. It has nice quotes from the literature.*

**Toward a General Theory of the Paranormal**

Lawrence LeShan  
1969; 112 pp.

**\$3.00** postpaid

from:  
Parapsychology Foundation, Inc.  
29 West 57th Street  
New York, N. Y. 10019

or WHOLE EARTH CATALOG

Our concern is with those aspects of whatever is out there that constitute the individual reality (IR) of a specific individual. ("We must remember," wrote Werner Heisenberg in a famous statement, "that what we see is not Nature, but Nature exposed to our method of questioning.")

Bertrand Russell has pointed up four basic characteristics of the IR of the mystic. These are: 1) *There is a better way of gaining information than through the senses.* 2) *There is unity of all things.* 3) *There is no reality to time.* 4) *All evil is mere appearance.*

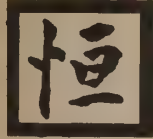
One is reminded here of the old Spanish proverb: "Take what you want," said God. "Take it, and pay for it."

**The I Ching**

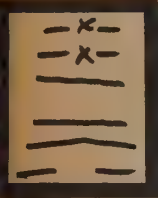
*The I Ching, the Book of Changes, is a brilliant problem-solving device. A problem (or ignorance) generally consists of being caught in local cyclic thinking. To consult the oracle, the wisdom of chance (or synchronicity, no matter), is to step out of the cycle of no-change and address a specific story on the nature of change. You now have an alternative set of solutions that owe nothing but proximity to your problem. You make the associations, you find the way out. It's prayer.*

*I can't think of a more important and useful book than this one. It's famously ancient, poetic, deep, esoteric, simple, involving. It has been the most influential book on American art and artists in the last 15 years.*

*Most people know about it. We've included it here to point at the new smaller (unabridged) cheaper Princeton University Press version of the classic Wilhelm-Baynes Bollingen edition. The oracle method is still on page 721.*



32. Heng/Duration



above CHEN The Arousing, Thunder  
below SUN The Gentle, Wind

The strong trigram Chen is above, the weak trigram Sun below. This hexagram is the inverse of the preceding one. In the latter we have influence, here we have union as an enduring condition. The two images are thunder and wind, which are likewise constantly paired phenomena. The lower trigram indicates gentleness within; the upper, movement without.

In the sphere of social relationships, the hexagram represents the institution of marriage as the enduring union of the sexes. During courtship the young man subordinates himself to the girl, but in marriage, which is represented by the coming together of the eldest son and the eldest daughter, the husband is the directing and moving force outside, while the wife, inside, is gentle and submissive.

**THE JUDGMENT**  
DURATION. Success. No blame.  
Perseverance furthers.  
It furthers one to have somewhere to go.

Duration is a state whose movement is not worn down by hindrances. It is not a state of rest, for mere standstill is regression. Duration is rather the self-contained and therefore self-renewing movement of an organized, firmly integrated whole, taking place in accordance with immutable laws and beginning anew at every ending. The end is reached by an inward movement, by inhalation, systole, contraction, and this movement turns into a new beginning, in which the movement is directed outward, in exhalation, diastole, expansion.

Heavenly bodies exemplify duration. They move in their fixed orbits, and because of this their light-giving power endures. The seasons of the year follow a fixed law of change and transformation, hence can produce effects that endure.

So likewise the dedicated man embodies an enduring meaning in his way of life, and thereby the world is formed. In that which gives things their duration, we can come to understand the nature of all beings in heaven and on earth.

**THE IMAGE**  
Thunder and wind: the image of DURATION.  
Thus the superior man stands firm  
And does not change his direction.

Thunder rolls, and the wind blows; both are examples of extreme mobility and so are seemingly the very opposite of duration, but the laws governing their appearance and subsidence, their coming and going, endure. In the same way the independence of the superior man is not based on rigidity and immobility of character. He always keeps abreast of the time and changes with it. What endures is the unswerving directive, the inner law of his being, which determines all his actions.

Six in the fifth place means:  
Giving duration to one's character through perseverance.  
This is good fortune for a woman, misfortune for a man.

A woman should follow a man her whole life long, but a man should at all times hold to what is his duty at the given moment. Should he persistently seek to conform to the woman, it would be a mistake for him. Accordingly it is altogether right for a woman to hold conservatively to tradition, but a man must always be flexible and adaptable and allow himself to be guided by what his duty requires of him at the moment.

Six at the top means:  
Restlessness as an enduring condition brings misfortune.



**The I Ching**  
Translated by Richard Wilhelm, Cary F. Baynes  
? B.C.; 740 pp.

**\$5.25** postpaid

from:  
Shambala Booksellers  
2482 Telegraph Avenue  
Berkeley, CA 94704

or  
**\$6.00** postpaid

from:  
Princeton University Press  
Princeton, New Jersey 08540

or WHOLE EARTH CATALOG

There are people who live in a state of perpetual hurry without ever attaining inner composure. Restlessness not only prevents all thoroughness but actually becomes a danger if it is dominant in places of authority.

**The King and the Corpse**

*I know of no better myth-telling than this, and no better myths. You've got Abu Kasem's Slippers, and then Conn-eda and John Golden-Mouth, and four romances from King Arthur that take deeper turns than T. H. White, the King and the Corpse, and the prize: the ancient Hindu Romance of the Goddess, plumbing the involuntary creation. Collected by Heinrich Zimmer, edited by Joseph Campbell. There's few books with such a blend of extravagance and intelligence, and none that come so close to the heart of education.*

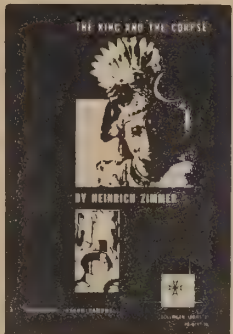
*[Suggested by Jim Fadiman]*

**The King and the Corpse**  
Heinrich Zimmer; Joseph Campbell, ed.  
1948; 338 pp.

**\$7.50** postpaid

from:  
Princeton University Press  
Princeton, N. J. 08540

or WHOLE EARTH CATALOG



The course of the world runs awry, but therewith it goes directly to its goal. The catastrophe of the previously unforeseen is what breaks the world progression forward, and the moment the catastrophe has come to pass it appears to be what was intended all the while. For it is creative in a deeper way than the planning creative spirit supposes. It transforms the situation, forces an alteration on the creative spirit, and throws it into a play that carries it beyond itself, carries it, that is to say, really and properly into play, and into a play that entrains the entirety of creation. The planner, the watcher, is compelled to become the endurer, the sufferer. Such a metamorphosis into the opposite, into the absolutely alien, is what throws the knots that reticulate the net of the living whole and mesh the individual alive into the fabric.

Shiva's visage became radiant with joy. In the presence of all the Holy Ones he lapsed, absorbed, into introverted vision. Then he permitted himself to sink to the floor, legs crossed, shut his eyes, and sank into his being to the depth of the Being Sublime. His body began to glow, so that the eyes of all the Holy Ones present became dazzled. And the moment he reached quietude in this immersion, Vishnu's Māyā fell away from around him, and his entire body burst into such a radiance that even his own hosts were unable to bear the blast. Vishnu passed into him, poured into him as the pure Light of Heaven, and disclosed within Shiva's body, to the eye of his inner contemplation, the whole lotus-spectacle of creation and the procession of the world. Blissful and serene, beyond the senses and their universes of distinctions, alone and pure, beholding everything, the abstracted one experienced within his own being the Being Supreme, that Substratum of all Unfoldments. He beheld, riveted in contemplation, how the One Substance exfoliates into all the delectations of the world.

Shiva, bereaved, distracted, was conducted gently by his guru, Brahmā, out of the gates of the city of his life's loss and away into the Himalayan peaks of snow. There, walking together, the two came upon a little lake of solitude, clear, and delightful to the mind. Brahmā perceived it first.

And seated here and there about the quiet shores were saints and sages in absolute meditation; two or three stood bathing in the cool crystal waters, sending ripples out across its mirroring of the blue and immobile, high, mountain sky. Many migratory birds, shrilly crying, were coming from all directions to flutter down into its lotus-bordered waters—pairs of splendid ruddy geese beautifully spreading out their great wings in exultation, cormorants with their hooked bills, gray-winged geese, and Siberian cranes, stalking about the shores, floating on the surface of the lake, peering into the waters, themselves beautifully reflected—and, occasionally, with a sudden thunderous beating of hundreds of wings, all lifting out of the lake into the sky, to circle in many companies, and presently return to settle, flutter, and preen. And beneath them, in the crystalline depths, were swimming fish of innumerable brilliant hues, visible as they darted in and out among the lotus stems. Lotus buds, lotus chalices, blue lotuses and white were abundant there; and the vegetation about the shores was luxurious and of cool shade.

That night, in the bed, Sir Gawain could not at first bring himself to turn and face her unappetizing snout. After a little time, however, she said to him: "Ah, Sir Gawain, since I have wed you, show me your courtesy in bed. It may not be rightfully denied. If I were fair, you would not behave this way; you are taking no heed of wedlock. For Arthur's sake do kiss me at least; I pray you, do this at my request. Come, let us see how quick you can be!"

The knight and loyal nephew of the king collected every bit of his courage and kindness. "I will do more," he said in all gentleness, "I will do more than simply kiss, before God!" And he turned around to her. And he saw her to be the fairest creature that ever he had seen without measure.

She said: "What is your will?"

"Ah, Jesu!" he said, "what are ye?"

"Sir, I am your wife, securely; why are ye so unkind?"

"Ah, lady, I am to blame; I did not know. You are beautiful in my sight—whereas today you were the foulest wight my eye had ever seen! To have you thus, my lady, pleases me well." And he braced her in his arms and began kissing her, and they made great joy.

"Sir," she said, "my beauty will not hold. You may have me thus, but only for half the day. And so it is a question, and you must choose whether you would have me fair at night and foul by day before all men's eyes, or beautiful by day and foul at night."

"Alas," replied Gawain, "the choice is hard. To have you fair at night and no more, that would grieve my heart; but if I should decide to have you fair by day, then at night I should have a scabrous bed. Fain would I choose the best, yet know not what in this world I shall say. My dear lady, let it be as you would desire it; I rest the choice in your hand. My body and goods, my heart and all, is yours to buy and sell; that I avow before God."

"Ah, gramercy, courteous knight!" said the lady. "Mayst thou be blessed above all knights in the world, for now I am released from the enchantment and thou shalt have me fair and bright both night and day."

The involvement of the gods in the web of their own creation, so that they become, like Abu Kasem, the harried victims of their creatures, entangled in nets of not quite voluntary self-manifestation, and then mocked by the knowing laughter of their own externally reflected inner judge: this is the miracle of the universe. This is the tragicomic romance of the world. The gods, the fairy powers, are always in danger of self-enchantment. Like the youth Narcissus, they become fixed to their own reflected images—momentarily reluctant to pass with the passing of time, and critically in need of the shocking, shattering blow of the redemptive catastrophe. Man is the little world creator; God, the great. Each, surrounded by the figments of his own mirrored depths, knows and suffers the cosmic self-torment. And the fatal power that enchants them both is ever the great goddess, Māyā, self-delusion, the supreme creatrix of all the worlds.

Brahmā, sinking still further into the limpid darkness of his own interior, struck a new depth: suddenly the most beautiful dark woman sprang from his vision, and stood naked before everyone's gaze.

She was Dawn, and she was radiant with vivid youth. Nothing like her had yet appeared among the gods; nor would her equal ever be seen, either among men, or in the depths of the waters in the jeweled palaces of the serpent queens and kings. The billows of her blue-black hair were glistening like the feathers of a peacock, and her clearly curving, dark brows formed a bow fit for jeweled palaces of the serpent queens and kings. The billows of her blue-black hair were glistening like the feathers of a peacock, and her clearly curving, dark brows formed a bow fit for the God of Love. Her eyes, like dark lotus calyxes, had the alert, questioning glance of the frightened gazelle; and her face, round as the moon, was like a purple lotus blossom. Her swelling breasts with their two dark points were enough to infatuate a saint. Trim as the shaft of a lance stood her body, and her smooth legs were like the stretched-out trunks of elephants. She was glowing with little delicate pearls of perspiration. And when she found herself in the midst of her startled audience, she stared about at them, in uncertainty, then broke into a softly rippling laugh.

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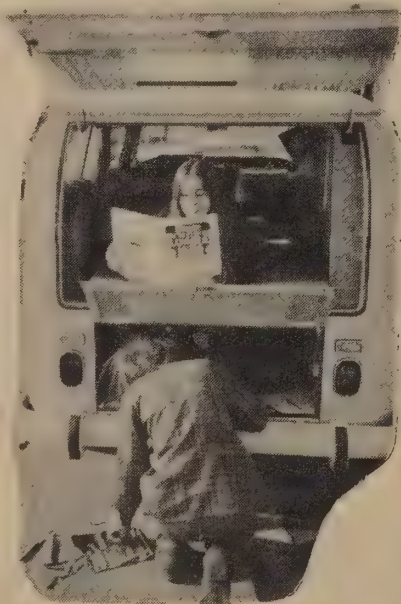
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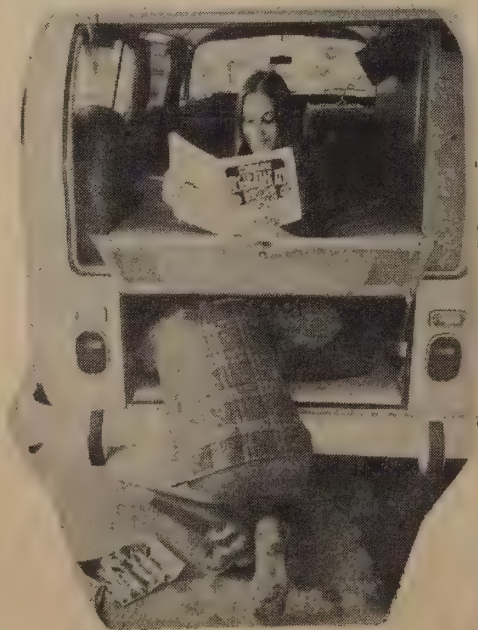
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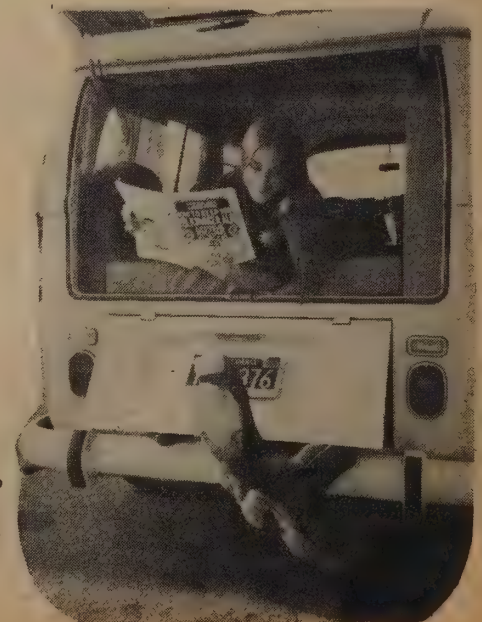
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**A MANUAL OF  
STEP BY STEP  
PROCEDURES**



**Step 4. Goof-ups**  
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**HOW TO KEEP YOUR  
VOLKSWAGEN ALIVE**  
John Muir  
1969; 242 pp.

**\$5.50** postpaid (\$5.72 in N.M.)  
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"One picture is worth a thousand words." The Germans believe that too, and proof is available in *The English Duden*. This is a short, fat, 928 page book that includes a picture of almost anything you can think of, and many things that you can't. Most of the illustrations are in black and white, but a number (including good ones of the human body) are in color. All are meticulously drawn and have every single constituent carefully and accurately labeled. The comprehensiveness of the book is staggering. It offers, with Teutonic omniscience, pictures showing every part of, say, a motorcycle engine, a paper-making factory, a handsome young lady, and the interior of a barber shop. Dress styles, beehives, photographic laboratories, musical instruments, Roman gods, jet aircraft; they are all here, clearly dissected and indexed in German and English (or French or Italian if you prefer), with differences between British and American usage noted. It is one of the publishing bargains of the 20th Century.

[Suggested and reviewed  
by Dr. Morton Grosser]

The same book is also available  
in the following languages:

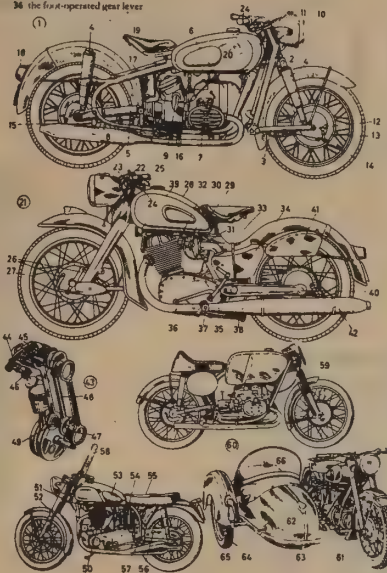
THE GERMAN DUDEN  
THE FRENCH DUDEN  
THE ITALIAN DUDEN  
THE SPANISH DUDEN

ea. c. 950 pp, cloth bound  
\$7.95 ppd

ADLER'S  
FOREIGN BOOKS, INC.  
162 Fifth Avenue  
NEW YORK, N. Y. 10010

## 162 The Motorcycle (Motor Bicycle)

- 1-39 wheels (solo machines).
- 1 the side-valve (S.V.) two-cylinder four-stroke (Am. four-cycle) motor with horizontal cylinders:
- 2 the tubular frame with front and rear suspension
- 3 the front-wheel leading link
- 4 the telescopic springing
- 5 the back (rear) wheel swinging arm with shaft drive and universal joint
- 6 the opposed-cylinder engine
- 7 the cylinder head
- 8 the silencer (exhaust box, muffler)
- 9 the induction pipe
- 10 the motorcycle headlight
- 11 the ignition key
- 12 the hub brake
- 13 the brake lever
- 14 the brake cable
- 15 the back (rear) wheel brake linkage
- 16 the rear brake pedal (Am. service brake)
- 17 the tyre inflator
- 18 the rear (tail) light
- 19 the pivoted saddle with saddle cover
- 20 the maker's badge;
- 21 the overhead-valve (O.H.V.) single-cylinder motor with dry-sump lubrication:
- 22 the carburetor air lever
- 23 the dipswitch
- 24 the horn (hooper) button
- 25 the steering damper
- 26 the parallel brake levers
- 27 the full width hub brake
- 28 the petrol (Am. gasoline) tank
- 29 the throttle control cable
- 30 the air control cable
- 31 the carburettor (Am. carburetor tickler)
- 32 the combined filter and petrol tap (Am. gasoline shut-off valve) with
- 33 the tubular section pressed steel frame
- 34 the oil tank
- 35 the kickstarter
- 36 the foot-operated gear lever
- 37 the foot-rest
- 38 the motorcycle stand
- 39 the horn (hooper)
- 40 the rear wheel spindle (Am. axle)
- 41 the motorcycle tool box (Am. tool kit)
- 42 the silencer (Am. muffler);
- 43 the overhead valve operating cam;
- 44 the valve rocker
- 45 the cam
- 46 the overhead camshaft
- 47 the eccentric
- 48 the overhead valve operating crank
- 49 the needle roller bearing;
- 50 the vertical shaft overhead valve (O.H.V.) engine
- 51 the plate showing type or model number
- 52 the telescopic fork
- 53 the knee grip
- 54 the motorcycle battery
- 55 the motorcycle dual seat
- 56 the chain guard inspection plug
- 57 the pillion-rider's foot-rest
- 58 the handlebar windscreen (Am. windshield)
- 59 the sports model;
- 60 the motorcycle combination (motorcycle and sidecar):
- 61 the side-valve (S.V.) single-cylinder four-stroke motor (Am. four-cycle motor)
- 62 the sidecar body
- 63 the sidecar bumper
- 64 the sidecar wheel
- 65 the side light
- 66 the sidecar windscreen (Am. windshield)



\$25 ad:

# VITA GREEN FARMS

WORLD'S LARGEST SOURCE 100% ORGANIC

Fruits and vegetables available airfreight. Vegetables and herb seeds. Fertilizers available via mail or truck. By ton or sack — Cavern rock potash, trace minerals, kelp and rock phosphate.

Water purifiers, bug lites, sprouting seeds (all varieties), grains, dried fruits, nuts — shelled and unshelled.

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Potatoes, onions, garlic, shallots, sun chokes (Jerusalem Artichokes).

Also expert advice for small fee on farm and gardening engineering, including gentle rain sprinkler irrigation.

Now arranging for imported Australian organic meats and sea foods. Hope to import canned and dried fruits and vegetables from uncontaminated Australian soil areas.

Organic gardening pamphlets and booklets. "What is a Balanced Soil?" — 50¢. Rental tapes of lectures on organic gardening, seeds, fertilizers, health, nutrition, moon planting, magnetic phenomena, frost resistance, 100% protein increases, other futuristic subjects.

In person lectures with free literature and samples.

VITA GREEN FARMS  
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Vista, California 92083

\$25 ad:

# TRAVELERS' DIRECTORY: ONE NATION UNDERGROUND

*Travelers' Directory* is the international registry of hip travelers who enjoy meeting others everywhere, whether around the corner or around the world. The book lists their names, addresses, telephones, ages, interests, and offers of hospitality to other travelers passing through.

Published annually since 1960, *Travelers' Directory* is now being published every six months to keep pace with its rapid growth. (The number of listings has more than doubled over the last two editions.) New listings for the forthcoming edition are now being accepted in Directory headquarters in New York City. As always, copies of the new edition will be sent only to those travelers listed in that edition, so only listees will know who else is listed. No extra copies are ever printed, so none is available to anyone not listed. Each copy of *Travelers' Directory* is numbered, bears the listee's name, is neither transferable nor replaceable, and acts as each listee's "underground passport" to identify him to all the others in the book.

Listees also receive a year's subscription to the Directory's own magazine, *Trips*, an entertaining publication written by and for the listees themselves. It features photo-stories about Directory listees, articles about their travel experiences, invitations to all listees for free weekend Directory parties in different cities, details of the Directory's charter flights and conventions around the globe, plus competitions, humor, even gossip.

Such bonuses, however, are incidental to the primary purpose of *Travelers' Directory*. The main reason people decide to be listed is that they enjoy meeting others with similar interests wherever they travel. They know they have friends to welcome them to any city in the world where there are Directory listees, and that seems to be just about everywhere: London, Paris, Rome, Stockholm, Bombay, Tokyo, Sydney, you name it. Listees live in almost every major country on every continent, as well as in such out-of-the-way spots as the Canary Islands, the Panama Canal Zone, Hong Kong, even Antarctica. One listee recently toured much of Africa, staying with other listees in Uganda, Ghana, Liberia, Sierra Leone, and Spanish Morocco. Although listees collectively speak dozens of languages, every one speaks English, the international language used throughout the Directory.

The country best represented in the current edition is the United States, with hundreds of listings in major cities and unpopulated areas in almost every state. Listings range anywhere from a single address in Topanga Canyon, California, to 55 addresses in New York City, so listees traveling across America will generally have a large choice of homes to visit at each stop. Mutual compatibility is first determined, of course, by mail or phone.

Since a listee must submit his listing himself every time he wants it published in the next edition, all addresses and offers are current, and couldn't possibly be more than six months old. No listing is ever carried over to the next edition automatically. Despite that policy, many current listees have managed to be listed in every edition since the first in 1960. We must be doing something right.

Ever since then, when it was founded by underground publisher John Wilcock, *Travelers' Directory* has been a non-profit labor of love. The costs of printing and mailing the Directory and magazine are shared by the editor and all the listees. Each listing is submitted with a donation of at least U.S. \$3 to defray some of the production expenses of the editor, who receives no salary.

Those who wish to be included in—and then get a copy of—the forthcoming edition may submit the necessary personal data, along with up to 100 words describing their interests and offers of hospitality. Cautious Whole Earth Catalog readers may prefer to request further details first, as well as back issues of *Trips*, typical listings, and official listing forms. Listings and requests should be sent to:

Travelers' Directory,  
51-02 39th Avenue  
Woodside, New York 11377

\$25 ad:



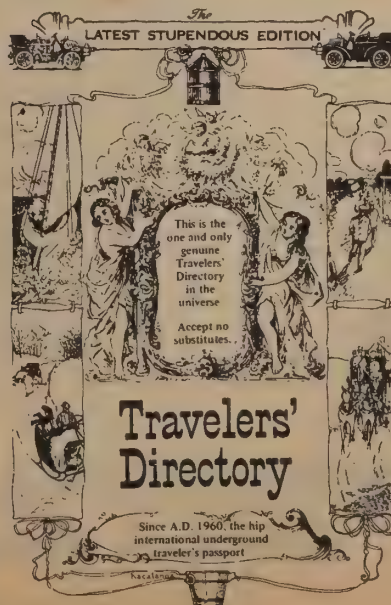
New, revised, enlarged by CNCA—  
"the ultimate in skin diving texts."  
—Skin Diver Magazine

## THE NEW SCIENCE OF SKIN AND SCUBA DIVING

Written by Council for National Co-operation in Aquatics experts, this newly revised edition has up-dated material on the physics and mathematics of diving, equipment, and on the medical examination. All the basic information you need. A recommended text of the National Assn. of Underwater Instructors. Now 73 illus., charts, tables; glossary; index. Now 224 pages. \$4.95. Paper, \$2.95.

At dive shops or direct from:

ASSOCIATION PRESS, 291 BROADWAY, N.Y.C. 10007

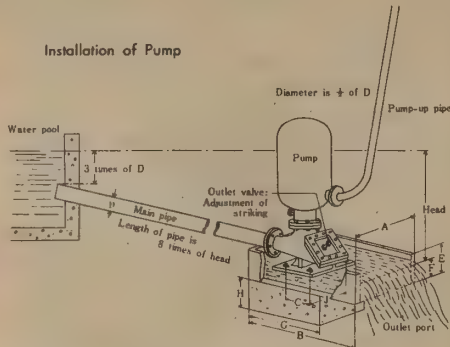


\$200 ad:



**"CECOCO" MOTORLESS (HYDRO-HI-LIFT) PUMP:—**

This particular pump will raise water by the power caused by means of declivity of water current up to a height 30 times of water head; no other fuel oil engines or electricity or attendance is necessary. It is extensively used in Japan for water supplying into the field for irrigation, spraying, water reservoir and household living far away in mountain and hill where no water is available and badly needed from stream or spring.



Specification of "CeCoCo" Motorless Hydro-Hi-Lift Pump

Type	L-1	L-2	L-3	L-4	L-6	H-4	H-6
Bore of Suction	1-1/2"	2"	3"	4"	6"	4"	6"
Bore of Discharge	3/4"	1"	1-1/2"	2"	3"	2"	3"
Water Head	0.5-4M	0.5-4M	0.5-4M	0.5-4M	0.5-4M	1-10M	1-10M
Capacity/minute	1.3-13 L	2.6-23.6 L	8-50 L	11-100 L	30-210 L	11-100 L	30-210 L
Net Weight	25 kg	35 kg	50 kg	100 kg	180 kg	160 kg	300 kg
Ship'g Measurement	5 cft.	7 cft.	10 cft.	15 cft.	30 cft.	20 cft.	40 cft.

**SELF-THERAPEUTIC RUBBER**

Secret of Longevity. Self-Therapeutic Rubber Did Miracle in Recovering Health—Long Years Prolonged Sciatica Thoroughly Cured. Feel Fresh and Young

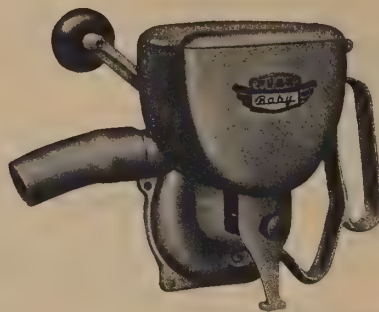
I have been suffering from Sciatica for more than 10 years, my hip was bending, my strolling was hard. Due to my age of 86 years old, surgical operation was not possible, and the hospital gave up medical treatment.

Then my friend, Mr. Shinzo Itoh of Kobe, gentlemen of 70 years old, told me of his experience curing his years' long cataract with a little oblong-shaped rubber gadget which he applied under his head when he slept for some time long and finally cured. This rubber gadget is Height, 2.1 inches X Width 1.8 inches X Length 3.4 inches weighing about 330 grams made of hard rubber.

I was happy in hearing the above fact and tried the gadget right away. This summer I felt no need for my usual hot-spring treatment. I am strong enough now to attend the business of the age of 86 years old during my son's absence to the South-Eastern Asia on business.

By sleeping on the gadget placing it on the back of your body and by pressing down the rubber heavily on all nervous muscles, where you feel pain with your body's weight, the rubber works very efficiently as if massaging that particular portion and much stronger and effective than the usual finger-pressure-cure because of your heavy body's pressing.

I am anxious to tell to my friends and acquaintances the advantage of using this Miracle-Rubber. The gadget consists of 2 kinds of rubber, one soft for the beginning to give less pain and one hard type to cure the persistent pain deep in body. It is easily portable in your satchel while traveling. Price is US \$5.00 a set, plus parcel post registered US \$2.00.



**BABY DUSTER Model 31-MB**

Painted with beautiful color. Small but efficient performance. Lightest, simplest, easiest to use duster ever built. Popular for dusting gardens, small farms, and the disinfection of livestock, etc.



**"CECOCO" BIRD & ANIMAL SCARER BANG:—**

This scarer is equally effective against sparrow or any other birds, rodent rabbit, wild boar, monkey, bear and other ravagers of paddy field, orchard and protects the field crops of food such as rice, wheat, fruits, radish, sweet potatoes, vegetables, nuts, etc. It is a most ingenious apparatus, producing deafening reports at intervals of 3, 5, 10 and 20 minutes.



**GUIDE BOOK**  
for Rural Cottage and Small and Medium Scale Industries  
"Providing the World with More Food and Employment."

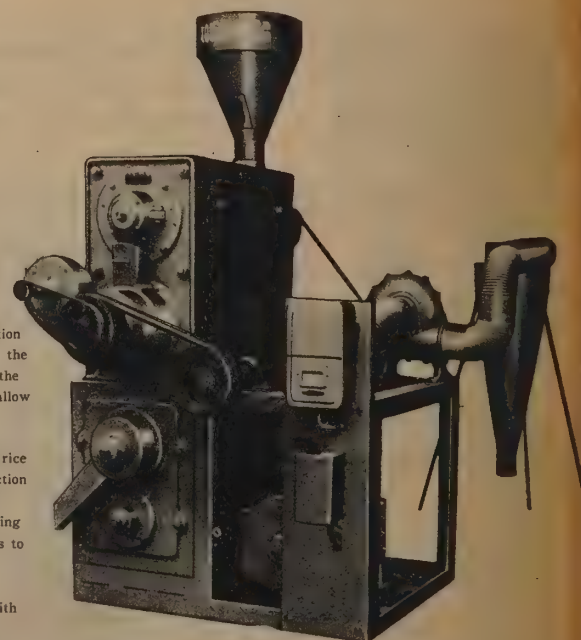
\$7.00 seamail \$10.00 airmail  
(See p. 39, this CATALOG)

**REVOLUTIONAL INVENTION-  
NEW TYPE RICE POLISHER**

The Outstanding features and constructions of Patented "TANI" Air-cool Inversing Rice Polisher:-

1. The Polisher is of Air-cool and Revolution Inversing type firstly invented in Japan and has the super large production capacity.
2. The Polisher has two polishing cylinders; A Stage and B Stage, which revolve inversely each other. Say, A Stage revolves anti-clockwise for a half polishing and B Stage clockwise for the final polishing. The inversion guarantees the uniform polishing of each grains to the highest efficiency and production yield to match the benefits of users.
3. Air-cooling is the unique mechanism of the polisher. The cooling air is blown into the polishing chamber to cool off the polishing temperature. Thus, the broken rice yield is the smallest and the polished rice is graceful.
4. The white rice is further pearled in C Stage, where the rice bran is perfectly removed and finely ground to the beautiful rice.
5. The rice bran is automatically collected with exhaust fan and cyclon.
6. The polisher can be installed in a narrower space in spite of the super large capacity, say gives the profits to produce same as the large rice mill.

7. The polisher rudimentally differs in construction from so called Engel Type Polisher. The polisher is of the type of emery roller grinding, air-cooling, revolution inversing, which are the distinctive features. These unique mechanism guarantee the highest efficiency, the highest production capacity, the highest production yield, the smallest broken rice yield as well as many other advantages which would not allow any chasers in this field.
8. The polisher is advantageously used for paddy field rice, upland rice as well as kaoliang. Further it has an excellent performance for polishing the imported rice and broken rice, giving a conversion to the graceful rice with the highest production capacity.
9. The polisher is precisely processed and sturdily constructed. Especially, the designing was concentrated on the Main Shaft, which has the bearings of the highest class to operate smoothly and soundless.
10. The quantity of feeding is adjusted by the Dumper set up under the Hopper in accordance with the horse power used. The degree of the whiteness is adjusted with the weights located at the outlets of A and B Stages.
11. The lubrication on the Main Shaft must always be careful and all the belts sufficiently tightened. The directions of revolution are shown with the Arrow marks. The suitable revolution of the Counter Shaft is 800 rpm.
12. The polisher is driven with 40HP motor, giving the super production capacity of 1,500kg. per hour.



HP required: 40 to 50 HP.  
Production capacity: 1,500 to 2,000 kg. per hour  
Weight: 1,500 kg.  
Measurement: 200 cu. ft.

**CHUO BOEKI GOSHI KAISHA  
CENTRAL COMMERCIAL CO.**

"CECOCO" Exhibition & Demonstration Farm Center  
P. O. BOX 8, IBARAKI CITY, OSAKA-FU, JAPAN.

# Business

Someone asked the other day how a depression would affect sales of the CATALOG. I said it would probably improve sales. As near as I can tell, we are participating in a sub-economy that, among other things, is not having an inflation. The effects of this sub-economy could become more consequential even than the subculture has been. Aquarius and its independent life-support system saving the crew when the command module malfunctions.

That's conjecture. What we can affirm is that the present economics of publishing favors publishing your own stuff and working with a distributor such as Book People. An IBM Selectric Composer leases for \$150 a month. A Polaroid MP-3 to do your half-tones costs about \$850—and it's just an in-house convenience. Printing on newsprint costs half what book paper does. Starting the CATALOG cost about \$5,000 in risk money. By the time that was spent we knew we were going to be all right and went \$25,000 in the hole with no sleepless nights (a large part of that figure was stock for the store).

Our growth went like this: Fall 68 CATALOG, 2,000 copies; Spring 69, 30,000 copies; Fall 69, 160,000 copies (30,000 still unsold). The \$1 Catalogs (Supplements) gradually worked up to printings of 35,000. Last October we had 4,000 subscribers; this May we have 13,000.

Financially we're in the black; all debts are paid. In January 69 we were doing around \$2,000 of business a month. The income-outgo figures for the last 4 months are, roughly:

January 70	in, \$63,000	March	in, \$37,000
	out, \$39,000		out, \$38,000
February	in, \$69,000	April	in, \$60,000
	out, \$62,000		out, \$55,000

10% of our gross income goes to Portola Institute. What's left over either goes into improving the CATALOG operation or will be used to start our next educational venture when the CATALOG self-destructs in '71.

The costs on this CATALOG production were:

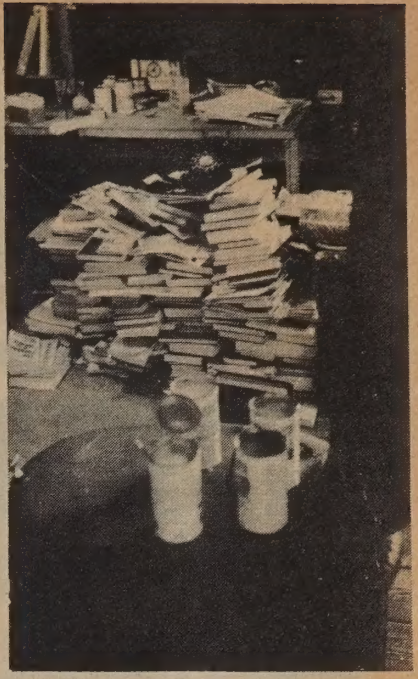
Printing	\$21,000
Salaries	4,300
Mailing	1,400
Film & supplies	500
Composer	300
Reprints	300
Repairs	200
Rent	100
	<u>\$28,100</u>

The figure does not include six months of research. We're printing 60,000 copies initially, which puts our unit cost at about 47¢.

One advantage we discovered in publishing our costs like this (it was Steve Baer's suggestion) is that it encourages lower bids from other printers. Production and printing last Fall cost \$33,000 for 60,000 copies. This Spring it's \$28,100.

Honesty is the best policy.

Scrooge McDuck



Mount Catalog  
New books in Spring 70 CATALOG.

## The Quick Hard Summary.

In the September 69 Supplement, Stewart boldly invited anyone who was thinking of opening a Whole Earth Store to write to Hal for a quick hard summary. We've since had many inquiries & various of our staff have written numerous more or less quick & more or less hard summaries. Here's a sort of composite of all that information. We've also told folks to write to the two going stores we now know of, & they've been very helpful:

- |   |  |
|---|--|
| Whole Earth Access Co.<br>2466 Shattuck<br>Berkeley, CA 94704<br>(415) 848-0510 | Whole Earth Cooperative<br>845 East Johnson<br>Madison, Wisc 53703<br>(608) 256-8828 |
|---|--|

### The Quick Hard Summary

First, get lots of money to start with. Ideally, enough to run on for at least six months, preferably longer, & assuming whatever you make during the first raunchy months will go for unforeseen expenses, which there always are. A very rough minimum estimate is \$10,000; it depends a lot on how much space you want to occupy & what you plan to do with it. Basic necessary expenses are: rent—often first & last months', plus cleaning deposit maybe—utilities—gas, electric, phone, water, garbage, some deposits required; insurance; equipment & supplies (possibly cash register, adding machine, typewriters), forms, paper, notebooks, files; use permit from your city—not much (\$10-\$50); furniture & redecorating: desks, tables, chairs, shelving, display areas, signs, etc. (A lot can be done with used stuff). If you don't have them you'll need tools—hammers, saws, etc. And paint. Salaries—possibly the largest single item, unless people work for free, which tends to breed poverty & discontent.

Now—assuming you have some bread, or think you can get some—find a place. Not too high-rent, but hopefully somewhere where people walk by a lot. Don't sign a lease until you have a friendly lawyer check it—most agencies use standard forms that are designed to screw the tenant, but you can change clauses you don't like if they want to rent the building. Next: apply to your town or city for a use permit, which often takes a while to get. Without one you can be shut down forthwith. Apply to your state for a resale permit, same reason. Invite your local building inspector & fire inspector to come inspect—before signing a lease, if possible. Because—if you're in an old building, you may be required by law to make changes in wiring, plumbing, fix leaks, etc. at your own expense. Again this is preventative—later harassment can come from these areas, & you have no recourse. Again, a good friendly lawyer can be a lot of help in knowing local ordinances, etc. Also, lots of towns are zoned so that you can only do business in certain areas. Find out about zoning before renting.

Hopefully when you start getting your building into shape & see how much space you have, you can start ordering stock. A good idea is to figure out how much it's going to cost you to keep the physical place & the people going for six months. Then see how much money you have left & order your stock accordingly. You'll probably have already opened a checking account. If you're going to stock books, join the American Booksellers Association—\$25 gets you a manual of publishers with info on almost all publishers—their discounts, access info, credit terms, policies, etc., free advice; & so forth. You can also file a statement of your credit with their affiliated group—the American Book Publishers Council; whenever you open a new account with a publisher you just tell him your credit was established there, he looks you up, & things are speeded up considerably. Usually publishers & suppliers require payment in advance on your first, or first several orders—after a while you can order, be sent an invoice, & have 30 days to pay. The more you order at once, the better discount you get—it's a question of working up to where you're selling enough that you

can afford to order in larger quantities. It takes an average of a month for orders to arrive. By the way, when opening accounts, please make it clear that you're not connected with us—we've had trouble already with publishers putting other people's accounts on our statements, because of similarity of names.

What to sell? Depends a lot on you. We do mostly books & that's what we know most about—also some merchandise (Ashley Stoves, Corona corn mill, Aladdin lamps, Snuggly baby carriers, etc.) & a few magazines. A lot of the people who've written to us are interested in health food; arts & crafts, & other trips. Selling food requires special permits; that's about all we know. You can often get local arts & crafts on consignment (you pay the artist when the item is sold), which can save you some basic stock expense. A rule of thumb in ordering books is that cheap paperbacks sell the most—you can be surer of selling more of them than of the more expensive hardbacks. The Catalog itself is our bestseller, could probably be yours too.

OK. If you get this far—plan a gala opening for publicity—invite Everyone & serve cheap (homade!) goodies. Word of mouth is best advertising we've found. But you can put up posters, flyers, whatever. Try to get your local newspaper to do a feature on you. Smile a lot.

We'd like to see a Whole Earth Store in every town. Yea! But before you start, be sure you're ready to do business—you will have to hassle with publishers & suppliers, keep records, mess with forms, numbers, paperwork. You will need a lot of human energy—someone has to do: ordering stuff, keeping track of what comes in, selling stuff, bookkeeping, cleaning up around the joint, correspondence, typing, filing, building or buying equipment, furniture, painting, keeping track of what you have & what you need (inventory), business with landlord & miscellaneous officials, decision-making, paying bills & payroll, etc., etc. Our aim here is not to discourage anyone, but to encourage open-eyedness about the prospects.

Diana Shugart

## Suggestions for the WHOLE EARTH CATALOG

An item is listed in the CATALOG if it is deemed:

- 1) Useful as a tool,
- 2) Relevant to independent education,
- 3) High quality or low cost,
- 4) Easily available by mail.

Please fill in as much information as you possibly can; it helps a lot.

Date \_\_\_\_\_

My name \_\_\_\_\_

Address \_\_\_\_\_

ZIP \_\_\_\_\_

Phone \_\_\_\_\_

### I SUGGEST:

Title of book or name of item: \_\_\_\_\_

Author: \_\_\_\_\_

Price: \_\_\_\_\_

Publisher or supplier: \_\_\_\_\_

Address: \_\_\_\_\_

ZIP \_\_\_\_\_

If an item suggested is intended to replace an item already in the CATALOG, please fill in the item to be replaced: \_\_\_\_\_

- I would like to write a review.
- Attached is a review of this item.
- I would recommend \_\_\_\_\_

(name, address, phone)

to review this item.

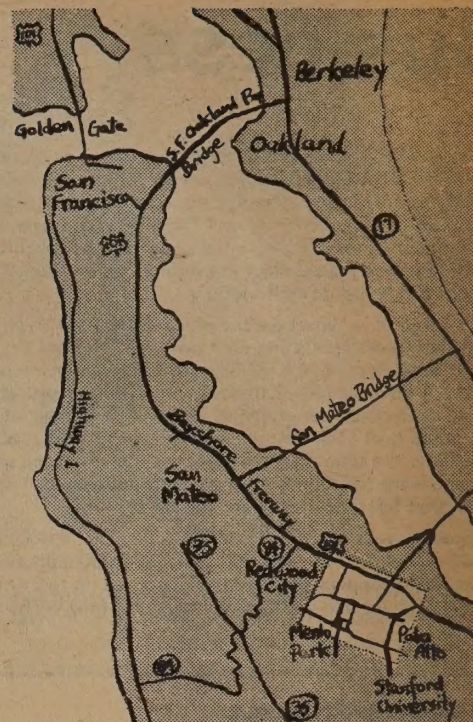
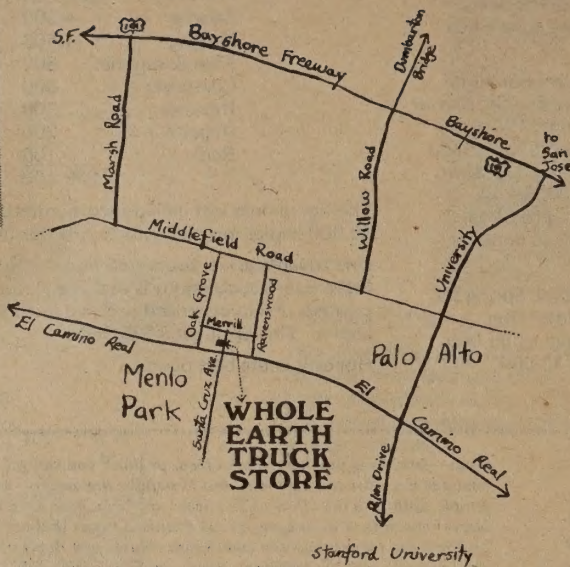
Additional information/review: \_\_\_\_\_

Whole Earth Truck Store



A major research source of ours is the Menlo Park Whole Earth Truck Store, which stocks most of the items in the CATALOG. We see who's buying what. We hear complaints and suggestions. We try out items that might be in the next CATALOG. We have a place where friends can come and see what's happening.

Hours: Monday-Saturday, 9 am - 6 pm  
 558 Santa Cruz Avenue, Menlo Park CA 94025  
 Phone: (415) 323-0313



Catalog Distribution

Book People, by agreement with the Bookworks, announces national distribution of

THE WHOLE EARTH CATALOG

The Whole Earth Catalog is published six times a year—2 large ones (Spring and Fall) and 4 smaller ones. As the materials are not completely duplicated, you can carry everything in print.

Currently available:

- Spring 1969 CATALOG \$4
- July 1969 Supplement \$1
- September 1969 Supplement \$1
- Fall 1969 CATALOG \$4
- January \$1 Catalog
- March \$1 Catalog
- Spring 1970 CATALOG \$3

All retail, wholesale, and library distribution is processed through Book People; please do not direct your order to Whole Earth Catalog Store.

TERMS:

- Retail: 1-14 assorted 30%
- 15-up " 40%
- Wholesale: 100 up assorted 50%
- (qualification: meet the requirements of our certificate of wholesale endeavor)

Invoices are due net 10 EOM  
 Accounts 30 days overdue will not be shipped.  
 Credit accounts will be established through your Dun & Bradstreet rating, new businesses are advised to enclose their financial statement.  
 Returns: request label. Unauthorized returns will be discounted at a penalty.

NOTICE TO NEW ACCOUNTS:

For immediate shipments, please enclose check to cover order. Catalogs are \$4.00 retail for Spring and Fall 69; \$3.00 for Spring 70; \$1.00 retail for the others (Jan, Mar, July, Sept). Figure your discount. Allow one pound for each catalog or each seven supplements. Figure your freight charges at Book Post rate:

- 12¢ first pound
- 6¢ each additional pound

Thank you,  
 Book People  
 2010 Seventh Street  
 Berkeley, CA 94710  
 Phone: (415) 549-3033

Note: Book People buys CATALOGS from us at 55%. So they get either 5% or 15% of the sale price. They earn it.

Subscription Form

Send to: WHOLE EARTH CATALOG  
 Portola Institute  
 558 Santa Cruz Avenue  
 Menlo Park, California 94025

\$ \_\_\_\_\_ Amount enclosed

- \$ 3.00  One issue of CATALOG  1970 Spring  1969 Fall \$4
  - \$11.25  Five copies of Spring 1970 CATALOG
  - \$ 8.00  One year subscription: six CATALOGs, two large (Fall & Spring) and four smaller.
- U.S. and Canada  
 \$9 surface elsewhere;  
 \$14.60 air elsewhere.

- starting issue:  1969 Spring CATALOG  1969 July Supplement  1969 Sept. Supplement
- Check one box only  1969 Fall CATALOG (late November)  1970 Jan. \$1 Catalog  1970 March \$1 Catalog
- 1970 Spring CATALOG (late May)  1970 July \$1 Catalog

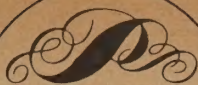
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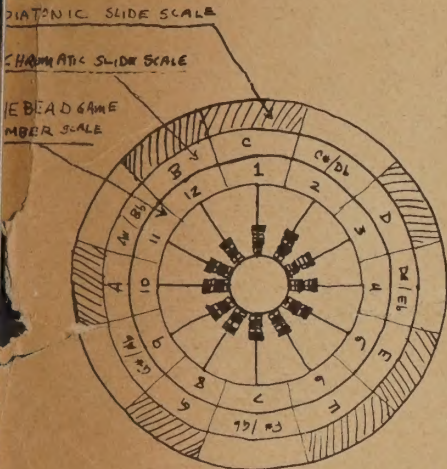




# PORTOLA INSTITUTE

INC.  
1115 MERRILL ST.  
MENLO PARK,  
CALIFORNIA  
323-5155

## Music Studies Program



The Bead Game  
MARK III

© August 1969  
Peter Ligon Sebring

The Bead Game: a composition system

## Big Rock Candy Mountain

resource for our education

### A LEARNING TO LEARN CATALOG:

- Learning Process
- Environmental Education
- Home Learning
- Classroom Materials and Methods
- Self-Discovery

psychosynthesis techniques, computer symbiosis, experiential learning narratives, interaction process; school and classroom design, environmental spreading methods, films on schools, outdoor classrooms, games; toys and playthings, bioenergetics, yoga, childrearing; classroom materials, liecester materials, cardboard carpentry, teaching methods, nature labs, audio-visual aids, the bag, the box, and the bin; gurdjieff books, self-discovery, meditation texts, gestaltstuff, theater games, simulations.

Descriptions, excerpts, and evaluations.

BIG ROCK CANDY MOUNTAIN  
PORTOLA INSTITUTE, INC.  
1115 Merrill Street, Menlo Park, CA 94025  
Summer 1969 ··· \$4.00

The Whole Earth Catalog  
is one division of  
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Other present activities  
of the Institute include

## Scripps Off Campus Project Center

Now let me tell you my story—once I was an aimless iconoclast roaming the streets looking for some way to express myself. Finally I was at the end of the line, nothing in sight, no hope left, despair gripped me as the neon advanced to my tortured psyche, starving, my thwarted genius shaking in a palsy, I collapsed on the street before the Scripps Off Campus Project Center (SOCP Center as it is sometimes known.)

Now I am making my movie. Everything is fine. They have supplied me with so much film and equipment. I run joyously about in a happy visionary day-dream shooting film and friends.

Does it sound like fun? Do you want to do it too? Stop bullshitting. You too can be a luxurious pendant on the capitalist system—and it may get you closer, yeah closer.

Facts: *The Scripps Off Campus Project Center*  
540 Santa Cruz  
Menlo Park 323-5155  
Jim Kerr Kay Mathews  
(next to the Whole Earth Truck Store)

Footnote: I neglected to mention—not just movies. In theory it says *any* project. Come in and test them. This is not science fiction.



Michael Kowalsky



## Ortega Park Teachers Laboratory



PORTOLA INSTITUTE was established in 1966 as a nonprofit corporation to encourage, organize, and conduct innovative educational projects. The Institute relies for support on private foundations and public agencies, to whom specific project proposals are submitted.

Because Portola Institute is a private organization with no need to produce profits or guarantee "success", it can experiment with new and unusual educational projects that would be difficult to administer within more structured organizations. For this reason the staff and facilities of the Institute are deliberately kept small and flexible.

Within its framework a wide variety of projects dealing with innovative education can be created as people with ideas are able to interest people with funds. New projects are always being considered, both within the existing divisions and programs, and within as yet unexplored realms of the learning experience.

Portola Institute, Inc.  
1115 Merrill Street  
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94025

More information on Portola Institute, please.  
Especially \_\_\_\_\_

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zip

Who is nothing Hear that!  
Meaning:  
The stars sing  
Because it's always all right!  
So far you've  
Not been near except when  
You didn't know. Night's day  
Was everywhere. No one is  
Ever separated from every other  
For then the world would die.

And the world does not die!  
O Glory, Glory of the Light!

*We live one life.* Message ends

Kenneth Patchen

