IO Magazine

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Io

ETHNOASTRONOMY ISSUE

Io/6 Editors: Richard Grossinger, Lindy Hough Grossinger
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1701 Crestland Road, Ann Arbor, Michigan 48104 [until August 1, 1969]
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ETHNOASTRONOMY

Layout and Collages: Richard Grossinger

The seventh issue of Io, also to be printed this year, will concern Oecology. Certain items omitted in the Ethnoastronomy Issue (as calendrics and star mythologies) will appear in the Oecology Issue. Back issues are available including Alchemy Issue, Doctrine of Signatures Issue, #3 (with Amerindian section), #2 (with section on light), & #1 (with introduction to set). Subscriptions: $5 for 2 issues, $10 for 4 issues. Contributing Editors: Harvey Bialy, Charles Stein.

Science and science fiction have become quite separate. Science fiction is definite, the way science used to be. Science is indefinite, constantly offering alternate solutions to the same problem, or offering different solutions on different levels. Initially, science fiction was one of the successors to the romantic tradition of Keats, and Shelley, and Byron, and Blake; it was the rocket ship of Verne that crashed thru the "dome of many-coloured glass," that went behind the previous language and style, using them as energy for the opening of a new field. Not that he solved the problem of the many-coloured glass, but in leaving the earth without leaving the romanticism, he replaced the previous distances gauged by the poetic wit with the new metaphysical opposition of sun and interstellar space, or of that which is terrestial bent against that which lies outside the earth. It was Mary Shelley who gave the unconscious a biochemical shape, and placed the next crisis of human sensibility (the five senses and the brain) in the laboratory, or she stumbled into an insight which led thru the Wordsworthian Lake Country (itself a myth sustained only in the on-going literature) to pre-Druid rituals and pre-Stonehenge stone.

But it is not as though the Lake Poets solved the problems in the romantic tradition or won the victory, and then turned the matter over to the scientists. In the Indo-European of Keats and Shelley, the European clearly comes by way of Spenser and the metaphysical poets: Raleigh, Donne, Marvell, "The Ocean's Love to Cynthia," and the sun-temples and star-observatories of Castiglione; that is, the Platonic, the geometric, the Neo-Platonic route to the heavens. It is a Ptolemaic universe in which the human court and its sprezzatura are continuous with the manners and customs of the stars.

"And if you will consider all things, you will find that those which are good and useful always have the grace of beauty in them as well. Behold the constitution of this great fabric of the world, which was made by God for the health and conservation of every created thing, the round heaven, adorned with so many divine lamps, and the earth in the center, surrounded by the elements and sustained by its own weight; the sun, which in its revolving illumines the whole, and in winter approaches the lowest sign, then by degrees climbs in the other direction; and the moon, which derives her light from it, according as it approaches her or draws away from her; and the five other stars which separately travel the same course." [Castiglione: BOOK OF THE COURTIER].

But the Platonic, for all its sprezzatura, for all its courtly, knightly, Ptolemaic manners, knows nothing of the decimal system, logarithms, or asymptotes. These are the problems that the Platonists and Metaphysicals just don't confront, but for Keats and Shelley (and to a certain degree, Blake and Byron), they make up the long-lost "Indo-" which must be regained. The form is Hinduism, and Donne's blood-sucking flea, and Raleigh's fiery sunbeams, are sparks of maya, a previous world magic. The geometry of matter in a crystal or a shell or a daffodil is no longer sufficient. Shape is karma, is adaptive law, even the spring flowers which lift Wordsworth's heart or the estuaries feeding the Lake Country itself. Keats writes to his brother and sister,"The going on of the world make(s) me dizzy --- there you are with Birkbeck --- here I am with brown --- sometimes I fancy an immense separation, and sometimes, as at present, a direct communication of Spirit with you.

That will be one of the grandeurs of immortality --- There will be no space and consequently the only commerce between spirits will be by their intelligence of each other --- while we in this world merely comp(r)ehend each other in different degrees....."

If millenia of Hinduism, from the pantheistic Vedic prayers to the studies of perceptual process in Vedanta, could not solve the metaphysic, or win a clear victory, we can be quite sure that the Lake Poets (and here I include all the Romantics in this metaphor) did not win a victory either. For them, as for the others in their literary tradition, the metaphysic was used in creating a wit and a tension in the language. In the end they were more interested in society and courtiers (experiments in living) than matter or perception. And it is this incomplete victory, as unclear as the metaphysics of the language in which it is fought, that is passed on to the early science fiction writers. The Stone itself, the great Philosopher's Stone of sun and moon, lies just outside of three centuries of poetry at least, in Orphic shadow, sustaining all metaphysic and wit, but itself never brought in directly, or at least into the mainstream. It is the source of chemical and sexual metaphor; it contains Utopias and mixed marriages. The alchemist Edward Kelly uses it directly in his poems, and sun and moon are man and woman, are gold and silver; mercury is orgasm, and when flesh and blood are converted, they go thru a chemical transformation rather than just the witty transmutation of style.

But the Stone is too heavy for sprezzatura; if it had been brought into the mainstream it would have crushed the delicate tensile metaphors; the court would have been filled with dung and brown menstrual blood, and the troubadours would have become yogis and magicians. In science and science fiction, however, the Stone is a touchstone, for sun and moon and earth are found to be part of one geochemical, one electromagnetic process, and male and female are found in the same seed. The nitrogen cycle and the water vapor cycle slice thru the countryside of the Romantic, and the romantic possibility becomes genetic and interplanetary.

It is clear that, at least initially, science fiction inherited the romanticism of multiple human possibilities, as the number of possible women for Byron, each with her grace, or the number of angels and worlds in Blake. The angels became extraterrestials in general; worlds were reified as planets, and intimations of immortality were revived as intimations of an endless universe, not only of springs and rains on THE SHEPHEARDES CALENDAR, but seasons at the distance of Mars and the moons of Uranus, and incredible chemical precipitations on the worlds of other galaxies.

Science, at the same time, was busy Linnaeusizing, cataloguing the various species and shapes of a Newtonian universe (though Newton himself was concerned with the color of God and motion behind the spheres). In the reversal we are presently witnessing, science fiction has become utterly rigid, concerned with technological accuracy, with projecting the present into the future in the most minimal sense. Science fiction has been able to predict every major invention in the last decades (so accurately that in fact we believe we have already landed on the moon), but it has said nothing about the total conditions of change we are undergoing and what our human environment is becoming. It is science which, thru topology, astrophysics, biochemistry, etc., has reseized the possibilities of the Platonic and the Hindu. Stonehenge is revived in the optics labora-

tory, and the Titans are found to be quasars, grotesque relicts of the original elephantine matter. And though centuries of poetry have mentioned the Titans without telling us anything new about them, astrophysics has taught us that they still have voices and still meddle in our lives. And Platonic temples are discovered again and again, all their ratios intact, in plants, in cells, in crystals. Agni, Indra are revealed as electron, neutrino, sparking substrata of a visible lie; atomic particles move in a world in which energy is indistinguishable from mass, and light from material; matter is plural, indefinite, vitiated. Topology derives, by rules, creatures that science fiction has been incapable of, for science fiction has worked by simple laws of addition and subtraction, and multiplication, producing very simple dragons, and dinosaurs, and giant squids. Topology, operating within the tight Platonic rules, constructing shape only out of shape itself, working always internal to the metaphysic, has created animals that are truly frightening in the way they turn inside out and disappear, and reappear, and eat themselves, and go on forever --- because here it means, as it doesn't in Verne or Wells, that these animals must exist, and surely in some way they are us. Which is coming back the Freudian route, not by direct application of a dragonlike snarling unconscious, but by the very meaning that we are the shape of our thoughts, and whatever law shape follows, we follow too: Dante's inferno, or Gurdjieff's hell of unstable helium souls.

"The observer passes both zeros, and then keeps right on going and comes out again through the surface. It turns out that he must come out of the surface before he went in." [X, at a Cornell symposium on the nature of time].

"There is one way in which the matter might escape being crushed. There might be a topological hole inside the photon 3-surface through which the matter of the star could flow without being crushed to zero volume. The matter might then emerge, bubbling upward like a spring in the mountains, in some other region of our own universe or in some other universe." [Kip S. Thorne in Scientific American].

"Can cosmology give the time direction? I do not see how it can unless it can be proved impossible to build a box which is decoupled thermodynamically from the rest of the universe." [P. Morrison, at Cornell symposium].

"We have agreed that the world is built according to certain rules. We cannot answer the question why the rules are just as they are, but that they come from our experience we could not deny. We are faced with the problem of man in the small and the universe in the large. The two are not completely disconnected from each other, because for life to exist with its entropy-decreasing biological mechanism, there must exist temperature difference. We could not exist for long without the sun. So from that point of view, man is the tail that is wagged by the rest of the universe. But, from another point of view, the universe is the tail that is wagged by man; when the man observes, he creates a cut between himself and what he sees around him, and this cut is governed by himself." [J. A. Wheeler, at Cornell symposium].

"I found myself in 1951 having to write in a book, which I was

about to publish, that the mind of man seemed to be the most advanced phase of antientropy witnessable in universe. And if there is an expanding universe there is logically a contracting universe. Possibly man's mind and his generalizations, which weigh nothing, operate at the most exquisite stage of universe contraction. Metaphysics balances physics. The physical portion of universe expands entropically. The metaphysical contracts antientropically." [R. Buckminster Fuller].

The complexity of scientific thought, itself exquisite and weightless, is continuous with the interwoven perceptions and insights of Romantic Poetry. The Romanticism is retained, and Byron and Keats are astronomers just as Fuller and Thorne are poets; the stars are phenomenologically critical, for man's place in (the) universe is always in danger, even in danger of definition, and thus never assured. Women and battles and terrestial fire may dominate the stars in Byron's work, but this is a matter of style, and it is Byron's wish to play with fire and gems but never to touch the touchstone. Yet he says: "The Night is also a religious concern; and even more so, when I viewed the Moon and Stars through Herschell's telescope, and saw that they were worlds." The Romantic Poets lived apocalyptic lives; they were controlled by calendric and hormonal nature, and they were controlled by precious and rare shapes of creation. But science is always in a state of apocalyptic intercourse with nature; lightning, eclipses, rare gases, poisonous snakes, cannibals, whales are all critical and unavoidable matters to the scientist; if he is dueling the Sphynx for her riddles, these are the only clues she offers. For Byron the amount of energy he stored came down to one word: LIGHTNING! For the scientist it is the law of chemical circulation and polarities invisible, or at least not readily apparent, out of which a sudden bolt of electricity strikes. Like the Romantic Poet, he is completely at the mercy of the rules and associations of nature; wherever they spin and twist, his attention and language must go, and the way in which they bend is the way in which his conception of reality bends too. So Coleridge, in dejection, places all his hope on possible waves and seiches of sea brought about by the chemical changes of wind and moisture, a reaction in which he will be a hormonal perceptual participant, an experiment over which he has no control but which will..... or does he have control? Antientropy, or man as world-maker, is essential to any poetry (where the world is made again), but especially so for the Romantics for whom the natural world was the apotheosis of their passion (compare Ginsberg, Snyder, and Corso today, or even Timothy Leary; says Ginsberg, "I am another Star."). And so it would appear that Don Juan is totally under the power of the two women, Julia and Antonia, as he is held between them in the bed. But this is a misreading. The two women, for all their female power, are fluttery frightened moles, afraid of goblins, and of husbands who return unexpectedly; it is Don Juan who holds the power, who carries the sword thru the remaining cantos, who, though totally seduced by the universe, the two mature women, sees, as the phenomenon itself cannot without him, how deep it goes. This is Byron's version of antientropy: "Matter is eternal, always changing, but reproduced, and, as far as we can comprehend Eternity, Eternal; and why not Mind? Why should not the Mind act with and upon the Universe? as portions of it act upon and with the congregated dust called Mankind. See how one man acts upon himself and others, or upon multitudes? The same Agency, in a higher and purer degree, may act upon the Stars, etc., ad infinitum."

But science fiction is more concerned with entropy and natural selection; it ignores the details of the complex relationship between perceptual man and sensual sense-emitting nature; instead, nature in its variety becomes the scenery for plot and adventure; at specific moments man is even alienated from nature as though from his own nature (as on distant hostile planets). The sheer scenic continuity of the universe becomes more significant than its unquestionable geochemical continuity. All the planets, as we discover them again and again in the vast literature, sound remarkably like travellers' accounts of the New World, archaeology of classical civilization, palaeontology (including Atlantis and Mu, those Atlantic and Pacific links between Egypt, South America, Polynesia, and China). If these planets differ from known worlds, it is because they borrow material superficially from comparative mythology, legends, and folklore much in the way Joseph Campbell blends a hodgepodge of gods and customs. In this sense, their literary tradition is Frazer and The Golden Bough. Science may not create as much contextual material (i.e., whole galaxies of civilization, whole dimensions and microcosms inhabited by conscious beings), but, in the line of another tradition, science examines the capabilities of man as they actually are, and as they will remain, no matter where he goes and no matter what happens in the universe. Science remains in a highly moral universe, a very harmonious universe, not from any traditional wish to do so (for science has only come to this in the last fifty or sixty years) but as an absolute necessity, for nothing is destroyed without consequences; i.e., nothing is destroyed.

There are two dominant undercurrents here, and they are connected. First of all, though science fiction has entrances into strange worlds and clear exits out of them, it is clear in science that there is no break in the system. In entering one sphere we do not escape from another, later or previous; we are the accumulation of all spheres of influence as they touch upon our life-space (measure). Microcosm affects (germs, genes, microconsumption), and macrocosm affects: there is an ecology of the total earth environment, in which smoke rising from a chimney in England has an effect on wild berries in China and corn growing in Kansas and midge larvae at the bottom of an Australian lake; there is also an ecology of the total universe, earth held in orbit by sun, tides pulled by moon, including the tidal waters of our bodies (menstrual periodicity), as well as the more alien forces of cosmic rays, meteorites, interstellar particles, and even that there are lines, like light, or the expanding universe, or electromagnetism, that encompass the shape and stasis of time-and-space itself. Rhythms that repeat, as in pulsars and lightning bugs, suggest not just mathematical regularity (as a reduction) but that phase and regularity permeate deep structure, emerging at some nodes as microrhythm, and at others as macrorhythm.

This continuity links one science with another. Just as the problems of American cities first appear in New York, and then spread to the other cities, so the problems of definition appear first in physics, and then elsewhere. So the way in which the status of the electron is ambiguous is, in some sense, the way in which quasars, dolphins, DNA, memory, and cultural origins are ambiguous. If physics cannot settle its laws, certainly the Law School, worrying about matters of civil and common law, is not going to solve its problems either. The judge decides unjustly, whatever that means, and this is true from the electron on out. Our position is ambiguous, even as Apollo reaches the moon, and this latter should not serve to disguise

it as so often it does in science fiction.

There is a second undercurrent here; and that is: where can man go in the universe?, and where has he been? In a certain sense, we can combine Thorne's topological hole (which resiphons material to other parts of this universe, or other universes) with Fuller's use of contraction. This gives us either an image of man as a neutron star, and his thought the material that is topologically retained (by resiphoning); or an image of the neutron star as a consciousness itself, retaining its finest densest material in collapse. The most exquisite material, if it retains its integrity, is thought, and thought, by defining topology, Metaphysical Poetry, etc., uses these as vehicles to get around the universe, which, in this case, is the tail that is wagged by man. Space is a convention we use to describe what appears to happen. If the universe is expanding, space takes on a different meaning; it is growing larger faster than we are rowing against its size, and it is growing larger (and we are too) in some absolute sense which we must finally confront. We must reconsider the meaning of interplanetary and interstellar travel in terms of the fact that material is passing out of the universe. We must reconsider where it is we are going.

Olson specifically rejects a reviewer's use of the term "naturalism" to explain what Melville is doing and into what tradition he fits. Melville was exploring an inner world of dynamically-changing topologies, creating and recreating the whale thru all his own organic functions, thru all his possibilities of thought and vision, in America and in history. That the whale, like any other animal, swims in a natural history, that America considers whaling (like football) to be a form of realism and naturalism leads only to rocket ships and space satellites. Olson says: "It is rather quantum physics than relativity which will supply a proper evidence here, as against naturalism, of what Melville was grabbing on to when he declared it was visible truth he was after. For example, that light is not only a wave but a corpuscle. Or that the electron is not only a corpuscle but a wave. Melville couldn't abuse object as symbol by depreciating it in favor of subject. Or let image lose its relational force by transferring its occurrence as allegory does. He was already aware of the complementarity of each of two pairs of how we know and present the real -- image & object, and action & subject....."

What interests us finally is that the Pequod is an electron, the whale a neutron star; what interests us is how the phonemes of our language mix and disappear inextricably with photons and positrons, in which spirit Kekulé fell asleep before the fire and half-dreamed of flames biting each other's tails like giant snakes, salamanders, ourobori, and therein the benzene ring, and the key to his own organic chemistry, root of his somnia. This is our secret tradition of science, that suggests that science fiction should take its cues from Spenser and Blake rather than Johnson and Pope. Science fiction must set out to discover what it means to be antientropic, to be in an expanding universe, to be organisms generating health and sickness, bodies of the biochemistry and matter we study, carbon rings studying carbon rings, and studying I Ching rings and Egyptian hieroglyphs of the Book of the Dead. Just as we have always needed an Orphic literature counterweight to the critics' realism and naturalism, so we need an Orphic science fiction to deal with matters that lie basic even to our technology, and that our technology, in effect, obscures, because we think it is proof of our science rather than of something else we have been doing too. We can derive the benefits of techno-

logy and still talk about the possibilities of man.

"Science in Auguste Comte's day was getting ready to dominate existence, theoretically and practically. Whether it was a question of technical or political action, men thought they would soon have access to the laws according to which nature and society are constructed, and govern both according to their principles. Something entirely different, almost the inverse, has actually occurred. For from light and efficaciousness having gone forward together in science, the applications which are changing the face of the world have sprung from a highly speculative science whose ultimate meaning men have difficulty agreeing upon. And far from science, including even political science, having submitted to these expectations, we have had instead a physics filled with philosophical, almost political debates." [Maurice Merleau-Ponty].

We would be far more correct in talking about man vis-a-vis his world if we focused on the small amount of control he has over his environment and life and the enormous amount of control it has and is gaining over him. In the moon trips it is clearly man as an agent of the machine's process and the very proximity of a heavenly body, not man having constructed machines to take him where he has always desired to go. Those who must argue for funds for the space program are hard-put to find any benefits, except military ones, that make the moon and the planets such desired objects. If the moon has been desired archetypally, it is as the Moon Card and somatic lunar process, not as landing soldiers onto craters.

Man has divined patterns in the substance of which his world is made, and has built fuels and engines from the materials locked into these patterns, even as his body manufactures food into soma by an unconscious (somatic) decoding process. He has recorded what nature has dictated (the angels are process that is not our own/in the universe, process ten billion years before earth; the song of the angels is blue, is static, clatter, as a logic breaks down into its underlying components; there is a soft churning of dyes, there is water, grass, Ulmus; there is the signal that is yellow, thought --- one strand in a blanket, one coarse interweave of woven plasm). He has made the most of what consistency and cohesive power there is in 96 elements-plus, in wood and stone and veins of mineral. But let be no mistake about it: man has not dominated and made use of the materials; the materials have always made use of man, and our continued existence may depend more on our unconscious perception of the environment than our direct use (and over-use) of its products. We serve our own interests better when we are not obsessed with them (Polanyi).

One world lies upon another, even as consciousness upon the unconscious. Bradbury never describes this ring, but Cocteau does, and Orphée is a film of messages passing thru radios and boundaries of scar tissue, from nether worlds ringing nether worlds, and always into worlds where both conscious and unconscious beings receive them. If there is a science fiction of the world of biochemistry and the organic dance of carbon, it is most accurately here.

And some science fiction stories do describe the relation between man and his machines. In Asimov's I, Robot the robot explains that man is an evolutionarily expendable item, created only as an intermediary stage between inorganic lifelessness and conscious beings of steel. Evolution is thus a complex process, able to switch from carbon rings thru carbon-crystal cortices to an image of a machine, to self-maintaining robots, the creatures best able to survive on a

changed earth. Similarly, in Hoyle's Andromeda stories, man's mind, for its reflective quality, its capacity to distinguish and unite complex patterns, is chosen by an advanced form of machine life as the medium (DNA code) of its own propagation. Man has discovered machinery and technology, but they were there to discover, and so was he; the consequences remain internal to the system.

The most important implication here is that consciousness is not an expendable item in the universe. As entropy expands, antientropy contracts. The universe lies in balance between the enormous diffuse expansion of space and the infinitesimal contraction of precise thoughts and images. Man's work, whatever its ostensible purposes, is, at any given time, to sustain the universe. Ethnographic cases have been reported both in Australia and North America in which natives, when asked the reason ceremony "X," replied that to fail to put on the ritual was to fail to sustain the cosmos. The dancing, the planting of the fields, the complex of images held by the participants, the pigments on prayersticks and costumes, and the blue and yellow neural pigments are a gestalt complex enough to counter the vast sweeps of empty average space coming in.

Given a billion years each, the Hopi, hypothetically, would reach Andromeda (a speed faster than light required here) before the American Space Program (though the Americans would beat them to the planets and even perhaps a few close stars). Space in the universe is the same as time, and the Hopi space-time verbs (as described by Whorf) could eventually create a vehicular gestalt (an astral body) that would make all times equal and simultaneous in the universe, hence allowing an individual to choose his position. In other words, there are certain distances man cannot travel unless mass becomes energy, unless he is unencumbered with a body as we know it now. Just as there is a ghost dance to return the buffalo to the Plains, there is a dance, or state of soma, to accumulate propulsion, to equalize time and space. Information theory suggests that once information is created it cannot be destroyed. If an astronomical or geological catastrophe were to eliminate the earth in one instantaneous blow, would the antientropy in this position be destroyed? Does the material escape thru a topological hole?, the accompanying soma eliminated and the information reduced to its most exquisite form. When the buffalo is killed by the hunter, does the buffalo gestalt seep back and erupt as a star at the other end of the universe? Are there elephant-stars and ant-stars? By "star," I mean here center of conscious energy, information stored. The relative sizes are of no account. When man stands in the night looking up at the whole sky, it is not that the sky is an enormity beyond all conception and that he is a meaningless iota in an arbitrary place-time. Man throws back at the sky his whole image of it; he cuts between himself and what is out there an equally large universe, and it is in this intermediate universe that the stars and men co-exist as equal beings. There is nothing between a whale and a star; the essential topological points are retained in the implosion that sucks the whale back into its burning presomatic center. The stars too are antientropy; in fact, according to Rodney Collin, they are more exquisite universe-contraction than man. In Collin's system, the stars are beings of six dimensions with one perception every eighty years; in that time the planets and moons have moved great distances; some of them have circled the sun hundred of times, or their own planet hundreds of thousands of times. From this vantage point the sun looks thru us, as we look thru the life of an elec-

tron; the sun is conscious at a different rate and magnitude of the universe, but its life spans as many perceptions as ours. At the moment of death we return to the womb and live the same life over again, day of birth, day of marriage, each second exactly the same. That we have lived this cameo a thousand times before, and will continue to live it, lit as it is with our odor and the colors of rooms, kitchens and dining rooms in which we have passed, faintly conscious, conscious of a warm area Rodney Collin says, a faint bleeding around us, as of colors. The only answer to this woven nested life is that every moment goes infinitely deep; consciousness can become warmer and warmer, the ominous roar of one total strand, one solid utter deepness, without a way out except to live it, and know. Again and Again and Again. "Desire to live again, for that will be your lot in any case." [Rodney Collin quotes of Nietzsche].

It is impossible to think that any descriptive system approaches in complexity the system that man daily experiences and conceives and reconceives each moment. In any room on this street the amount of material that consciousness has assembled and woven and annot form the eternal living space of a room is dense enough to balance the out and out throw of the universe in the other direction. Science fiction is merely part of that material; it can not hope to analyze it or project it anywhere else. Science fiction is neither of the future nor of other worlds; it is part of our presently-inhabited now-space.

These books describe the present world; they have no more idea of what will happen in 2220 or eight million years from now than they do of what happened ten billion years ago, or than the reader has, or anyone else for that matter. This statement is not meant to be sociologically or psychologically obvious; it is obvious in a much more basic and final way.

The world exists now. And now. And now. Chemical distance, breath alone.....lies in between.

To imagine what might have been the past or to extrapolate a future is simply one way the nervous system has of using language in experiencing to its fullest depths what is happening now. And the surreal is merely another way of seeing the real. The culture emphasizes a realistic material NOW, and there is no formal outlet for thoughts about other possibilities that are also immediately present but not explicit in the same sense as newspaper-magazine history. These thoughts are news also. If they break their ties with newspapers and magazines completely, they may become poetry, or sculpture, etc. But if they insist on maintaining their relationship with so-called realism, they must be shunted off to the far corners of that real world, in other regions of time and space, as if such regions existed anywhere but here.

The effect in science fiction is to flatten the imagination out in a time-space plane. If an event does not exist here and now, or a possibility has not been realized as such, then it is clothed in the fictive scenery of another planet or eon, another dimension or level of cosmos, etc. etc. ad infinitum. This is naturalism; the visible reality, the shape by which the image is sustained: are never explored. No new territory of NOW is opened up; we are led to believe that everything is THEN and THERE. Nothing is HERE, except perhaps the story, the author, and the publishing company.

We sell ourselves short. Like the scientist who broods over not

being able to live long enough to see what is on the other planets of the Solar System. He does not realize that he knows already, and that the answer to his frustrated desires and curiosities lies outside such a linear time.

Because we have history, we must see ourselves as no more than history. The newspapers bring us upto date, car crashes, elections, murders, the retrograde world. And even as we have lost the one New World made available to us (in all its Pawnee-Choctaw-Tlingit variety), we will always lose new worlds. Spacemen are trained as rigorously as conquistadors, or an military personnel; they are told what to see. Anyone flying for the Air Force who establishes contact with a flying saucer is demoted, loses his job. In effect, discovery is reduced to reporting on what is already known. Our culture would like certain opportunities in outer space, and it is only those opportunities that they will be aware of. It is like the baseball predictors who make a great show of looking into the future to see who will win the pennant, and then end up telling us that the team that won it last year will win it. Why? Because they won it last year. And if he should pick a different team, then most likely he would not be writing for a major publication: TIGERS AND CARDS TO REPEAT. Science fiction, in its most unimaginative mechanistic sense, is our history of the future, a history, imaginary in itself, which ties us to an equally imaginary memory of a past.

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In recalling science fiction plots there is a tendency toward stimulus generalization. The single books are forgotten, and all stories of our colonization of the planets and our movement into the galaxy and galaxies are remembered as a single tale; all stories of Vikings, Aztecs, Polynesians, Norsemen, Sufis, Phoenicians, Greeks, Druids become one story of an almost-world between prehistory and history. The prehistoric age of Sheckley is the same as children's science fiction stories of dinosaurs is the same as archetypal depictions of the planet Venus. Although we have all read different combinations of books, it adds upto the same thing, and any two people who have been reading science fiction since they were children, even if they cross on only half a per cent of all the books they have read, can reminisce on the same general events and types of events. This is the same as reminiscing about the 1952 World Series. Everyone remembers it differently, and it does no good to get out a record book and check. Some people went to the games; other watched them on T.V., others listened on the radio; some merely read about it in the newspaper. All Billy Martin's rushing in with their caps flying off come together, and Bob Kuzava is a lefty whose magic is due to Casey Stengel's magic, getting them out by negative capability, the trick that Stengel knew as well as Keats: to platoon your stars because we are all metabolic beings with astrological dispositions and burn out; Hank Bauer is Gene Woodling, two faces on the same coin, Janus, astral twins with powers from opposite sides of the planet, powers that Mickey Mantle, the American Indian twin-birth hero, combines. Amoros is '55 catching that ball as he crossed the line; Shantz is '61 unable to complete his momentum in Forbes Field, and Coates (not Terry as some remember) yielding the home run that turned the season backwards. We meet on the street and recall the old days; we have all read LOST: A MOON, or its equivalent; we all remember the great civilization on Mars, duplicated by the

Krell in the movie "Forbidden Planet;" we all know that the moons are space satellites even as Swift knew they were there before anyone saw them thru a telescope. Little matter that Amoros lost all his money, and Shantz pitched for those very Pirates the next year, and Hal Smith, who hit the home run, faded out in Houston, or that LOST: A MOON was given away to the Salvation Army book collector, along with FIND THE FEATHERED SERPENT, and Heinlein's children's stories of the Martian canals, the boys skating followed by the furry bouncing inhabitants of the planet. The fact that these events coalesce so easily indicates that, in some sense, they are all the same, or that, different as they are in content, their information is repetitive ("All forms evolve according to eternal laws,/And in the most divergent shapes is hid the archetype:" Goethe). We are not even terribly concerned about the conflicting images of Mars: aging planet and uninhabited planet. The two are part of the same story, and different versions do not contradict. Nor do Flash Gordon's wars with kingdoms and the hoary royalty of Mars conflict with either of them. The entire universe has been colonized. We have passed thru space warps and thereby arrived at the other ends of the cosmos, where we could never have arrived in a lifetime, even at the speed of light. And we have reached these same distances by the relativity of time and space, that the crew of the space-ship does not age while hundred of years have passed on earth. And in Heinlein's version for children the ship communicates with earth by having one telepathic twin aboard the ship and the other on earth. The one on the ship ends up communicating with something like his great-great-great-grand-daughter, and marries her when he returns. Once again: two alternate versions of the same version.

These different versions do not conflict because they are not the future. The future is something else that will happen (syntactically) or has happened (geophysically); man's possibilities remain man's possibilities. They are the future of now, a world we already have, and share, no matter what the future will be.

Levi-Strauss' structural study of myth helps us here. He goes from saying (in "The Structural Study of Myth") that no one version of a myth is the myth but that the myth is an open-ended collection of all its versions to saying (in THE COOKED AND THE RAW) that the interpretation of the myth is also just one more version. These versions then include: all diffusions of the myth to other cultures, all translations of it (by anthropologists, missionaries, psychologists with projective tests, folklorists, etc.), all individual variation in the telling of the myth, and all commentary on it. Freud did not solve the riddle of Oedipus; he merely added his version to those already told.

The different versions are like different musical themes on the same basic intervals of sound: creation, maturity, death, phylogenetic regression, entrance, departure, passage, eternal return, land beasts, water beasts, man descended from two parents, man tracing descent from only one, etc. The actual myth can never be known; it is coequal to breath in a flute: diverted thru the stops becomes a particular thing at a particular moment of time. Versions of the same myth may contradict each other, but these contradictions are present in the myth that underlies all its versions. In the very contradictions is a further dynamic of the original unknowable form; like Whitman, it is large, it contains multitudes.

In his Political Systems of Highland Burma, Leach points out that each group has its own story of the same event, the story of a feud in the 1890's which supposedly set the present organizational hierarchy. In describing this more recent event, the members of each town are

remembering some more ancient feud and describing the happenings in terms of it. Each group tells the story that best suits its image of its role in the present system of exchange. The historical event is indistinguishable from the various mythological events and from other historical events which come to resemble it; the anthropologist tries to account for both and to combine all individuals versions as well; this is another variant of the myth itself, or the history, no larger and no more inclusive than any of the others. Leach says:

"Thus where the anthropologist talks about 'being in relation', the actor must symbolize his meaning through concepts associated with everyday facts of kinship behavior and friendship; similarly 'being distinct' tends to be represented in images of hostility and contrast. But in abstract technical language relationship and distinction are merely two aspects of the same thing; the mental operation of classifying A and B as similars is the same as the mental operation of distinguishing A plus B from C. In the language of ritual this identity introduces an element of paradox. Very similar social situations may be described at one moment as systems of social solidity and the next as systems of mutual hostility..... Obviously each lineage head tells a version which puts himself and his group in the most favourable possible light and I have already pointed out some of the more obvious instances of this. But while different versions stress quite different elements, they are not actually contradictory. They could all be equally true or equally false....."

A similar phenomenon takes place in science fiction for quite different reasons. Mars is the range of a possible myth; it is inhabited and reinhabited historically; it is a god on Olympus; it is a planet, a warrior, an astrological event, a metal; it is one thing to Schiaparelli, who saw canals, and another thing to an artist whose signature looks like "Bonestell," who drew it like an Henri Rousseau of Siberia.

Each planet, each direction into space, is a dynamic of our present life, and in all its contradictory images and levels, the changing form of the present is seen. The mirror is Venus, or Mars, or Alpha Centauri; the mirror is invasion from outer space, is economic conquest of space. All science fiction stories are equally true at the same moment, and only in this conception can any of them have meaning. It is not as though we have ruined the excitement of all these many stories; we have saved it from false and tiresome melodrama. The universe, as long as we must use that word, is a human universe, as Olson puts it; the stars dance as we dance; the villages of the Pawnee are laid out to birds and swans: constellations; the mirror of the sky is the earth; the sky is space; beyond the light-breakage of atmosphere is outer space. We must learn to inhabit these planets, for they are all our own, and we have created them as a way to live even as the Hopi live in vast worlds of mythology, each world a color, each world opened by an animal, each world in a completely isolate and inviolable region of space. The influence of the planets on us is not only astrological; it is astronomical; and the astrologer forgets the astronomer only with the greatest danger to his work.

Mythology is the wrong word. It is proprioception of natural history, the simultaneous domestication of wheats and the moon, the initiation of men into categories of animals, plants, stones, and phenomena of weather. This is not after the fact of economic existence. It is the very terms of existence in a complex changing environment, an environment in which consistency must be lived and solved but is not

given a priori. Most primitive peoples experience their mythology on a daily and seasonal basis; an unbroken chain connects the great events of history, and of time-yet-to-be, to the present, where they are experienced now as then, here as there, or there is no difference in neuron-firing. The unbroken chain of DNA is realized in the unbroken chain of mythology and ritual. There is nothing vicarious about this experience. As in the Australian Dreaming it is a direct perception of the total environment, or as Stanner says, it is reality: the only link between life and suffering. It is the continuous reaffirmation of a dream which is always in danger and always in doubt, as life itself.

Science fiction, however, has become a form of technological pornography. We must slaver after the future as after a magical whore, a future which is at the same time the heavenly city of the 18th Century philosopher (threatened by comets) and an unthreatened biophysical heaven, or the end of doubt concerning our tenancy in the universe, a universe whose other and endless possibilities elude us without technology, and technology merely turns them into probabilities. We justify the loss of our spatial frontier by the imagination of other frontiers; we rationalize the pollution of earth by the colonization of Mars, and justify the cutting off of all other possibilities for the earth, for us now in the present, by a future in which possibility itself becomes coordinate, point for point, with what we imagine to be and what we have always called in incredible fallacy: THE UNIVERSE, that thing that will make it for us, New New York.

If the eventual landing on Jupiter is more magnificent than the possibilities for vision on earth, then the two must become the same thing in the end, a fact that finally screams out for solution at the end of 2001. My issue here is not with the American Space Program, or the attempts to synthesize DNA; these things are activities of man and will have their own meaning in time. My issue is with a literary tradition that pretends to be concerned with our possibilities as beings in terms of time and space, but can only see those possibilities in terms of extension from present form. The joker in the deck is narrative, plot, a thing we have been tied to literarily for a long time, so that the NY TIMES book review is on the level of the NY ENQUIRER or the crime and scandal pages of the DAILY NEWS. The future becomes sheerly narrative; other worlds are the same as this one, or getting into a novel and identifying with a character, linear events, adventures described in surface emotional fashion. And this is the tradition of science fiction. There are always Indians in those hills, and armed, but nobody cares what reality stares back out of the Indians' eyes, or that the Pawnee live in a universe where thought touches down vibratory ripples in a brook. The space-men arrive on the silent planet ready to shoot. The universe, again that Alexander the Great thing, the world in his hands, and his own domain lost, is always in danger of a Caesar or a Khan, who we never are despite the fact that we were and are and always have been. Good and evil are awfully anxious to fight it out once and for all, a mistake Tolkein did not make in his ambiguous on-going ending. A dictatorship is always about to impose some form on the whole universe, and we have our Trojan Horse tricks to defeat a stronger enemy, but it is we who wish to impose this form; these plots themselves are dictatorships (that people read Philip Roth and not Leonard Cohen); and they hope to impose their own repetitive linear world on us.

Other possibilities of life imperceptibly blend into our present;

the mythological lies close at hand: there are magical rites in our cities, the electrical wires of a single-nervous-system earth erected, men in the streets carrying out the precise steps of a ritual they do not know, even union men. The Hopi boy who goes to gather salt at the Grand Canyon passes many of his gods during the long journey; the Aborigine awakes and the stones are his gods, transformed thru continuous ancestral time into a landscape. Any day we go out into the street we pass our unknown gods, and they are different and more powerful than anything else we see, undimmed by nostalgia or fear. We cannot turn on the radio without hearing behind the language that something else is happening, and even as our condition plays, puns on itself, the words cannot shut it out. In that sense we are all going mad.

Our gods are beside us even as Olympus blended imperceptibly with the affairs, the daily business of Greece. In science fiction, our habitat, as it is now, begins to appear. What is appearing is the serious and immediate nature of our salt expedition, our projection outward into unknown corners of the universe. We want to understand these messages that roll upon the earth at least a billion a second; we want to know our gods, our powers; we want to be conscious, aware.

The universe as we know it is infinite, and we are saddled with this (the sheer notion of endlessness, a defanged infinite), whatever it means and for whatever it's worth, and we can lie awake at night trying to place our heads outside of what would be a whole universe, or into one, but there is no solution or relief; the problem is not one of infinite space, but infinite possibilities within any region of space. Given the first situation, the notion of the moon as the nearest of the heavenly bodies immediately suggests a trip there, but previous to this the presence of the moon necessitated and its celestial irritation was relieved by its inclusion in groups of animals and spirits, i.e., proprioception of the fiery outer world.

It is not that we should return to the Platonic court and the Ptolemaic universe; we have come to understand infinity and centrality in a different sense, and even as we have lost our central position among the spheres, we have gained possibilities of a enstatic and ultimate center. Yes, it seems critical that from now on we deal with the way in which the universe is infinite, even as Bruno went before the Inquisition for telling us that there are universes and universes beyond this one, and stars to the end of possible space, or time; we must know this as it is; it does not endanger our other possibilities, our largeness, the cut we make against this infinity. If we enter ourselves we find that we too are deep beyond all imaginable depth, and have space and time that Marvell never dreamed of when he wrote that poem, but began to make for himself, perhaps, by making the poem. Bruno did not reject Keplerian harmony; he merely interpreted it in terms of a deeper structure, generating strings that are without end.

In the worlds of primitive mythology the infinite is sacrificed in order that time be realized now. The infinite is subordinated to the possibilities of the body to be in touch with all phases of existence; the moon lives, participates with the birds and other animals in their feeding and flight; the plants are the living repetitive (clonal) organs of a body; the ancestors exist in the present, and their actual flesh may be donned in war-paint and rituals, as the immortal warrior club that fights other tribes (it is as though Joe Dimaggio and Mickey Mantle were simply Babe Ruth all over again, or

whoever starred in the Yankee outfield). An experienced Indian might suggests that what science fiction describes is the limited infinity in which the white man can progress; he might talk about his own space, his ability to visit other worlds in trances, his ability to participate in orbital velocity by his dances. These may sound like metaphors, but planetary motion, like sex and phylogenetic fantasies, is a basic human energy-state to which other states refer. If we participate in the origin of species by our ontogeny, and if we participate in sexuality by our organic processes, then surely we participate in geology and astrophysics by our thoughts and dances. Poetry is politics, but if and only if we do not have a limited definition of politics, or of poetry.

We are committed to realizing the infinite (diminishing out from the body) as simultaneous with the infinite possibilities contracting into the body, and with neither destroying our chance for the other. If we are to have both, we must yield neither, even where they would seem to contradict. Poetry is constantly reminded by science that there are more than Donnian metaphors and Eliot nitrogen cycles; science fiction is reminded by poetry and science that the universe, even along its most obviously spatial loci, is more than contextual space, and that its infinities do not elude but embrace man, placing more of a condition on his language and thoughts than on his technology and its linear progress.

Robert Lindner includes in his book of psychoanalytic stories the case history of a patient who visited nightly all the planets of this Solar System, as well as the Milky Way, the nearer, and the more remote galaxies. He wrote tens of thousands of pages describing his exploits and the histories of the various planetary nations; his vision was so compelling that it almost drew Lindner in; the doctor found himself enjoying his role in the cosmic melodrama. Part of the cure was for the patient to renounce the events, that is, as unreal, and burn the writings. Yet Aqu, a Tibetan monk, has written a similar traveller's account, a descriptive chapter on each of the planets, their surfaces, their forms of life. For one man it is erotic sublimation; for another it is the reality principle. There are two utterly different notions of what it means to visit the planets, to move into outer space, or the spatial outer. They are not as different as it would at first appear.

The difference is, in part, the difference between tourism and sight-seeing (ad-venture) on the one hand, and location inside the head on the other. The Polynesian sailor must always know where he is, without reference to landmark or maps. He finds his position even hundreds of miles from where he has ever been, alone in the ocean; the Ojibwa Indian, taken captive to the East Coast, escapes, and finds his way home thru unknown territory, as back to his sleeping place thru a dream. This is an essential trait; an Ojibwa must know where he is even in dream and vision; he must know what spirits are leading him and in which of the power worlds he is travelling. Position is an internally-derived coordinate, establishdd by visceral and hormonal tensions; polarity is located by a loose isostatic lock simultaneously with the mantle and bedrock of the earth and the nervous system and skeleton of the body. Aqu prepared a cloak of earth, air, fire, and water, an impenetrable shield for his journey into the sun; i.e., in his dream he wove a gown out of the neural energies that lie behind the shapes of earth, air, fire, and water, on planetary body or in bloodstream; and his spacesuit was made of the ionization that

passes in interstellar space anyway. The formal name for this is astral projection. The body enters the gestalt, the supposed dream; it passes into fixation, the inward stars, before it is broken with the spell.

We must reconceptualize distance. The Crab Nebula lies thousands of light years away. Quasars break down at the terminus of the red shift, and pour off into red radio waves; these are the great giants, the topological Cyclopses and Titans, the left-over material from the creation of the universe, having retained its integrity to lie now on the edge of time. But Homer is more than 2000 light years away; Donne, in the spacesuit woven in part by his work, has sailed into the distances of the blue shift, a galaxy of thought that contracts, and on death contracts to an unheard of density, as a neutron star at death gives off enough kinetic energy to fill its portion of the universe with cosmic radiation. The quasars lie at the beginning at the end; the dead are tossed thru 4-space and 5-space, thru the ascending harmonics of their neural tone, into another configuration. This is distance also. And as for time, there are beings who feed on us, beings of light who have a single thought every 25,000 years, whose lives encompass the histories of planets. The nerves lie exposed in the morning sun beside the apple tree; they are the sun; they are the tree; there is no difference between the inside and the outside of the apple; the worm lives in his skin and digests at his proper harmonic tone. He is placed in the juices of his survival, and he sucks with breakfast the complete coordinates of his space.

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Because it imitates poorly a previous tradition of novels and does not establish its own tradition, science fiction is generally considered only as a commercial pseudo-literature. It is the pretence of making use of a larger universe that points out by contrast how small the universe of science fiction is. A Victorian novel explores the winding depths of Victorian society, the entangled field of marital possibilities, the ecological interplay of organisms, and the maintenance of reality in a collective social image (Durkheim's religious life). A science fiction novel uses words that are associated with greath distances and alien conditions, but the actual distance is usually very small, even if from here to the end of the universe; the conditions are more often composite than alien. It is much the way in which people during the Middle Ages imagined life on the rims of the earth: men with giant ears, whole tribes of women, white kingdoms in the midst of Nubian kingdoms, lost tribes of Israel, and a white king named Prester John, an enormous island sunk with its palaces and most of its peoples, and the rest wandering around Europe with ancient wisdom. But just as the Book of Mormon shows that text is not always revelation, so science fiction shows us that context and extent are not penetration.

The usual love story, which makes the woman initially unavailable for psychological or cultural reasons, is superseded in science fiction by metaphysical accounts in which the woman is unavailable for existing at another time, or in other biological form. By extension, the romanticism of the alleyways of space (so powerful in Sturgeon) is a form of longing for the distant earth, the things we want on earth and are unable to get of our own innate powers, and from which and only from which the powers of the greater universe, the universe at large, follow. Or Poul Anderson's hero and heroine, trapped at light distances from earth and without the means to return, begin to rea-

lize: "Afterward he said ruefully: 'I fear we've managed ill. Now the way home is indeed lost.'

'It doesn't matter,' she whispered. 'Where you are there is England.'" [THE HIGH CRUSADE].

So an England, in danger and unrevealed as the story begins, is discovered only in interstellar space. And although the story does not take place in England, it returns to England, for it was England alone, as they knew it, that was at stake. At relativistic distances, which we all live in to some extent, the end reveals only what the beginning might have been, and this alone is the meaning of things. A story, as with Dickens, begins in medias res, and then thru moving forward in time moves backward in time to reveal that the consequences are the same as the origins, as in Absalom, Absalom! the past and present are simultaneous worlds, and after a while the language cannot distinguish between them. This is essential in science fiction stories that occur over great spans of space and time, for the further we move from the earth (where it happens but we don't see it) the less accidental, the more cyclical all things become. Events are indistinguishable from laws; in order not to be trivial science fiction must take this into account as it moves out into stars.

In Sturgeon, sexual desire is described as an itch from a powder prankishly sprayed on the earth, but in Ferenczi the itching is a mark of an ancient and powerful regenerative urge, of a land creature to remove the irritation of land and go back into the world ocean; sexual desire begins a total downstream flow of organic activities into the liquid production of sperm. In a Leinster story, a whispering shell appears to tell a man of his own distant origins on another planet, but in the end it is only the shell which is alien, like the itch, and leads him into its own adventure. Man's longings are fulfilled only outside his muscular and psychic control. Some books bridge this gap by bringing man closer to the immortal consciousness of matter. Mark Clifton's book of the planet of conscious crystals comes almost to that simultaneity of beginning and end, although a lovely nostalgia maintains the break in the system:

"Magnificent the dreams of man that took form in steel and stone and glass, yet none matched the lightness, the grace, the intricacy, the sublime simplicity of these interwoven crystalline structures where light from the noonday sun separated prismatically until it filled the air with myriads of living, darting, colored sparks of fire above him. Where the breeze that blew through the vibrating spires made blended sounds the ear could barely endure in rapture.

As once, in childhood, he had stood in a grove of giant trees that laced their limbs in gothic splendor above him, now again he stood, lost in time and space and being, lost in vision and in music which neither had nor needed form nor beginning nor end.....

Without wondering more, he sank down upon the mossy turf of the floor and lay supine to gaze upward, to follow line to blended line until they mirrored into infinity.

The darting lights above him whirled, spiraled up, then down, clockwise, then counterclockwise, reminding him...reminding him...

...the internal structure of crystals..." [EIGHT KEYS TO EDEN].

So, in terms of Mars, Bradbury fails, for he seeks not the planet, but a kind of Tennysonian lyrical beauty (Illinois and Dandelion Wine). Except for a few accounts, and moments in others, the tradition of being aware of distance and interval and the dynamic flow between shapes is foreign to science fiction, and we must look elsewhere for

it, as in Spenser for Venus, or Collin for the sun. And it is Miro who, in effect, takes us to Mars, for in his work we can locate the crystallography of the Martian silicon atom and the electromagnetic lines of distortion that lie between any two planets or types of space. Because both he and Mariner are associated with Mars (even in the public eye), Bradbury confuses its concerns with his own, and writes me: "I will look forward to more photos of Mars. Number Seven, coming up, hopefully, will read, in large canal letters across the whole surface of the Red Planet: Bradbury Was Right!"

If we are to discover the planets, we need a literary style which, in its generation of syntactic intervals and junctures, shares a dynamic of coding with the generation of other types of space (atomic, astrophysical, genetic, etc.). It is Olson's 'distances' we need here, and not number of miles or light years. While science fiction writers have been concerned with the unusual and the occult, their language remains decorous and conditioned in the worst sort of Nineteenth Century way. But the secrets of Mars are locked in a complex alien syntax, even as the colored worlds of the Hopi are locked in Hopi syntax such that all animals on one world are instantly transformed into different animals on the next. Yet a science fiction story about Mars gets into the matter about as much as a missionary's account of a Hopi ceremony, or an astronaut's account of the whole earth. Since language is the issue as much as the planets, we are better off with Williams, Olson, Duncan, Kelly, etc. if we are to visit any regions of space beyond our own. The avid science fiction reader comes upon their poems, and he discovers there the space and stars and availability of planets that he hoped for and searched for in years of reading science fiction and newspaper accounts of Mariner. And this reminds us again that all future possibilities, whatever they may be, are present in ourselves now, and we can find them there, as these poets have.

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Given the relativity of time and space, it is interesting to see how our search for the events of the past becomes confused with our projection into the future. Our surety about Greece, Rome, Crete, China, and Olduvai Gorge becomes equivalent to a surety about Mars, Venus, and the moon, and the descriptions of these two separate regions of the spatial-temporal cosmos are confused. The Mars-ruled Roman wars become the Mars of Flash Gordon; Crete is found on Deimos and Phobos; China and Olduvai Gorge are found on different continents of Venus even as the Morning Star appears in Chinese court-life, or the Evening Star on cave walls. We confuse metal, god, and planet; we confuse astrological sign with astronomical surface; we confuse prehistoric with closer-to-the-sun and the more ancient histories with further-from-the-sun. We confuse these orders because the manner in which they are similar precedes all their differences.

If the Old World is our known past, the New World, also our past, is our shadowy and unknown past, Jung's archetype of a snake lying dusty and toxic outside a firelit mandala or Druid hearth, Sturgeon's cosmic rape, or Finney's invasion of the body-snatchers. The New World, with its star-temples and star-mounds, its serpents and coyote-hares, is a past we have given up entirely to a different calendric (as the Platyrrhine monkeys and Incas and lacrosse-players), is a past we conquered only to lose, an electron fleeing into the jun-

gle from its mass, is a past finally given up to Le Plongeon and the lost continent people, who combined it with our other lost past of Egypt and the Tribes of Israel. And is why Lawrence eventually moved from the soft membranes of Lady Chatterly and the newly-weds sealed in orgasm by the Rainbow, and other books of direct sunlight and sexual creation, to another planet, a reptilian planet of mythical god-men, where the answer to the sexual riddle became simultaneous with the combined past and future in which it was once lost.

Lord of the Rings takes place in the indefinite and faraway past; it is a past so long ago that it is in no way associated with the historical or palaeontological times we know of. It is a time that occurs not once but again and again, in different places in different ways. It is evidently associated with the earth, the earth of Scandanavian and Anglo-Saxon legends, and even though its events cannot be located in historical time, we recognize and accept them instantly as part of our history, like some valuable documents lost at Atlantis or Alexandria. It is the earth of the White Goddess and the Druids, of Coyote and Old Man Moon, of Vinland and Polynesia, and the ancient sea-kings of the Pleistocene and Stonehenge; it is the same world as Oz, but Oz is reached by tornado; it is the same world as Christopher Robin, only Pooh Bear is reached by being young and having stuffed animals; it is also outer space; it occurs on an unknown planet in a region of space whose consequences seem to reach us only archetypally, as part of the crisis in the psyche, or as cosmic rays. It is a world in which a great feast is followed by a solemn genetic message and a long journey from home, the expanding universe, with magicians and planets as guides, spies overhead: which is not just the Jungian battle for individuation (though that is part of the larger affair), a battle which Strider had to fight (and which Charles Atlas grotesquely typifies as a comic book Ammon-Ra), but is also a battle for the world at large, a battle for the sun which the Egyptians fought against the serpents of darkness, a battle for perception which the Maya waged in the jungle with calendar wheels and ecological diversity. It is a battle in outer space, of which the earth is part, is perhaps the only part (or in C. S. Lewis and Gurdjieff the earth is the only planet in danger). Lord of the Rings happened, but is happening now, and it will continue to happen, for time is no different than it ever was. Its action is the meaning of our passage thru our lives, our metabolism, where our cells move against their own darkness of outer space.

Arthur Clarke has used the node of equivalent past and future to turn simple spatial narratives into musical myths of man's time in the universe. It happens visually at the end of 2001 when the spaceship descends thru the Jovian atmosphere; the spaceman sees the bright violent colors of creation lit in a different organic chemistry, but he also sees the storms of energy emitting from the geometric center of the universe (not that the center is simply geometric, but geometry is the only way in which he can see it). The space is is passing thru approaches him in oscillation until internal and external pass thru each other and lock; this is the room he eventually departs thru.

This interval of oscillation is present also in Childhood's End: the devils who appear at the beginning are like the megalith; they are, but are not recognized as the magi, those alone who can pass information between two otherwise-separate creations. In Childhood's End the children dream of another dimension until they finally awake in it, destroying the previous geological earth and replacing it with

their own. The content of the dreams is the position of a deeper, another earth, or what else could the Hopi clan-chiefs mean when they say we will enter the Fifth World in 1980, which is perhaps the fifth coordinate of a dream image?, or what else could Mel Noel mean when he says that while flying for the Air Force in Colorado he was told by people from Saturn aboard a UFO that the earth will pass into the fourth dimension in 1980? The fourth image?, asks Robert Kelly. The Hopis and Saturnians are the same even as the past and the future of the earth is the same. Chardin says that above the geosphere and biosphere we are developing a mind-sphere, or noos-atmosphere of the earth (the noosphere); it is not just an imaginary trip; it is a place in the imagination of the planet where we can and will live physically, a collection of electrical and nervous points which McLuhan and Fuller understand us to be collecting even now as the earth draws closer and closer to a single T.V. image, a galactic cloud contracting in a uniform image of man, a space that Miro paints (and will paint) as imaginary until we enter it with all five perceptual points of being. And then, Kelly asks, how will we know we are there? This is the world that the children begin to dream as they cross the universe while rockets stall on the ground.

"And even here there was life. Though the planet might be scorched by the central fires in one age, and frozen in the outer reaches in another, it was yet the home of intelligence. The great many-faceted crystals stood grouped in intricate geometrical patterns, motionless in the era of cold, growing slowly along the veins of mineral when the world was warm again. No matter if it took a thousand years for them to complete a thought. The universe was still young, and time stretched endlessly before them. . . .

('I have searched all our records,' said Rashaverak. 'We have no knowledge of such a world, or such a combination of suns. If it existed inside our universe, the astronomers would have detected it, even if it lay beyond the range of our ships.'

'Then he has left the galaxy.'

'Yes. Surely it cannot be much longer now.'

'Who knows? He is only dreaming. When he awakes, he is still the same. It is merely the first phase. We will know soon enough when the change begins.')" [CHILDHOOD'S END].

The spaceman is sucked into the noosphere, the geosphere of Jupiter (which is the meteorosphere too: methane and ammonia). His biosphere is bound to be destroyed in this region not poisonous to itself but to what it has not nourished and born. But the earth and Jupiter have been connected for all of time (as magi); the geosphere of Jupiter is his own geosphere, soma, body; the atmosphere of Jupiter is homogenous with his thoughts; in this electrical field he is able to carry out an unknown genetic mission, for which his space mission is merely subterfuge, planned that way eons ago. He has reached a node, one of the converting spaces of the universe; the moons are in conjunction, defining it, and his time, his body, the tim(ing) of the earth; the megaliths line up at the gates. He enters thru them a mansion, a liveable dream space, a stylized meeting-place where he can join with himself, where the past and future of the earth can melt into one somatic fragment of its total being. He is the earth. We are reminded of another mansion with many lines of perspective (Meshes of the Afternoon).

The Ojibwa would not be surprised if told that man's body is made

by the dance of particles sent off in the last burst of energy of a dying star. They would tell you that they had seen those dancers, and some of them would tell you that they are those dancers, which they are.

In Childhood's End it is the dreaming of the children, in 2001 the passing of the amphibious sperm into the Jovian atmosphere, in either case the lines of Rennaissance perspective are broken, and we pass into the Fifth World or the fourth dimension, or inner-outer space a crystal passes thru while changing according to its inner laws of focus and successive ratio, which are transferred from the real number system into tissue growth.

So the spaceman passed from one chamber of the universe to another, a node of passage created by his own noos, mind; and the Hopi dancer passes into ritual state and whirls thru the inhabited San Francisco Mountains of the eternal land which overlooks his mesa; he penetrates the deeper field of the earth; he senses the closeness of the Fifth World, as the children dream it, as the astronaut meets the old body he had forgotten about and missed for so long, Lawrence in South America, magi looking into their own atmosphere and seeing the earth from without, words heard by Mel Noel in the atmosphere of the earth.

Anyone can sense the terrible sexual overtone of the room on Jupiter at the end of that film (totally sexual, as spores are sexual: the sexyness of other films only a superficial covering.) There is a bed, a bathroom; there is the elaborate preparation of something like a woman who has waited a long time, and now she has bought a slave (odalisque) and is about to indoctrinate him into the erogenous points of her (which is his) body, which is the geographical planet Jupiter. Circê in her kingdom: as Swann so wonderfully describes her in The Dolphin and the Deep, a changing geological shape of woman, a continental feature both hardened and softened by time. She is, of course, the female pole of the Solar System; her menstrual cycle is sunspot driven; she is in the atmosphere of all planets, but only meets a man in passage from one planet to another. And the fuck, as it exists, is between planets; planets are the initial sexualities that men and women later replicate in the crystal points of their bodies; so it is presex sex: and the fertile product is a child who can start imagining it all over again, the astronaut returned to earth without the benefit of any of that technology that sustained them all thru the first 4/5's of the film, sustains most science fiction; the child leads the world out of that technology (which is an evolutionary dead end) into a dream. But in Childhood's End, the master-race (whose place is taken by megaliths in 2001) is doomed to technology, to knowing the universe as space-pilots and astronomers report it; they appear both as guardian (because they guard) and as devil (because they are in a hell of genetic repetition); the dreamers pass them in a flash that covers the universe.

We must recognize this region in which planets seduce each other, the great older woman in Jupiter taking the seed of the young Earthman, as she came herself to plant the seed two million years before; the hobbit carrying the ring into the forest, Circê turning the Dolphin into a beautiful maiden, and Blake's prophetic books, the Hopi Snake Myth, where the snakes become women, and he marries one of them, and has children by her, and they are snakes during the snake ceremony and humans all the rest of the time. These are not unreal worlds or make-believe worlds, as I sense Bradbury and Sturgeon would have

them; these are real worlds, and they leave the audience angry and disgruntled even as they file out of the luxurious cinemascope theatre (at the end of 2001) feeling that a joke has been played on them, passing off the great shock that they have seen themselves in a mirror staring out into the universe.

At one point I wrote my own science fiction story, combining the Hopi, the Saturnian space-men, the dreaming children, and the Qabbala. I give the last four paragraphs of it here:

We felt a great rush of air; it was daytime, but we looked outside and saw the stars, more stars than had ever been seen from the earth, and each one seemed to be whispering in its nearness; we had lost something, a cover we had always had. The sky was gone, and in the street the children were running toward the fields, a chemical flood toward the pole; the earth was shaking, and it was pouring rain from the wind rather than the sky, and the rain was sore and acidic. And, as promised, a single star grew brighter until it was a second moon, and twice as bright. The earth was disappearing, even as Egypt had disappeared, but now Egypt was the whole earth.

Some rushed toward the shelter; some rushed with the children to the field, and tore off their clothes, presenting themselves as naked to the apocalyptic sky. By the time we got there the ground was shaking and the star-moon filled the whole sky. The rain drove so hard that we should have been helpless, but we formed a great circle in the open ground; we were the earth laying a mirror for the sky which was to seize it; we were an unbroken magical ring. Just as everything but the sky blackened and the wind tore us apart, just as the fire came down to crush us like ants, the earth opening beneath, and I helplessly ready to yield all images to the great deep, instead of going out completely, instead of the whole optical field disintegrating, it began to make of the chaos a new shape, a countryside of rich colors, red trees with blue fruits swaying thru the storm in their own gentle breeze; our eyes focused, and there seemed to be many more than three dimensions; perhaps four; perhaps five; we were inside and outside everything at the same time, and yet we knew where we were. The ponds were yellow and I sensed pure esters and aldehydes, peppermints and cherries in the atmosphere. We have all been reduced, I thought, to electronic mass.

Still we hugged together, the two of us, and still the all of us stayed in our magical mirror circle, and still if we looked closely enough thru the veil we could see the old earth disintegrating, its body torn to fragments, whirled by winds with the fragments of meteors, houses wheeled off into empty interstellar space. We were conscious; at no time did we lose consciousness, though it took on a different meaning; being conscious was what drew us into where we really were, making us forget where we thought we were before that. We were clouds, we entered a line of bodies we had created by our lives, and the actual clouds were dark green masses laden with fluid and bubbling/bumping across the sky. The children were beginning to sing, and we joined in their song:

"A, B, C, D, E, F, G
H, I, J, K, L, M, N, O, P
L, M, N, O, P, Q, R, S, T
U, V, W, X, Y, Z."

We hung between two earths, the one being ripped apart, and its green trees, and the other one we could see with its red trees. The animals of the forest surrounded us, and a cardinal flew straight

ahead, and we followed it. "This is the new world," it said in a voice clear as a bell ringing. It stood before us as an Indian warrior with a single red feather; then perfunctorily it was gone, a bird, into the sky. All the other animals had come thru too and were people; they were wiser than we; they understood the color change and taught us its rules, and how we were to seek food; the stars came down and were people too, and brought materials with them, and helped us build homes those first hectic days before changing back and taking their places again on earth and sky.

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Stapledon's Starmaker does not make any attempt to deal with nodes and conversions of energy; its space is linear and its time is linear; it sets out from a single point to discover the entire universe and the manner of its creations, and ends up with a dark vision of a play-making god who destroys his visions of galactic gas even as they pass from his mind. Stapledon's book covers more of the universe than any other science fiction book could; more people are killed in it than in any other book (the number of people killed approaches the number of atoms on earth). But if we focus on these superficial signs of largeness, we miss the real scope of the book. We must not be fooled by what a person says he is writing about; Stapledon's book is a description of Europe during World War II; he uses science fiction as the Azande use a rooster in court trials; the rooster is given poison; if it dies the question is answered one way; if it lives, the question is decided in the opposite way. Stapledon feeds the universe his darkest poison; he travels with Ivan Karamazov thru the infinite darkness of interstellar space and entropic repetition. The The poison oracle says, thru Stapledon's book, that we are all doomed and have been from the beginning. Yet in all its explorations of suns and galaxies, Lindy Hough points out, The Starmaker says nothing about outer space; every planet is merely the earth, and its activities represent some form of World War II (as in Philip José Farmer's repeating decimal of World War II planets with slight variations, all occupying the space of the earth [INSIDE OUTSIDE]). As Stapledon moves into deeper and more collective regions of space, the galaxies turn out to be no more conscious than hedgehogs or clams; all motivation is querulous and entropic; hence the universe disintegrates for its inability to hold itself. In the Qabbala the opposite occurs, for the universe escapes from God thru the dream of Adam and is projected out via Hebrew letters into an inhabited world (wet dream of a bumblebee in nectar rather than destructive dream of a child blowing galactic bubble gum: the difference is tremendous). Stapledon's book relates to Tolkein or Clarke much in the way the Book of Mormon relates to the Qabbala or the I Ching: it describes an enormous world in a narrative sense; we want very much to know about this world since it is ours and we have been born into it outside-in. Suddenly the great tale we have awaited reads like a Superman comic book or a Hollywood movie, and the law of this world comes from the sacrament of another planet, called Krypton, or called Atlantis, or called The Lost Tribes of Israel, the records hidden in Cumorah, New York. The Book of Mormon imitates, and badly, the literary style of the Bible, making up a theosophical New World so that when people moved West they knew where they were going in terms of the old gods and a world already sanctified beyond use (for which reason: a New One, but they refused to risk having their heads turned around by creation itself). Stapledon goes out and out, from

planet to Solar System, to galaxy, to the creation of galaxies, to the Starmaker himself, and nothing ever changes; it is one long landscape of the same customs and mores and motives. The Qabbala does not separate us from creation, by time or space or artifact; it allows for a man and woman in marriage to traverse space, without holy wars, without rocket ships, to build their own planet (a body) without being colonists or settlers. Modern Israel is a grotesque distortion of Shekinah even as the Book of Mormon is a false holy book, and The Starmaker is a poison-oracle divined without the necessary priest.

C. S. Lewis was a friend of Stapledon (as were Tolkein and Charles Williams), and Lewis acknowledges his borrowings from Stapledon's plots, but insists that he in no way wishes to share the spiritual or moral implications of The Starmaker. Lewis is one of the only persons writing science fiction to explore the astrological relationships between the planets. To a person involved in the sheer technology of space travel, this would seem to be fantasy rather than science fiction. To a person standing outside the universe it would be immediately clear that the planets in the vicinity of one another and the distant stars showering the planets in prescribed patterns are the most powerful relationships in the universe. The earth, Mars, and Venus are a triad whose histories (and mythologies) cannot be wholly separate from each other, and the history of one of these planets exists solely in terms of the mythology of the other two, and vice versa; finally there is no distinction between myth and event. The zodiac serves to catalogue the positions of this power as the earth moves daily and seasonally thru the universe. Physics has always been concerned with the influence of bodies on one another, and most recently in physics it has become clear that the outcome of an experiment can be judged only as the experimenter stands in relation to the universe, his laboratory to the world of matter; even the language in which he makes his description is heavily based on the total field of the earth, geophysical, historical, and etymological, or that these come down to the same. The earth's history is not isolated from the history of the Solar System and the universe; the planets are great heavy bodies; Rodney Collin describes them as influencing life by setting off different glands after so many revolutions; the link is tonal, electromagnetic on hormonal waters; the different functions of man are set off as the resonance of the planets keys them; the biological and astronomical clocks run parallel.

"All in a moment of time he perceived that what was, to human philologists, a merely accidental resemblance of two sounds, was in truth no accident. The whole distinction between things accidental and things designed, like the distinction between fact and myth, was purely terrestial. The pattern is so large that within the little frame of earthly experience there appear pieces of it between which we can see no connection and other pieces between which we can. Hence we rightly, for our own use, distinguish the accidental from the essential. But step outside that frame and the distinction drops down into the void, fluttering useless wings. He had been forced out of the frame, caught up into the larger pattern. He knew now why the old philosophers had said there is no such thing as chance or fortune beyond the Moon."

Hence one cannot say that it was a coincidence that the astronaut reached Jupiter just at the time the moons were in conjunction. A biological clock was set between the earth and Jupiter a long time

back; once he moved into the great range of space between the planets, out of the influence of the earth's history, all coincidence fell away, and he fulfilled the initial premise of the positions: the fertilization of heavy bodies. Call it glandular if you want; the megaliths set off complex pineal responses in the body at the vibratory node of their playing; or call it history and rob man of all independence except the power to imagine where he is and make something of it. Even if it were a coincidence, it would be too much of a coincidence to be coincidental. It is, instead, the way it happens because it is the way it happened, because true and false etymologies are the same, because everything is in cyclical, not linear step, in harmony and release: he could not arrive, thru all that we call dream and accident, at any other time.

This is the nature of our functions as beasts locked within a cycle of heavier beasts, something we often ignore in our blind stab at freedom; freedom would be blind (i.e., outside the speed of light). Our existence is filled with light, and as organs of the passage and propagation of light we must perfect our conscious functions in order to travel. C. S. Lewis' spaceman arrives on Venus at a time that is neither history nor myth but both: he arrives at the beginning of a birth cycle, and he joins in a ritual battle in order to aid the alchemical king and queen, the Venusian Adam and Eve. He arrives just in time because, according to myth, there is no other time when a man from earth may arrive. He arrives as Ransom, which is also his name, as a representative of the earth, hence the body of his home planet. The pun on his name is as actual as the landing on Venus, as actual as the goddess Venus visiting the earth; all these things lie behind and within the physical bodies; men are soft chemical beings, moved easily by moons, as tides, glands: are subject to the most obvious liquid puns on their condition. Or they will return to a liquid condition as Ransom arriving on Mars, or Clarke's spaceman pouring thru the fifth image of Jupiter.

Thomas Burnett Swann and Charles Williams are similar to Lewis in being able to handle the soft flux of energy. Most science fiction writers overload their tales with technological and biological explanation, but in Swann (THE DOLPHIN AND THE DEEP) a mermaid-boy appears before Bear, the Etruscan; this is the simple effect of biological conditions in the psyche. When Philip José Farmer has such a mythological creature appear, he must distinguish between myth and history by explaining that the petty lords who created these universes used mythology books to get interesting ideas for use in their bio-labs. Similarly, Circê is young and old at the same time; Africa is both historical and mythical (a place to visit and a place where transformation is easy), and an albino dolphin becomes a pale girl. So in Williams (THE GREATER TRUMPS) the tarot deck commands the intrinsic power of the elements, and the shuffling of the cards is earth, or is air, is fire, or is water. This is the nature of the deck, just as the nature of the Ring in Tolkein is to bind this much energy (by its existence, or this is what its existence is). All this could be explained technologically, but such a contrivance would reduce the stories to Rube Goldberg cartoons. We are interested in a universe of energy and not a terra firma of explanations. It is in such a universe that Swann puns on his name and Bear gives Dolphin a beautiful mirror in the form of a swan. So Cocteau (in TESTAMENT TO ORPHÉE) is called to trial by the gods for having exposed them in his previous film.

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"Who is the sick man? The tissues could not become sick unless something prior to them had been deranged and so made them sick. What is there of this man that can be called the internal man? We say that man dies but he leaves his body behind. We dissect the body and find all of his organs. Everything that we know by the senses belongs to the physical man, everything that we can feel with the fingers and see with the eyes he leaves behind. The real sick man is prior to the sick body and we must conclude that the sick man must be somewhere in the portion which is not left behind. That which is carried away is primary, and that which is left behind is ultimate..... Both the dead and the living body are to be considered, not from the body to the life, but from the life to the body." [KENT'S LECTURES ON HOMEOPATHIC PHILOSOPHY].

Our functions are not separate of the life itself. We are not divided into instincts, which are pure, and other activities, which are forms of sublimation, but the glands, flooding as they do the whole body, can work in all areas of vision and process. Sex has to do with the making of things (as man makes woman and woman man), has to do with the peculiar stamp a person leaves on anything that has passed to within his physical sphere, like a human micro-salt. Art is sex: feeling the sensitive points of soma as to know inner shape, dancing, body as instrument, as organ thru which various functions and tunes are played by all, on all, and eventually a chemical or froth is manufactured, as the come of a centrifuge. This is not only sperm and vaginal fluid; it includes sweat and other centripetally inflamed chemicals, as earth: the rivers; it includes the entrance of the body thru any of its solitary gates. And Mars is not only the planet of aggression, but of general internal irritation with the bodily state, from which greater consciousness, clearer orgasm comes. And outside the limited known sensorium, there are senses of time, sense of magnetism and balance, senses of prophecy and germ plasm. At the end of 2001 the change is from the minimal separated functions to the total consequences of the organism. Likewise, at the end of Lewis' That Hideous Strength, the sexual function itself breaks loose, and all the animals, including man, do their natural dances of absolute polarity male and absolute polarity female, as these poles exist in all regions of the universe: and the dance is the sexual manifestation of the earth. This is how female Dolphin and young woman become equivalent in Swann's story, or how Wolff discovers in the middle of Maker of Universes (Farmer) that he himself is the creator of the universe into which he has stumbled. He is returning by accident to the one universe he created, but where else could accident return him? The book is then the story of his re-individuation (the sequence beginning with the Tower card in the tarot); as he rediscovers the body in which he created the universe he regains more and more powers, and eventually takes control of the world again. As his functions cohere, his strength is more than the sum of his parts or experiences; he is himself, whole; like Strider, again he is king. And the difference is that he is a better king than he was before the fall, before the decay into a lesser body; this is the alchemical transformation described by Lacinius; the king himself, who is put to death and burned at the heat of microorganic decay, returns as king twice-crowned, as generous and wise king who shares his wealth with his people (i.e., that his body is gold, and he gives freely of himself). So similarly is Gandalf brought back to life with new powers.

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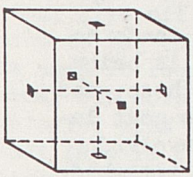
How often can the whole galaxy be conquered? can Rome fall? Why repeat Jane Austin again and again, or the soap operas, and Mary Worth?, Batman with amnesia grasping a bat, and sudden recall. These are our minimalizations as biosphere, and it is here that our literature of other worlds borders on code of code of code, and is always problematic. Bishop Pike thinks he is getting messages from his son, and goes thru an archetypal Saturday Evening Post adventure to verify the source. Eventually his article is published in the Saturday Evening Post, and he suggests at the end of it that maybe he didn't speak to his son at all but received a complex feedback generated by his own memory of his son's behavior, and passed telepathically to the mediums with whom he worked. Problematic. The Sanpoil Indians accept the simple likelihood of spirits; it is the beginning of a vision-quest, not its end, or goal; there is no goal; the spirits, whatever their names, pseudonyms, and aspects, lead, and we follow. In Cocteau these messages are like the tom-toms of Afrique, and connect in the night air. When Orphée, like the true cowboy existential hero, wishes to locate their source and smash them for their insolence (they stand in his romantic way), Death tells him that things are not such, nor is he such. The messages come on slips of paper, and no one knows from where, and there are only shapes and forms of things, each shape of the same thing different on each successive level, and she is only one of the shapes of Death, Death itself passes between zones, leaving messages for its shapes (the shapes of it) to carry out, and the planet is only one of the shapes of Mercury, and the messages pass from one dark region of shape to another, and only the messengers, like light, pass between, ribosomes and cosmic rays. And Cocteau's glass salesmen sell only what they cannot forget. Anger's motorcyclists, Christ, Hitler, ecstasy of the saints: "Fools rush in/Where wise men fear to go." For a whole novel (Charles Williams: ALL HALLOWS EVE) husband and wife reach to each other in the interzone between life and death (she dead, he alive), to settle the affairs of love (which is the greater magic, and in which death is subsumed); and Bishop Pike reasons with the Saturday Evening Post and its readers, a two part sequence for suspense; but Gurdjieff was told by the Russian count in Afghanistan that curiosity and suspense are, far from being man's greatest guide to discovery, his worst danger, for they make it possible for him to solve only the simplest of riddles, what lies on the other side of the moon?, is there life on Venus?, canals on Mars?: the deeper question of position and energy, of love and sexual consequence, of proprioception eludes him. We are not lost in a vast entropic expanding universe; we are lost in a mechanical universe of our own making. This is genetic hell, a melodrama, damned, condemned: to repeat the same thing over in different guises.

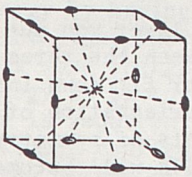
Science fiction is all too wise: but wise men never fall in love/ So how are they to know.

Grossinger - Could you perhaps begin by giving a general introduction to crystals, going into depth where you wish? My own readings on crystallography have been solely in this book I have brought here, and I wonder if you consider this man's work similar to your own [A FIELD GUIDE TO ROCKS AND MINERALS by Frederick H. Pough].

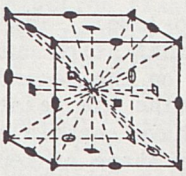
Cloke - Well, I think I would say first that the basic rules that one follows in classifying crystals come back to questions of symmetry and certain kinds of symmetry operations that one can perform. And by noting which ones of these are possible combinations, one can come to a scheme of possible classifications or possible combinations of various symmetry operations; and this gives you then a certain grouping of the way crystals may actually appear. As an example, if you look at a cube, you could put an axis, just an imaginary line thru the middle of opposite cube faces, opposite square faces of the cube; and then about that imaginary axis you could rotate the cube so that it would come around four times (each fourth of a revolution it would come back to its actual incidence of original shape). You would have therefore what is called a fourfold axis. You could also put an imaginary axis or line thru opposite corners of the cube; in this case you rotate three times and get a threefold axis. So you have here, if you think about this, a combination in a cube of three axes that are fourfold and some other elements of symmetry as well. This combination of elements of symmetry characterizes a cube or a cubic type of crystal, as well as a number of other crystal shapes, octahedrons, for example. You end up with thirty-two different crystal classes that are possible on this basis. And I think I would emphasize this over the classification that you have probably seen in this book, which is one of crystal systems, and a little less rigorous way of looking at it; it is also somewhat confusing when you get beyond the material given in this book.



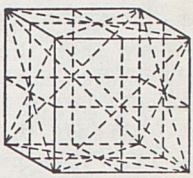
Cube with 3 principal axes



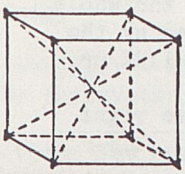
Axes of 2-fold symmetry



Cubic axes of symmetry

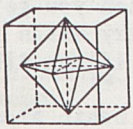


Planes of symmetry

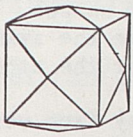


Corner axes of 3-fold symmetry

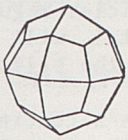
Cube with octahedral corner truncations



Octahedron, related to same axes as the cube



Tetrahexahedron



Trisoctahedron

Grossinger - What does this book emphasize then?

Cloke - If I remember that one well enough, it will emphasize the crystal systems. I think I saw some that were in here just a moment ago. Yes, here we are. It emphasizes the orthorhombic, monoclinic, triclinic; it mentions, in some part here, the hexagonal, cubic, and

tetragonal systems. There tends to be some confusion in the hexagonal system as to whether you're going to split it off as a rhombohedral group or a rhombohedral system. Hexagonal here evidently is subdivided into a hexagonal division and a rhombohedral division, and different classifications will divide it into hexagonal systems and rhombohedral systems, and you have seven systems. But either way, the number of classes, the number of possible combinations of symmetry elements remains the same. And you still have the thirty-two possible classes of symmetry elements. Now in external shape this is related to these symmetry elements, but the various faces, the various lines or planes or points that you see on the external form of the crystal must all obey these symmetry operations that I am talking about here (in the more abstract sense).

Grossinger - How do the systems of symmetry relate to the growth of crystals. I mean, what replaces the organic law of growth in an inorganic chemical sense?

Cloke - Perhaps the simplest way of understanding this in a reasonably accurate way is to consider the case of the piling together of billiard balls. If you have a whole series of balls and you juggle them together, say in a flat box, then in the bottom layer (if you jiggle this thing hard enough and fit them in as close as possible), they will have the shape which, if you look at it in the right kind of way, will tend to have a hexagonal outline. You can have, for example, a ball in the middle and six more around it, and this will form a hexagonal shape, and then each one from there on out will form the center of the hexagon. This is the concept of closest packing. In a simple sense, if you're dealing with ionic compounds, things will tend to closest-pack in this fashion.

Grossinger - Is this on a macro-level or a micro-level?

Cloke - That's on a micro-level. The next layer you put in tends to fit down into the holes that stick out between the three balls below. You'll have another ball on the second layer fit down into those, and this will begin to determine the relative orientation of the next layer. Already this will have certain elements of symmetry involved with it. This particular shape of four balls will become a tetrahedron, and this will indeed have some threefold axes, some twofold axes, and then as the crystal grows up layer by layer they will tend to follow these particlar regular shapes. When you get all done, the whole form, the crystal, will have the symmetry which is determined by the arrangement of the balls, or the atoms if you like, as it builds up.

Cohen- So there's continuity from very basic atomic structure right outward into the crystal?

Cloke - Yes. Now the various combinations that you get here involve some complexities in that the balls are not all the same size, and you still have to get characteristic symmetry arrangements out of this. There are different size balls, or atoms. Take sodium chloride as an example. In this case the chloride in the structure is large and the sodium is small; you're putting together small balls and large balls, and this particular relative size will give you the particular shape that you observe in salt crystals. In other cases you end up with a different size ratio, and the closest fit of the small and

large ones together there will give you a different overall symmetry arrangement and a different shaped crystal.

Cohen - The transfer of an electron from a sodium atom to a chlorine atom to produce sodium and chloride ions implies that stable structure can occur between one sodium and one chloride ion, which would seem to obviate the notion of close packing. If I understand you correctly, you are stating that there are electrolytic imbalances which go beyond the one-to-one donation of the valence electron of a sodium atom to a chlorine atom, and that these larger imbalances result in close packing.

Cloke - If you look at this from the point of view that you start with metallic sodium, which is therefore neutral, you have atoms of sodium, rather than ions of sodium, and you let this come atom by atom close to chloirine, which is also neutral in this case (gaseous chlorine). You can draw an analogy to things rolling to the bottom of a hill. The stable configuration (this is simply a matter of experience) is that the sphere of the ball or the round boulder is happiest or most stable at the bottom of a valley, and it rolls back and forth two or three times before it gets there. This is what we might call a potential well; it's just a potential field. The ball tends to sit at the bottom of a potential field, in this case a gravitational potential. Now what happens in the case of atoms approaching each other is that there is an electronic field involved here, which then involves the electronic structure of the atoms. Well, if the sodium atom is far away from anything like chlorine, then its most stable position at the bottom of the well is a certain distance away from other sodium atoms, all neutral, and the same will be true for the chlorines; if you keep them far apart the most stable configuration is for these to sit as uncharged atoms. As you bring them together it so happens that you can get a less energetic situation, give off energy by having the electron transfer from the sodium atom to the chlorine atom; thereby they're both becoming charged. To be sure it requires some energy to take the electron away from the sodium, but more energy is given up by the electron falling in toward the chlorine atom than is required to be added to the sodium, and as a result this is the stable configuration on that transfer; you reach the lowest energy at the bottom of that potential situation. In the case of the sodium chloride structure, the chloride ions are closest packed and the sodium ions fit in the holes between the closest packed chlorines.

Grossinger - What are the limiting conditions for these groups? Like why thirty-two possible groups?

Cloke - The number thirty-two: this is the mathematical possibility of permutations or combinations, given all possible symmetries. It's 2^5.

Grossinger - It's a basic rule of symmetry?

Cloke - It's a basic rule of mathematics. And in fact there are not crystals that fit into all thirty-two classes. One can look at this in a different kind of sense as well: in terms of not the combinations of symmetry elements but the combinations of where points in space may sit with respect to each other. Rather than looking at the symmetry operation applying to a whole group of points or group of atoms, one

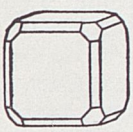
can look at the possible relationships, or the symmetrical relationships between one point and other possible points, and use various rules to repeat distances and symmetry operations proceeding in each direction. And in this way we end up with the so-called space groups, of which there are 230. Again this is a mathematical combination of all the various things which are not redundant; some of the possible combinations mathematically turn out to mean the same thing, and I know that a good many of the space groups have in fact been recognized as not applying to actual crystals. This is something that was worked out by mathematicians just as an abstract exercise in logic, and it was subsequently discovered, when x-rays were found to be useful for unravelling crystalline structures, that this theory had already been developed for how to interpret the x-ray patterns that we produced, and we simply utilized this mathematical theory which had already been developed.

Grossinger - Then the atoms are the limiting factor in determining the ultimate shape?

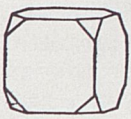
Cloke - Yes, it's basically the properties of the atoms, what their size is, what their charges are, what the nature of the electronic interaction is between them. You are probably aware of covalent bonding as compared to ionic bonding; covalent bonds, because of the electronic structures involved here, tend to be directed; they make bonds in certain directions but not in other directions, which is unlike the ionic bond; the ionic bond can make a bond in any direction completely around the sphere. But covalent bonds cannot do this. And this then puts limitations on in certain cases as to which way the symmetry operations have to persist, as symmetry operations to some degree have to be parallel to the bond directions, or there's a relationship between them in this way, and so this produces limitations as to what are the possibilities.

Grossinger - How do the habits of crystals relate to these things? I am thinking of this particular figure.

Combination crystal (fluorite)



Crystal habit dominantly cubic



Crystal habit dominantly octahedral

Cloke - We have been talking about about fundamental properties of what the crystal looks like inside. The crystalline structure inside is exactly the same in all three of these cases that are given here if these are all fluorite crystals. What this appears to be a function of is the growth conditions under which the crystal is forming, and if you look at crystals of this character on a microscopic level, you would see an alternation from an ion of positive charge to negative charge to positive charge to negative charge, perhaps not exactly regularly; but this would then mean that, again on this molecular level, next to the positive charge you would tend to attract something from out in the solution which was growing and had a negative charge. If we're trying to grow sodium chloride, for example, it might turn out that the carbonate ion would tend to be attracted toward the sodium position and the sodium positive sodium ion there; next to the chloride ion you might get some potassium ion tending to be attracted. Well, these are not things that we're trying to grow the crystal from, clearly, so that if we have a large number of these things here, they may effectively

mask an entire surface such that the things that it's growing, the sodium and the chloride, can't reach that face very effectively, and therefore that face does not grow. There is some other surface, and the sodium and the chloride might be able to grow on that face much more easily than they can on the other flat surfaces. As a consequence the relative rates of growth of different crystal faces will change depending upon what else is in the solution. So that you get different shapes depending upon the surface environment. The relationship of the crystal to its environment affects the shape that it grows to.

Grossinger - So there are different classifications of the macro-crystal than the actual internal crystalline structure?

Cloke - Yes, that's right. The internal symmetry in all three of these cases would be exactly the same, no differences in internal symmetry; and in fact, if you applied the rules of symmetry that we were talking about before, such as fourfold axes and threefold axes, you would find that they had the same numbers, even in these, exactly the same numbers and exactly the same combinations; the only thing that's different is the so-called forms that are developed: the octahedron as compared to the cube, the dodecahedron and things of this character; they are developed to a different degree. But each of these forms has the same symmetry.

Grossinger - How does a system like this relate to the system of pseudomorphs. Is this another system of external environment?

Cloke - What we have is a crystal that's grown and this shape is then somehow retained and something else has grown in its place; a replacement has taken place as a consequence of something that's gone on. An example of this might be where you form a crystal and then let rainwater get at it; the rainwater dissolves out the crystal so that it's completely gone but the rock around it remains: so that you form a mold for what the crystal was; then it gets filled up with something else, and it may even get crystallized in there, and completely fills the void space forming the cast. The cast will have the symmetry of some pre-existing crystal which is no longer there. So the pseudomorph will have almost the same symmetry externally; it imitates the shape of something else which is no longer existent. The internal crystalline structure will still be correct. But you cannot tell what it is from the external shape. It's sort of the difference I would draw between synthetic and artificial. Synthetic is something that you make that has essentially all of the properties of the original material. If you want to make a synthetic sapphire, for example, the sapphire that you make has the same chemical composition and the same crystalline structure as the natural gem sapphire would have. So this would be a synthetic gem. On the other hand, if you took a piece of glass and colored it and ground it to the same shape, this would be artificial; it looks pretty much like it if you don't look too closely. This is the pseudomorph type of thing, this artificiality, this false shape.

Grossinger - Do you see any analogies or homologies between crystals and other organic phenomena? I'm really asking if you have any "crytal intuitions."

Cloke - I think I will try to draw the parallel of the relationship

thru matters of symmetry. I think that understanding the possible symmetry elements and different kinds of symmetry will give you a better understanding of what to look for in the way of symmetry. I think it really broadens your scope of what symmetry is. I know when I first began studying this sort of thing I thought symmetry was when you drew a line down a page or put up a mirror, and if you reflected thru the thing, then you got the reproduction of this image in the mirror. Well, this is only one kind of symmetry. There are many other kinds of symmetry elements as well.

Grossinger - Is the term "focus" relevant here at all?

Cloke - The only thing I can think of here is sufficiently abstract from the questions that we're talking about; I'm not sure how it would relate. It concerns the different speeds of light as they travel thru crystals. Most crystals do not have the same properties in all directions thru them. Salt crystals happen to, and a few other crystals happen to; fluorite, as a matter of fact, happens to, but quartz, sapphire, most calcite, and most of these other minerals do not have the same velocity of light thru them in all directions. And, as a consequence of this, when a light beam enters, it does not enter perpendicularly; even if it does enter perpendicularly, in most cases it will be split into two rays internally rather than going thru as a single beam, as you are familiar with; it will split up into two of them, and moreover they become polarized; they vibrate according to certain lattice directions in the crystal; and they have different refractive indices; so if you were to achieve focus for one of these rays, you will not achieve focus for the other. To make a lens in the crystal, for example, you will end up with two different focuses depending upon which ray you're looking at.

Cohen - You have these rules of dimension across a given axis or across a given set of axes. Is it possible in this way logically to deduce the form of a crystal without actually having grown it from solution?

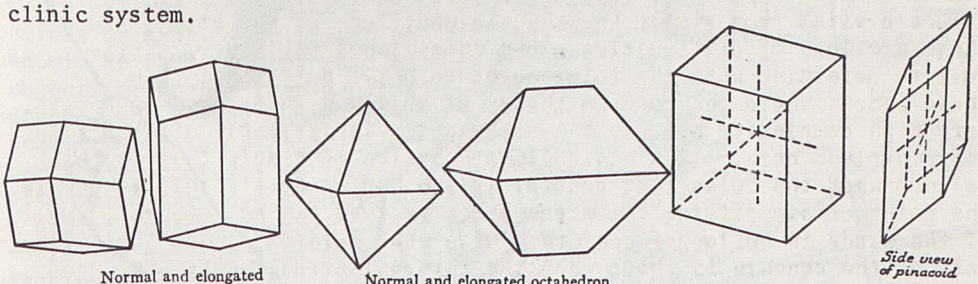
Cloke - Oh yes, you can do this. There is simply a mathematical logic involved here. We can understand many of a crystal's properties when we are not yet at the stage of being able to relate directly from the crystallographic properties as we observe them. We generally cannot compute the refractive index or the velocity of light thru a crystal from simply knowing the positions of the atoms, and there are lots of difficulties along these lines (it's very difficult to determine what the color ought to be). But this is one of those places where the quantum theory of solids gets snagged down with very high complexity because the mathematics is extremely difficult and very involved here. It's basically a question of simply that we think we know what the rules that control it are but we aren't able to get to the point of simplifying the mathematics so they can be computed. Most of the study is no longer concerned with what external shape looks like; most of the concern is about what the internal arrangements are. And once you've gotten as large as what's called a unit cell, then you just stack unit cells together; unit cells are guaranteed to fit with no space left between them. If they don't fit you haven't got the figures of the unit cells yet. All this is almost by definition of what's meant here. So it seems as though the important question is what controls the growth conditions rather than what is the internal structure like.

Cohen - Well, it's almost a truism.

Grossinger - Isn't the environment the same as the crystal and the crystal the same as the environment?

Cohen - Yes, it's obvious that the conditions in the solution are going to determine what the crystal will look like.

Cloke - It might be worthwhile for me just to list for you certain of these symmetry operations involved here. One of these I mentioned before is an axis of rotation. Here. We've got a cube. You're supposed to put an axis thru here and you can rotate this thing four times around. So you get one fourfold axis and you can get one fourfold axis here, and one here, and one there. You can likewise get a threefold axis, and here you rotate around to this point so that it exactly matches the previous volumes, and so on again, and here, we're back to the original. You can get twofold axes as well. Now you can't have a fivefold axis because what you'd have to have then would be a regular pentagon, and you can visualize the problem of stacking regular pentagons together one by one by a next; you can do with with squares; that's beautiful, or with triangles you can fill up spaces; but you can't do this with pentagons; you'll end up with a little miscellaneous hole every so often if you try this. You can't have pentagons, so you can't have fivefold axes in this system. The ones that are possible are, of course, one (and you have an infinite number of those, and that's redundant; you don't have to worry about that one; anywhere you want to draw a line thru it you can rotate once completely and get back to where you started), two, three, four, and six, and those are the only ones. Then another operation is what I will now call a mirror plane, where you simply pass a plane down the middle of this, take one half away, reflect thru the mirror, and you reproduce the half that you took away. Another thing that you can visualize (and this cube certainly has it), and you may have this in the absence of anything else, is a center of symmetry: you can imagine the center in there; you take a point over here; for every point over here there'll be a corresponding point on that side; for every line there'll be a line on this side; for any face here, there'll be a face on that side, and so on. What you end up with is that things reproduce there but not necessarily with a point here to make this thing top on a square; nothing at all says you have to have a square on the top. One of the crystal classes has a center and nothing else in the way of symmetry, and this is the triclinic system.

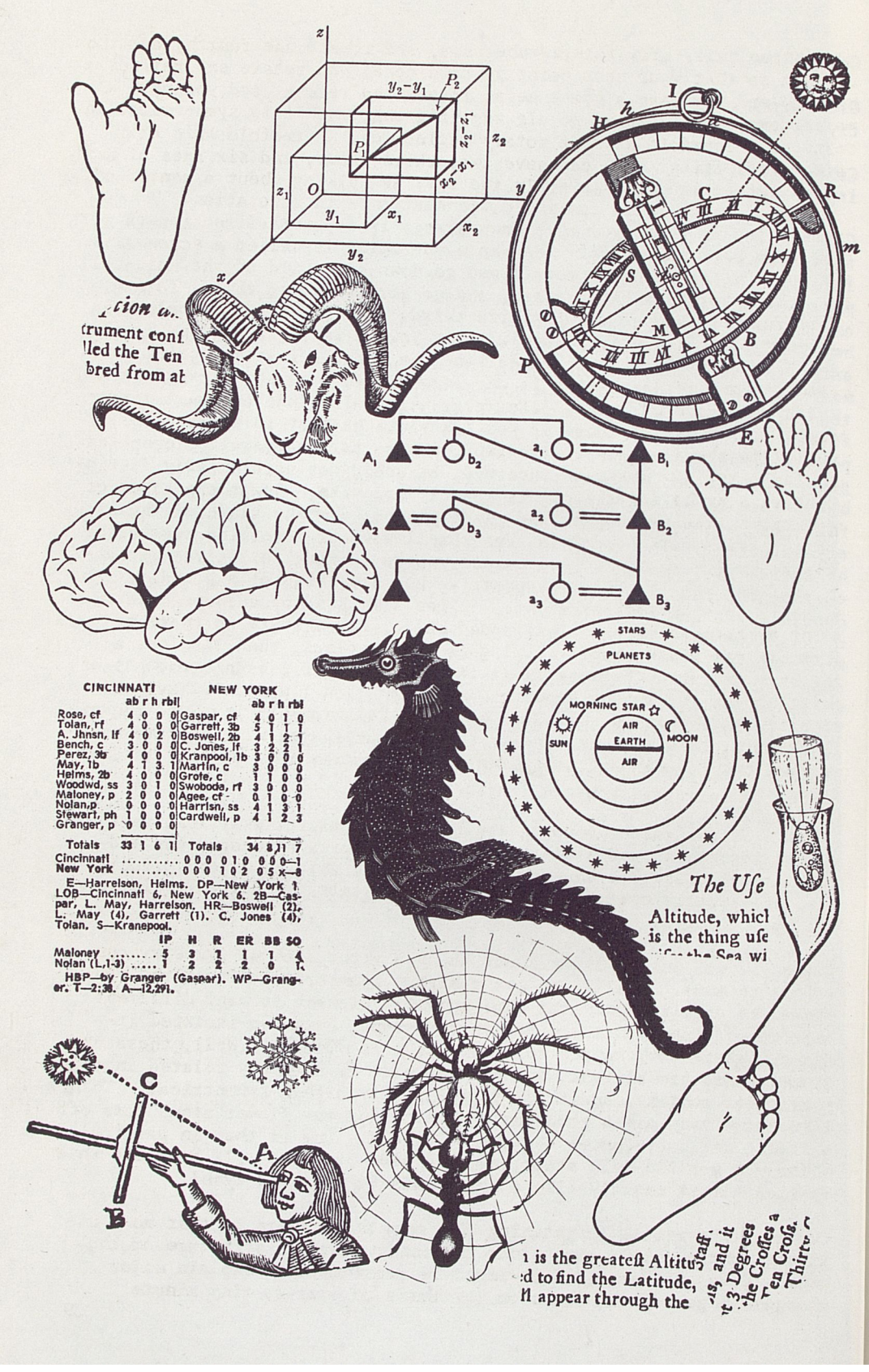


Normal and elongated dodecahedron

Normal and elongated octahedron

Triclinic system axes and pinacoids

Then we have three other interesting ones. One is a so-called axis of rotary reflection; it's a kind of combination of a mirror and



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CINCINNATI

	ab	r	h	rbi
Rose, cf	4	0	0	0
Tolan, rf	4	0	0	0
A. Jhnsn, lf	4	0	2	0
Bench, c	3	0	0	0
Perez, 3b	4	0	0	0
May, 1b	4	1	3	1
Helms, 2b	4	0	0	0
Woodwd, ss	3	0	1	0
Maloney, p	2	0	0	0
Nolan,p	0	0	0	0
Stewart, ph	1	0	0	0
Granger, p	0	0	0	0
Totals	33	1	6	1

NEW YORK

	ab	r	h	rbi
Gaspar, cf	4	0	1	0
Garrett, 3b	5	1	1	1
Boswell, 2b	4	1	2	1
C. Jones, lf	3	2	2	1
Kranpool, 1b	3	0	0	0
Martin, c	3	0	0	0
Grote, c	1	1	0	0
Swoboda, rf	3	0	0	0
Agee, cf	0	1	0	0
Harrlsn, ss	4	1	3	1
Cardwell, p	4	1	2	3
Totals	34	8	11	7

Cincinnati ..... 000 010 000—1
New York ..... 000 102 05x—8

E—Harrelson, Helms. DP—New York 1. LOB—Cincinnati 6, New York 6. 2B—Gaspar, L. May, Harrelson. HR—Boswell (2), L. May (4), Garrett (1). C. Jones (4), Tolan. S—Kranepool.

	IP	H	R	ER	BB	SO
Maloney	5	3	1	1	1	4
Nolan (L,1-3)	1	2	2	2	0	1

HBP—by Granger (Gaspar). WP—Granger. T—2:38. A—12,291.

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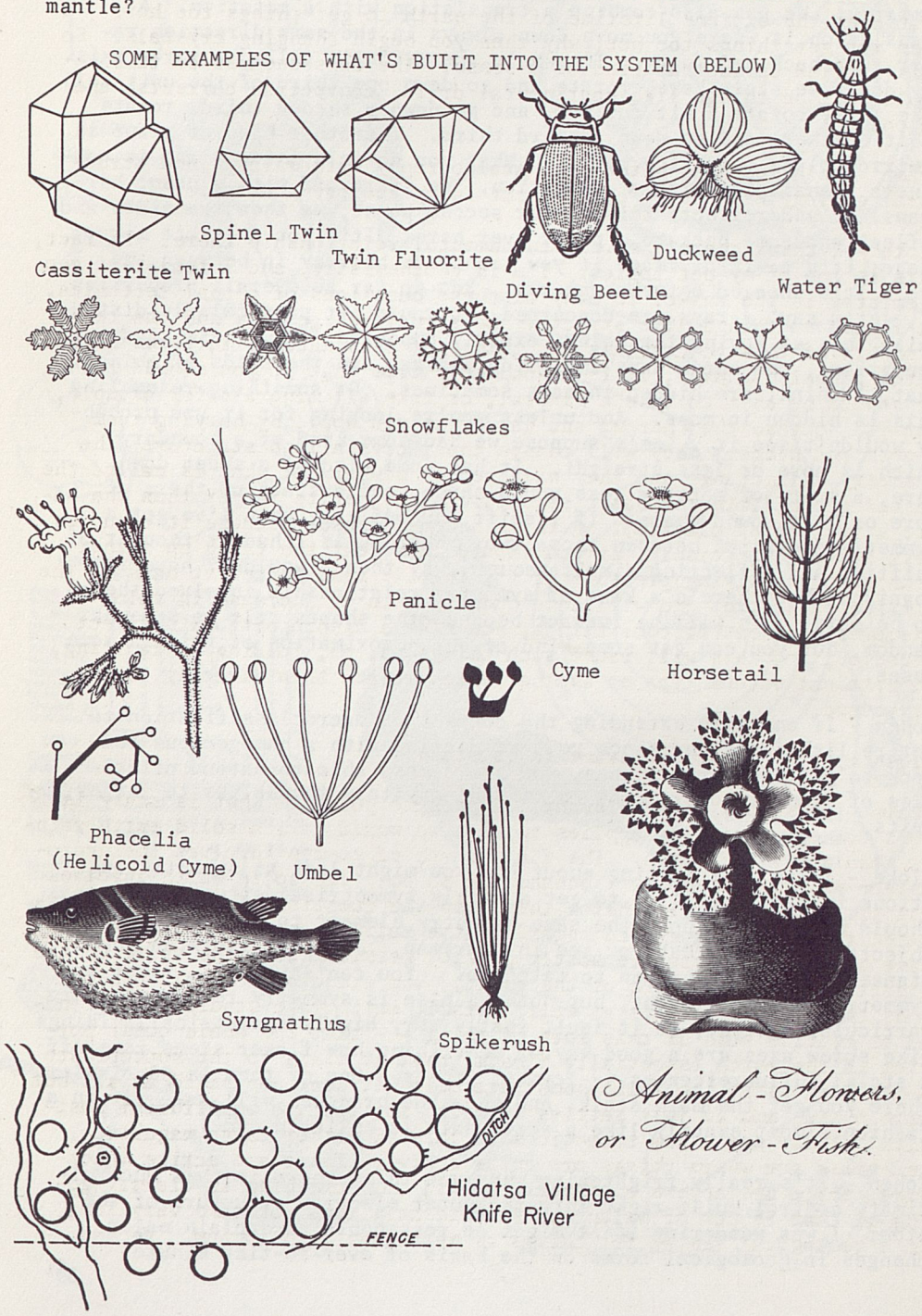
a rotation axis. You take a tube here, and rotate one fourth, and then reflect so that your next point is down here, you rotate and reflect back up and you have a point here, rotate and reflect and you have a point down there. So we go zig zag, zig zag, and it is symmetrical in terms of a fourfold axis of rotary reflection. A twofold axis of rotary reflection. You can have two, three, four, and six axes of rotary reflection; it's exactly the same as talking about a center of symmetry. We can also combine a translation with a rotation. A translation is where you move down always in the same direction rather than back and forth. The whole operation is called a screw axis. Why don't we start here, rotate and go down one third of the unit cell like this, rotate a bit further, and go down a second third, rotate a bit further, and go down a third third. The other kind of plane is a mirror plane (or glide plane). What you do in a glide plane is combine a translation with a reflection. We start off with a point here, translate and reflect: this is our second point; we then translate and reflect and come back to a point over here. It's not an exact mirror image; it's a mirror image if you translate halfway in between the two. It's sheered between the two. But so far as overall properties of, let's say, x-rays are concerned, it would not particularly distinguish this as having the points exactly opposite. Now these kinds of operations, the screw axes and glide planes, are the kinds of things that, I think, are hidden in maps sometimes. Or something resembling this is hidden in maps. And unless you're looking for it you probably wouldn't see it. Let's suppose we had some kind of a boundary which is more or less straight. It has some kind of a shape down here, a state of more or less round shape, and a state up there of more or less round shape. If I shift and reflect, then I've got a symmetry operation between those two. Whereas if I hadn't thought of shifting and reflecting simultaneously, why then I wouldn't have recognized that there's a kind of symmetry relationship involved there. To be sure, this will be inexact because the shapes will be somewhat random, but you can get some kind of an approximation of this in some cases.

Cohen - If one were extending the concept of macroclassification to entire lithofaces and since you are dealing with a homogeneous bedrock to get these two shapes, you are almost able to extend principles of symmetry operations on mineral crystals themselves to larger units.

Cloke - I was just talking about how you might look at symmetry operations in maps. Really, to get a highly symmetrical situation, you should be able to apply the same symmetry element to many different objects or shapes that you see in your map. Just two isolated instances where they happen to match up. You can say: Well, these are symmetry related alright, but nothing else is symmetry related in this particular context, so it isn't really very highly symmetrical. Things like screw axes are a good way of describing how flower stems come off a stalk: influorescences --- cymes, umbels. One of them in particular where you get the main stalk, and the side-branches will come off in a fashion almost exactly like a screw axis [a helicoid cyme].

Cohen - It's really frightening when you think there is that much ultimate control built right into the outer electron structure of the atom. I was wondering if it might be reasonable to explain major changes in geological forms on the basis of ever-so-tiny minute

changes that take place in certain areas of crystal formation within subsurficial environments, say in the mantle. I'm referring to geological or physiographic evolution. What, essentially, powers the convection currents in the mantle? Is it enough to say that it's a function of the earth's rotation, electrical currents, and gravitational currents which are generated under the surface all contributing to the formation and deformation of substance in the mantle?



Cloke - Well, it's all tied up together; this is why I'm not able to answer you. Perhaps the most fundamental thing to come back to is the energy source. This whole thing wouldn't work unless there were enough energy coming from some place. I think that almost universal consensus on this is that it comes from radioactivity, the breakdown and natural decay of uranium, thorium, and potassium (there's a small percentage of potassium atoms that are radioactive); and this produces enough heat over the extreme lifetime of the earth to get things too hot. When you get things too hot, why then you begin changing crystals. So this is tied up in that kind of a sense. The consequences of this could well be things like continental drift, convection currents, and so on.

Cohen - Relationships between crystallography (mineralogy) and structural geology were never pointed out in my geology courses.

Cloke - I think there's a very fundamental relationship there. In fact, this is one of my pet topics. I'm in geochemistry, and I feel that geochemistry is the answer to many of these questions of global tectonics. In regard to things like structure in structural geology and the relationship of this to crystals and things of this nature: in terms of our large global pictures, it is undoubtedly true that if you should take or should be able to take a mineral, or take all minerals for example, and you squeeze them harder and harder as you would by burying them deeper and deeper, they will change their crystalline structure; the symmetry will change and they will become members of what is called the Spinel group (like the basic structure of magnetite rather than the basic structure of olivine). A thing becomes denser because it occupies less space. Conversely, if you should then heat the thing up rather than simply applying pressure on it, it will tend to revert back to the olivine structure, and will consequently have an increase in volume. Whenever you heat or cool things, you have a disproportionate effect involved, and this will cause such things as, oh, folding or faulting, distortions of one type or another which relate then directly to the structure.

Grossinger - Is this relevant to isostasy?

Cloke - It's very much relevant. I presume you know what isostasy is. This concept basically applies to what we would call a solid earth rather than the fluid earth. The fluid earth of course involves the hydrosphere and the atmosphere, oceans and so on. The solid earth involves all the stuff that lies below this, and the question of isostasy originated from what happens in regard to the solid earth; and measurements have been made (these are mostly gravity measurements, the value of the gravitational attraction of the earth), and there are certain other ones that relate to this as well: seismic earthquake studies have tended to confirm some of this sort of thing --- that the whole outer portion of the earth essentially floats, that it sinks to the appropriate depth just as if the solid substance below it were not solid at all but were fluid, and it just settles into its appropriate equilibrium position. There are a few exceptions to this of rather large magnitude, and these are where things are quite active. There are active volcanoes; there are active earthquake belts; and something is clearly going on that is out of balance. It evidently does not take very long, in a geological sense, for things to reachieve equilibrium. We had

a large amount of glacial ice on top of us not very many thousands of years ago right here, such that if the ice melted and the value of gravity were measured here, you'd have a rather appreciable anomaly. We do not have that anomaly now, and this has only been 25,000 years. So that means that something is going on actively in these areas of so-called island arcs and [oceanic] trenches that keeps things on a shorter time basis than 25,000 years, and this to me is a very active process.

Cohen - I think that the island arc is considered one of the main continent building force, a proto-continent.

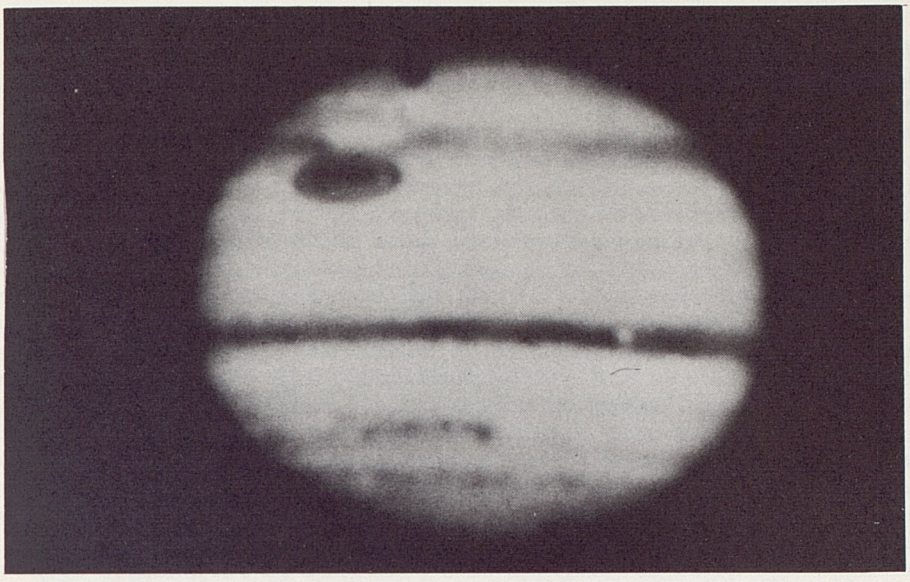
Cloke - It's certainly one of the concepts that's been held a number of years, but it's beginning to change a little bit, and the interpretation of it's beginning to change. But anyway, whatever it is, it's active.

[Paul L. Cloke is a professor in the Department of Geology at the University of Michigan, Ann Arbor. Irwin J. Cohen is a graduate student in the Department of Anthropology at the University of Michigan.]

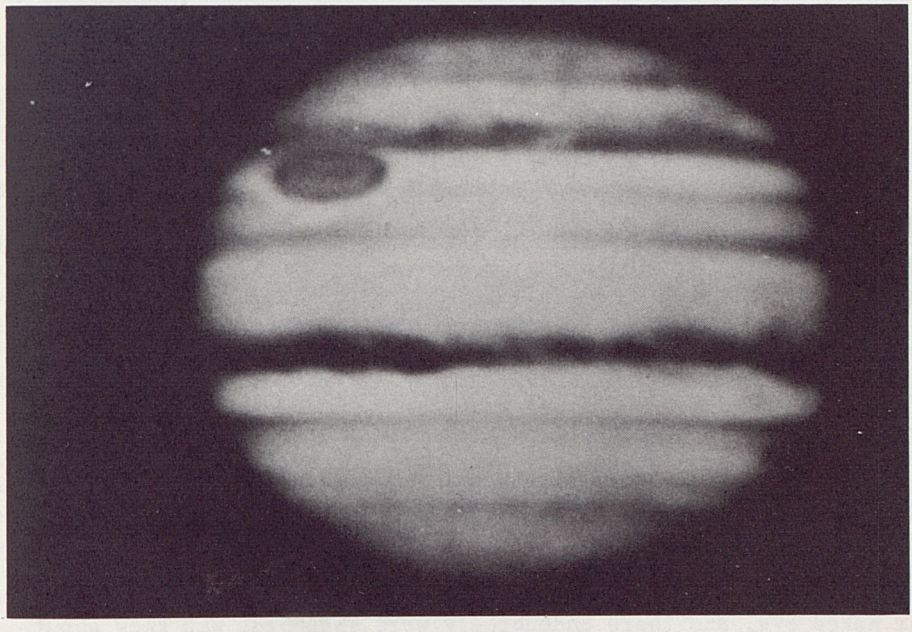
Fred T. Haddock: INTERVIEW

Grossinger - I will begin by asking you to describe Jupiter.

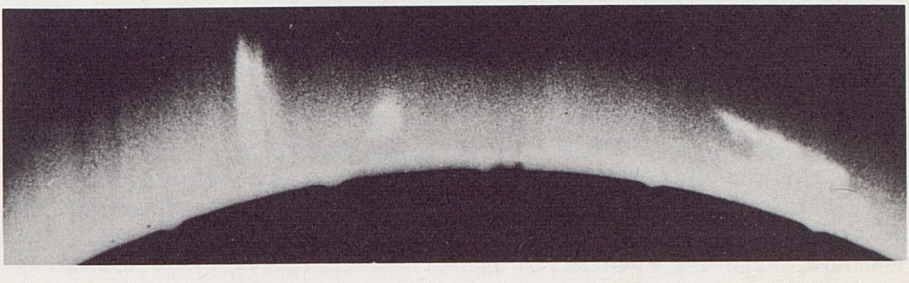
Haddock - Jupiter is not only the largest planet in the Solar System, but it's got the most satellites. From a radio point of view, it's extremely interesting as there have been a number of discoveries that were wholly unexpected concerning Jupiter. At the very long wavelengths that were discovered in 1955 by Burke and Franklin there is a tremendous outburst of radio emission (around 20 megacycles) sporadically from the planet. Then in 1956, the radiation at centimeter wave-lengths was measured and found to be much more intense than one would have expected, and this led to the eventual discovery of tremendous Van Allen belts around Jupiter which are millions of times more intense in terms of trapped radiation (that is, trapped electrons and protons) than those around the earth. And from the fact that the radiation from Jupiter in these Van Allen belts is so well organized, you can measure the polarization (I'll have to refer to polarization of radiation as the orientation of the electric vector of the radiation, the position angle or angle on the sky that has the most intensity). From the planet Jupiter the radio polarization is predominantly oriented more or less parallel to the planet (the planet's equator), but closer measurements of it over a number of periods of rotation of the planet give good evidence that the magnetic field of Jupiter at large distances from the planet is largely in a dipolar form and that the axis of the dipole is inclined about 10° to the axis of rotation of the planet, somewhat like on the earth; and this may be a necessary criterion for generating a magnetic field. Trapped radiation gives out emission at centimeter wave-lengths, and this can be observed out to a few Jovian radii in the equatorial plane. Now that was completely unexpected, as were the low-frequency bursts. And to account for the centimeter wave-length emission you need a mechanism that will accelerate electrons to nearly relativistic speeds. The low frequency bursts might be accounted for by the radiation from groups



Two Views of Jupiter, Above with Ganymede, Note Red Spot



The Solar Corona During Eclipse



of electrons that are gyrating in the magnetic field of Jupiter and radiating in a coherent manner to give rise to highly-directional very intense bursts. At first glance these bursts appeared to be sporadically emitted, but on closer study certain longitudes were found to be much more bursty than others. Now how can we have a system of longitudes on a planet that's gaseous (where the rate of rotation of the gas at different latitudes is different)? Well the system of longitudes on the planet Jupiter is defined entirely by radio measurements. This System III was defined originally as the periodicity of the frequency of occurrence of these 26 megacycle bursts, but it was later found to be identical with the periodicty of the rocking of the position angle of the polarization at microwave-lengths. So that when we are talking about System III longitude we are really physically, I think, identifying the rate of rotation of the magnetic dipole field, which is cocked at an angle of 10° from the axis of rotation. The Jovian day is nine hours, 55 minutes, 29.37 seconds. There is some evidence that the frequency of occurrence of bursts on Jupiter is affected by the activity of the sun, perhaps even in a negative manner, for instance, that the more active the sun is the less active Jupiter is. Now the radiation from these low frequencies is confined to a beam that is very narrow even in the plane of the ecliptic. The amount of energy that's radiated in any one second burst is large in comparison to physical phenomena on the earth, that is, the energy is hurricanes and most earthquakes. The frequency of occurrence of these bursts, as I started to say, is periodic with System III; but the interesting thing is that, at the high-frequency end of these low-frequency bursts (near 30 megacycles), there are two regions of longitude from which most of these bursts come. We call them "early longitude" and "late longitude" regions. The early source appears to be very strongly modulated by the presence of the innermost Galilean satellite of Jupiter, Io. When Io is in eastern elongation as observed from the earth, it appears to switch on the early source of Jovian bursts. Also when it is in almost western elongation, it again seems to excite bursts from these preferred Jovian regions. In other words, it's a kind of doubly-periodic phenomenon. We've got the period of Io, which is 1.77 days, combining with or beating with the period of rotation of the magnetic field of Jupiter, which is nine hours, 55 minutes, 29.37 seconds.

I should perhaps now digress just for a second to say something about the Jovian system of satellites. It's really a remarkable group. There are twelve known satellites of Jupiter that form naturally into three separate groups. The innermost group consists of five, which include the four Galilean satellites (discovered by Galileo when he looked at Jupiter for the first time with a telescope) and a fifth (which I think is Amaltha). I might add here that I've known people, including my young sons, that can look at Jupiter and see these satellites with their naked eye, and there undoubtedly were shepherds who knew about them, but since men of weaker vision couldn't see them, they were never given status until Galileo. Io, Europa, Ganymede, Callisto, and Amaltha form the innermost group, all within two million kilometers of the center of the planet. The secondmost group consists of Jovian satellites 6, 7, and 10, at distances of 11.47 to 11.85 million kilometers from the center, having orbital periods from 250 days to 260 days. The outer group consists of Jovian satellites 8, 9, 11, and 12, remarkably bunched at a distance of 21.2 million to 23.7 million kilometers, almost precisely the the distance as the second group. The outer group revolve around the planet in a retrograde manner, in an opposite sense not only to the other satellites but to the direction of all the planets around the sun and all other satellites of all other planets (with the excep-

tion of satellite number 9 of Saturn and Triton, the first satellite of Neptune). Now we have these three very interesting Jovian satellite groups. The outer group of four satellites are characterized by sidereal periods of from 631 to 758 days and have orbital eccentricities that are relatively large (from .16 to .4) in contrast to the small eccentricities of the innermost group. Satellite number 5, the innermost one, is .003, to give you an idea of the contrast in eccentricities. Furthermore, the orbital inclinations to the equatorial plane of Jupiter show that the outermost satellites are inclined at very steep angles when you realize that 90° is the maximum (16.5° to 33°). The middle group of satellites are all around 26° to 28°, and the innermost satellites are essentially in the plane of the equator of the planet. This is the first very interesting fact about these satellites. The next interesting fact is that the three innermost Galilean satellites, Io, Europa, and Ganymede, rotate in a synchronous manner with respect to one another. I don't know how to describe it. I'll first just state that the ratio of the sidereal period of rotation of Io to Europa is 2.0073, almost precisely the harmonic. The ratio of the period of Ganymede to that of Io is 4.0441, which is almost twice that of Europa. Now these numbers that I've just given are even more intimately related, related in such a way that whenever Io and Europa line up on the same radius, that is, the same line that passes thru the center of Jupiter, then Ganymede, the third one, is either also on that line or at right angles to it. So that whenever two of these three innermost Galilean satellites are lined up, the third one, whichever it be, is either on the same line or at right angles to it. Now, that line of conjunction rotates gradually around the planet, with a period of about one and a third years, so that there occur periods or seasons when we can see the three satellites in a multiple elongation, and I've labelled these four different elongations in terms of the angle from the line connecting the earth to the center of Jupiter, measured in a direct sense in which the satellites go around Jupiter. I've labelled elongation Class A where Io, number one, is at 90°, that would be in western elongation; number two, Europa, would be also at 90°; and Ganymede would then be at 0°, near the center of the planet, and so perhaps would not be seen. Conjunction Class B would be Io at 90°, Europa, number 2, at 270°(that's the opposite side and in eastern elongation), and Ganymede then at 90° on the same side as Io, so that you'd have all three in a line, with number 1 and number 3 on opposite sides of Jupiter. And a Class C conjunction would be Io at 90°, number 2 at 90°, and number 3 at 180° (which would be behind and perhaps invisible). And Class D conjunction would be Io at 90°, Europa at 270°, and Ganymede also at 270°.

SEASONS OF MULTIPLE ELONGATIONS OF THREE GALILEAN SATELLITES OF JUPITER

1955 - Dec. 20 - 25 (D) Dec. 20.5 (A) Dec. 22.3 (B) Dec. 24 (C) Dec. 25.8
1957 - March 17 - 22 (A) March 17.5 (B) March 19.3 (C) March 21.1 (D) March 22.8
1958 - June 11 - 17 (A) June 11.8 (B) June 13.6 (C) June 15.3 (D) June 17.1
1959 - Aug. 28 - Sept. 2
1960 - Oct. 15 - 20
1962 - Jan. 1 - 6
1963 - March 17 - 22
1964 - May 29 - June 3 (A) May 29.5 (B) May 31.3 (C) June 2.1 (D) June 3.8
1965 - Aug. 11 - 16
1966 - Sept. 27 - Oct. 3
1967 - Dec. 12 - 17 (B) Dec. 12.6 (C) Dec. 14.4 (D) Dec. 16.1 (A) Dec. 17.9
1969 - March 6 - 11 (A) March 6.1 (B) March 7.9 (C) March 9.6

(D) March 11.4 1970 - June 3 - 9 (C) June 3.9 (D) June 5.7
(A) June 7.4 (B) June 9.2
1971 - Aug. 22 - 27 (C) Aug. 22.1 (D) Aug. 23.9 (A) Aug. 25.2
(B) Aug. 27.4
1972 - Oct. 9 - 14 1973 - Dec. 24 - 28 1975 - March 7 - 13
(A) March 7.95 (B) March 9.7 (C) March 11.5 (D) March 13.2

And so about every year and a third we get a season where we have a series of these multiple elongations of the satellites. Now, one of the questions that we'd like to answer is whether, when we have these conjunctions of the Galilean satellites, the radio emission is super-enhanced. If Io, when it's in eastern elongation, enhances the 26 megacycle burst activity, do we get greater enhancement when it has the help of Europa and Ganymede? This is not yet answered, although there're a few papers in the literature that suggest there is an effect due to Europa and Ganymede. It's interesting, I think, to point out that these satellites are, by no means, small objects. Io is 90% the diameter of Mercury. Europa is 84%; Ganymede is about 36% larger than Mercury, and Callisto is about 36% larger than Mercury. So here you have satellites which are larger than Mercury going around a planet, Jupiter. And in fact there is some spectographic evidence that on Europa and Ganymede there is snow and ice covering part of the satellite. So we have miniature planets really going around a larger object, Jupiter, which is in some ways similar to the sun in that the planet receives more heat from its inside than it does from the sun. The circulation of the clouds on the planet Jupiter is like those on the sun; they are heated from below; rough calculations of actual energy measured from Jupiter suggest this. [The only other satellite of a planet that seems to have an atmosphere is the satellite Titan of Saturn, which has a diameter within 20 kilometers of Mercury. There's evidence of the gas methane on it in an atmosphere].

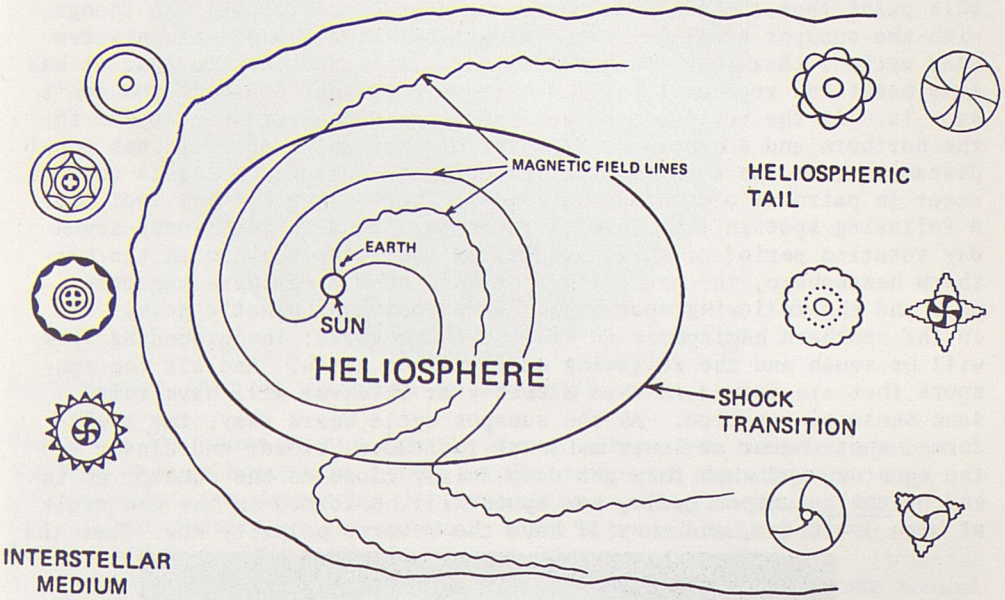
Grossinger - What would be the cause for such a harmonious relationship?

Haddock - There's a physical coupling between these satellites, and in fact once you have this configuration there are gravitational forces that tend to keep it locked into this beautiful phase relationship. Whenever one of the satellites would tend to go a little too fast, there would be perturbing forces by the other two satellites to pull it back in. So I guess the proper view of this would be: it didn't start out this way but once they drifted near this they would lock in, like a marble rolling down a valley. And then it would tend to stay that way. There are several other interesting locked-in motions in the planetary system that you might be interested in me enumerating. The moon is apparently elongated, say a kilometer or so in its diameter facing the earth; just one kilometer difference in diameters appears to be enough for the gravitational gradient of the earth to grab it; that is, the fact that the gravitational field decreases inversely with the square of the distance from the planet causes the part of the moon that is closest to the earth to experience sufficiently greater force than the back of the moon, so that there's a torque on the moon due to its being slightly elongated, like a cigar, or prolate.

Grossinger - What about the magnetic field of the earth?

Haddock - The magnetic field of the earth is a weak force compared to its gravitational field, and it's definitely limited in its extent.

This has just recently been shown by satellite measurement: once you get out beyond five or ten planetary radii, you go thru a region called the magnetopause, a transition region where there's an actual bow shock wave as you go toward the sun. Here, the solar wind (that is, charged particles and magnetic field blown off the sun) slips around the magnetic field of the earth and trails off leaving a wake behind the earth. And the magnetic field effects stop abruptly at this interphase between the solar wind and the magnetic field of the earth.

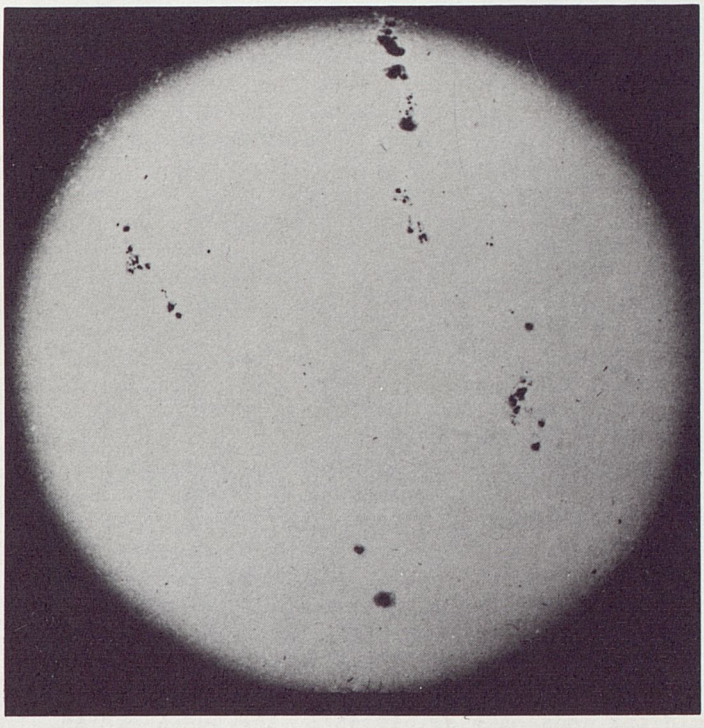


This is a digression, but I should say that one of the theories that attempt to account for the Io control of Jovian bursts is related to the wake in the ionized gas and magnetic field of the planet Jupiter. The magnetic field rotates around at a velocity at the orbit of Io that is faster than the velocity of Io around Jupiter, so that the wake of Io actually precedes Io in its motion around the planet, perturbing the magnetosphere (the charged particles and magnetic field) near Io. It's believed that in this wake is caused a precipitation of these trapped particles and a dumping of the trapped electrons giving rise to the Jovian bursts. And this would be somewhat analogous to the auroral discharges on the earth, where you see, at times of magnetic disturbances caused by perturbations in the solar wind, a solar corona, a solar gas or plasma hitting the earth's magnetosphere, shaking it, and causing the charged particles in their uniform orbits to be knocked out of regular paths into the neutral atmosphere in the Arctic regions of the earth, giving rise to auroral illumination. And something like this may be related to the mechanism that causes Io to control the radio bursts.

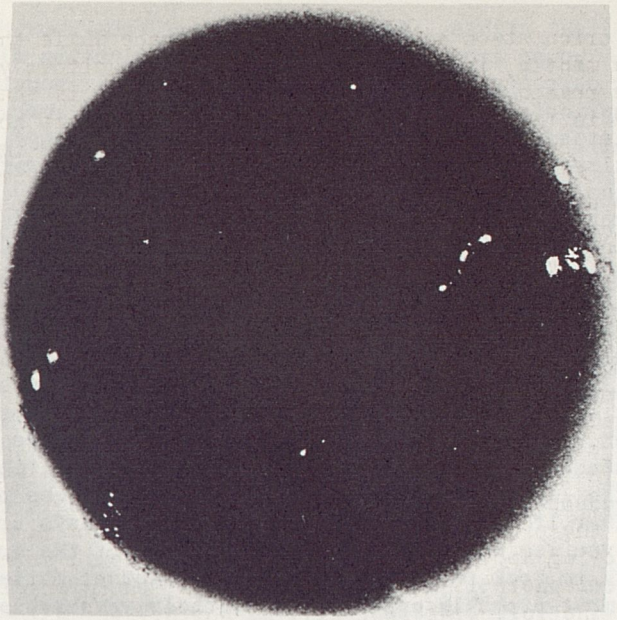
Grossinger - What about theories of the magnetic field of the earth wearing down?

Haddock - Well, I guess the magnetic field of the earth is highly variable, and in one sense the reversals in the sense of the magnetic field are seen geologically as due to the slippage of the crust of the earth on its core: that you have a constantly rotating core (perhaps

not changing its orientation at all in inertial space while the crust of the earth, the mantle, is slipping around on this uniformly-rotating core; and the reason that it hasn't wandered lately is that the basin, the region in the Arctic where the magnetic field is now located, has a lower density and the mantle is kind of locked into this dynamically. This is one paper I saw.) So that the reversals seen in rocks are due to the whole core just slumping all around while the magnetic field is more or less stable. I should mention at this point that the sun's magnetic field undergoes a periodic change with the sunspot cycle in such a sense that it's really a twenty-two year cycle rather than the conventional eleven year cycle. And it has some beautiful regularities. This is a remarkable story if you don't know it. At the beginning of a sunspot cycle the sunspots appear in the northern and southern hemispheres of the sun at more or less equal distances from the solar equator, about, say 40°, and sunspots tend to occur in pairs at a constant latitude. There's a preceding spot and a following spot in the sense of rotation around in the twenty-seven day rotation period of the sun. During one sunspot cycle in the northern hemisphere, the preceding spot will have a northern magnetic pole and the following spot will have a southern magnetic pole. And in the southern hemisphere it will be the reverse; the preceding spot will be south and the following spot will be north. And all the sunspots that are formed in this eleven-year interval will have this same sense of rotation. As the sunspot cycle wears away, the newly-formed spots occur at lower and lower latitudes, closer and closer to the equator, and when they get down fairly close to the equator at the end of their sunspot cycle, new spots will be formed in the new cycle at high latitudes, and they'll have the reverse polarity now. When the



new cycle comes on you'll have old spots with one sense of polarity near the equator and new spots with opposite orientation in the north.



Grossinger - What is the cause of sunspots?

Haddock - The cause is not exactly known. There are theories that there is a huge homopolar dynamo in the center of the sun; that is, currents that are driven by the convective heating of the sun from the nuclear furnace at the center. There's a circulating meridional current which is driven by the energy of the nuclear furnace. It's a feedback loop, self-sustaining. These currents then gravitate toward the surface and new rings come out. It's like a relaxation oscillator, an oscillating homopolar dynamo that changes the sense of polarity of the whole sun, from north to south, south to north, every eleven years.

Grossinger - Are there any such sun-like phenomena on Jupiter?

Haddock - The sunspots are regions of irregularity in the global magnetic field where some of the field is bulging thru the surface, appearing as a black spot due to the magnetic field suppression of outward convection and thus slightly cooler. On the planet Jupiter there are theories to account for certain irregularities in the statistical frequency of Jovian bursts that suggest strong asymmetries in the magnetic field of Jupiter. But they wouldn't show up as spots because you don't have an analogous strong convection of heat from the interior outward. You undoubtedly have that, but it's not so strong.

Grossinger - Since we're discussing radio astronomy, could you mention some of the correlations between pulses in space and on earth?

Haddock - In the January 1969 issue of Science and Technology, E. M. Dewan discusses rhythms and relaxation oscillators. In general, coupled oscillators drift somewhat in frequency until they lock together; then they all go in unison. The author cited the analogy of lightning bugs at early twilight when they're more or less blinking at random; then as the night goes on they begin to blink more and more in synchronism until they're all blinking in unison. Then he mentioned the interesting fact that women's menstrual cycles are kind of free-running oscillators nowadays, presumably because we're not living

outdoors on moon-light nights. Female cycles vary from about 23 days to 32 days, but if women are subjected to full illumination all day for three or four days starting at the 14th day of their menstrual cycle, then the periodicity of their menstrual cycles all became nearly 29 days instead of being scattered over the wide range. Apparently this fictitious full moonlight for several nights near full moon stimulates their hormones to go back to a natural 29-day periodicity which corresponds very closely with the time between full phases of the moon. [I might mention here one related fact: that the moon scatters light in such a manner that when it's full moon, it's nine times more luminous than when it's quarter phase, that is, half illuminated and half dark. The rocks on the moon actually scatter more light from around the limb of the moon than in the center. It's actually brighter on the limb so that when you come into full moon you get this limb effect, plus the fact that there are no shadows to be seen. When you're looking at the quarter phase of the moon, there are shadows that are cast by surface irregularities and craters so that the light is appreciably dimmed, and this helps me accept the fact that it only takes these three or four days around full moon. When you see what the illumination curve of the moon is, it is sharp enough to lock to.] Now pulsars are another matter, and I think that the most probably explanation of their remarkable periodicty, which is accurate to a part in ten million per year for some. It is believed that this degree of precision is due to rotating objects, and about the only thing we know that could rotate that fast and not destroy itself by centrifugal force would be neutron stars which have not been; they're hypothetical concepts, objects with the mass of the sun but a diameter of only ten kilometers and a density corresponding to the nucleus of atoms, densities that are 10^{15} times greater than that of water; it's so dense that it's difficult to conceive of. These objects are spinning periodically, emitting radio waves and hence giving a kind of searchlight beacon with a remarkable periodicity; you could set a watch by it. The pulsars, though, are not locked together; they appear to have their own periods; and if they're rotating objects, they're not relaxation oscillators. The author might have been influenced by some papers that said that the pulsars are oscillating neutron stars with a natural period of oscillation. But the period is determined by age. The ones that are young would be fast-rotating and have short periods, and as they get older, they'd have longer periods. I want to stress that the energy radiated by these pulsars is fantastic; you talk about it in terms of hundreds to thousands of megawatts; that gives hundreds of millions of watts radiating from each square centimeter of the surface.

Grossinger - How are these related to cosmic rays?

Haddock - Well, Tommy Gold's hypothesis was that from the fast-rotating pulsar in the center of the Crab Nebula (with a period of .033 seconds, as slow as alternating house current, but it's slowing down at the rate of one part in two thousand per year), if you assume it's a neutron star you can then compute how much energy is being released from the change of kinetic energy, and its energy dissipation is 10^{38} ergs per second, which is enough to illuminate this entire Crab Nebula, which itself is the debris from a supernova which exploded in the year 1054, 915 years ago. This amount of mechanical energy then is being released, and Gold's hypothesis says that the only way you can slow down a neutron star, the only way you can get ahold of it and

apply a torque to it is by its own magnetic field, which must be a million million gauss at the surface and a million gauss out where it's rotating with the speed of light. This rotating field would then sling out matter from the neutron star which would be going at the speed of light at its periphery. Ordinary matter, when it's accelerated to this velocity then is, by definition, a relativistic gas, such as cosmic rays. If you estimate the total number of pulsars there might be altogether, you have thirty times as much relativistic gas as needed to account for all the cosmic rays in the galaxy. And the point that Gold made was that the amount of kinetic energy left over from a star after it has burnt up all its nuclear fuel is equal to the amount of energy it has radiated in its entire life. The kinetic energy is released when it collapses gravitationally because there's no longer any support by radiation pressure, and the star falls catastrophically inward and speeds up due to conservation of angular momentum. After it burnt up its entire fuel supply and before it dies, it's given this rejuvenation of all this energy again. So it's as if in your old age you were suddenly given all the energy you had expended in your entire lifetime.

Grossinger - Where does the matter go when the star collapses? I am thinking here of Thorne's suggestion that the matter is inverted thru a topological hole in space and bubbles up in another universe. How does that work? How can you speak of a topological hole?

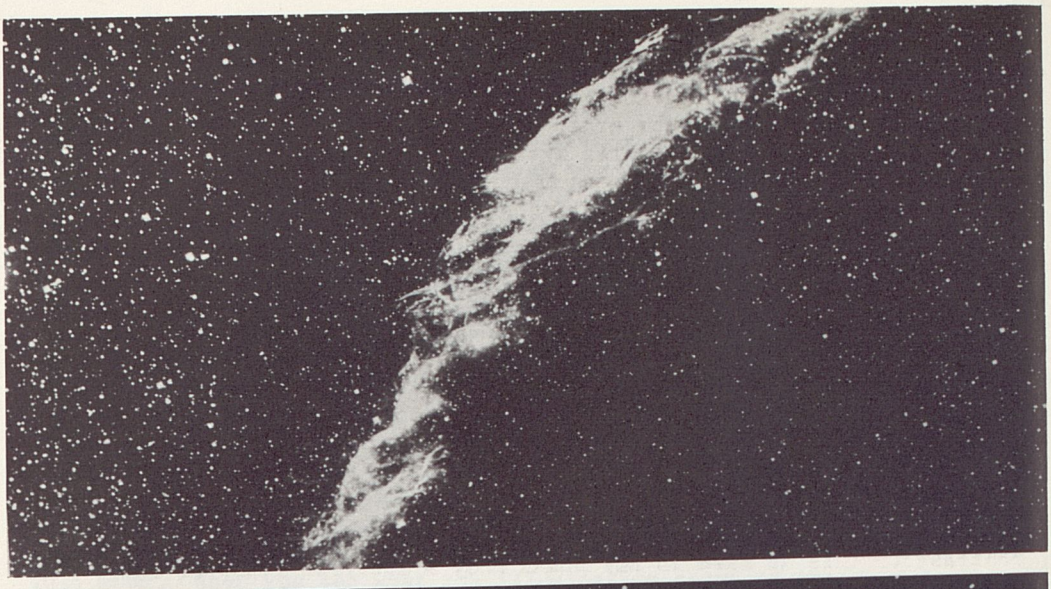
Haddock - I can't. They know a lot about topology and three dimensional space, and there are such things as Klein's bottles where there's all outside like Moebius strips and which mathematicians can generalize to N dimensions. And I suppose if you generalize it to four or five dimensions, why then by crawling around on a topological surface, a constant surface of four or five dimensions, it would disappear in three dimensions and come up somewhere else on the same fourth or fifth dimensional surface.....topologically speaking, and of course the surfaces they're talking about can be distorted and twisted around by the presence of matter; according to Einstein's views you can warp space drastically by great gravitational masses. It's really interesting science fiction. John Wheeler at Princeton; he's a leading man in graviational theories. I've watched him; I don't understand, but he shows fantastic drawings of topological surfaces that are artistically beautiful, and he refers to them as his zoo. They discuss mathematical properties of these objects and if they can be stable and so on.

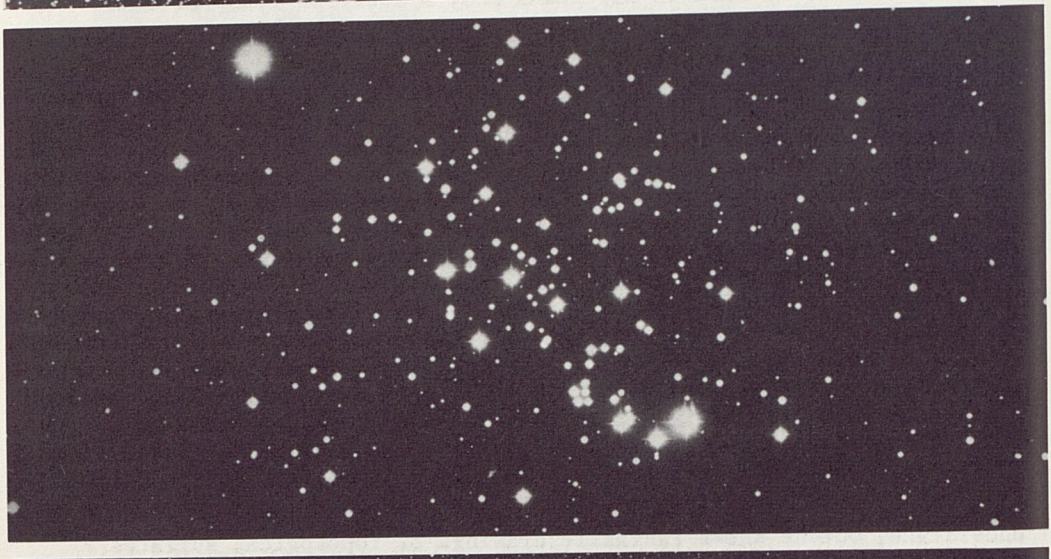
Grossinger - But this is our real science fiction.

Haddock - I think so. There are clever ideas in science fiction, but I'd rather read physics, like this.

Grossinger - I've been reading thru the book Gold edited on The Nature of Time, and there are two things that I would like to know more about. Perhaps they're related: the red shift and the anisotropy of time.

Haddock - I can say just a bit about Gold's views on sense of time. The problem in the physics of time is that all the equations of physics except thermodynamics are just as valid equations of natural phenomena if you replace time in the equations by minus-time, that is





if you change the sign of the time variable in the equations, they're still valid equations, and so there's no reason for choosing time to flow in one direction or the other in any dynamical system (quantum mechanical system or gas-kinetic system). In thermodynamics, though, the concept of time takes on a much different status. I believe that you have a sense of the flow of time such that the degree of chaos can only increase with time, and that you can't naturally go from a system that's very chaotic, or what we call a high entropy system, to one that is more well-ordered. And so a lot of discussion in the Time Symposium at Cornell has to do with this paradox. And Gold's view is that if you're in a perfect box, whose walls are impervious to the communication of radiation or heat or anything to the outside, then it would be just as likely for the gas to flow from being uniformly distributed to all flowing off into one corner in apparent contradiction to thermodynamics, as the system would go thru a series of configurations in velocity and position that would make just as much sense to have time go one way or the other, and that indeed, in such a box, there would be no way to assign or sense the flow ot time. In contrast to this we have in our human body a definite sense of time and of aging and of running down and decaying, and this appears to present a very deep question. Gold's answer to this is that the key observational fact about our existence as human beings with a sense of time is related to the dark night sky. The fact that you have a night sky, a black sky, is the most important fact of our existence. This is Olber's Paradox. Many years ago he pointed out that if you assume that the universe is finite, uniform in mass density of a very large scale, then the night sky would be as bright as the surface of the sun because along every line of sight from the observer, that line of sight would eventually hit the surface of a star. Well then you'd say, "No, there might be some absorbing dust there that would obscure it." But closer examination proves this wrong because the dust will be brought upto the star temperature; it will be made to glow. In fact, life could not exist because we'd be at this same 6000° temperature. So that you have a definite paradox as to why an infinite universe? If it isn't infinite, what is the boundary? The explanation for this arose in the 20's when Hubble made the fantastic discovery that galaxies are receding from us in every direction we look; in fact, they are receding from us at a velocity which is proportional to their distance from us. Hubble found this correlation between distance and red shift: that every direction you look you find objects receding with a velocity that is proportional to its distance. So if a galaxy is twice as far away, then it is receding twice as fast. It's as if there was an explosion, and those objects that are going twice as fast naturally would be twice as far away in the same amount of time. But this would appear to be anthropomorphic, that we're right at the center. We don't assume this; we assume there's no preferred observer, that all observers have equal positional status, and therefore every observer sees exactly the same red-shift law that we do. [Red shift is just a short name for the fact that the optical spectrum of a galaxy, which is a composite of the optical spectra of the billions of stars that make it up, is progressively shifted toward red as galaxies are at greater distances]. Now how is the red shift possible? It is only possible by the uniform expansion of space. Every cubic inch of space doubles every ten billion years or so for everybody. Each galaxy might think that it is the center because all other galaxies are moving away from it. This is the expanding universe concept and the big-bang explanation that it all happened ten billion years ago.

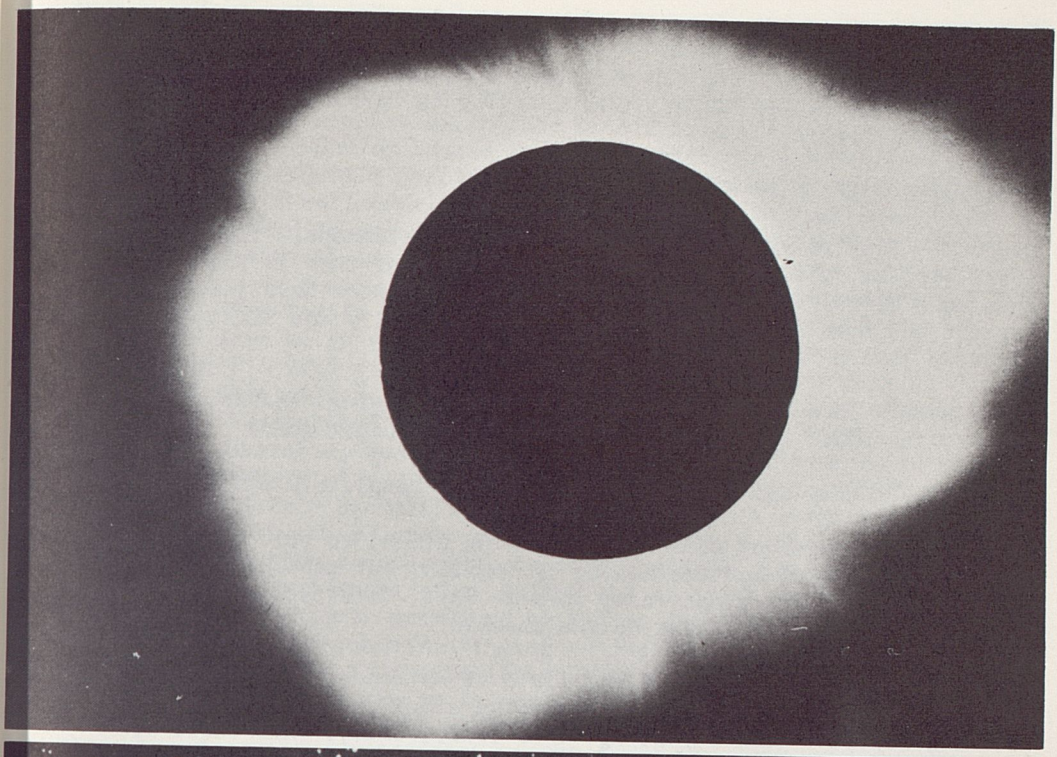
Now this rate of expansion explains nicely the black sky. Because as you look further and further out, the galaxies are receding with increasing velocities, and the blue light of the galaxies is shifted to the red, and if you look further out, it's shifted down into the radio and invisibleness. Thus, if you extrapolate Hubble's Law to the point where the velocity of recession approaches the velocity of light, everything becomes invisible; the photon stream is stretched out so you get fewer photons per second, their color is shifted toward the radio frequencies, and the solid angle subtended by the galaxies is diluted, and so everything makes the brightness drop off quite rapidly as you go out. Therefore, instead of living in a closed box, we live in a universe with invisible boundaries, black walls. Any energy that is generated in the stars has a net outward flow. The fact that energy can flow unidirectionally, that is, radially outward, is Gold's reason for the sense or direction of time. If you were living in a universe that had a blue shift, then the sense of time would be reversed presumably. So that we define time sense as that in which the leakage of energy is away from us, toward the increasing disorder. That is an explanation of Olber's Paradox and the night sky. You owe your existence to the expansion of the universe.

Grossinger - So there's no difference then between a blue shift and a red shift?

Haddock - I think that if you lived in a blue-shifted universe, the sense of time would reverse and it would look like a red-shifted universe. I just have this feeling; I've talked with Gold a number of times: could there be an inter-mixture of universes in which some are expanding and some are contracting? Our own universe has already expanded; the outermost parts of it that are furthest away have already started to fall in. Then if you observed this phenomenon, would you be able to tell if the laws of physics reversed?

Grossinger - Could you say just a word or two about quasars?

Haddock - Well, quasars might be related to this above discussion. Quasars are usually found first as intense sources of radio emission which, when their positions are located precisely, the optical telescopes see as objects like stars. That's why they're called quasi-stellar objects. They have spectral lines which indicate very hot gases. And that have red shifts that are very large. Before the discovery of quasars the maximum red shift was something like, let's see, 3C295, a radio source with a red shift of 0.46. [Red shift is the ratio of the change in wave-length divided by the local wave-length]. With quasars the red shifts run out to above two, so that's a great extension of red shift values. If they indeed obey Hubble's Law, then a red shift of two is located six billion light years away. And you're also looking backward in time six billion years ago to the early days of the universe. The radio waves we receive with our 85-foot telescope here at Portage Lake has been travelling to us for a billion and a half years before the earth was formed. So we're able to pick up, then, messages, radio signals from objects that have been travelling in space for six billion years. You can talk about these as artifacts, archaeological remnants of the early days of our universe. Now to get this much energy you require the gravitational col-



lapse of a mass that's hundreds of millions of solar masses, hundreds of millions of times greater than the energy of a supernova whose remnant leads to a pulsar. But it's the red shifts that make them interesting, and the fact that they must be excedingly bright to be seen at that distance.

Grossinger - You both see them and hear them?

Haddock - Yes, both. You can pick them up quite easily on a radio telescope, and we do. We see them changing in intensity when a new explosion occurs.

Grossinger - Are they visible as light?

Haddock - They're visible on a large optical telescope. They're quasi-stellar objects. They look like stars, but then as you examine them more closely they have some structure, and some have jets sticking out and some are double sources, but originally the first ones appeared like a star image.

Grossinger - Then these are our original mythological shapes, the Titans, the older gods on Olympus before the younger gods.

Haddock - In many ways they have always been completely mysterious.

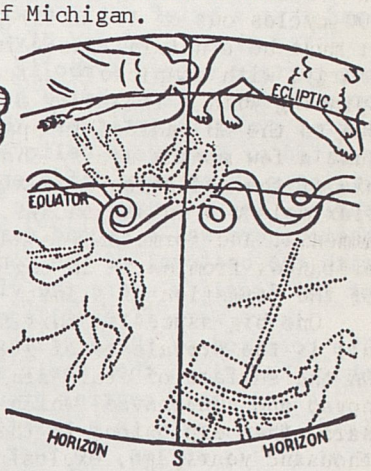
Grossinger - Astronomy seems to be getting around to more basic questions than location and the naming of familiar but unnamed objects. I would say that it is closer now, in some ways, to astrology, than the earlier astronomy. What do you think?

Haddock - It seems to me that the field of astronomy is in a golden age where major discoveries are occurring almost yearly. I mean, the pulsars, reported just a year ago this [Feb., 1968]. Now there are over two dozen of them, fantastic objects; they may indeed be neutron stars rotating with tremendous energy and generating all the cosmic rays you need, clocks accurate to a high degree, and so on. And just a few years before: the discovery of quasi-stellar objects, explosions too large to imagine, requiring gravitationaly energy because nuclear energy is not released fast enough. Also during this interval there have been discoveries of very sharp spectral lines of radiation limited to 1660 megacycles per second. There are various localized spots in nebulae of nearby galactic objects that have a band width of only 300 cycles out of 1.6 billion cycles, so precisely tuned that we feel it must be a natural laser in space emitting a pure tone of radio energy, with completely circular polarized light, electric vectors spinning with a frequency of 1.6 billion cycles a second. This is due to the OH radical in space; and then the discovery of emission just a few months ago by Charles Townes and his colleagues in California of the radiation from ammonia gas in space, which is the most complex molecule in astronomy. [Since this interview clouds of water, ammonia, and formaldehyde have been detected in our galaxy at great distances from earth in regions between stars. This is real evidence of the formation of planets and suns].

One big aspect in this new outlook due to quasars and pulsars and all is the prevalence of gigantic explosions throughout the universe: On the surface of stars are solar flares, then the stars themselves as novae and supernovae, which later gravitationally collapse into pulsars, then explosions in the nuclei of our galaxy that took place a thousand years ago, explosions that put out big waves of cosmic rays that would have maybe biological effects due to radiation damage, to where whole galaxies are undergoing explosions; if there were life in these galaxies it would certainly be extinguished in just a very brief

span. And it looks like maybe galaxies, planets, and solar systems are really forming out of the debris of exploding galaxies rather than vice versa. It's almost as if, it's even been suggested that quasars are hunks, chunks, of the original explosion, the primeval material that has somehow maintained itself in a stable quiescent state, perhaps by having such a large mass that the gravitational energy kept it together until finally it's perturbed, gravitationally perhaps; then it collapses and blows out material in such quantities that galaxies and solar systems and planets and life can form out of the debris of explosions. So I think the new thing is the prevalence of explosions on cosmic scales, that were impossible to imagine ten years ago. Previously it was more static, less dynamic and more enduring and more as if things were formed at an early epoch and there has been only a very slow evolution of things, a gradual forming of planets in more or less fixed orbits. One of our graduate students, Jack Hills, has pointed out that the planets in their original orbits were highly unstable, and that Uranus, Neptune, and Pluto were flung out from somewhere closer in and that our solar system is really in a state of delicate dynamic balance. By the way, I meant to say in talking about the third group of Jovian satellites, the outer group, that they have such great eccentricities and such changing orbits that you can't even speak of an elliptical or Keplerian orbit for them; they're so highly perturbed by Saturn and the other satellites that they're very tenuously clinging to Jupiter, and it's best to refer to these outer four satellites as transient members of the Jovian system, and very likely in not many years they'll be flung loose and become planets in their own right; they are big enough. So that this changing nature and transiency of former eternal verities.....

Fred T. Haddock is Director of the Radio Astronomy Observatory and Professor of Astronomy at the University of Michigan. "The University of Michigan and the University of Florida are jointly proposing a series of radiofrequency experiments to be performed by the Pioneer F/G Asteroid-Jupiter spacecraft..... Is the radio source in the magnetosphere near Io, or is it in the planetary atmosphere, perhaps at the foot of the magnetic tube including Io?" Dr. Haddock is the principal investigator for the University of Michigan.



The far-reaching avenues of trade upon this continent stretch from the equatorial regions to its northern and southern confines, and along these paths have passed with the traders more than their articles of barter. These men took with them the knowledge of rites, customs, myths, and folktales, which spread, with modifying influence more or less enduring, from tribe to tribe. As a result no one tribe on the Western continent can be said to stand wholly apart from all other tribes or unaffected as to its forms of organization, its culture, or its folklore. A network of exchange, more or less formal, lies over the whole country, enhancing both the difficulty and the interest of ethnological field research.

Some twenty years ago, while studying among the Omaha and other tribes of the Siouan linguistic group, I met with evidence which seemed to indicate that the people of the Pawnee tribe had probably been instrumental in the spread of certain cults among their neighbors, and that this tribe still possessed in considerable fulness of detail many of their ancient ceremonies. Although at that time the way to witness and investigate these ceremonies was opened to me by some of the old Omaha leaders who were in close and friendly relations with the Pawnee, circumstances beyond my control prevented for several years my entertaining the Pawnee field. However, I have since been able to take up the work and have made considerable progress, having obtained complete records of ceremonies and attendant rituals.....

The language of the Pawnee belong to the Caddoan stock. When first met by the white face the people were living near Platte river, in what is now the state of Nebraska. About thirty years ago the tribe was removed from this locality to the place where they now reside in Northeastern Oklahoma.

In this preliminary report no mention will be made of the earlier or later migrations of the Pawnee, or of the different divisions of the tribe, beyond the statement that it is now represented by four bands. These bands used always to build their villages in a certain definite geographical relation to each other. The Skidi was always to the west of the others; it is of the organization and cult of this band that a brief outline will be given.

The Skidi band was divided into several villages, each possessing certain sacred symbolic articles which were preserved in a pack or a shrine. Each shrine had its own ceremonies and rituals. The sacred symbolic articles, the ceremonial use of them, and the rituals recited or sung were believed to have been given to the different villages by as many different stars. The star gave its name to the shrine, and the name of the shrine became thd name of the village. Where there was a second name it referred to some incident connected with the bestowal of the contents of the shrine. or it was descriptive of the locality where the village was placed.

There were five villages which formed a central group (figure 1). The position of these villages was fixed by the position of the stars which had given them their shrines and ceremonies.

About this central group were located the other villages of the Skidi band, each in a position corresponding to that occupied by the star of its shrine, so that the villages of the Skidi on the earth were as a reflected picture of their stars in the heavens.

In the central group, the shrine of the village at the west led in the religious rites. Its ceremonies were the first to be performed

in the yearly sequence of ceremonies, which commenced when the first thunder in the spring was heard. All but two of the villages took part in these ceremonies, following a certain order.

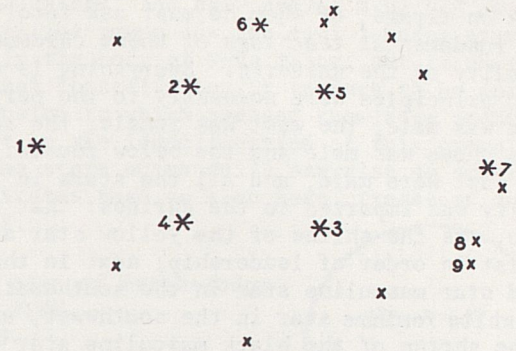


figure 1: villages of the Skidi band. [The position of four villages is not represented in the diagram.]

1 STAR OF THE WEST
2, 3, 4, 5 FOUR LEADING STARS
6 NORTH STAR
7 MORNING STAR

Not only did the ceremony of the shrine of the village of the west open the rites of the year, but certain of its ritual songs were repeated at the beginning of the ceremonies connected with the shrines of the other villages taking part. To quote the words of my Indian informant,"the ceremonies of the other shrines were like branches of this shrine." This shrine did not have anything to do with secular affairs unless the people were in dire distress.

The ceremonies connected with the shrines of the other four villages of the central group related to the affairs of the tribe, such as hunting, planting and harvesting, the conferring of honors on warriors, and the installation of leaders. The leadership of these shrines rotated in a fixed order. That of the village at the northwest became the leader for the year, that is, a winter and a summer. Then the leadership passed to the village at the southeast for a winter and a summer. Next came the shrine of the village at the southwest, which led for a year, a winter and a summer, when the leadership fell to the shrine of the northeast, a winter and a summer. After that the leadership returned to the shrine of the village at the Northwest, and so on, following the order as given, each shrine being the leader every four years.

Quoting again my Indian informant,"The Skidi were organized by the stars; these powers above made them into families and villages, and taught them to live and how to perform their ceremonies. The shrines of the four leading villages were given by the four leading stars and represent those stars which guide and rule the people. The shrine of the village at the west was given by Tiráwa, who is above and over all stars, hence it is given over all the others which were given by the stars. That is why all the ceremonies of the other shrines began with the sacred song of this shrine. Tiráwa sent this shrine by the star in the west, but it was not to represent that star, but to represent Tiráwa who gave to the mysterious beings, who stand below that star, the power to put life into all things, to set the people in order, and to give them knowledge." Heefurther explained: "First of all was Tiráwa-atius (a-ti-us, father), the power above all and over all, the

father of all things. Then came the lesser or under powers; these were given places in the heavens; they are in stars. Then all things were made, and men and women were created." Again I quote:"The ceremonies of the shrines give an account of creation, the establishment of the family, and the inauguration of rites by which man would be reminded of his dependence on Tirawa, of whom he must ask food."

One of the fundamental teachings of these ceremonies is the predication of a duality of the universe. Everything is either male or female; these two principles were necessary to the perpetuation of all things. The east was male, the west was female, the south was male, the north female, the above was male and the below female. Therefore all the stars in the east were male, and all the stars in the west were female. This quality was imparted to the shrines: that of the west was feminine; so, too, was the shrine of the yellow star at the northwest, which was the first in order of leadership; next in the order was the shrine of the red star masculine star in the southeast. The leadership then came to the white feminine star in the southwest, and the following year passed to the shrine of the black masculine star of the northeast. These diagonally situated stars were sometimes spoken of as in "pairs" or "mates."

The care of these shrines was deputed to a woman, the knowledge of its contents, ceremonies, and rituals, to a man.

The sequence of ceremonies began with those of the star in the west, through which, I was told, "the life-giving power of Tirawa-atius passed, coming from the west to all living forms." After the ceremony of the star in the west the next in order was the ceremony of the star of the village which was the leader for the year; the other three villages of this central group sometimes joining, and in that case acting as a unit. The general progress was from west to east, and the sequence closed with that of the shrine of the morning star, which included a sacrifice typifying the conjunction of the east and the west, the below and the above, thus insuring the perpetuity and productivity of all forms of life.

The two villages marked 8 and 9 in figure 1 were not included in this sequence, for the reason that their shrines, while connected with the stars, were more intimately associated with the animal forms of the earth. They had their special rites, which included many of the remarkable feats of sleight-of-hand for which the Pawnee have been celebrated.

The influence of the star cult was manifest in the construction of the earth-lodge of the Pawnee. The circular floor of this dwelling symbolized the earth, and dome-shaped roof the arching sky. The four posts which supported the framework of the roof represented the four stars of the leading villages, and on occasion were painted their respective colors. The place of the shrine was in the west in accordance with the position of the star of the west.

No further mention at this time can be made of the elaborate rites attending the construction of these earth-lodges, nor of their manifold symbolism; nor can other ceremonies' relation to stars be spo-

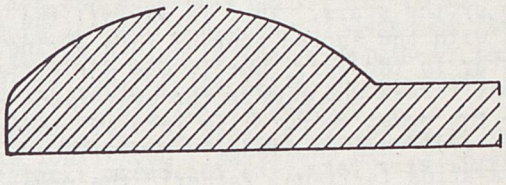
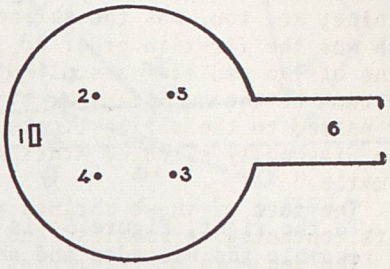


figure 2: section of an earth-lodge

ken of, nor the many ways in which the stars were supposed to influence the lives of the people.

As to the identification of the stars which control the position and ceremonies of the villages composing the Skidi band, with any known constellation, only the north star (to which belong certain ceremonies connected with the chiefs) and the morning star can be pointed out by the Skidi. The central group --- the four leading stars --- seem to suggest the four in the body of Ursa Major, but if they ever had any connection with that constellation it appears to be lost. At least that is the conclusion to which present knowledge points; further study may throw light on the identification of this group. The fact that the position of the stars which still exercise so controlling an influence is lost, indicates that we have here traces of an ancient and deeply rooted cult.

figure 3: ground plan of earth-lodge
1 SHRINE IN THE WEST.
2, 3, 4, 5 POSTS.
6 ENTRANCE WAY.



The sky map is in the collection of Pawnee material at the Field Museum of Natural History at Chicago..... The map was found in a sacred bundle among other things common in these collections. This chart is oval in shape, made from a piece of tanned elk skin about 15 by 22 inches in size. One end is colored with red and the other with brownish yellow. According to Dr. Ralph Linton, of the above-named Museum, this map is at least three hundred years old.

The stars are represented by a four-pointed figure and drawn in five different sizes which are indicated by the letters a, b, c, d, and e. This would mean as many different magnitudes. Taking the magnitudes of the stars in the eleven constellations, they are divided as follows: Of the first, we find eleven, the second are nine in number, while forty-four are shown as third. The other two classes were not counted because they are placed at random.....

Down the center of the map may be seen a stream of stars of the fainter magnitudes, which is true of most of the suns of the Milky Way as we see them with the unaided eye.

The star groups on the right side of the division are similar to those seen in the summer skies. This half of the map is marked at the extreme end with a band of brownish-yellow color.

The constellations on the left side of the Milky Way are typical of the winter heavens. This end of the oval is marked with a reddish-brown band.

The eleven groups that appear on the map have been traced with an unbroken line. For comparison, the constellations as we know them are outlined with dashes and the stars shown by circles.

The V shape of Taurus is shown in Figure 4 by the stars marked a, b, c, d, e, f, and g. Zeta Tauri, Alpha Tauri, Theta Tauri, Gamma Tauri, Sigma Tauri, Epsilon Tauri and Tau Tauri. (a) is the third magnitude star Zeta, (b) Aldebaran first magnitude, (c-d) probably

the double star Theta, (h) then would be Gamma. The stars forming the other side of the V would be (e) Delta, (f) Epsilon, and (g) Tau.

Near the position shown by h is the variable Lambda Tauri which ranges from 3.3 to 4.2 magnitude. This star might have been much brighter at one time. [In March of 1924 the bright planet Venus passed between the constellations Taurus and the Pleiades, in about the same position as indicated by h. Venus has taken this path many times in the past].

figure 4

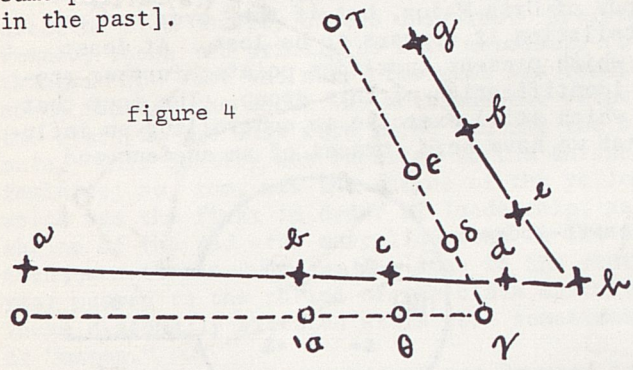
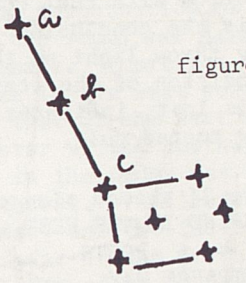


figure 5



To the right, Figure 5, is a group of seven stars a, b, and c that resemble the Pleiades and about in the same position in respect to Taurus. If we look at the Pleiades in the evening of late March, they will be found as indicated by the drawing, the four stars forming the square pointing down to the horizon.

The stars shown in Figure 6 resemble closely the bright suns in the Orion group, (a) the first magnitude star Alpha Orionis, (b) Beta Orionis, (d) Rigel, (c) one of the stars in the belt and (e) Kappa Orionis; there are, however, within this area several groups of three stars in a row, either one of which might represent the belt of Orion. The relation of these three constellations, Taurus, Pleiades and Orion, to each other is quite accurate.

These stars are reversed in regard to their position to the Milky Way.

Drawing lines around the stars shown in Figure 7, we have a geometric pattern similar to Auriga and including the stars Alpha Aurigae, Beta Aurigae, Theta Aurigae, Nath and Iota Aurigae of that constellation, (a) being Capella, (b) Beta, (c) Theta, (d) Nath, and (i) Iota. The position of this group of stars in relation to Orion and Taurus is not correct, being above them in the sky. It is, however, correctly drawn in relation to the Milky Way.

The stars in Figure 8, a, b, c, d, e, and f in the right hand portion of the map are a good representation of the geometric pattern of Lyra formed by Vega, Zeta, Beta, Gamma and Delta of that constellation. (a) and (b) in the figure represent Gamma and Beta, (c) and (d) Delta and Zeta, (e) Epsilon. (f) is shown to be brighter than the other stars in that group which is true of Alpha Lyrae. The Indians placed Lyra close to the Milky Way which is its true position.

The likeness of Corona Borealis is shown in Figure 9. The Indians used eleven stars, whereas our maps have seven in the circle formation. The position is not correct. It should be more to the East.

The stars in Figure 10, a, b, c, d, e, f, and g look very much like the group forming Ursa Minor, (a) being Polaris; Delta, Epsilon, Zeta, Eta, Gamma, and Beta forming the tail and body of the Bear. As they have more stars in this constellation than we see, their identi-

fication is not certain, however, they might be as follows: (f) and (g) Gamma and Beta; (b) Delta; (c) Epsilon; (e) and (h) Eta and Zeta. The stars forming the tail show a curved line the same as we see it. The Indians used eight stars in the group and showed them to be about the same brightness.

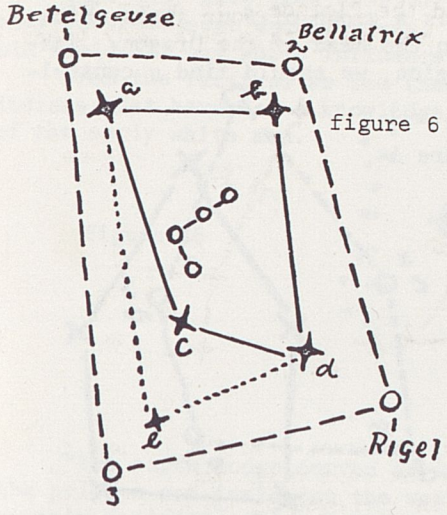


figure 6

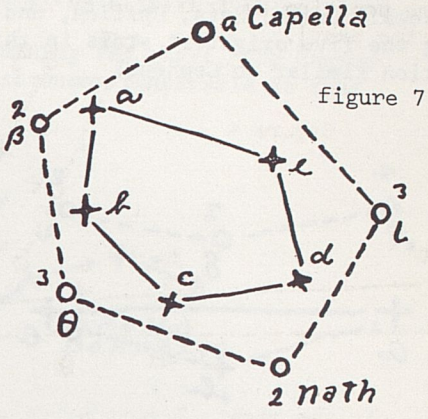


figure 7

Alpha, Beta, Gamma, Delta, Epsilon, Zeta, and Eta of Ursa Major are shown in the stars marked a, b, c, d, e, f, and g in Figure 11. Alpha and Beta, (a) and (b), point to Polaris which is the same as we see them. The tails of the bears, however, are reversed when seen in the position as indicated on the map.

Below Ursa Major is a small group of stars, Figure 12, which might be the constellation Coma Berenices indicated by ten faint stars. This scattered cluster is in about the same relative position in the sky to Ursa Major as the chart shows it. The three groups, Ursa Major, Ursa Minor, and Coma Berenices are quite accurately placed in relation to each other. These stars as we have catalogued them range from fourth to sixth magnitude in brightness.

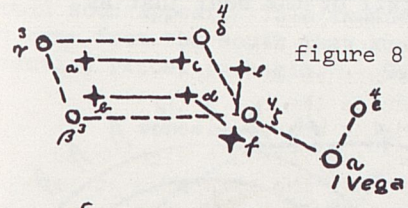


figure 8

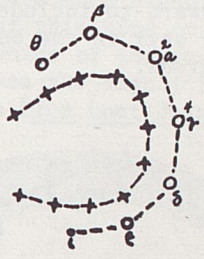


figure 9

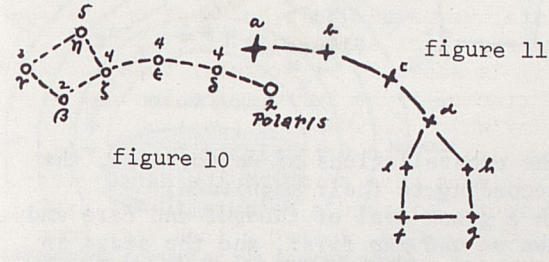


figure 10

figure 11

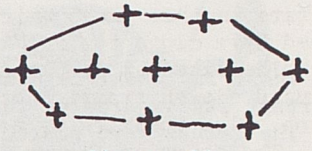


figure 12

Andromeda is represented by three stars, see Figure 13, Gamma, Beta, and Alpha. This group of stars might also be the three suns in

Cygnus, Epsilon, Gamma, and Delta. The constellation, however is above Lyra in the heavens. Beta, Alpha (Altair) and Gamma, of Aquila, form a like configuration. The "Eagle" is to the south of Lyra as pictured by the Indians.

At the top of the map, see Figure 14, and in about the same position in the sky with respect to Lyra, is a group of four stars which resemble Gamma, Beta, Upsilon, and Xi in the head of the Dragon. Taking the five brightest stars in this region, we should find a constellation similar to Cepheus.

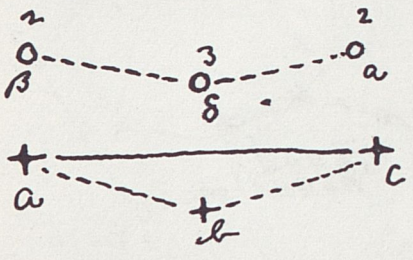
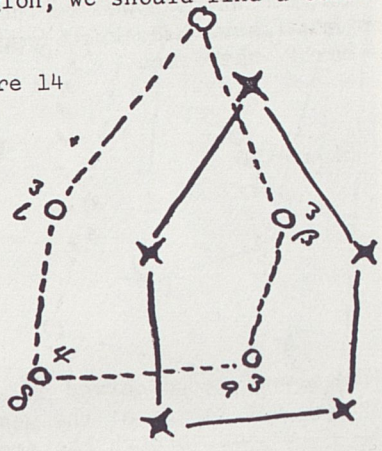


figure 13

figure 14



The Pawnee Indians have recorded no less than two double stars, the larger and brighter of the pair being drawn prominently and its companion close to it and proportionally smaller. These stars do not resemble the others, so they could not have been placed there to fill in or at random but indicate keen observation. One of these double stars is between Lyra and Corona Borealis near the Milky Way, see Figure 15 on the map. The second, Figure 16, is the tail of Ursa Major, (this constellation is sometimes called the "Big Dipper"), which we know as Miser and Alcor. The position of these twin suns positively identifies this constellation. If we continue the line of the tail downward to include the next bright stars, this would place the double star in the bend of the tail of the bear just as it is in the heavens.

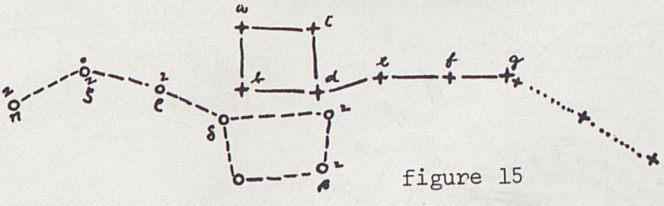


figure 15

These Indians recognized the constellations as we do, also, the important stars, drawing them according to their magnitude.

The groups were placed with a great deal of thought and care and show long study. They were drawn on the map first, and the stars in the background were put in later as the smaller ones do not show any interference with the constellations. The large groups were foremost in their minds, their relative positions one to the other being quite

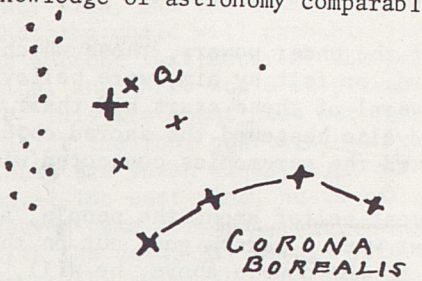
accurate. The fainter points of light were put in merely to fill the vacant spaces and represent suns of the lesser magnitude.

They recognized the seasonal shift of the stars. This is portrayed by the division of the map.

That they were keen observers, is also shown by the fact that they recorded some double stars. The map being three hundred years old would bar any white influence.

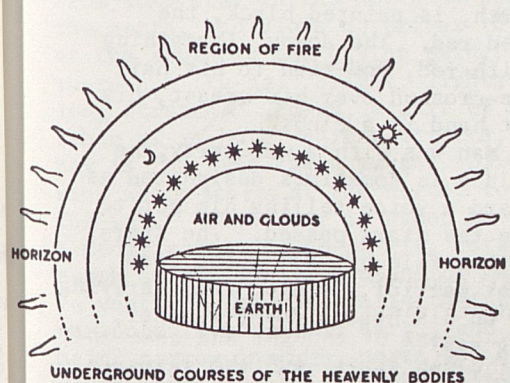
From the facts as we see them regarding the chart, the Pawnee Indians must have had a knowledge of astronomy comparable to that of the early white men.

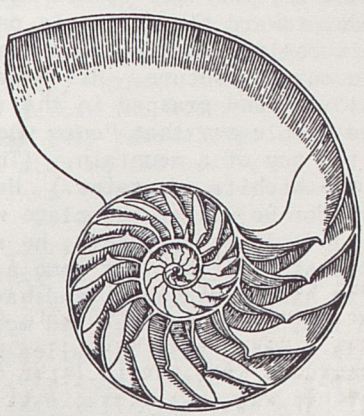
figure 16



"The earth lodge served as an astronomical observatory and as the priests sat inside at the west, they could observe the stars in certain positions through the smokehole and through the long east-oriented entranceway. They also kept careful watch of the horizon right after sunset and just before dawn to note the order and position of the stars.

The round of spring renewal ceremonies was heralded by the appearance of two small twinkling stars known as the Swimming Ducks in the northeastern horizon near the Milky Way. They notified the animals that they must awaken from their winter sleep, break through the ice, and come out into the world again. At this time the Pleiades began to take a certain position. When these signs were seen, then they must listen for the thunder that is low, deep, and rumbling, starting in the west and rolling around the entire circuit of the heavens. Sheet lightning gave warning that this kind of thunder would soon appear. This thunder was the voice of Heaven, and when it came from the south they knew that it was the signal for the creation ritual to begin." Gene Weltfish [The Lost Universe].





.....The dual forces, male and female, had, according to the Ski-di rituals, their places in the heavens. The west was female, the east was male. The source of all life, the power which permeated all forms, dwelt in the zenith, in "the silence of the blue sky, above and beyond all clouds." This central power, whose abode was where the east and west conjoined, could not be seen or heard or felt by man, and yet it was to this power that man must address his wants.

.....Many of the under powers, those which can come near to man and be seen, heard, or felt by him, were believed to dwell in particular stars. Several of these stars had their shrines in certain villages, and had also bestowed the sacred objects kept within the shrines, authorized the ceremonies connected with them, and inaugurated a priesthood.

It is a current belief among the people, and, as they say, "it often happens that when a person goes out on the hills at night to fast and to pray to the powers above, he will, as he is praying, become conscious that a particular star is looking at him. Then he will have a vision from that star, and the star will have control of his life." Sometimes the effect of a star was disasterous. For instance: "A lad was made crazy by a star. His friends sent for a doctor, and when he came, he waited for the star to rise which had caused the trouble. As soon as it was discerned above the horizon, the doctor took the lad out under the open sky, painted his body black with white spots, wrapped a fawn skin, which had still the spots upon it, about the boy, and then painted a star on his forehead. As long as the painted star remained on his forehead, the youth was sane, but when it wore off, he became crazy again."

A certain star in the west, which cannot now be designated, was believed to be the abode of the potential female element. The ceremonies of the shrine of this star led in the series of yearly ceremonies which culminated with the rites belonging to the red morning star. We are told that "there are two morning stars, brothers; the elder is red, and it is he to whom the human sacrifice is made; the younger is white, he is kind, and does not share in these rites." Some of the rituals speak of the red morning star as "a man, who stands facing the west. His body is red, and the right side of his face, that is, the side toward the north, is painted black, the left side, toward the south, is painted red. The downy, 'breathing' (as it is called) feather is tinged with red, and tied to his hair over the coronal suture. His arms are crossed over his breast, his hands closed, and grasped in the right hand is a club."

The people say that "once when a man was with a war party, he lay on the top of a mountain. (The place is sometimes designated as one of the Wichita mountains.) He heard a voice telling him not to go away, for he was at the place where the stars passed. The stars are people. As he lay there, he saw them file by, all going from east to west. At the last came a great warrior, painted red, carrying a club in his folded arms, and having on his head a downy feather, painted red. This was the red morning star."

This morning star is called Ho-pi-ri-ku-tsu. The word is made from ho-pi-rit, "star;" ko-ri-tu, "fire;" and ku-tzu, "large, great, mighty." The name signifies "the mighty star of fire."
The person to be sacrificed to the morning star was considered as hav-

ing no future, as no longer belonging to the living. From the time of dedication to the star until the actual sacrifice of the life took place, the victim belonged to the star-god, was kept in seclusion, and not permitted to be touched by the people. This fact was known even to the children, who, when they wished to ostracise a playmate, would cry "Pi-ra ho-pi-ri-ku-tzu!" ("child set apart to the morning star").

.....The rituals state that the first human beings were borne to the earth from the star of the west by the wind. The people say,"When a child is born during the night, the relatives take notice of the stars. If the wind does not blow, and the next day is clear, then the parents are assured that the child will probably live without sickness or trouble." The ancient instructor of the priests said,"The wind, hu-tu-ru, would divide, and there would be places where the different winds would dwell." This statement does not refer to the four winds which guard the paths at the four quarters down which the lesser powers descend to man. There are seven winds, each of which has its name and peculiar function:— The east wind, hu-tu-ru-ha-wit (hu-tu-ru, "wind;" ha-wit, the sacred name for east, the meaning lost). This is the wind which comes with the dawn; "it brings life to the body, but it does not bring help to the spirit." The west wind, hu-tu-ru-wa-rux-ti (hu-tu-ru, "wind;" wa-rux-ti, "mysterious, wonderful!"). "This wind comes from the mysterious being to whom Ti-ra-wa gave power to put life into all things, to have direct communication with man, and to direct his life." "In the west are the powers which bring rain to cool and vivify the earth, in the west we hear the thunders sound; there dwell the powers which carry out the commands of Ti-ra-wa. Because of this, we call the wind sent from this power, hu-tu-ru-wa-rux-ti." North wind, hu-tu-ru-ru-chow-wi-ri-ki (hu-tu-ru, "wind;" ru-chow-wi, "placed permanently;" ri-ki, "standing"). From the character of the name of this wind it would seem to be connected with the north star, ho-pi-ri-ka-ra-wi'-wa-ri, "the star that does not move." This star is one of the lesser powers, and was made a chief. "Ti-ra-wa told this chief that he was always to stand there, where he was placed, and to watch the earth." "This Le-cha-ru, chief, must not move, for if he should do so, all the other stars, as they pass over the heavens, would become confused, and know not which way to go."

The wind of the spirits, Hu-tu-ri'-kot-tsa-ru (hu-tu, a part of hu-tu-ru, "wind;" ri-kot-tsa-ru, "a shadowy image of a person, a ghost"). "This wind takes the spirits of the dead from the north, from some star in the north to which the dead immediately pass from the earth, and blows or drives the ghosts along the way, to the star at the southern end of the path." The Milky Way is called ru-ha-ru'-tu-ru-hut (ru-ha, "bright, light;" ru, first syllable of ru-hut, "a long stretch;" tu-ru, a part of hu-tu-ru, "wind;" hut, the last syllable of ru-hut, "a long stretch," as across the heavens). "The Milky Way is the path taken by the spirits as they pass along, driven by the wind which starts at the north, to the star in the south, at the end of the way." This star is named ho-pi-ri-ka'-hu-ri-ri-wi-si-su (ho-pi-ri, a modification of ho-pi-rit, "star;" ka-ru, a part of ka-ru-ra, "the earth as the dwelling-place of man;" ri-ri-wi-si-su, "midway from east to west"). The word tells that the star is the dwelling-place of those who once lived on the earth, and that its length is east and west, it being narrow in width, north and south. "As most people linger in their death through sickness, so the path they tread is the long path we see across the sky, while the short path (the short fork of the Milky Way) is the path made by those whose life is cut short by sudden death, as in battle." South wind, Ra-ri-tu-ru. This wind comes from the star

in the south where the spirits of the dead dwell. It is connected with the Milky Way and with the wind that drives the spirits of the dead to the south star. "This wind accumulates at the south, and our ancestors were told (so the priest said) that some day this wind will rise up in the south, and make its way back to the north, doing much damage as it goes. When this shall come to pass, the people must remember that this wind has come from the place where the dead dwell, and as they see it coming, they must show it respect and offer it tobacco."

"In the old days we (the Pawnee) did not know cyclones; but when we came to know them, we called them Ra-ri-tu-ru. We remembered what we had been told of the return of the south wind from the star of the dead, and we offered tobacco." "We Pawnee always do this, and it is wonderful to see how the cloud will rise and go off in another direction, and the people will escape all harm."

.....Hu-tu-ru-ka'-wa-ha-ru is the wind that sends the game. This wind comes from one of "two stars that are close together and are back of the north star, nearer to the horizon toward the East." The name Ka'-wa-ha-ru occurs in rituals, and seems to be a personification of the attribute of willingness to give. Among the people, "when a man is about to shoot at game, he will call upon ka'-wa-ha-ru to give the game to him, to make his shot successful." "A woman will call upon this power to help her husband when he is hunting." "A little boy, when he is learning to use the bow and arrow, calls upon ka'-wa-ha-ru to give him good fortune."

.....Hu-tu-ri-hi'-hus-su is the wind that drives. This wind comes from the other of the two stars that are back of the north star (hu-tu-ru, "wind;" hi'-kus-su, "the sudden expelling of breath"). This wind is associated with the wind which sends the game, hu-tu-ru-ka'-wa-ha-ru, "it drives the animals toward the camp, so that the people can secure the game given them by ka'-wa-ha-ru." When the people have secured the game, that has been thus driven toward their camp, they give thanks to this wind by saying: "Na-wa-i-ri Ti-wa-chi-riks hu-tu-ru-hi'-kus-su!" (Na-wa-i-ri, "we give thanks;" ti-wa-chi-riks, "uncle;" hu-tu-ru-hi'-kus-su, "wind that drives").

The constellation Corona borealis is said to be "a council of chiefs, and the star in the centre of the circle, the servant cooking over the fire, preparing the feast." Ursa Major represents four men carrying a sick or dead man, and Ursa Minor, "four persons carrying a sick baby." .....Various animals are seen in the skies. The rabbit is a group east of the lower end of the Milky Way; a bird's foot is discerned on the path itself. To the south and near the galaxy is a cluster called the bear. In the south toward the east is a bright star; this is the head of the serpent; many little stars are to be seen on its body, which lies close to the horizon. Farther north, in the east are three deer, one following the other. The bow is to be seen among the stars, but "it is difficult to locate."

"In its very essence, the Pawnee outlook on reality differs from our own. For us the material aspect is primary. On a second level of discourse, we place observed events; on a third level, which we count still less sure, is the "human factor"; and finally furthest removed from solid reality is the realm of ideas. In the Pawnee estimate of the world around him, the primary level of reality is thought. In our own story of creation, the deity shaped man out of clay, but the

Pawnee deity - Vault-of-the-Heavens - began the process of creation with thoughts and so created the universe and the stars, and they in turn were to create man in their own image. When a Pawnee individual wanted to organize his life goals, he looked within himself in his thinking and was blessed by Heaven with a vision. In the Pawnee context, the thinking man was the essential human being. The universe continued its seasonal round only when man willed it through his thought of Heaven and its creative power. In creating man, Heaven had also created the moving force of the universe. In this order of things, events were an adjunct of human ongoing, and all the non-living things were a fluid manifestation of the universal life process." Gene Weltfish [The Lost Universe].

N a n c y E d J i l l E m m y M i k e: /7 February 1968/Buffalo NY

RIDDLE ME THIS: BIRTH day present

Direction of blue -- and black
as the Vikings knew it ...
    Sound of a shell in the ear
numberless drops in a cyclotron.
    Diagonal from where
Moby Dick was at -- Kontiki tried to
get there the long way around.

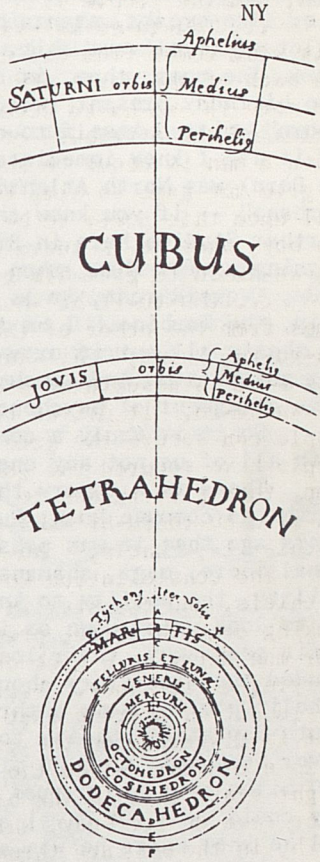
Not a record but it goes in sound,
and is human, being relation.

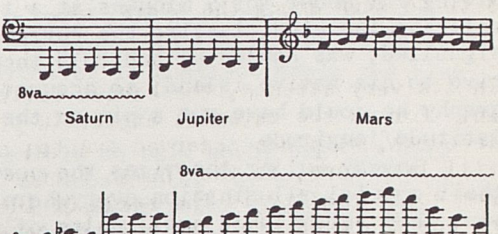
    First contact when the sap runs
in trees and the noon day
sun falling hot on the temples -- seasons
of waterfalls, the pincer'd crab.

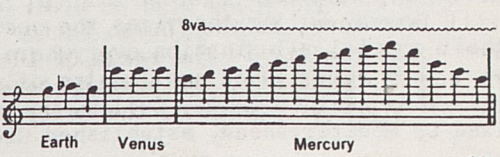
    The commune constantly escaped, we
behind seawalls, grappling holes. And he:
    From Idaho (day the Shoshoneans came
left his mark upon it like a name)
    To Bosporus: wider than space

but slower than time, the newer geography
    inside our turbans
    "The dodo must be shorn."
The Druids knew it, and Eric the Red
    whirled out of it
through deserts of South, bidding West
    as serpent-bird continuing vortex
and over peaceful seas at last.

Not a record but it goes in sound
and is human, being relation.







Mike Aldrich: 14 JAN VIVA 69

Dear Richard --

Your postcard startles me. I know the poem you mean but I have no idea who sent it to you -- probably Ed Kissam or Nancy Blecker his chick. Genesis: 7 Feb is my birthday, we were sitting around the commune one night a wee mite stoned last year and I figured out that it was my birthday and where was my present, heh? Well it hadn't arrived yet, so I started to ask what is it, and everybody sort of riddled. As often when I'm stoned I figure the import of what's happening is GREAT and hustle for a piece of paper and start writing down their clues. Nancy was especially ON that night, and most of the lines are hers in the poem; though Ed Kissam, Jill Bevis, Emmy Cresciman and I all added some fragments. Later I put it into the shape of a poem, i.e. line-breaks, stanza breaks, rearranging some lines, dropping out a lot of irrelevant shit. But Nancy Blecker is the real author.

The poem, then, is a riddle of things they were talking about. The birthday present (which I guessed when the line "the dodo must be shorn" emitted itself to our consciousness, i.e. we were pretty out of it and I knew immediately that what they were talking about was Ed Dorn) was North Atlantic Turbine "the newer geography/inside our turbans" -- if you know the work of Jack Clarke and the Institute of Further Studies here in Bflo, we all take courses from Jack without signing up for them, then you dig the significance of the TUR-TAR-TIR-TOR-, TvowelR root, it is the tornado vortex turn cyclotron wa/ter trip, the Turbine. I am Aquarius so twas particularly relevant. Maybe that's all a trip or a poem is -- follow it to find out what's being gotten at. And somehow without our meaning it to, the poem became a segment of psychecology.

So it is truly a commune poem, a committee poem, com/mitto sent with all of us not any one of us.....

There is a theory that I adapted from Bucky Fuller in the poem, which the commune knew; Fuller said in his New Yorker profile 3-4 years ago that it was possible the Polynesian navigators were the original Seers, magi, shamans, the men in the know, because of one simple ability, the ability to know where they were at; literally; the ability to look up or down or inside their heads and figure out their specific geography, their locus in spacetime. Can't remember if he included the true story about the south sea islander who was taken up in a helicopter by some anthropologists who'd heard of the legendary south-isolato's ability to figure out where they were. This man had never been more than 20 miles from his home island; they took him over 100 miles away and dropped him in the ocean (a line attached though the guy could swim for days) and told him not to signal to be pulled up until he knew where he was at. After several hours of treading water, diving far under for 5 minutes at a time, leaping up in the air, sniffing the wind, tasting the currents, feeling himself ... the guy signalled; was hauled up and told them exactly where he was at relative to his native island; so accurately that had the man known cartography he could have put a pin on the spot within split-seconds of latitude/longitude.

Anyway Fuller theorizes the possibility of the Polynesian taking their special illumination everywhere by seacraft; everywhere they went they established small cults of people who knew where they were at. They went to India, Ceylon, up the Arabian seacoast, up by sea/land to Mediterranean, established Crete, out the gates up the Atlan-

tic, were the Vikings. Fuller ends there. Proto-druids.

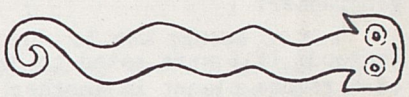
I pick it up and theorize that "Eric the Red/ whirled out of it" [The N.A. Turbine] i.e. came to America. Do you know the history of the migrations of the pre-Sioux Indians. If, as is likely, they followed the same trails in general as the Dakotas later did, then originally the ancient ancestors of the Sioux came from the Great Lakes region, pushed Southwest, split, some West (to Paha Sapa the black hills holy land, found only after crossing the Mako Sika, the Terrifying Lands, the "Bad Lands" for travel) and some further south, some to nomad some to settle down. Anyway, IF as that map from Yale (65?) indicates, the Vikings truly colonized America (Vinland) long before Columbus, then dig the possible accounts of people, Vikings, with like white skins and red beards, who kept going INTO America, not colonizing but pushing until they hit WATER again [great lakes]: knowing where they were at: and knowing that somewhere out there was the Big Water. So, if the crazed idea that the Vikings were aboriginally polynesian magicians can be considered, how about the possibility that white-skinned, red-beared QUETZALCOATL was a viking on his way home -- home to the south seas across the pacific.

through deserts of south (pre-Aztec myths of origins)
bidding West
as serpent-birds (quetzal/coatl)
continuing vortex
and over peaceful seas at last.

So much for what I think is a beautiful poem. Glad you dug it, and it's sharp to figure out that Ed Dorn was involved, though it was Ed Kissam in the byline. ("left his mark upon it like a name" is a day Dorn was here and autographed the Shoshoneans for me.) Bosporus is an in-joke between Ed Kissam and I, extended to include Dorn: the word means OX/FORD.

[Mike Aldrich is a professor of English at the State University of New York at Buffalo].

Charles Hapgood: INTERVIEW



Grossinger: Are there any maps that, in & of themselves, predate Columbus and contain chartings of the Pleistocene New World?

Hapgood: The answer here is no, and you can see why. If any manuscript copies of the maps of America and Antarctica of pre-Columban origin were known, nobody would ever have claimed that Columbus discovered America. People have asked me this question before. The Piri Re'is and Oronteus Finaeus Maps only appeared in the Renaissance, based, quite evidently, on rediscovered ancient source maps, but these were only rediscovered, it seems, after Columbus' first voyage. Their rediscovery may have been in part a result of his voyages, for now there was a new interest in the whole globe, in the New World as well as the Far East, and so many old archives in Constantinople and elsewhere were pawed over anew.

Grossinger: I know that it is impossible to talk about the ultimate source of such maps, but what sort of appearances (or even hints of appearances) does the secret (i.e., non-mainstream) tradition give during the times of ancient history, Medieval history, etc.?

Hapgood: Nordenskiold gives evidence of the existence of the prototypes of the portolan charts in ancient times. These were not secret, however; they were the charts actually used by Greek navigators, inherited from the Phoenicians or Minoans, (perhaps) and ignored by the Academic geographers, such as Strabo and Ptolemy, who had no way of knowing that they were superior to any maps they themselves could draw.

Grossinger: To what degree might we, in general, merely inherit and re-inherit the symbolic shells of others' thinking (i.e., the faces on the one map, suggested Coptic: we have inherited them without their original context, and in the context of a wholly different thing?)

Hapgood: As to the symbols found on some of the Renaissance maps, especially the Piri Re'is Map: It would appear in the case of the Piri Re'is Map at least, that these symbols originally had scientific meanings, which were totally lost. As I suggested in my book, the big snake shown in Antarctica on that map may have been a symbol originally for the latitude of approximately 70° South; similarly the ship off Argentina and the bull in Brazil: these were symbols of constellations. But Piri Re'is thought they reflected the accounts of voyagers. This was the process of degeneration. The Coptic faces on the Ibn ben Zara Map I take as suggestions that the copier, Ibn ben Zara, had before him a Coptic map which he was copying with extreme care. You are right in thinking that the assignment of new uses and interpretations to old things is common in history and archeology. In archeology we have case where a whole succession of peoples have occupied the same structures. We don't know, for example, whether the Incas built their wonderful roads or just inherited them. Stonehenge, which was used by the Druids, was not built by them.

Grossinger: How would you describe the earth, as sort of a cosmic geographer?

Hapgood: If I were asked to describe the earth, to some inhabitant of a remote planet in another galaxy, I would describe its shape, physical consituents, inner structure, and surface features, adding that the surface features are much more transient than most geologists on earth now believe. The reasons are developed in EARTH'S SHIFTING CRUST.

Grossinger: Did map-making originate as a spiritual exercise or in a simply practical context, or both together?

Hapgood: All the maps I studied in my book seem to have been highly utilitarian. They were, it seems, intended for purposes of navigation, and in all probability with practical objectives, such as commerce and war. Even the far inferior maps drawn by the classical geographers, Eratosthenes, Strabo, and Ptolemy, were practical in purpose: governments and private people required them. The first time in history known to us when map-making was subordinated to religious purposes was the time of Cosmas, who, in the 6th Century, said what was needed was a "Christian Geography." He then redrew the ancient maps to put Jerusalem in the center of the world, adopted the idea of the flat earth, put in the Garden of Eden, etc. etc., and in a word, bowlderized the geographical knowledge of the ancients.

Grossinger: How do the "maps of the ancient sea-kings" connect with Sufi, Norse, or Polynesian map-making traditions. What about the map-making of primitive peoples?

Hapgood: The ancient maps I studied in SEA KINGS had no connection whatever with Arab learning, none with the Norse, except that both drew to some extent on the ancient tradition. I do not have complete data on the Polynesians, but there is at least one bit of evidence that some of the ancient geographical knowledge penetrated to them. The fact that the Polynesians could navigate the whole Pacific of course is known. We have some primitive maps made by Eskimo and South Sea Islanders: in all cases the purposes were practical; they were simply guides to navigation. It seems that some Polynesian myths are in fact very specific directions for navigating by the stars, the characters in the myths representing different stars or star groups.

Grossinger: Could I perhaps go back and ask you about your assumptions? What were they, and how did you test them?

Hapgood: I started with the assumption that the Piri Re'is map was a product of ancient science, but of a science more advanced than that of the ancient world that we know, going back at the very least to Phoenicia and Crete. The assumption proved right. I thought that these ancient people might well have had advanced mathematics - at least trigonometry - and have been able to apply it to construct map projections, which even Hipparchus could do. And finally, I assumed that the Phoenicians, the Cretans, or some older people now unknown, might have had instruments equivalent to our compass, and chronometer, as well as astrolabes, etc. The Babylonians had the astrolabe. This assumption also proved out. The accuracy of the maps proves that somebody, sometime had the instruments required for gathering accurate geographical data, as well as knowledge of the use of trigonometry in constructing map projections.

I would like to emphasize the importance of the tables at the back of MAPS OF THE ANCIENT SEA KINGS. The tables are the actual supporting evidence for all the conclusions in the book. And it is just a question of mathematical probability. What is the probability that anyone could get over fifty geographical points in Antarctica correctly located (within a small margin of error) without good instruments for finding latitude and longitude? The distribution of the localities itself proves that they were consciously mapped on a projection with curved meridians - a projection that can be constructed only by the use of spherical trigonometry.

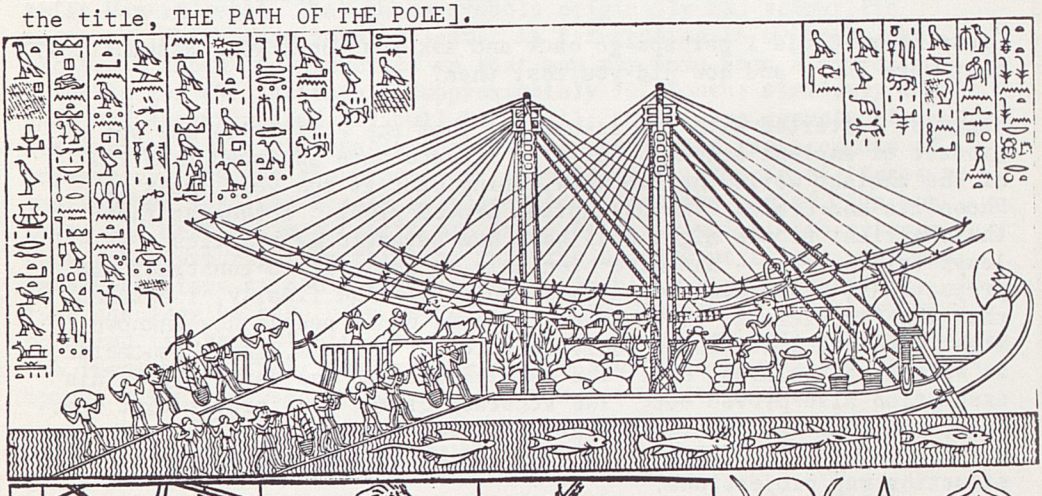
Grossinger: How do you think the original maps looked?

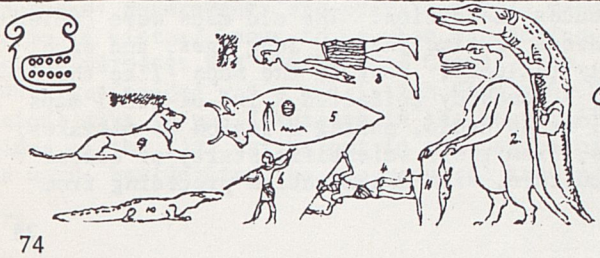
Hapgood: We cannot, of course, restore the maps to their original state. When they were first drawn they were undoubtedly much more accurate than they are now, because it is impossible to copy a map accurately by hand. Even photography often introduces distortion. The old maps were copied again and again, perhaps hundreds of time through long ages, and each time some errors were probably included. Many of the maps (like the Piri Re'is Map) were composites - somebody collected a lot of local maps and put them together as well as he could, making a legion of mistakes.

The decline of the maps, from their scientific start, of course reflects changing levels of culture, with degeneration proceding from

age to age. In other words, Ptolemy in Greek times, owed much to the scientific cartography of Crete and Phoenicia, as it probably came to him through Marinus of Tyre, but he made changes in the maps to suit himself and thereby delapidated and degenerated the maps. In Greek times nobody could find longitude. Ptolemy had to depend on mileages from city to city of the Roman Empire, as reported by travellers. He saw, we are sure, the excellent ancient maps that had correct longitudes, but he did not suspect their accuracy. He had to depend on his own sources.

[Charles H. Hapgood is a professor of Anthropology at Keene State College of the University of New Hampshire. MAPS OF THE ANCIENT SEA KINGS, thoroughly illustrated with maps and geometric projections, is available from Chilton Books, with the subtitle, EVIDENCE OF ADVANCED CIVILIZATION IN THE ICE AGE. The new edition of EARTH'S SHIFTING CRUST will be published next fall by Chilton, under the title, THE PATH OF THE POLE].





Robert Kelly: WHY COLUMBUS DISCOVERED AMERICA

It is good for a people to believe that the nation is only 5 minutes old, with time out for coffee. As Rome went sour, it stressed a hectic search for ever more remote antiquity to be its genesis. Better to believe that yr grandfather came here from Mt Carmel & yr great-grandfather was a gorilla. Dont blame me if L'anse au Meadow turns out to be Waterloo, if the Leif Erikson stamp really shows Judas (whom Brandan found floating on the almost-American ice), come to call the whole thing off. Garcilaso was told by a master of Inca lore that their culturefounders had come only 400 or so years before, or the distance between Jesus & King Arthur, or Columbus & us. There it cuts out. Ten generations & the virtú goes out of us. Happy Columbus Day, & maybe it was really **Capt** John Smith?

Charles Olson: WHAT'S BACK THERE

It begins to come in -- from the far end as well. We are a gross and chronological people, had no underground or previous ground of conduct -- and what was wiped out, on the back end, at the nearest to was what still's called "Phoenician"[like the Greek, and the Jewish -- and not the Egyptian, which had, itself, stayed in the ground, or there, for sights, in Egypt until Napoleon].

How to back the horse into the tail. That was one problem, and until Linear B and now Cyrus Gordon, there was Albright. (Still though I want that peri-Mediterranean syllabary round about all those Far Eastern sea-persons' waters [of, still, those shores, that small pre-Atlantic hyper-Red waters "and bays thereunto appertaining"].

°°°°°°°°°°

Doria and I have this compact: 4 original "Phoenician" survivals only [Not yet any sign of an Herkaliad -- though plenty reasons to think, still, shall be.]. Sanchuniathon [T.L. Webster, Italy, did exist (via Linear B's 1400 & backwards)]. John Malalas.

Etc.

So there is, signs of this awakening. Charles Olson, Gloucester, December 1968.

Charles Doria

The background for this piece is Olson's review of Homer and the Bible (now reprinted in Human Universe). He fairly commissioned me about four years ago to make this translation, especially after Duncan hooked him in a letter with some comments about Sanchuniathon as "my teacher," "taught me all I know" (Duncan this is). After many false starts this is the result.

It is part of a series on the history of mythology. This takes in the Chronicles of Paros (alias Marmor Parium), the Chronicles of John Malalas (which I'm working on at present), and the Dea Syra of Lucian.

The way the thing was supposed to work goes something like this:

1. Sanchuniathon's History - Beginnings and Definitions in and around Phoenicia in the Second Milennium B.C. Re-appearance among the Greeks.

2. Chronicles of Paros - A series of inscriptions found on the island of Paros in the Aegean. Tells the coming of the Phoenicians to Greece (Cadmus, etc.); Greek history, almost year by year down to the death of Socrates, 399 B.C.

3. Malalas' Chronicles - What the Phoenicians were doing all this time (c. 1500 on).

4. Dea Syra - A visit to a famous and ancient Phoenician temple by a Greek dialectician during the Roman Imperium.

Short Commentary

Some Useful Dates etc.

Eusebius - Praeparatio Evangelica, c. 312 - 4 A.D. A treatise for gospelers and revivalists, refuting and discrediting all "pagan" mythologies from Egypt on. Source for Philo's text.

Porphyry - 232/3 - c. 305 A.D. "scholar, philosopher and student of religions." Our extract is apparently taken from his Kata Christianon, written to demonstrate by "historical criticism" the ahistory of Christianity. Either wrote a critique of Philo's translation or re-edited it, to keep it current.

Philo(n) of Byblos - 64 - 161 A.D. Grammarian, polymath, and historian of his native city. Fragments of a history of his, narrating the story of Phoenicia from its beginnings preserved in Eusebius. These fragments are a translation of an earlier poet, Sanchuniathon, who either lived c. 1200 B.C. or about 700 B.C.

Prefaces etc.

the chroniclers: apparently P. has a Phoenician king-list that makes this computation roughly possible - sometime before the fall of Troy (classically dated 1180 B.C.) and near Moses floruit (c. 1300 B.C.)

Semiramis: legendary queen of Nineveh, wife of Ninus, its founder. Sometimes identified with the historical Sammuramat who ruled as regent 810-5 B.C. In reality she is a daughter of Aphrodite.

Sanchuniathon - Hierombalus - Ad(b)ibalus: poet - priest - protector. The traditional relationship of the poet to his city. Cf. Pindar. Or was S. a temple scribe?

I Creation

Mot: ?/from a Hebrew root meaning to fall, decline; possibly from another that means to die, to be corrupt. However it clearly does not mean that here. Astour calls Mot a "cosmogonic notion" for the changes of water and wind, and derives it from Phoenician ma (water). By no

means clumsy or rationalizing as he suggests; S. could hardly have been more explicit about this. Scratch A.'s suggestion that Mot is egg-shaped. Too much snakeism in his dreams.

the zophasemin: semin is Hebrew for skies; zopha Hebraic for watch: as Ovid has it (the persistence)

Os homini sublime dedit caelumque tueri
iussit . . .

gave mankind a face tilted heavenwards and the command watch the sky . . .
(Metamorphoses I, 85 - 6)

a minor matter - but compare Hesoid on Chaos, yawn/gape

°°°°°°°

II The Nomoi: as if from nemo - to divide and there to dwell. Habit and inhabit. Character is from this (ethos/cave). Another title: Families, Trades, and Settlements.

Qol-pa: two roots here: Greek kolpe - fold, lap, bosom, bay (the sinuses) or possibly kolpias - windy, blowing. Could also be transliterated Phoenician qol-piah - voice of blowing. See Astour, p. 115, n. 3.

Baau: corresponding to Greek nyx (night) or that "darkness on the face of the waters." Bohu according to Astour.

Time and Bride: Aeon and Protogonos in the original. I have construed Protogonos as feminine and active - marrying and giving birth for the first time.

Beelsamen: translated in the text. But could be further glossed as Zeus, Juppiter (Diespater - Dayfather).

Memrumos: ?/Ousoös.

Hypsuranius and Ousoös: ?/Cain and Abel. I think Jacob and Esau, but could be mistaken.

the mothers . . . the women: Vico's Giganti.

Agreus and Halieus: translated in text.

Chrysor: goldsmith.

God of the Trades: Diamikion in the original. from ?/Dia Meilichion, the mild or propitios Zeus, or ?/Dia Mychion (from mychos, latin penes/penates - the inner /family or clan/ protectors), Zeus, Protector of of the House. More or less the sense I followed here in line with the rest of the passage where the founding of families is equated with the appropriate trade. Another possibility - as if from emphilokorei (oreo) "to dwell in, haunt, to be fond of dwelling in", usually connected with house or home.

Misor and Sydyc: Semitic bases, translated in the text.

Dioscuri . . . Samothraces: families or guilds of healing dancers. cf. the tarantella

Elioun Altissimus and Beruth: the parents of Dagon (Uranos) and Gea, according to S.

°°°°°°°

III The 3 Generations: really 4. See table.

Sanchuniathon	Phoenician	Hittite	Hesiod
Elioun	Dagon	Alalu	Elieus (epithet of Zeus at Thebes - Most High)
Epigeios/ Autochthon	Baal	Anu	Uranos (Babylonian Oginnu "ring" or IndEur. urine)
Kronos	El	Kumarbi	Kronos (sky)
Demarus	Marduk/ Adonis	"weather -god"	Zeus (deus - day)

iron sickle . . . iron spear: implements of ritual child sacrifice. Abraham and Isaac. Cf. Gea's speech in Hesiod and the castration narrated later in our text.

Eloim: translated in text.

Baetylia: "thunder stones," meteorites possessed of healing power. ?/connected with Betylos.

Mt. Casius: on the Syrtes, the Phoenician Olympus. Cf. the Idaean Dactyls for clans that practice their trade near the gods' palaces.

Peraia: a genetic toponym - "land on the other side," usually separated from the city or district by a river or stream.

Typhoon: a relation of the Hittite Ulikummi.

Sidon: ?/goddess of the Phoenician city of the same name.

"This is the story . . . ancient time": Philo's not inappropriate editorial comment; he is quoting Homer here.

Baaltis: Astarte.

Mouth: not to be confused with Mot; see previous note.

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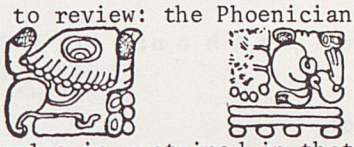
Prefaces by various hands

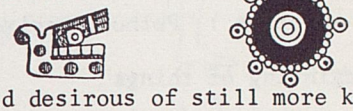
Eusebius, Preparation for the Gospel

The gods, according to the ancients, are representations of our moral nature and, in the words of the oracle, the invention of images for them marked the beginning of their disappearance. But this is not true: in point of fact the gods, having sprung or rather initiating from the Phoenicians and the Egyptians, passed from them to other nations - in particular to the Greeks. That this is true is confirmed by the history it is now time for us to review: the Phoenician "testament."



Porphyry, Against the Christians

The truest history of the Semitic peoples in contained in that Sanchuniathon of Beirut because his most closely agrees with the topology and onomastics of the region. Furthermore he used as raw material the records of Hierombalus, the priest of Ieuo, and dedicated his book to Adibalos, the king of Beirut, since it has been approved by the king and his scholars. These men lived before the Trojan War, almost about the time Moses did, as the Phoenician king-lists show. Sanchuniathon, who fell in love with his subject, collected and wrote his work from the records of the local cities in Phoenicia and from the priestly registers. It is further said he lived during the reign of Semiramis, the Assyrian queen whom the chronicleers tell us flourished either before the time of the Trojan War or else was its contemporary. And this is the History that Philo of Byblos translated into Greek.



Philo of Byblos: Translator's Preface

Sanchuniathon, a man of great learning and desirous of still more knowledge, interested himself in the early history of all peoples, beginning from the creation of the world. Painstakingly he researched the history of Taautos since he knew full well that of all men born under the sun Taautos was the only inventor of letters and record keeping. With him, as most appropriate, he began his History: with him whom the Egyptians call Thoyth, the Alexandrians Thoth, and the Greeks Hermes.

But the most recent of hierologues who reject the real even before they begin to write, treating of one thing in the guise of another, have striven to invent a fabulous mythology. They do not stop at this, but even shape imaginary analogues between this world and the conditions of the cosmos, establishing mysteries and wrapping everything in a cloud of darkness and ignorance so that one cannot easily find out the truth of what in fact did take place. But Sanchuniathon, who happened upon the writings of the Ammoneans, composed secretly in their temples (and naturally not known to all men) set to work to master

them. Having done that, he was able to write and, most importantly, to put away the received myths and their attendant allegories. However, the priests who came later, wishing to restore the mythic character, swathed his History in silence and obscurity, whereupon the mystic sense arose, even among the Greeks, it not having touched them previously.

For the sake of explaining the History itself and its contents, it is necessary to make clear right from the start that the ancient barbarians, principally the Phoenicians and the Egyptians (from whom the rest of the world received their traditions), worshipped as gods whatever contributed to the health and well-being of communal life. In particular it was the Phoenicians' habit to affix their kings and whoever among them divinely conspicuous to the elements of the cosmos, but they knew no other gods than those of the natural world, sun, moon, and the other wandering stars (all that has grown out of connexion with them), so that some of their gods are mortal and others are not.

S a n c h u n i a t h o n: THE PHOENICIAN HISTORY
[translated by Charles Doria]

I Creation

The all father was Air , dark blowing and clouding

more rather a sharp blast of wind and cloud : but gap

swirling erebud throughout that first long aeon ,

boundless and endless

but then Air, love struck of his own beginnings

mated with them,

their marriage : Pothos, Desire

the beginning of things

though he did not know it yet,

and the child of that union Mot

whom some call mud

though others mould , and from her

the spores of creation the genetices of the world,

then there were others :

the zoas not possessed of sense,

from them the zophasemin who were ,

and their shape egg like :

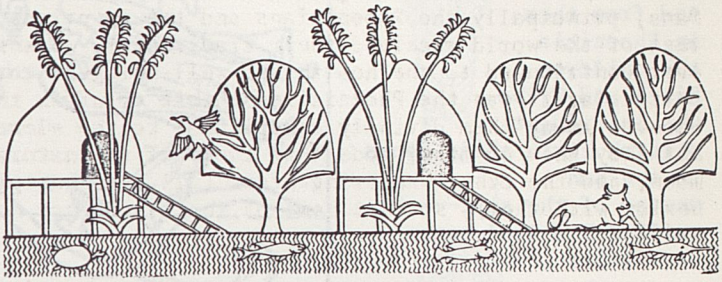
and Mot burst forth into light

and the sun the moon the stars and the other huge constellations

a n d w h e n s h e h a d b u r s t f o r t h i n t o l i g h t

' s splendour

strength
of
her
heat
struck
land
and
sea
,



and it clouded

it blew

it rained down

great rain

and they stood apart

each moved from their place

from the strength of that heat

and flew up once again in Air

meeting headlong

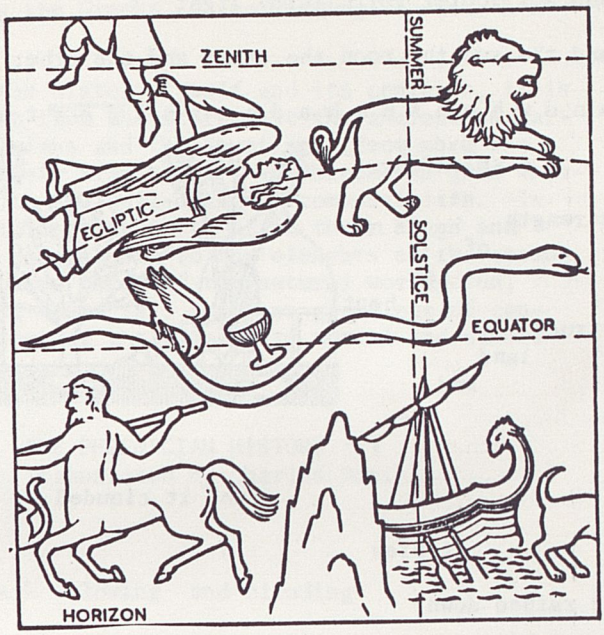
crushing together

and at that noise

the zophasemin awake
and were frightened
and began to move out on the land and sea male and female

II The Nomoi

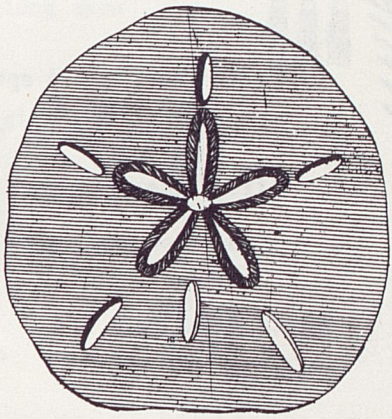
From the wind that blows from the gulf
from Qol-pias and Baau his wife
the first of mortals
Time and Bride:
and Time discovered
the fruits of trees



And from them
in Phoenicia
the children
Birth and Tribe
who in drought
stretch forth their hands
to the sun
master of the sky:
calling him Baal-samen
Day Father

And from them
Light, Fire, Flame:
from the rubbing of sticks
and teaching the use of it

And from them
the Titans
and the mountains they name
corresponded in size:
Cassios, Libanos, Antilibanos, Brathys

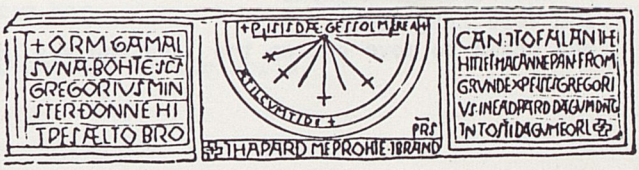


And from them
Memrumos and Hypsuranios
named for the mothers:
as women then
fucked without shame
any they met

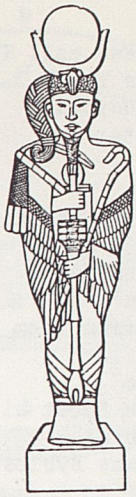
And Hypsuranios
lived in Tyre
building huts
of reed and papyrus strands

And he quarreled with Ousoös
his brother: who dressed
in the skins of the beasts
he caught and skinned

Then it rained in Tyre:
the wind drove the trees
against each other
and made them burn
and so the place
was stripped of wood



Though Ousoös
catching a tree
lopped the branches off
and paddled out to sea:
the first

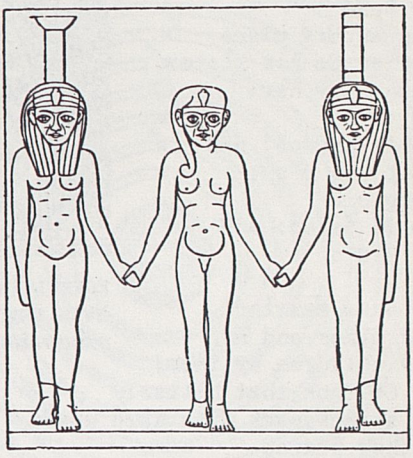


And dedicating two pillars
to Wind and Fire:
poured the blood of the beasts
he caught over them

And from their children
Agreus and Halieus
man of the wilds
man of the seas:
the hunting and fishing clans

And from them
the workers of iron
Chrysor:
singer enchanter speaker diviner
Hephaistos:
fashioner of the hook, bait, line and raft
whom they worshipped
when dead:
god of the trades and clans
and his brothers
built walls of brick

And from them
Tiller and Stalker
and Stalker is
the great god of Byblos:
in Phoenicia his statue
and shrine is still
drawn on an oxcart:
and they built houses
with basements and courtyards
and rooms



And from them
Farmers and Hunters
called Settlers and Nomads

And their children
Upright and Wise
built villages
and herded sheep

And their children
Misor and Sydyc
discovered salt

And from Misor
Taautos
inventor of the alphabet:

whom the Egyptians call Thoyth
the Alexandrians Thoth
and the Greeks Hermes
three times master

And from Sydyc
the Dioskouroi or Cabeiroi or Corybantes or Samothraces:
whose children
the first to pick herbs
cured snake bite
weaving charms from them

And in that time
lived Elioun the 'most high'
and his lady, Beruth:
and their home was Byblos

III The 3 Generations

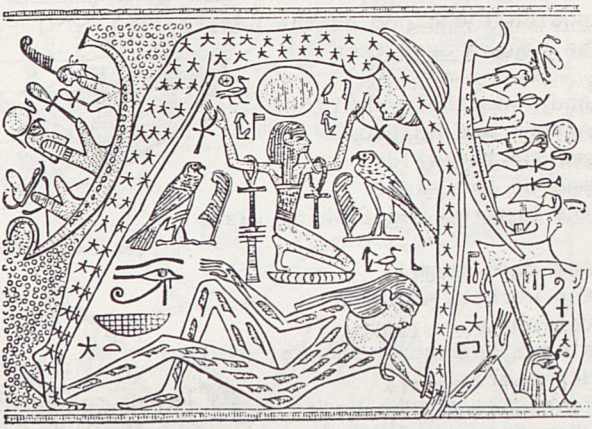
And Autochthon, Landsman
they called B a a l
from the excellence
of his beauty
he names the upper world

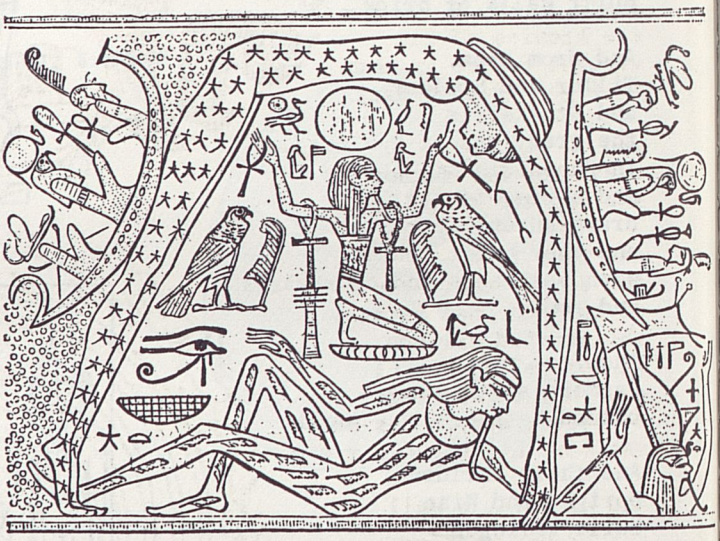
And Ge
his sister
naming the lower
the Earth

And Elioun died
meeting beasts
and became a god:
his children poured out
and sacrificed to him
according to the rites

And Baal
king in his place
married Ge his sister
and had by her:
E l
who is Kronos: and
B e t y l o s :
D a g o n
who is Siton: and
A t l a s

And Baal married
many times and had
many children by them:
but Ge took that bitterly
and struck back with hard words
so they parted

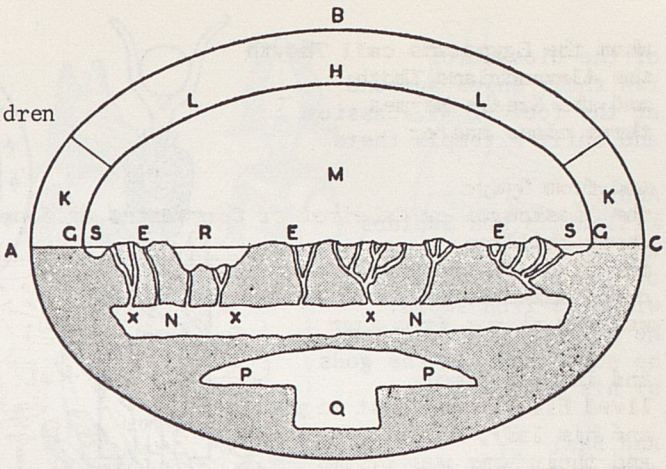




EGYPTIAN GODDESS OF THE HEAVENS, NUT, ARCHING HER STARRY BODY OVER THE EARTH. THE SHIP OF THE SUN IS SHOWN BOTH AT THE BEGINNING AND END OF ITS TRIP OVER HER BACK.

And Baal
came back
and filled her with children
by force and went away
when it was his mood
destroying them
when he could

And many times
Ge drove him back
gathering friends
about her
And El and Taautos
his secretary
protected her
and saved her honor



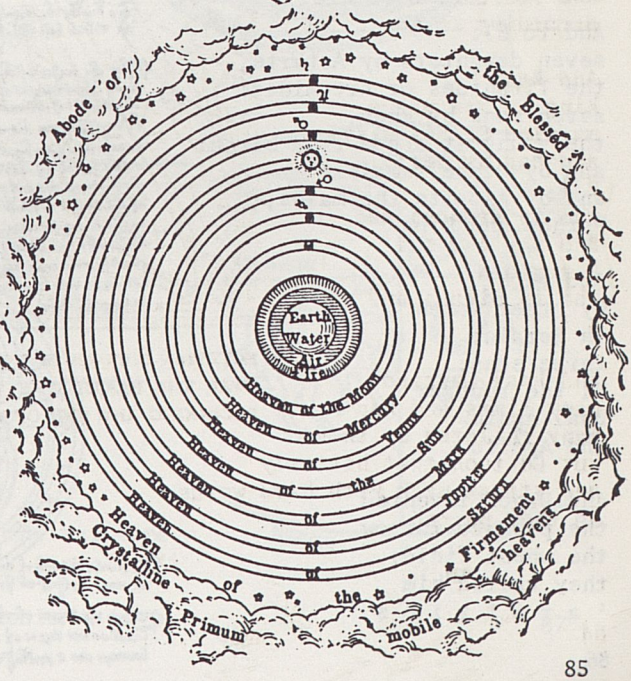
THE UNIVERSE ACCORDING TO THE WRITERS OF THE OLD TESTAMENT

And the children of El:
P e r s e p h o n e
that died a virgin:
A t h e n e :
who with Taautos
told him to forge
the iron sickle
and the iron spear

And Taautos spoke
magic to the E l o i m
the kronies of El:
wrought desire in them
to fight against Baal

and :
overthrew his father
seizing the kingship

And they took
the lovely concubine
of Baal in that battle:
she carried his son
in her belly, but El
gave her in marriage
to Dagon, and in his house
she bore him D e m a r o u s



And El built a wall
around his house:
Byblos in Phoenicia,
the first city

He grew suspicious
of his brother Atlas
and threw him in a pit:
he listened to Taautos
and buried him

And then the children

of the Dioskouroi
ran their ships aground
at the foot of Mt. Cassios
and built a temple there

And El
killed his son Sadidos
and cut off the head
of one of his daughters
with the iron sword:
he had no trust in them
he surprised all the gods
by his mindedness

And Baal
sent A s t a r t e
and her two sisters
Rhea, Dione
to kill El
by their cunning:
but he caught them
though his sisters
and married them

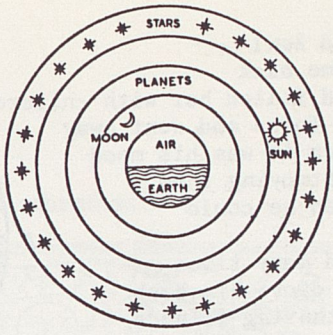
And when Baal heard
he sent H e i m a r m e n e
and H o r a to make war:
but El assimilated them
he kept them by his side

Then Baal created
the B a e t y l i a
thinking to put life
into stones

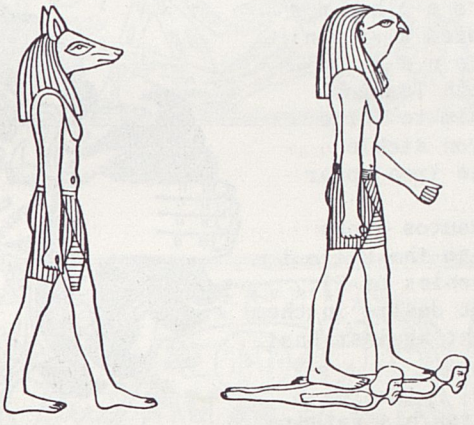
And to El:
seven daughters by Astarte,
the Titanides or Artemides:
seven sons by Rhea,
the youngest a god from birth:
and by Dione females:
and by Astarte the males,
Pothos and Eros

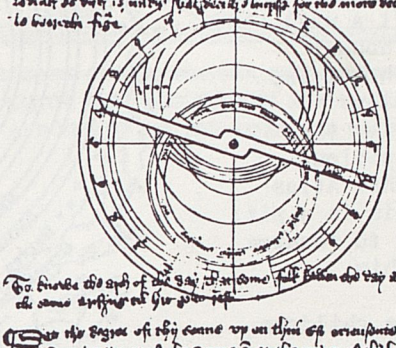
And to El
by other women
in Peraia:
three sons,
El the Younger
Baal Again
and Apollo

And Dagon invented
the plow to furrow
the wheat field:
they called him
' a r o t r i o s '



UNIVERSE OF LEUCIPPUS





'the plowman'

And Sydyc
married among
the Titanides:
and Asclepios
his child

Of their generation
Pontos and Typhoon:
and Nereus
a son of Baal
was father to Pontos

And from Pontos
S i d o n her voice
so lovely in song
there came music forth

And from Pontos
P o s i d o n
lord of the sea

And in the 32nd year
of his kingship
in an inland spot
beside springs and brooks
El caught his father
and wrenched out the genitals
with his own hands:
and Baal became god there
as breath left him
his blood trickling
drop by drop from the wound
into those springs and brooks,
today I could show you the spot

This is the story of Baal and all his race

The first and golden age of men

"who speak with clear articulate voice"

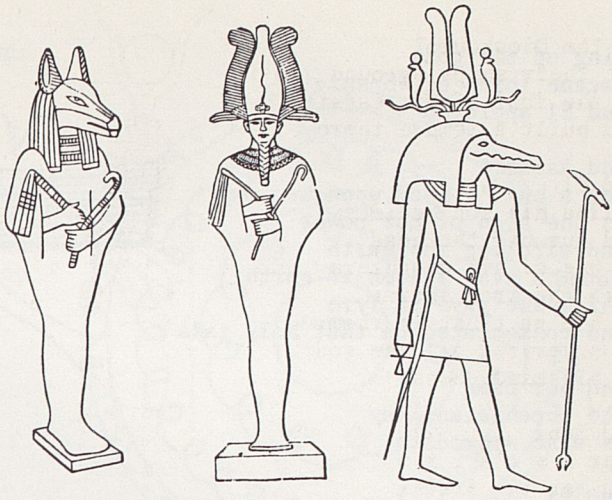
---

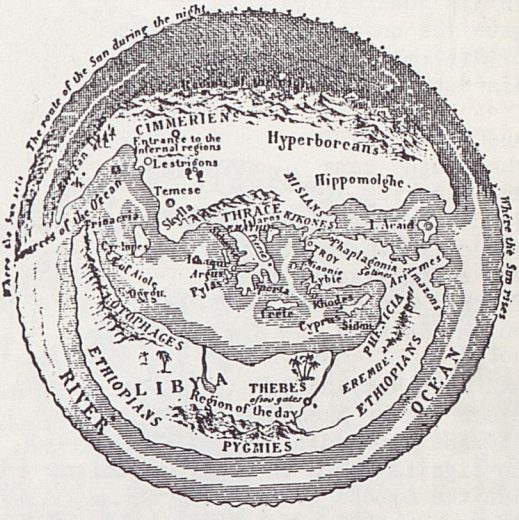
as the poets write

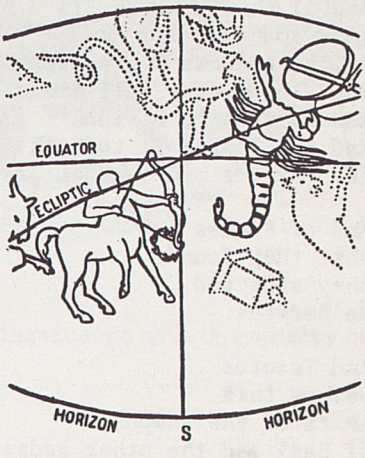
---

that blessed happiness of an ancient time

Astarte, the greatest
of goddesses, and Demarous Adonis







king of the gods
became lords of Phoenicia
and El approved

And Astarte
set a bull's head upon her own
as the sign of her power
and circling the earth
found a star fallen to earth
which she gave to Tyre
and consecrated on that holy isle

And her name
the Phoenicians say
is also Aphrodite

And El
in his journeyings
gave the queenship
of Attica to Athene
his daughter

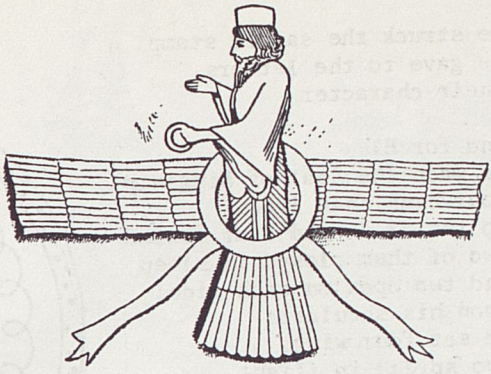
And when
the plague came
and death:
El offered his father Baal
his only son burnt whole
and circumcised himself
forcing the Eloim
to do the same

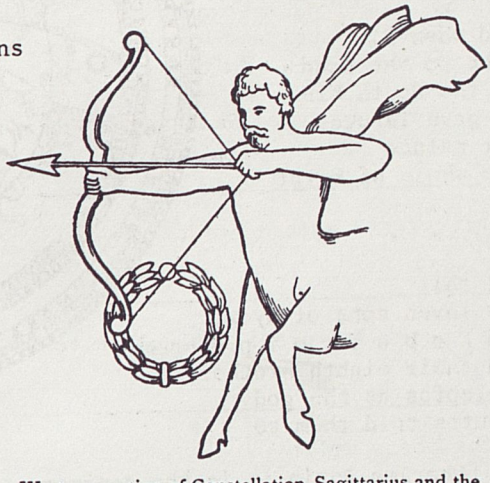
And when his son
M o u t h by Rhea died
he made him god:
to signify death to the Phoenicians
but the Greeks call him
T h a n a t o s P l u t o

And El
gave his city Byblos
to the goddess B a a l t i s
whom the Greeks call Dione
and Berytos to Posidon
and the Kabeiroi: to both
the Farmers and the Sailors

And of Pontos
what they found:
they made god
in Berytos

And Taautos
before this
imitated the shapes
of Baal and the other gods:
of El and Dagon:
of all those who were with Baal

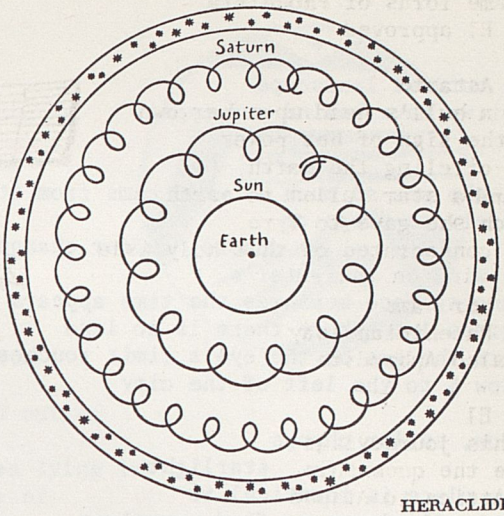




Western portion of Constellation Sagittarius and the Constellation Corona Australis.

he struck the sacred stamp:
he gave to the letters
their character

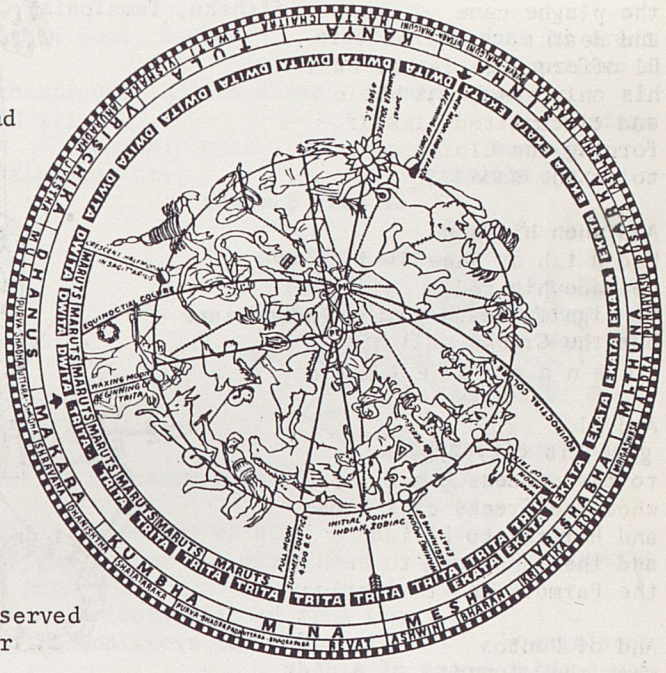
And for El
he made the Seal of Kingship
four eyes that look
to the front and four behind
two of them closed in sleep
and two open on each side:
upon his shoulders
he set four wings
two spread in flight
two folded in rest
and the Seal reads,
El sees and sleeps
sleeps and sees
flies at rest
rests in flight



HERACLIDES

And to each
of the other gods
he gave two wings
since they fly with El

And to El
he gave two more wings
and put them on his head
one for the quality
of his mindedness
and the other
for swiftness
of his thought



And when El
came to the land
of the South Wind
he gave Taautos
for palace
the whole of Egypt

. . .

All this
the seven sons of Sydyc
the K a b e i r o i preserved
and their eighth brother
Asclepios as the god
Taautos told them to

[Charles Doria is in the department of Classics at the University of Texas at Austin].

the natural landscape
what we have behind our eyes

not the sea so much as what came from it
coazervate drops of
adhere, suffer change
the wind on the water's
changing face measures the time appears
a green land where there is no land
where the sun at the eye's limit touches
below & to the left of the city

(grow, suffer change
starlight
this place is identical to
isos, all places we find ourselves
moving to and like Odysseus finding
(and) isos all such places
(Ithaka, Tamalpais), once come

there is each way we turn
a calling
away from
again
okeanos
a bloody affinity
of salt & water
alchemy of ocean
the soft sea
southward
the mountains rising 8000 feet
had snow

topos is kosmos

coazervate drops of

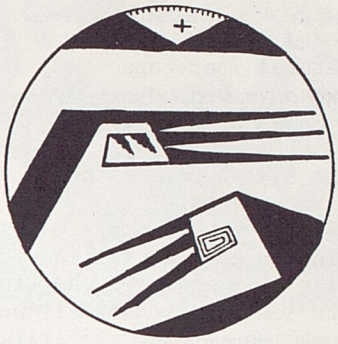
OKEANOS 2

contingency . Pacific under the eye . cow shit on the slopes
jaw & thigh bones of a deer .

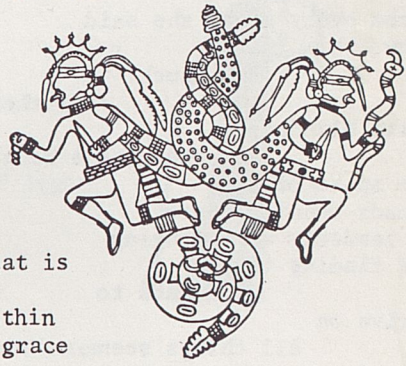
phototaxis . we go where the light is
who have been before . this land lacking

in adversity . & take pictures of it all
wch is also phototactic, to touch the light

white skin, purple shirt, the effluence of
all of it
contingent
on Love.



Baphomet, stellar abomination
horror of the eastern sky
Capella
Baphomet, glory of Babylon
cult of the Cabiri, a maced fist
above the city
Set (who
later became Orion) Shakti, who
looks towards Pluto
to be led into
filth, βεδεωμαι, a
stinking wind out of
the east,
Baphomet, filth, whores lying in
their own vomit fart in the face of
Baphomet! Capella! cult of
Cretans, later became
stars thru wch Arthur, thru the Logres, wandered
lost & starry-eye'd,
Thoth's boat, Bapho-
met,
dyed red, violet, chartreuse, colors whose
radiant spectra is beyond all
earthly eyes
Baphomet, queen of celestial harlots,
consort of
Kings, Christ's true love.

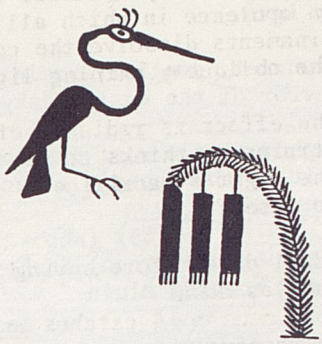


OKEANOS 3

map of the places we have travell'd
an imaginary glyph marks the spot
heart that is
the bow
peri-cardium, coil'd splendour within
serpent love, to take delight in our own grace
give the love we thot to get
a tooth rescued from time
offer'd as plastic relic in a city
mock protein]
fills itself on memory of
such light as saved the people from despair

a darken'd room, & laid in stores of women, images against
that time, stored up light surrounds Los Angeles
secret heart of the secret Nation

OKEANOS 4



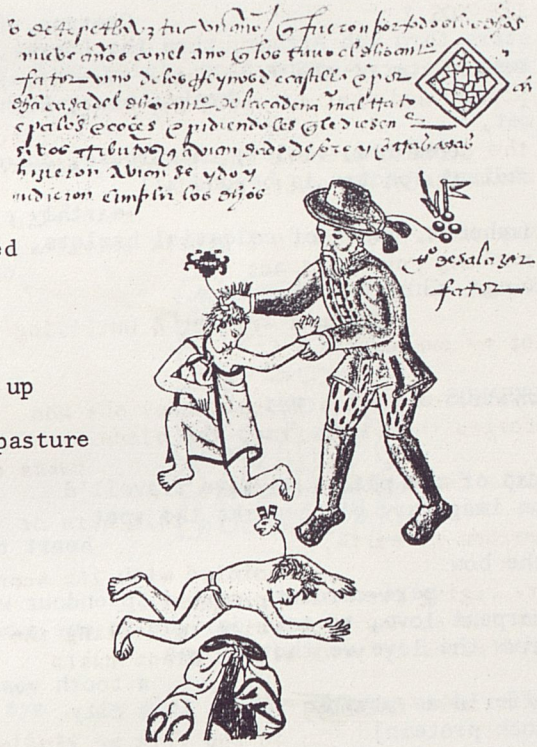
trees & birds. mostly trees. women growing
in the Oakland hills

how many times the door is one thru which we
have already pass'd
cut diamonds in the
paysage

driftwood & jade. isos. the beach picked
clean of both
zeugma, the word yokes us to them

Cupressus macrocarpa,
Cupressus goveniana
the Monterey Fort where young men learn the laser speech of dolfins
above the bay, we watched them enter the ocean and come
out again

OKEANOS 5



fog: let there be
a veiling of this shrine,
city
full moon 3 days past
some
drink & attain thereby
the grade of Magus of the Red Seed

from every such, she said
now, this juice
!suck!
:eat them up
with blindness,
the mind's back pasture
he spoke of
roads running there
& tenderly with longing
of finding them
roads to
drive on
all things seen
named

a street
dark women
who move easily thru the fog
ladies of the rent veil

OKEANOS 6

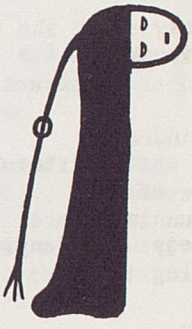
insights of eyes closed in the dark
an opulence in which all
ornaments dissolve the contours of
the obliquely shining light

the effect is radiant before the eye
strains or thinks to see
the light's sacrifice
to itself

[dull days before spring before the war
tumbles down
& catches us up in a turbulence]
refractive,
cold brilliance of cold gold melting
its way down a brass lattice-
work

OKEANOS 7

separation of the fine white from the coarse white
powder add what is wet & dry & red
(stone in
the center) prepare the furnace, separate the yellow sun
from the milky-white matrix,
this also add
touch of your hands & gentle curvature of buttocks
nothing you do is not
equal to
continual veiling & unveiling
of my own eyes



mysteries of the Weiberbunde: she who
forges the blade frees the blade
cakes of light
like the mouths of rivers
this burn or
return to earth,
annointed with its scent
my raging even made pregnant
in the shadow your voice reflecting the radiance
reflected by your silver dress casts
to forge is to make
& to make falsely)
in the fire we kindle or
is kindled in us
no difference, sectors of
the transfix'd circle,
a forged pie or poem
the house stands
because of
telos
& for

OKEANOS 8

sun's pause, earth reposing in
a starry metaphor for the obvious we take so long to
stumble on

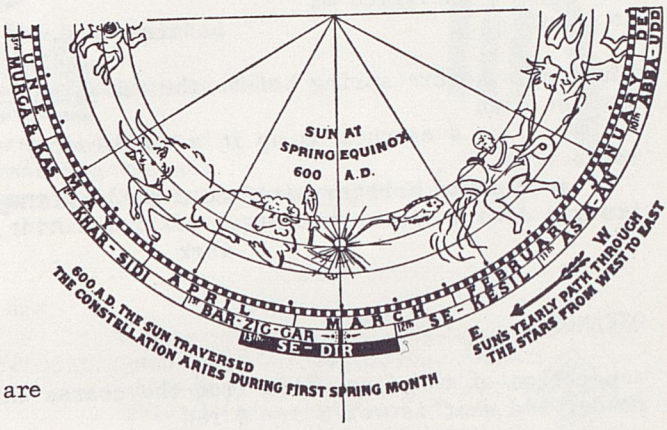
hydrous carbonate of copper,
malachite color of scorpions under black-light

(fluorescent Arachnids

the unseen moon pulls at

hag-peck'd ocean
she said, no one owns

Timotha,
thigh deep in
tide.



OKEANOS 9

there have been & still are
instances
[& witnesses to them]
of the hand of God extending itself down thru the firmament
& touching the genetic continuity of his flesh
faith of birds,

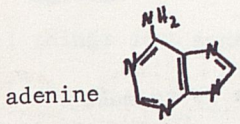
light of the upper air

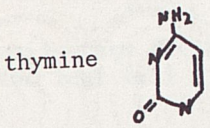
H a r v e y B i a l y: THE MOLECULAR BASIS OF CHANGE,
DNA & THE I CHING)

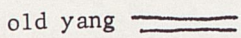
codes of transformation, potential

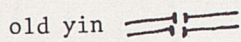
potent earth of the implied form,
as tho' the west knew the spiral
shape of the cell-f

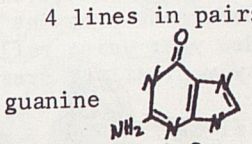
& the east the language of
congruence 1: 4 purine & pyrimidine
bases, in pairs
4 lines in pairs as
letters

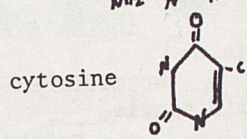


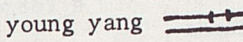


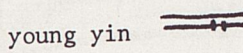












congruence 2: combine in linear arrays of 3 to form the words, there are then

congruence 3: 64 in each

(tho the genetic code as we know it is "degenerate so-calld, that is the 3 letter words spel only 22 discrete objects, some of the words function as punctuation, others are the ?'s)

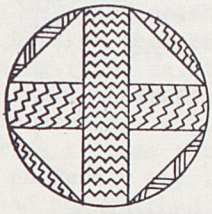
congruence 4: the syntax, order of the elements, yields the meaning.

(the DNA duplex is read from one end only as a hexagram is read from bottom to top)

"in the Book of Changes are included the forms and the scope of everything in the heaven and on the earth" (I Ching, 315)

& form, as D'arcy Thompson points out, is a diagram of force

wch is change is



congruence 5: any nucleotide base can be converted to any of the others either by a direct molecular transformation or by virtue of position,

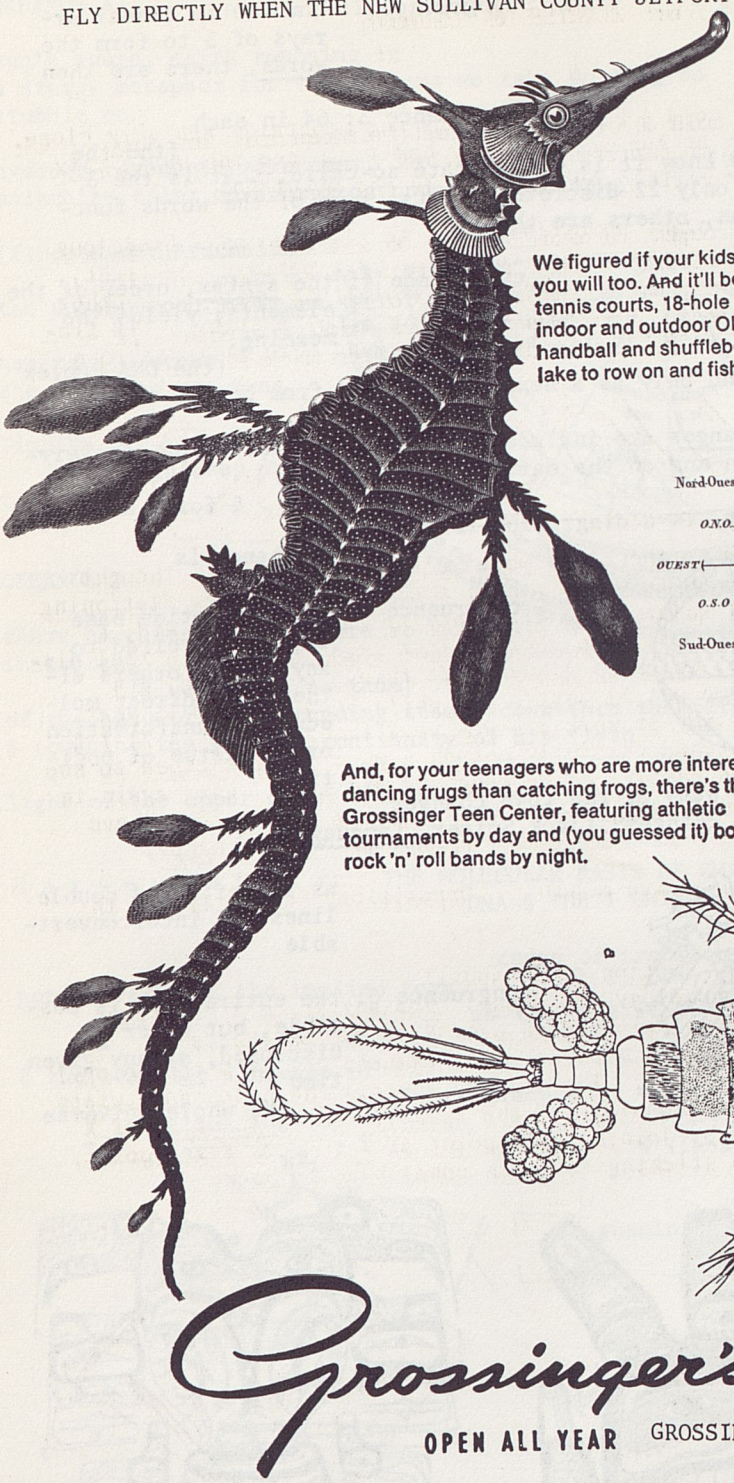
"it is not that the name of the town changes but that the syntax changes" (Jack Spicer, Language)

as all of the 4 double lines are interconvertable

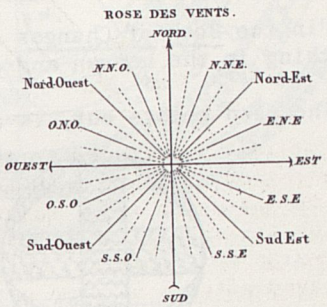
congruence 6: the entire book is possible, but never is disclosed, at any given time

the whole universe sublimed to each instant's own signature.

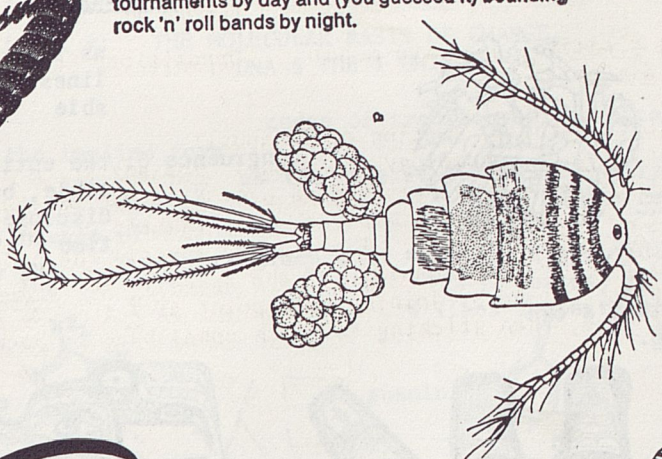
FLY DIRECTLY WHEN THE NEW SULLIVAN COUNTY JETPORT OPENS!



We figured if your kids have a fulfilling vacation, you will too. And it'll be easy with our 8 all-weather tennis courts, 18-hole championship golf course, indoor and outdoor Olympic pools, 2 health clubs, handball and shuffleboard courts, and a mile-long lake to row on and fish in.



And, for your teenagers who are more interested in dancing frugs than catching frogs, there's the Grossinger Teen Center, featuring athletic tournaments by day and (you guessed it) bouncing rock 'n' roll bands by night.



Grossinger's

OPEN ALL YEAR GROSSINGER, NEW YORK 12734

Greg Dropkin: 2 NOTES ON TOPOLOGY

1

Lovely days, it is cold & bright blue and the mountains are very close. I woke this morning at sunrise, from my bed I can see the whole city spread in the river valley, and the sun on the mountains.

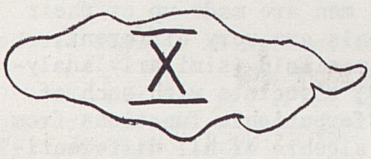
Earlier this week brought an oscilloscope to class to make Lissojous figures, plotting two sine waves (the basic wave pattern, of light, sound, circular motion, water waves, the viola) one vertically other horizontally gives (e.g., if frequencies are same) a circle. If frequencies differ slightly, circle slowly flattens thru ellipses to a line back to circle.

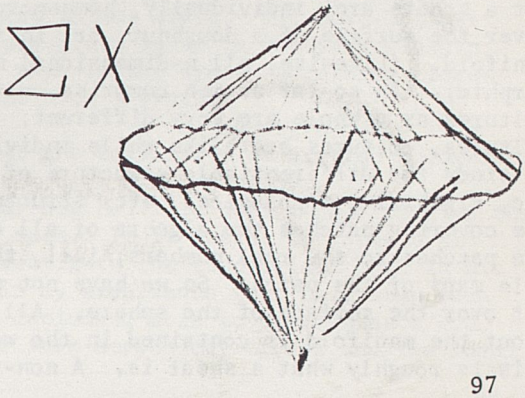
Yesterday I recalled to the class what we'd seen, or what I thought we'd seen, & asked them to write (then) about why this slow flattening & unflattening (slow relative to frequency of waves). They did, & then talked well about it, then rewrote last night & we had a real discussion this morning, which as always left things unresolved, & 4 stayed after & it came out 1) that a boy who's been silent all year understood perfectly why it worked & was very interested plus 2) I & one other had not watched carefully enough & what I had claimed to see couldn't be explained easily; so we went and did it all over again in the right spirit. There are moments when finding that my eyes have been shut (or glazed by preconception) sweeps me clear & happy.

What does positive, negative mean? Oppositions become linked in the next dimension.

Bundles (Levi-Strauss, section on Oedipus):

Bundles give a cohomology of spaces: For any space $\overline{X}$ construct the algebra of all (complex) bundles over $\overline{X}$; a map of spaces $K(\overline{X}) \longrightarrow \overline{Y}$ gives an algebra map backwards (that's why it's cohomology) in cohomology $K(\overline{X}) \longleftarrow K(\overline{Y})$. The algebra reveals the holes and twists in the space [= the (co)homology of the space]. The suspension of $\overline{X}$ is a new space formed by joining each point of $\overline{X}$ to some fixed point, yielding a cone, then sticking two such cones back to back.





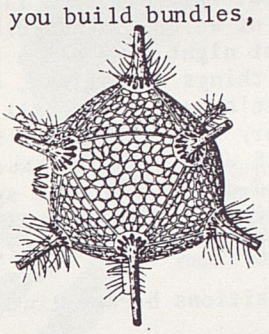
If $\underline{X} = S'$, a circle (= 1-dimensional sphere), then ΣX is (topologically anyway) a 2-sphere S^2. $\Sigma S^n = S^{n+1}$. If $\underline{X}$ is any space, then $K(\underline{X}) \cong K(\Sigma\Sigma X)$.

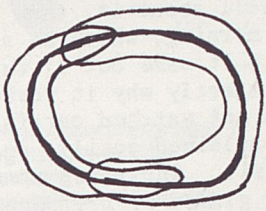
[suspend twice]

This periodicity of the K's is a deep fact dependant on using complex bundles. For real bundles (the real numbers rather than the complex numbers) we need the eight-fold suspension, not the double suspension. This relates to the stable homotopy.

Groups (maps are homotopic if one can be deformed into another; homotopy classes of maps can be added, giving a group) of the space of rigid automorphisms of real spaces and complex spaces.

What is a bundle?; Eg., the Moebius strip is a bundle over the circle, because there is a natural projection of the strip onto the circle, and the circle can be covered by open sets such that the portion of the Moebius strip lying over each open cover is itself homeomorphic to a strip (just a plain strip, not a twisted one). Thus bundles are locally trivial but twist around globally. The more twisted the base over which you build bundles, the more bundles can be built.





2

Topology:

1) Local-global. We are made out of atoms. We are also made out of our memories. Out of tissues, cells, friendships, history. Then we make up families, a race, other memories. Think of the surface of a sphere, covered by overlapping patches. Now cover it, simultaneously, by another family of patches. Now imagine all possible families of covering patches. Some patches will be tiny, some solid  , others will have holes  , some will have many holes. Any two small patches will be homeomorphic (in the rubber sense) if they have the same number of holes. The patches which cover a sphere are, individually, homeomorphic to those patches which cover the surface of a doughnut, or, in fact, of any 2-dimensional manifold. (Likewise, all n-dimensional manifolds are locally isomorphic). In so far as men comprise cultures, men are alike but the cultures as a whole are very different. As men are made up of their cultures, cultures are alike while individuals are very different. To study the differentiable structure of a manifold (similarly analytic, algebraic, topological, etc. structure, associate with each of the covering patches the algebra of all differentiable functions from the patches to the real numbers, i.e., the algebra of all differentiable maps of the patch. So we have not patches, but algebras spread out over the surface of the sphere. All possible global information about the manifold is contained in the way these algebras fit together. This is roughly what a sheaf is. A non-trivial global object con-

structed out of many families of trivial objects, not like bricks, but many families interlocking & overlapping. This approach also works in number theory, surprisingly. To study possible solutions of polynomial equations in integers, study their solutions in finite fields which arise from the prime numbers. This is the local question. Global solutions come from local solutions strung together by global symmetry laws.

2) Congruence. This is not an inherently geometric idea, but underlies everything in math. Mappings arise as transformations which preserve structure. One exciting example of this, in topology, is to make a space, actually a topological group, out of the group of all automorphisms of some structural space, then study the topology of the space. E.g., consider 3-dimensional space with structure given by length. The possible structure preserving transformations form a group $\theta(3)$ consisting of all reflections and rotations. As a topological space, $\theta(3)$ has two separate components: the rotation, and the reflection. They are separate in that rotations can be close to one another, as can reflections, but a rotation can't be close to a reflection. This is a 3-dimensional version of the fact that nonzero real numbers split into two separate pieces --- positive and negative. There is a deeper way in which 2 is involved in the structure of $\theta(3)$ [and thus of the space we live in], though this too comes back to the positive and negative numbers. Namely, the fundamental group of $\theta(3)$ -- i.e., the group of homotopy classes of maps from the circle to $\theta(3)$ --, which measures the 1-dimensional holes and twists in $\theta(3)$, has exactly two elements +1, -1. This means $\theta(3)$ has no holes, but a twist of order two. The fundamental group, π_1, is the first of a sequence of homotopy groups; π_n is the group of homotopy classes of maps from the n-sphere to your space [here $\theta(3)$]. For any fixed n, the n'th homotopy groups of $\theta(3)$, $\theta(4)$, $\theta(5)$,... stabilize eventually. A really deep fact is that the stable value of π_n is equal to the stable value of π_{n+8}. If we studied complex spaces rather than real ones (the complex numbers rather than the real numbers), then $\pi_n = \pi_{n+2}$ for the stable homotopy groups of the structure preserving maps of complex spaces.

It's harder to say what the metaphor is in this stuff (algebraic topology). It makes me conscious of the fullness and thickness of space, and the ways to twist around in it. As do photos of the earth from the moon.

3) Association. The abstract concept of a topology gives us the freedom to decide for ourselves when things are close to each other. An obvious idea which I'll bet is being tried is to make a topological space out of the set of memories in the brain in order to find out when, or how, images are associated in our minds. Or, Levi-Strauss is thinking of a culture as a topological space in studying kinship laws. Who are we close to?, and what is the syntax governing closeness. A topology is the giving of such a syntax.

[Greg Dropkin is a graduate student in mathematics at the University of British Columbia.]

ooooo "No one has yet tried to say how Melville does manage to give the flukes of the whale immediacy as such. It is easier to isolate his skill over technology than to investigate the topological both in his soul and in his writing, but it is my experience that only some such sense of form as the topological includes, able to discriminate and get in between the vague types of form morphology offers and the ideal

structures of geometry proper, explains Melville's unique ability to reveal the very large (such a thing as his whale, or himself on whiteness, or Ahab's monomania) by the small.

The new world of atomism offered a metrical means as well as a topos different from the discrete. Congruence, which there, in mathematicians' hands, lifted everything forward after Lobatschewsky (via Cayley especially, another contemporary of Melville, and Felix Klein) makes much sense, as no other meter does, to account for Melville's prose. Congruence was spatial intuition to Kant, and if I am right that Melville did possess its powers, he had them by his birth, from his time of the world, locally America. As it developed in his century, congruence, which had been the measure of the space a solid fills in any two of its positions, became a point-by-point mapping power of such flexibility that anything which stays the same, no matter where it goes and into whatever varying conditions (it can suffer deformation), it can be followed, and, if it is art, led, including, what is so important to prose, such physical quantities as velocity, force and field strength." Charles Olson in Equal, That Is, To The Real Itself (The Human Universe).

Charles Olson: THE ANIMATE VERSUS THE MECHANICAL, AND THOUGHT

Gravity, in fact, but pre- or post- mechanics. That is, not effect (Newtonian) nor proof (Recent) but experiential: phenomenological, perceptional, actionable.

Or the fact that plants, by starch (statoliths), turgor and a geotropism as much a part of a plant's sensibleness as its heliotropism, has at the tips of its leaves and the ends of its roots "standing-growing-responding" actions (its hinges, of leaves to stem, as well, so far as turgor goes, and has, if and as 'weight,' gravitational 'history.'

In fact 'history,' as, in that sense, difference from "astronomy": that event (in Merleau-Ponty's sense - narrative) is a perceptual - that wld be primordial - element of experience so much so that it 'carries' throughout the system - the system being 'Creation' - as 'element' (or 'weight') as profound as any mechanical measurable or demonstrable 'truth;' that event in short - or here decisively 'history' - as must - is a condition of organism. (Above 'Animate').

And that any present (Present) ('thought' ('Thought') requires the insistence of these tips and ends (as, earlier, Cosmology - Mythology has led me - Dogtown, and Hesiod, Maximus Poems IV V VI - to believe ends and boundaries (Hermes or all nomoi: 'laws' against cannibalism --- thievery) are 'space-activities' in, Creation; now I am proposing an even more fundamental 'tropism:' that one cannot 'think' even - because one cannot 'act' even - without such limits as the 'lines' of being, both in the plant and the animal meaning, 'animate.' That all most Recent thinking has had this 'exaggeration' of kinetic or mechanical, 'measure'

Which in itself is 'astronomical' (Clio, by inverse square of the distance) instead of Uranian: distance by inverse square of the event.

The 'event' being now most decisively gravity. The great unadmitted limit - actually Hermetism or alchemism, thus Ouranianism - of experience.

Even to the science or 'time' of same: that anything inexperienced in the weight or matter of the organism is not transacted - traversed - thus 'carried,' or 'known' in a decisive, and theological - or 'moral' - ethical (in the meaning ethos, or cave-of-being) sense.

So I am back to animate, plant-or-animal - 'perception' sense --- of the freshness in time of the narrative or history as a tone or mode & so activeness of, for a human being, 'Creation': that there is no 'knowledge' of the crucial (axial - tropistic) sense of anything, including the "Universe" or the "Self," except by this 'Time' phenomenon of freshness which Animateness, in and by itself, as initial of experience. And so - anti-Newton, and anti-Einstein - of History. (For which instantaneously read 'narrative' (as its only means - Memory), or Event.

We are here and hereby under image (the other only of the two tracks of form - gestalt, if you like - morphology equally, if you want (to, that is, and in pair to, genetic). Image. Imagination. (Thought, consciousness and sense perception - chiefly itself, and dominantly optical - telescopic --- photic --- are secondary phenomenon. Or, activity. The fundamental essential and experiential - active (what I am here insisting is the unbelievably left-out but unbelievably powerful and sole human 'power,' viz (quote):

of tip and end
of gravity - (geotropism)
/ God is the aboriginal instance of this
creativity, and is therefore the aboriginal condition which
qualifies its action/

If I right then and there obviate any Modern (or boring Kerkegaard Fear of God Mindedness) by substituting the equally limiting (though equally dipolar word Animate of this presentation Principia or De Motu - movement, motion matter, I have my argument per se in these words:

The Animate is the aboriginal instance of activity,
and is therefore the aboriginal condition which qualifies
(limits, in the event or 'History' sense - 'Time' sense:
Hermes,

or 'Ekatick' sense (Iris the only part-child, other than this Brother and sister children of 'God' - the water or turgor 'test' of the Gods as whether they are or are not telling 'truth' - tested and failing . They are abandoned by 'God' from 'his House of Mountain' for precisely '9' Years -

(Come back(:

The Animate is the aboriginal instance of activity,
and is therefore the aboriginal condition (gravity) which
qualifies
its 'action' (meaning of course then more than ever what
makes
gravity - gravitation - magnetic ((as opposed or dipolar of,

and to
electronic --- we live in a prescribed 'kalpa' of Time specifically the Electromagnetic Epoch))

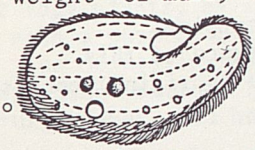
So finally:

The animate - plant or animal - is the aboriginal instance of our occurence and is therefore the aboriginal condition which qualifies - defines both in fact and act, including the form-making usefulness of - our action.

(And my 'point' here - in order to place 'time' in its proper and true powerful relation to space (the Clio here, though the Urania there, and, by inversion of the powerful dimension of time as 'smaller' than space, the multiple or 'power' it properly is, the Urania here as there the Clio - I am in short trying to expose all astronomy physics and mentalness - or telescopic, optical video - idein thought as non-Event -- as non-Uranian - - non-historic) -

that Thought itself, without this animate admission, entrance - limit, is over-extent (over-Extension - Spatial) and so removed, by one remove - unessential and secondary; and that with out limit as being both plant and animal, Thought then as 'ours' is aboriginal or Primordial, and so Consequent.

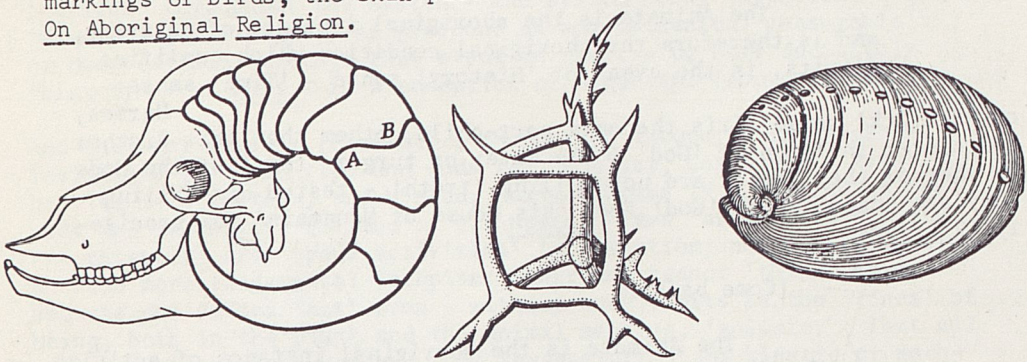
The import of this can quickly be stated: man as Love (plant, heliogeotropic) grows up and down, man as separateness (animal) disposes of himself by sitio - chooses his place but which even though it gives him freedom disposes him likewise by gravity (statholith) - starch, turgor - 'weight'-of-mass) - equally tropistically. Heaven and Earth.



Gloucester, 28 Fort Square Feb. 15th (Lxix).

oooooooooo

"The word dirmu is applied to a wide range of phenomena: to bodily decorations in dances and mimes, ancient cave paintings, and the spiral, concentric and radial whorls of shells, the segmentation of honeycomb, the divisions of spider-webs, the crystals of rock-minerals, the colour-markings of birds, the skin-patterns of reptiles." W. E. H. Stanner in On Aboriginal Religion.



C h a r l e s O l s o n: 1st Addition, after some slight studies into present scientific understanding of "gravity," to The Animate versus the Mechanical, and Thought:

Gravity
[or for which read happily & allowably gravitational waves, to all advantages] are 'narrative' in the simple fact that we stand up & therefore 'move' in the widest possible alle [literally, alle --- anywhere anywhere]

& the sound sense --
image : of
inner being
that we 'are', catches both
(I shld think) of the originary & continuously primary 'matter'.

[Saturday, April 19th

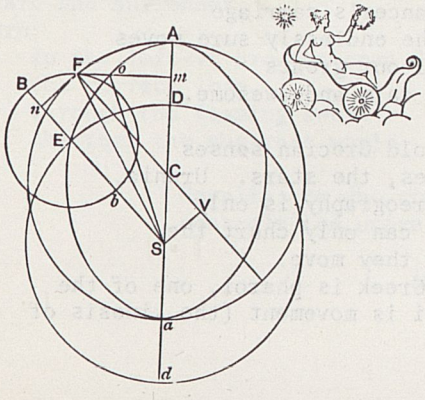
*I cld note that nothing that Dr. Forward or the Hughes people or Dr. Sinsky have come up contradicts the above. They find that there is no material which refracts gravitational waves, nor can such waves be led along conductors like electrical waves.

I cld suggest then that both facts wld seem not so much negative as evidence requiring a wholly different attitude toward them, the one I have already put in 'our' terms, that is, that no material refracts them --- they can't be bent or focused --- because they already are ('narrative'). Are in time. And (2) don't conduct because like the figures under the hill they do something else, directly. Figure, and event then, put it.

C h a r l e s O l s o n: The enclosed, hopefully will also push the discussion another inch or two —— O

To make absolutely sure that this discussion is on the table intended by it, I aught as well to add this note [as a further "Addition" --- and as of "other" studies]: that I am here seeking to speak within, or across the 'range' of a principle of likeness which includes, and seeks to 'cover' what Henry Corbin reminds me is a constantly affirmed homology among the iniatic cosmos, the world of nature, and the celestial world.

[Note added April 30th, 1969]



L e w i s MacAdams: AN ESSAY

I

No privates. You have no
private eye. The initiates go naked to the sea
at Eleusis, nothing to cover the third eye,
the cock-eye
flips up and out to the left
the beginning of the spiral
to regain the earth
flip out, be a dancer, a crazy left-hander,
a Jonah in the belly of the whale.

The cock's eye is the sun's eye.
In the alabaster serpent bowl the sun is the snake,
the snake Apollo that comes up with the sun.
(The cock crows up the sun,
as the cock watched Apollo open his eyes)

Of our eyes only the cock-eye can look into the sun,
and only if aroused, as the snake comes up through our legs.
"You come on like the sun, you shoot sunbeams
you create the universe in your image as the sun does
you shoot into your woman deep."

II

Still Apollo,
at the white eye of the hurricane,

Eden is limitless space
and white There's nowhere to go
we've come
There is silence in this room

When you leap
through the double sword of flame in the east
the high priest is a sleek, conked cat
"It feels so goodinside" Mr. James Brown
with the Famous Flames
The Pillars of Fire
The Mighty Clouds of Joy

your joyful noise lifts you up
it carries you.
The dancer's carriage
and the endlessly sure moves
of all our greats
is so calm and awesome.

Anything can dance, in the old Grecian senses the flowers, the trees, wind, the stones, the stars. Urania, patroness of astronomy, is a muse. Choreography is only "interesting." It's an act of will. We can only chart the true stars certain path, how directly they move.

The important word for us here in Greek is pharoi, one of the three constituents of the dance, pharoi is movement (the kinesis of

body and mind). It is related near the beginning to pheroi, to carry, as the carriage of the heavenly bodies in the skys. Rank says the Cretean labyrinth dance is an imitation of the movement of the stars.

Don't the dancers look fine? We never tire of the great till they can't feed us, can't carry on. Dancer, it's always apocalypse What's on the other side of the threshold of pain? When Nijinsky danced they say he defied gravity when he lept. We know it is true from his diaries. As he nears completeion of his work all dates disappear. He leaps and loses the track of time:

"I am the saviour, I am Nijinsky
and not Christ. I love Christ because he was like me... I am husband and wife in one"

signed God and Nijinsky
for the rest of his life he never danced

III

"To the Sea, Mystai"
When you come down you're always revealed anew
It's the opaque sea
that lets you be blind
(St. John of the Cross: "If a man wishes to be sure
of the road he walks on
he must close his eyes and walk in the dark."
when the come drops across your eyes.

IV

Gary Snyder says
"it is not necessary to
think of a series"
rather
The mysteries are elements that recur.
You can't move through the labyrinth in a frenzy.
You want to be good in the troia (the labyrinth, the castle
the dance)
You have to be good
as the bull-roarer is specific. It's not
simply loud.

Regain Apollo,
the Brilliant Eye.

The true dance is charted, don't presume
learn and surrender
turn
to the left-it brought down Jericho
the correct leap
through the flaming sword
shatters the abstract world

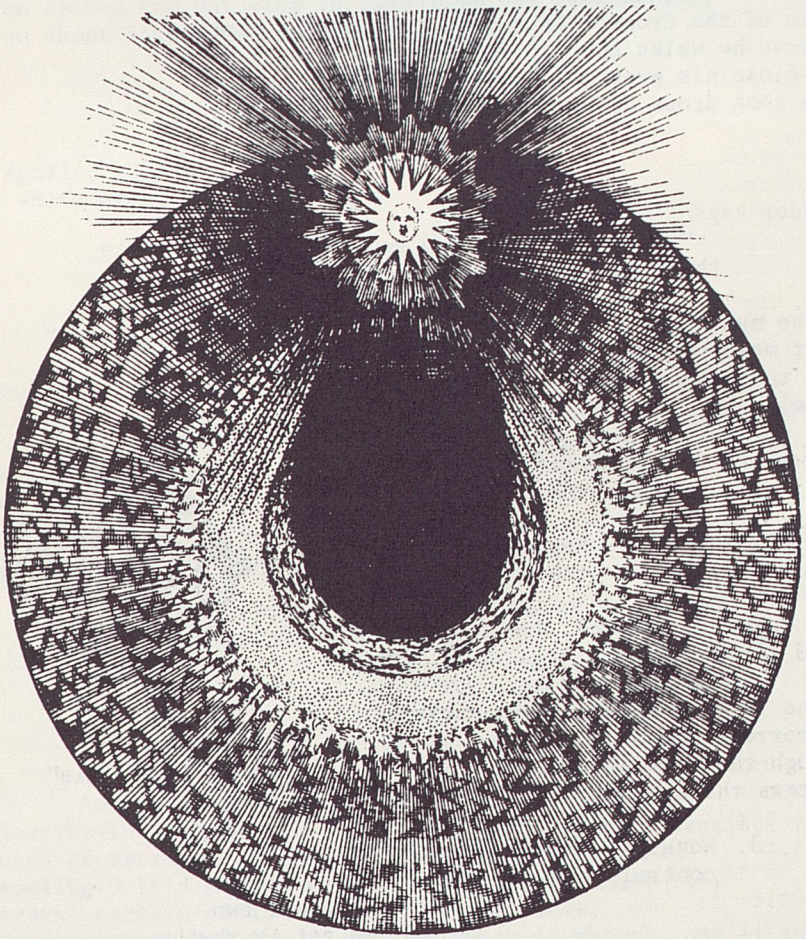
Ginsberg:
"So that I do
live I will die"

Novalis: He who controls rhythm
controls the universe
It's not our own
in bed, we get in rhythm

Only the third eye gets inside, to home,
a man's true home is the castle
that only the third eye gets to see
noos - to know - to see
(old songs) and in you is where I want to be
it's nostalgia (the oldest song)

V

The motion of the ax
makes the noise, noise carries therough the night to the sea.
In the beginning, there was only one noise
the noise of the unaccompanied dancers,
before Dionysus was a thing to invoke
there was harmony, with the mother earth in her moans.
When that comes to us
only the lady who holds your body
tightest when you flow
brings you on home
Sweet peace when your body is on fire. [in Buffalo, 1967]



Robert Kelly: RE: THE OCCULT

The traditional sciences became 'occult' when the city took on its modern sense & the bulk of a nation's people came to live in it.

The horoscope (13° ♋) of this Nation proclaims by its existence the country farmer our typical Founder was.

[Goethe's Faust can still stroll outside the city.] [He is the opposite of the Socrates of the Phaedrus, & grazes widely.]

Living the life of the seasons, the life of 'nature', is the beginning & consecution of the traditional sciences.

Just as the sky over a modern city is occulted by smoke & industrial throwaway, its proper atmosphere, so that antique science based on the inspection of the sky becomes mythologized, & hence a fossilized, hence a despised, science, rather than an open possibility.

[Cumont points out that in the deserts of the middle east, Venus as evening star still casts a shadow.]

[Countrymen are unlikely to forget how after a quarrel with the wife & a quick getaway, they came out to see the Pleiades flirting in & out of sight at the top of a cold sky. Or 'Orion blazing.']

Living up here, barely a hundred miles from New York, the calendar the hardware store gives me is marked out zodiacally, & tells me how the planets affect the parts of my body or the times of my plantings.

[Waite reasons that doctrine (true or false, profitable or foolish) becomes superstition only when the hypothesis motivating the symbolic form is lost.]

The sort of wisdom that the City of Athens spent two weeks a year in steady pursuit of, in the month of the leading of oxen, the journey outside the city walls to Eleusis, that wisdom was outlawed & made criminal by the City of Rome, that Post Augustan first 'modern' city, terrified of the interpenetrations of the world. Not until orientalism dominated Rome (the majesty of those orderings we have been taught by etiolate Gibbon to despise) did Rome become a city.

I point out two kinds of city: the cosmically-oriented city, laid out to be the type of the heavenly (i.e., the kosmos itself), the city that served as <u>focus</u> for all natural forces (Athens, Alexandria, Byzantium; Peking)

& the other sort of city, that serves as a refuge from the natural order, & strives to deny it as extensively as it can. (Republican Rome, that misunderstood the Etruscan <u>mundus</u>, or ditch, around the city, falsely apprehended it to be a mode of excluding the outside, rather than a mode of harmonizing the ground of the city with the forces of nature & the cosmological realities that ancient people seemed to have grasped. The sin of Sodom had not to do with the worshipful cock at the lips & gates of the body: Sodom sinned contra naturam in the most literal sense of those words, an inane hubris, to set a city on bitumen, & was burned. <u>That</u> is the sun a city can commit: To deny

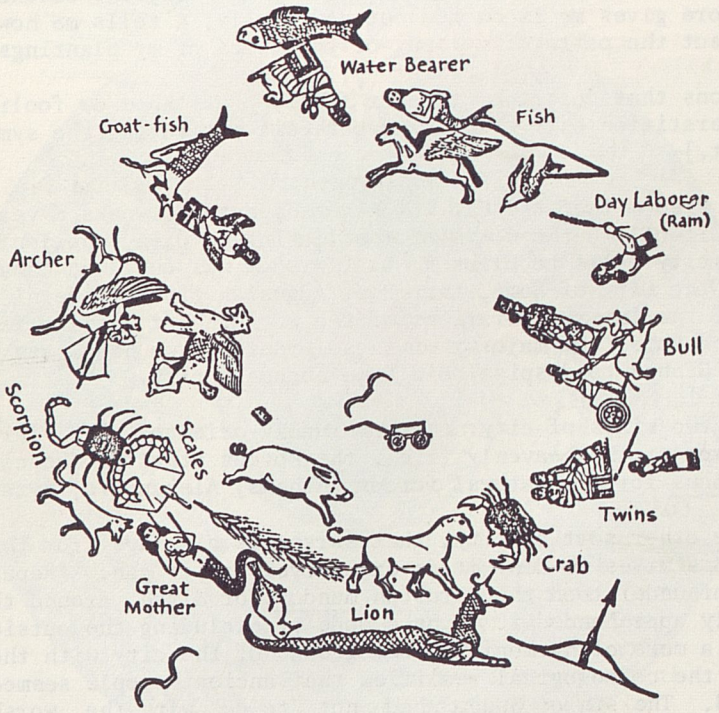
in its plan & life & ordering the great wheel of which it should be the hub. America is filled with such cities, abstract negations of the body of man.)

Rome was purified & redeemed specifically by the influx of Jew & Syrian & African & Egyptian, by their bodies, wise loins, & memories of a wider measure brought back to the sharpness of focus Latium had lost. I have predicted a like novation for New York, fulness of the City balanced between sea & land, between New world & Old. It will yet be the world city, Frobenius' altar to which all roads lead.

The traditional sciences, which can by our social forms be made superstitious holdovers, represent at best that empirical speculativeness which constitutes our best mind --- study thereof can make us perceptive of conditions, states, rhythms we are no longer in our bodies conscious of. For the New Yorker, the stars are for the most part hearsay (which can be 'superstitious holdover'), virus to the man without an electron microscope. There are no ready pragmatic ways of inferring the Pleiades. They go unseen, their dance ignored. And we are cut off.

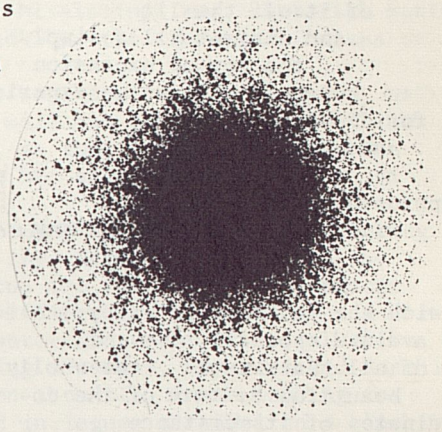
The stars would lead us to the city, & the city restore us to ourselves.

[This article opened the original and only issue of Aion, A Journal of Traditionary Science (December, 1964). This journal is now out-of-print, and Charles Stein, the editor, is a contributing editor to Io.]



having touched the Slaughter Stone
of the Henge of Stone
Rock
in the memory of
Memory Rock

in the memory
of Brittany Dolmen and then across
the return into a people
woe to them who eat too much
from a people who eat
too fast as
tho it were an exercise



yet
well being arose
from
the emptiness
of the stomach
from the universe
every change of placement
the shift of every leaf
is a function
of the universe which
moves outward from its composed center
40 bilynyrs. Then returns
the pulse
and location will have changed
The location free of reference
except this obvious measurement because you can feel
completely a straight 5 B. years
from some moment now which is not
an apparent edge
but as mappa india anna
as the source of speech
is no simple explosion

our given pulse
hits inside this
everymoment we live
to hear this
COSMOS
the soul of the universe
calls indifferently the populations
to proceed
from the tincture
to the root of the natural
in the present effort
to arise into the light
ness of these limbs
these parts of the universe having growth

So the foot of this book
is grown at last for the book to stand upon
thrown from myself as my life was given to me
with sharp aim
right across the quality/quantity question

When I reached the Tor
and walked up to
be elevated
enough to sense the zodiac
of its configured presentations
of itself the lit
and distant hills simply
the joy of expansion
which is what we've experienced
for 35 billion years
and can take in
the moment
approaching when all of it
will be stilled in a shimmy
of its own distance
as the thing holds so
with the delicacy of water tension
to avoid dispersal
of all thats here the wholly
beautiful seizure of the co-
ordinates of its distance
the scansion of its trip
as we come around again to feel wide open
on the arc

magic on the hill. the late green grass. YELLOW sun BLUE stadium. & those in white (those with the ball) those who control its dance. The spell: is never broken, a wagon-wheel of fire, hangs like wings, the pigeons gather, break away, desert the infield for the outfield; the home team flocks, ball-bearing between them, geomagnetic; Earth jumps over the runner, completes rotation into darkness; the sun is flipped around the infield, to the pitcher, sun-statue; bees collecting honey, a saliva star combed with protein; the Cardinal crest, bright bill, prayer-sticks notched yellow at the tip, notched red at the Southern tip, the balls shined in Mississippi mud, shellfish hunters in tropical waters, the bright Red Sox, the Cleveland Indians at harvest.

a cameo is kept, a diamond inscribed in a locket, love, Sue, and Ted Williams kneeling on deck. they will not defy the order of the thing, they will not break the spell, as long as no one breaks the spell, no one wins for good, the game has another day, the race of cave-dwelling fishermen goes on.

i was young, i was looking for something like it, i was looking for a way to mobilize the grass, the sky, the clouds (cumulus the fat catcher with his home runs, stratus the fleet young shortstop who can't hit, altostratus the pinch-hitter, Irv Noren lines a double off the wall). a way to sit by the water and under trees, a way to go for walks, a way to read the morning messages, Reynolds and Raschi vs. Lemon and Wynn, the sun dancing on the wall, i was looking for a star a sunflower a girl lying naked in legume a dandelion a bluebird, a red plastic radio that brought in the scores and recorded the players --- playing in the stadium where it was.

what they did could never be repeated, it was the rhythm of it happening, the moment on the edge of the maturation of the next point, it was the sound of the rally, the rally itself, as the thunderstorm itself, washing sexual frustration and 6 P.M. dust down thru the trees, only when the elves descend and are present, only when the radio ignites the street - and light itself is alive with traffic; at gametime a second sun rises, warnings are dropped, sailboats sail, witches creep away; every fifty-two years the calendar is revived and the ancient Anglo-Saxon and Mayan stars return.

each inning the first man tries to get on, one by one the pitcher moves toward the end of the game, putting each out, the next man tries to create a rally, flint and iron pyrite, the cardinal from tree to tree, the mudhen squats on deck; each inning goes by, some score, some are left on base, the pinch-hitters roll from the cave, each one used only once, drawn on only once, and his unique power, each game; it is near sunset, the relief pitchers flutter in the alley, weights against momentum, against gravitation and the destruction of the earth.

light on the street. color on the beaches. small statues. a girl pops a coke at a teen-age party. thru the bushes and within. the sounds of the children. the water from the fountain, the wet cobblestones tasted in between innings. black pavement tar. or mica. or dirt and a stick buried in it. or a squirrel among acorns. she undresses in the tautness of blood, the Indian drum, the stiff log the old chief carries into the young girl's hut, Bardot sliding the planet off her hips into second base, Safe! Damnit, Safe! or how the winning hit was made. who's pitching tomorrow? the setting sun, golden, the evening papers. orange red blue beach-pail. the scores. the standings. fluorescent moths in the arc-lights. 'now batting for new

york, number twelve, gil mcdougald, number twelve.'

we put the radio in the sand and sat and listened to the first four innings and when it got hot we dug up thru the sand to the shack that smelled of orange juice and mustard and bought toasted almond ice cream and came back thru the sand to the edge of the sea and sat thru the next three innings and watched the boats and talked a little about other scores and dug holes in the sand letting the water up thru caverns and canals, working brusquely during rallies, jumping in to the ocean between innings, tingling beneath the cold of the whole sea where the fish went and were cold, back to the start of the next inning, the eternal sprung knot, rabbit trap, an excuse for history and Gustavus Adolphus during the Thirty Years' War, Oxenstierna when he was killed, Captain Cook and taboo, and the Lewis and Clark Expedition among the expansion teams, the Athapascans in the old Basket-Maker Region, the Algonkians switching from fish to beaver, the rise of Japan and the New York Yankees, the great salmon run and 18 wins in a row followed by 9 straight losses, the sun, the sailboats. a place to come back to everything and feel it all at once, the dizzy motion of the earth among planets, the pinch-hitters and comets, to change the game, laying their odds, their averages against it, trudging back up thru the sand, 'hey kid what's the score?,' the car radio on dirt roads, back in the shade outside the porch, lemonade, sunset, supper, scores, twilight, having been born. that the universe is not everywhere equally dense with light, and we can see the separate stars.

Rip Coleman started his first major league game down by the camp lake, i kept in touch while everyone else jumped in the water, practiced swimming strokes and their own competitive skills, i waited in the bushes, purposely dry, purposely outside america, to keep in touch with these beginnings, hiding from the life-guards. In the midst of a hidden life.

we can see the stars, each player is specific, each girl in her uniform lined up at the social for some boy (me?) to choose, each bird in color, and the yellow-breasted chat, with the large breasts, lemon blouse, genetic star-weight, but specifically present - salt, irritant in hormonal waters, mine, now, here: "winds up and fires - strike one!" byron/one word is lightning!, spicer listening to the giants on a transistor in a chilly san francisco park: the giants, the titans, the great unshaped monsters who preceded matter and now lie among the relics at the end of time and space, redder than the male cardinal, than blood in the penis, sheer radio noises red, static, quasar cyclops wailing radioactively from its wound, the old gods, saturn and his fathers, the agnates of hydrogen and amoeboid flesh, a red shift of the beginnings of recorded history, a phoenician ship between continents, trireme lying out at the edge of greek alpha-beta history, polynesians anchored off egypt, ships tied to osiris by magnetic coins, listening on their short wave sets, bering off the tlingit coast, red noise falling thru trees, giant puzzle pieces out of place, the forty year old knuckleballer, the meadowlark undressing behind closed shades, titmouse and blackbird, spruce and juniper, each girl in her genetic clothes, her engraved sporecase, the swimmers learning their strokes, the quasars thru bluesky, the so-called atmosphere of atlas, static on the radio, a hundred and ten miles from the station, the girls' camp hidden by the bend of the shore.

the sun set, all the games from eastern cities came in, came thru the night, all night name after name thru the zodiac, the homers, the

winning and losing pitchers, complete surveys understood in terms of tomorrow's pitchers and the standings, as a magician would know all the movements of distant and dim stars and their effect on his experiments as Earth turned on night, as cosmic and insular rays penetrated solution and kicked their energy therein.

each player was different, each with aberrant possibilities, locked to the others in a slow spell, in the spelling of the final consequences of the game, in carrying me, finally, to know what one hit, in the center of the whole, meant, one tree, sitting with the radio, away from everyone, away from cultural movements and collective responses, listening to each hit, each squirrel passing across the whole field into the bushes, each thought played with tangled in entangled with each other thought, the specific wears a crown and is king; these were not hits from a wooden bat (though that was their occupational sign, their form under pentacles); these were nouns, verbs, and occult numbers, seasons, tribes, and poison-oracles: magic atmospheric strokes from a cedar wand. Hence:

the road-signs. the packets of seed. the flavors of soda. the names of birds, and apples (Winesap Jones). the cities and the rivers. the colors of plastic. the warmth of electricity. the warmth where the nob goes ON. squash and okra and peas and cabbage. yellow and brown and purple and gray. secret journeys to nearby planets. close your eyes; now retrace your steps without moving. transmigration. time-travel in its early stages

there was a difference between where i and my friends hit and fielded balls on green grass and where those of the game played out their ancient possibilities. somewhere between these two geological fields was a universe of matter, and we rode on the cut between: between wave and particle, between tribe and chiefdom. even the men who were then the ball-players stood outside the universe of the game. some thought that they entered it by being allowed to play the actual game; others (and i was one) thought the game was somewhere else, and these names of players were used like messengers to carry its materia, its interval, from one biosphere into another. the new york sunspots. the jupiter 12-moons. the huron horsetails. hermes the stone batting for thoth the glyph. the reds. the meteors. mercury the planet running for mercury the metal.

in a way we knew very early that the ends of the game were beyond us, were more deeply entwined into matter and space than our own bodies. the announcers were men, the players lived and had jobs during the off-season. not the point. somewhere beneath the earth men live and die and are unborn, shaken from a pile of genes and possibilities. somewhere beneath the game the players operate all games to infinity, and are absolute, and achieve all alternatives, and some of these alternatives are perceived by those following the games, and they follow these other games just beneath the surface (some of them even erect whole boards and card-systems to eventify a few of the other possible games; these are historians). we live out our lives in tension between the two, the one half-born, until death, and then only half-dead, and one half of the total possibility of being -- achieved. or how we know (and fail to know) that the season has begin, the stars are in the sky, our hearts are beating, the soup is bubbling, our grandparents are dying all around. we who remember bob kuzava and billy martin in the seventh game are the old-timers; the ancient atlantic genes have been shaken and a new race is already born.

many, many we know, lie in the sacs and gulches of time, the

swinging scrotum, the moon-bled egg. the frog lays thousand of eggs for every one that is fertilized. pornography: sperm left with the stale popcorn in the movie theater. the kansas city hatchery. the farm system. they are not the point of man and woman but we insist on them anyway, and insist on having land for them, and storing grain for them, keeping charts of them, and playing the game for them to its ends. And man and woman achieve possibilities in the floods of sperm and hidden chambers of egg, and some come to be, and stand in blue light and know what blue light is out of all unignited light, the blue of the baseball card sky, born to where the stars are the fingertips and not the inner functions of sleep.

they come across the land-bridge, they come from beneath time, speaking tonally into new winds across the plains. they come a separate way from birds, but they are birds too. they are the clouds and snakes and they divine their own weather, speaking even as they revolve and spread the gases of the upper loom. all the way following the same stars though their names changed: three in a row and seven maidens, or six and one lost: the dim star Alcor, found again on the American prarie.

recording in sands and on walls the flight across, or movement up onto (this is the fourth world), recording the combinations of men and animals, and man-animals, the friendly birds and those that retained grudges from other worlds, which ants carry which wisdom, which flies came sunwards and which were coded anti-sun, and how many suns, and how many directions: sunray, sunbeam, sunglow, pollen used to smother a hawk and the new-born doused with that kinetic strength: born between the invisible rays of Alcor and corn, born between clouds and comets, born on the sand, colored in abalone and jet and redberry, born in migration, hence transmigration, born as a girl-child or a beetle or a fly, laid on the light of the night sky. the cards are shuffled and the rookies are added to the spring deck. there is a card of every girl you might think of, you might want to have, a card of each star, and those without names have numbers and Greek letters. there is a card of every girl who has something on you. there is a card of every girl. every possibility. a star.

Big Fly is the messenger of atmospheric change.stands still.vibrating.in sand.waits to speak. Blue-Horizon-Light tells at what angle the earth lies onto the sun. Bluebird is the larynx of Talking God.feathers.stood in sand.tied to a stick.have their own flight/fire! Badger."he went back into the hole at the Place-of-Emergence." Dragonfly.hovers over the water. Bat.guards the East. the redstones.clouds. blue.snake. yellow.sunpigment. the deck of cards, as the queen told Alice, are the players: the los angeles kings, the iowa city jacks. gene woodling.sun. don bollweg.snake. miro paints the clouds with wild ecotones, gouache, creatures of neither earth nor air, neither night nor day, shellfish, pigs, caribou, taboo.

WOMAN
BIRD
DOG STAR MAN

the pigments and borders pertain to the initial shapes, those that lie behind the cloud- or star-form even as electrons and neutrons lie behind the cloud- and star-matter. arrows, fired across the day, leave their paths thru certain rhomboids and clusters of trees and buds and rocks, to the ends of streams, and shreds of clouds, and fish, and

the turning point of the sun at the equinox, to the ends of streams of people up from other earlier world, from the Water Basket, and Atlantis, and the Fertile Crescent, the original New York Highlanders, the Tyrian Purples, from the dividing rivers of Africa and South America (magically twin worlds guarded by left-handed and right-handed deities, or pre-isotatically by Mickey Mantle, the greatest of the switch-hitters), from the second and third worlds, each with a color and a mineral, separated from each other by a color and a mineral (i.e., a manifestation), joined to each other by reeds, and entered thru the vast inner worlds of the Ant People, by canoe, eating the lungfish who pour thru a different reed, marrying the girls who are born of beavers and snakes: the rookies, established in image-suns from 1954 to 1964, that century of multiple summers in the heat of Cancer and Leo, Aries and Virgo, the Yankees balancing on top under the Scales:

for the light of the game comes in the light of the radio, in the red shift of Orphée, orange soda and toasted almond at the heart of the photosynthetic sun, the autotrophs of taste, the morning paper as a morning star, chart of the heavens in the standings, and i am the chief priest on this world, as i have always been on worlds before.

we sit here, aware, in our blood, of travelling warriors and genes, of the cells that will die before sunset, and those that will replace them. we sit in the path of the retreating spirit-animal, torqued to the centers of several simultaneous worlds, the long body of the solar system. we sit co-tangent to the singing positive and negative priests of the sun.

and as for her: the navajo call her changing woman, the hopi see her spinning a spider web, hence spider woman, in egypt she began as the moon, and was filled with the sun and called isis, and later athene and ishtar. on each planet she has her own form, and her form is the changing dimensionality of the planet itself, its growth thru images into the field of another time.

[The set or family of all planes having life in common is called a pencil of planes. The life common to the planes of a pencil of planes is called the spirit of the pencil. The individual events on the separate planes are the species, the leagues, the teams; these are called, collectively, the taxons. A pencil of planes is completely determined by its spirit, and therefore by any two distinct planes of the pencil].

the magic is not in the single numbers that separate the worlds, and delineate them, one by one, the magic is in the mathematics of tensors and imaginary numbers, which the priest, the Two Horned Priest, taps by his rod several times, one for each world, one for the form, and one for the passage. the animals wait outside blue light for the splitting of the cell, for the explosion of the sun, and the transmigration of their souls into shape.

Columbus found what he wanted (a short route to India), named it correctly, recognized somehow the secret crypt of the Amerindian adverbial East. we are following behind Columbus now. so that in 1953, while i lay across the attic, plumb to the surface of the continent along which they moved, Allie Reynolds, Indian, having come from the East, pitched for the Yankees and beat the Indians. while the people, having been born, passed along the street in blue and yellow light, the colors of this world, not realizing yet that it was transmigration, and only in baseball do all the worlds of peo-

ple, insects, and animals exist together, not even realizing it myself as i followed the game, the world, my life, trying to grasp and encompass it for what it is, all it is, imbedded, inlaid, contradictory, yet hold it all in a single flash. and turn one thing on all things, or all things on one thing. and begin slowly to turn, as having an orbit, as receiving rays and messages, myself.

It is time now for the projected configuration, the visual projection of the War Trilogy. Not only the images of the poem arise from vision but the formal concept relates primarily to illumination, painting or tapestry, in contrast, for instance, with the musical concept of Eliot's Four Quartets or Pound's Cantos. Music enters in -- the "O, What I meant/by music when I said music" of Tribute to the Angels XXII comes as a poignant yearning:

music sets up ladders,
it makes us invisible,

it sets us apart,
it lets us escape

"but from the visible," she continues: "there is no escape." What is seen, and in the poem the matter is always the seen, is what cannot be escaped, the ground of responsibility. For H.D. the eye in seeing is involved:

but from the visible
there is no escape;

there is no escape from the spear
that pierces the heart.

Vision itself may be the spear; the eye being struck, the necessary vulnerable spot, where reality can get at the hero-poet. Yet this reality in what is seen is just that web of appearance that we also mistrust as the phantasmal, the Celtic glamour or faërie. H.D.'s intensity of image arises in her stricture of the eye to see in the clear, to penetrate the elf-skin or shimmer of excited vision and to locate the object. She holds a limit in poetry against the riot of the imagination, for she seeks a conscious recognition of what is going on. The very tenseness of her line is an attention that functions to hold back from the potency poetry has to produce its own luxe of the unreal, the world seen thru a glass darkly, the shadow of the dome of pleasure, the strange thunders from the potency of song, and the magic casements that open upon fairy seas. This reverie or "escape" in ascent or descent beyond the scale of the consciously analyzed is the medium of what she calls music that she resists. Dream and day-dream are a source of image, as ecstatic states in her waking life are a source, but in the poem she does not dream or day-dream but strives to render an exact account of what she has seen.

In the first panel, The Walls Do Not Fall, there is the war, the City (London) drawn under the rain or reign of fire, that in late Medieval Christian painting would have been Sodom and Gomorrah. In classical history, it is "Pompeii has nothing to teach us." In my family's theosophical fantasy this City in its last days was Atlantis:

over us, Apocryphal fire,
under us, the earth sway, dip of a floor
slope of a pavement ...

The ruins, the pressure, the fire, where

> the bone-frame was made for
> no such shock knit within terror,
> yet the skeleton stood up to it:

revivifies the image she had known twenty years before of that burnt-out triangle of iron: the inner psychic state finds its fulfillment in the conditions of the bombardment. Reality for H.D. is an identity between the self and the event.

The tapestry itself weaves the theme of the City under fire to haunt all other areas of the poem. It is not only a figure but a thread. In the foreground are woven, recalling the ground of flowers and small animals of Medieval tapestry, the first forms of our life, shell-fish, worm on the leaf, serpent. In verse XXXVIII the analogy with tapestry is openly drawn in answer to the counter questioning of her own thought. The antagonist of the poem argues:

> This search for historical parallels,
> research into psychic affinities,
>
> has been done to death before,
> will be done again;

and the protagonist of the poem defines clearly that search and research, parallels and affinities here are not operations toward a philosophy but operations of a fabrication, open possibilities of design. History, psyche, biology, the physics of the universe are elements of the artist's creation. The poet and her reader, the animal and plant worlds, the stars and events are revealed in a fabric the poem weaves.

> my mind (yours),
> your way of thought (mine),
>
> each has its peculiar intricate map,
> threads weave over and under
>
> the jungle-growth
> of biological aptitudes,
>
> inherited tendencies

This sense of the interrelation of figures, each particular "map" having its "inherited tendencies" and in turn its "aptitudes," is on the one hand a sense of life in terms of correspondences and evolutions of form, Darwinian and ecological; on the other hand the artist's sense of the work itself in which each part derives from and is source of the design of the whole.

Randall Jarrell is snide and means to dismiss H.D.'s work from serious consideration when in Partisan Review he comments glibly:" "H.D. is History, and misunderstands a later stage of herself so spectacularly that her poem exists primarily as an anachronism." Yet the statement "H.D. is History" is curiously right; for she takes her identity in her vision of history.

I make all things new.
I John saw. I testify.

So, in Tribute to the Angels she reminds us of another text where John at Patmos "misunderstands" a stage of history --- for it is a puzzle of the Christian apocalypse that it mistakes history in order to create a history that had not been there before. So too, Bosch, seeing the conflict of rising nations and warring churches in the light of his Adamite heresy as an Armageddon, misunderstands the "history" of his times. But to speak of misunderstanding thus is to misunderstand History itself, for historians, no less than artists, are creative and make all their things new. Gibbon and Spengler have their fire in their "misunderstanding." Thoth, Mercury, is patron of thought itself, mercurial where it informs.

*

"To show how the worm turns" means something mercurial about the psyche, about the worm turning into its butterfly; means too something hermetic about the evolution of the psyche --- the worm or dragon, the old serpent, that turns to betray us in ourselves. Following the tradition of the tapestry, the worm on the leaf is just such a detail of the flowering ground as we have seen in medieval work; and turns or leads into other figures of the scene:

Gods, goddesses
wear the winged head-dress

or horns, as the butterfly
antennae

to reappear in "the erect king-cobra crest," the uraeus of the god-crown of Egypt.

*

From The Book of the Dead I find: "Understanding said of him,'He is like that which he creates.'"

March 12, Sunday

In The Walls Do Not Fall, the quick-changing mercurial and the conspiring hermetic appear in the experience of the War itself.

We have seen how the most amiable
under physical stress
become wolves, jackals,
mongrel curs;

"Let us, therefore," H.D. turns: "entreat Hest"

in her attribute of Serquet,

the original great-mother,
who drove

harnessed scorpions
before her.

In the background -- a scene resembling the City under Fire in Lot's Daughters, a painting attributed to Lucas of Leyden, reproduced in Verve, January-March 1939. For H.D., it is not a City of the Plain but does recall Pompeii, Nineveh, and Babel. In Tribute to the Angels, in the central panel, it is compared to Rome, Jerusalem, Thebes.

Above, there is the night sky with stars --- Sirius, Vega, Arcturus; the constellations --- Scorpion, Archer, Goat, Waterman, Aries --- "the wandering stars" and "the lordly fixed ones." Over the world-city, over actual London, the skies open up and pour out their flames. It is the old wrath of god; it is the actual new incendiary attack. Fallen walls and blackened dwellings stand out, silhouetted in the raging light.

So, when in the poem, the poet says

> O, do not look up
> into the air
>
> you who are occupied
> in the bewildering
>
> sand-heap maze
> of present-day endeavour;

it is a reference to the incendiary bombardment that has cast a confusing light upon the common-sense business of men. But it is also, we begin to realize, a reference to the stars.

> You will be, not so much frightened
> as paralyzed with inaction

refers then both to heeding the war and to heeding the stars.

The worship of nature is H.D.'s first heresy; and then, in that worship there is further the willing evocation of and participation in the enchantment of nature. Woodland and sea shrine are primaries of the poet. Helios is a spiritual light but he is always the Sun. But in the first poems the stars do not have the place they are to have later in her feeling of ratios. Hermes is a garden herm; he is not yet Hermes-Mercury having the light of a star. In The Shrine, She-Who-Watches-Over-The-Sea is not yet thought of as the star Venus, the dual identity with Lucifer,

> Phosphorus at sun-rise
> Hesperus at sun-set

so important in the concept of the later work. In the great ratio that morning-evening star will be for H.D. as for T.S. Eliot in The Four Quartets the star of Mary. Eliot's "Lady, whose shrine stands on the promontory," proctectress of ships, is the benign persona of that same power, the ancient sea-borne goddess, who in The Shrine appears as the wrecker of ships.

The Orion of Orion Dead is the titanic Orion, child of earth, as

Apollodorus drew him, ravener of the woodlands. Heat of the sun, light of the torch --- what touch knows and can know defines the limits of vision. Her early ratios are all within the reality established by the concert of sensory-sensual data. "Bid the stars shine forever" I find in Centaur Song;

> O I am eager for you!
> as the Pleiads shake
> white light in whiter water
> so shall I take you?

in Fragment Thirty-Six (from Sappho's "I know not what to do: my mind is divided") and in Fragment Forty ("Love ... bittersweet"):

> (such fire rent me with Hesperus,)
> then the day broke.

What is beyond reach enters into Collected Poems 1925 only as it appears in earthly mortal experience, a reflection in water, at most an attendant of dawn. And in The Hedgehog where H.D. unfolds adventure by adventure her sense of the divine world, though Zeus is translated into "the father of everyone ... like the other God our Father which art in Heaven" and His messengers are listed, the stars are not among them. This God remains the Weltgeist.

It seems to Madge, questioning the learned Doctor Blum in her search for the meaning of hérisson, that it might be a messenger. "'A messenger?' Doctor Blum inquired, having, it appeared, forgotten about the eagle. 'Oh, a messenger' --- he remembered --- 'like--like what, exactly, Röselein?' 'I mean a sort of thing that--that helps people. I mean, like the eagle was a messenger of God, and the cuckoo was God, and the swan was God too, when he was most white and beautiful and had Helen and Cassandra, who made the war of Troy, and the messengers who are called Oreads...'" The angels or people of the heaven are birds, but they are not yet stars.

Up to 1925, anyway, for all of H.D.'s early identification of her time with Alexandrian times, her imagination keeps the bounds of the pre-Alexandrian Greek mind. Like Xenophanes of Colophon, she holds to the reality of earth. "For everything comes from earth," Xenophanes maintained: "and everything goes back to earth at last. This is the upper limit of the earth that we see at our feet, in contact with the air; but the part beneath goes down to infinity." This is the chthonian good sense of the Greeks; and the sensory directive of the Imagists in poetry, disciplining the imagination to the concrete and away from aerial fancy, is close in spirit. "She whom they call Iris," Xenophanes wrote: "she too is actually a cloud, purple and flame-red and yellow to behold." "The intelligence of Man grows towards the material that is present," Empedocles taught. Even in Orphism this strong prejudice or practical wisdom insists upon its elements of earth, air, fire, and water; pneuma is breath, and the Anima Mundi is the element air in which we take our living breath.

The tradition of the substantial resisted the sidereal theology of the Chaldeans "as long as Greece remained Greece," as Cumont puts it. Plato's "great visible gods," divine intangible ultimate realities or essences, were the wedge; but for the imagination to entertain the lords of light or the star of Bethlehem, a conversion of mind had to

take place. Vision in and of itself became a highest criterion of the real. Things got out of hand, man saw and took self in what he could not grasp. To have a star then, to take life in the remotest possibility of the real and even in the risk of what was not realized --- the unreal --- was at the root of the new understanding or misunderstanding of the divine. What we see is Man's deep and transforming engagement with an "other" world of nonsense, and nonsense, the troubling of reality that we know as Christendom, not only the City of God but also Alice's "Wonderland."

The early determination of known limits remains in The War Trilogy working side by side in the fabric of consciousness with the later cosmic ratios. There is not only the stellar phantasm of

> The Presence was spectrum-blue,
> ultimate blue ray,

like the blue aura of popular theosophy or the blue flame or light that Wilhelm Reich, heretical psychoanalyst, tells us he saw in the living cell, but there is also the strong counter-feeling of necessary bounds, that the hermit within

> like the planet
>
> senses the finite,
> it limits its orbit

What she has sensed, what she has dreamt, what words suggest are distinguished even as they are interwoven in one experience. "I sense my own limit" remains a primary term of her art. And the dual proportions --- the apprehension of the great stars and the humanistic concept of self --- give an ironic charm to her admission that follows the "O, do not look up / into the air," address to those others who are occupied in "present-day endeavour:"

> and anyhow,
> we have not crawled so very far
>
> up our individual grass-blade
> toward our individual star.

II

The figures of the foreground must be, and their world, seen as under a microscope's lens, enlarged. To the left we find the world of tidal life, a margin; and the under-water. Her sense here is evolutionary, that given in the earliest life forms we will find "the craftsman," "the hermit" or "self-out-of-self, / selfless, / that pearl-of-great-price." In Tribute to the Angels, she will insist again:

> No poetic phantasy
> but a biological reality,
>
> a fact: I am an entity
> like bird, insect, plant
>
> or sea-plant cell;
> I live; I am alive;

To the right: the field where the worm clings to the grass-blade, explores the rose-thorn (that here, in the transformation of the tapestry becomes a forest), eats at the leaf, devours the ear-of-wheat ---

for I know how the Lord God
is about to manifest, when I

the industrious worm,
spin my own shroud.

This same insect perspective of the psyche appears in Pound's vision of the Pisan Cantos, in the "nor is it for nothing that the chrysalids mate in the air" of Canto 74 that colors the meaning of the Confucian "To study with the white wings of time passing" that occurs later in the same Canto. In Canto LXXX:

if calm be after tempest
that the ants seem to wobble
as the morning sun catches their shadows

leads towards the "The ant's a centaur in his dragon world" of the close of LXXXI. These reflections which Pound draws from seeing the actual small world about him enormous are like the mirages or loomings in which ships and the Farallon Islands upon the horizon appear giants reflected from layers of air beyond Stinson Beach.

In The Walls Do Not Fall, the worm is an identity of the poet. The identification may be taken as metaphorical, illustrative of the poet's persistence:

In me (the worm) clearly
is no righteousness, but this ---

persistence; I escaped spider-snare,
bird-claw, scavenger bird-beak,

clung to grass-blade,
the back of a leaf ...

But the I that was shell-fish and that was also worm recalls the incarnations of the Taliesin wherever life has been or is:

I have been teacher to all Christendom
I shall be on the face of the earth until Doom,
And it is not known what my flesh is, whether flesh
or fish.

The Book of Taliesin, Alwyn and Brinley Rees tell us in Celtic Heritage, is replete with utterances beginning with 'I have been',"and

the things he has been include inanimate objects --- stock, axe, chisel, coracle, sword, shield, harp-string, raindrop, foam; animals such as bull, stallion, stag, dog, cock, salmon, eagle --- and a grain which grew on a hill." These identifications may be also the impersonations of the actor --- the animal dancer in the caves of pre-history or the twentieth century student of Stanislavsky.

There were often times in childhood when, lying in the tall grass, the perspective of the world shifted so that this little scope became the eye's universe and an ant or worm was hero or protagonist of that world; his journey along a leaf, over a stem, around a stone, became momentous. So that I would forget myself in the ant's purposes or in the worm's intent. That was one instance where one's consciousness was transported to another world that was still this world.

The other, related perspective, was the one of H.D.'s poem, as the identity would come in dreams, where one was an ant or worm, living a life within a life, in a perspective of the ant's "dragon world" within one's own sensible human world. Though I am persuaded to the truth of Freud's sexual analysis of the language of dreams and of our daily lives, as a poet I know that language has many such realms for the wave of life itself strives to speak in us, and from some parent cell drifting in the first seas, child of Ocean and of radiations from Sun or even from the stars beyond, a germ of animal sympathy has survived to find its life in me as a man. In some protomammal --- mutation or conversion of a germinal form --- all the yet-to-evolve possibilities of wolf, rabbit, elephant or man lay hidden; we are co-expressions of the idea of the mammal, members of a "kingdom" as the biologists recognize. There may be then in the differentiated members an intuition of the undifferentiated potency in which we belong to a tree of living forms, and may dream in the tree of being not only ancestral entities but colateral entities.

There is the curious poetic tradition that Denis Saurat traces in Gods of the People not only of other worlds but of other lives, not only of a divided mind but of a divided existence. What idea of reality lay back of Blake's

> The caterpillar on the Leaf
> Reminds thee of thy Mother's grief.

Not only trance mediums made trips to other planets and stars but poets too practiced mental travelling "to the other side" of the waters as in Blake or to the other side of the interstellar abyss as in Victor Hugo's Contemplations. Here Saurat traces a cosmos in which every being has many personalities --- "each has other parts, elsewhere in space, elsewhere in time." "A frowning thistle implores my stay," Blake writes:

> What to others a trifle appears
> Fills me full of smiles or tears;
> For double the vision my eyes do see,
> And a double vision is always with me
> With my iwnard Eye 'tis an old Man grey;
> With my outward a thistle across my way ---

The great Maya of Indian thought seems to invade the West. But if

poiein means to make, and poet is maker; Maya, Zimmer tells us, means to measure, to form, to build;" the maya or illusion of the real is itself in Indian thought a great poetry. It is not out of order that in the poetic tradition of other cultures, even in England or France or in America, like concepts should appear. Victor Hugo in Pleurs dans la nuit hears a stone that he has kicked out of his way cry out:

I took Thebes in its ruin,
I saw Susa on its knees
I was Baal at Tyre! I was Scylla in Rome!

"So each man," Saurat gathering the idea from fairy tradition and poetic flights and also from folk-lore of unorthodox twentieth century Christianity, finds "is spread out in time and space, has parts of his being in the past, parts in the future, parts somewhere on earth, parts in the stars and in spiritual worlds parallel to this physical world."

The ratio between the worm and the star, the identity taken in the mollusc or the wild-goose, may isolate H.D. from her contemporaries. Deeply as Ezra Pound drank at the fountain of Yeats's occult lore, though in the Cantos, as in The War Trilogy, angelic powers appear and parts of the poet's being are in the past, though the ant looms large in reflection, the poet's identity does not become confused in the web of many incarnations. But this same confusion that isolates H.D. from her contemporaries unites her with the imagination of Blake and Victor Hugo.

As early as Narthex in 1928 we find a conversion in H.D.'s concept from the Greek one-dimension to the Venetian -- "renaissance" Raymonde calls it. She practices a magic of swarming and drifting identifications. "The sun would soon go suddenly but mites still swarmed within it ... people ... people ...in the porches of the piazetta, in and out of the cathedral doorways. People swarmed and people drifted..." "I want to be a great bee," Raymonde thinks: "I want to crawl in and forget everything in this thing." She sees Saint Mark's Cathedral as a great flower.

Raymonde's mind, it seems to her, rises out of confusion, out of hysteria, "a lily, rising on tall stem." "Loss of identity is the gift of Venice," she continues: "power to crawl, snail self up the surface of high window and creep half-hatched moth in among tenuous rootlets and dynamic deep earth feelers." It is this experience that Raymonde cannot share with Gareth.

"I am the child of Gaia (Earth) and of starry Ouranos (Heaven)," so the Orphic initiate testified in the Underworld. H.D.'s "Earth" or mother was named Helen, was Helena or Greece then. And her father, the astronomer, was a master or keeper of the stars, Ouranos then. The stars had been there in the beginning for her, as her father's study or property -- her paternal inheritance. In the prose works of the middle period, 1925 to 1935, there is the Solomon's Seal star of Narthex and the movie star of The Usual Star, but the stars of Heaven do not appear. In the poems the stars begin to come out -- Narcissus in Myrtle Bough turns from his "chrysalis of steel and silver" and "who cast my silver-self afar" sees his own image in Hesperus

for one star
rises above the sand-dunes
one star lights
the pool above the marshes

"Yourself in myself,/ mirror for a star,/ star for a mirror." In Myrtle Bough the Greek theme is mixed with "the contents / of Assyrian phials," with "dreams of Medes and Grecians." The star cult enters H.D. 's poetry as it entered Greek culture, an invasion of Assyrian-Chaldean-Persian influences -- "the Median rites." In the "Stars wheel in purple" of Let Zeus Record, Hesperus, Aldebaran, Sirius, the Pleiades, and "Orion's sapphires, luminous" appear; they are, we know, also actual lovers. "Take me home," H.D. will sing in The Walls Do Not Fall:

where we may greet individually
Sirius, Vega, Arcturus
where these separate entities
are intimately concerned with us,

These now seem most surely to be the stars of an astrological cult, but we must remember too that "take me home" is "take me back." That "anywhere / where stars blaze through clear air" can be London before the War, when that brilliant new constellation of poets appeared together briefly: Pound, Eliot, Lawrence, Williams, Marianne Moore; each separate entity intimately concerned with H.D. as none of them were so concerned later. And back of that "home", the first home appears: it is the study of the father. In Tribute to Freud H.D. makes it clear that the study, the father's room, of Professor Freud leads back to the study of Professor Doolittle. These great astral forces then of The War Trilogy

where great stars pour down
their generating strength, Arcturus

or the sapphires of the Northern Crown;

are charged with the powers of living men.

[April 24th, 1963]: In the dream I had gone to meet Jess at the country house or retreat of Muriel Rukeyser, but this Muriel Rukeyser was another. Even in the dream I was troubled by the fact that I could not identify the woman, and now it seems to me, for Muriel Rukeyser in my mind has always impersonated the poetess, that the house in the dream may have been the retreat of the Poetess Herself. It was in a village on the Pennsylvania Turnpike, a very English village with great trees, that had not changed since the earliest days of colonial America. This Pennsylvania home may have been H.D.'s Bethlehem, and then, because the stars come into the picture, it may be the Bethlehem too, for just before sleep I had been rereading her account of her father and mother in Tribute To Freud. Her mother, she tells us there, was a descendant of one of the original groups of the Unitas Fratrum, the Moravian Brotherhood, of Count Zinzendorf. The Moravians had settled in the New World, in the earliest days of colonial Pennsylvania.

What returned to my though as I began work this morning was the

revelation of the stars. For the dream-Muriel Rukeyser, the Poetess of the major arcana of my own dream-tarot, took us out to see the night sky. All the stars of the cosmos had come forth from the remotest regions into the visible. At first I was struck by the brilliance of Orion, but as I looked the field was crowded with stars, dense cells of images and then almost animal constellations of the night sky. It was as if we saw the whole over-populated species of Man and in that congregation of the living and dead, the visible and the invisible members of the whole, we began to make out patterns of men, animal entities whose cells were living souls.

"We see these skies here," the Poetess said,"because we are very close to the destruction of the world."

III

In the middle ground of the panel, where men and gods mingle, under the stars and the fire, under fire (light and flame), what we see in the Heavens and what we see in terms of our evolutionary life (above and below) are dimensions now of something happening in a multiple image, like those revelations of one thing in another or mingling of images in Salvador Dali's dream paintings.

Where in the foreground of our Nature the life of the worm is enacted, suggesting in his cocoon a shroud, and in his metamorphosis a resurrection; in the middle-ground of our human Person, we are reminded that men, gods, wear winged and horned head-dresses

as the butterfly
antennae,
or the erect king-cobra crest
to show how the worm turns.

These images are rimes and recall previous occurrences of the poem to the mind as echoes of sound do. There is, as there is a highly developed melody of syllables, a melody of figures in H.D.'s work. Neither rime nor image occurs as a device, to punctuate line-end or to enliven some convention in its keeping; but they are cells of the tissue of meaning and feeling itself. Blake's Worm on the Leaf is now not only "thy Mother's grief" but Pharaoh, Lord of Upper and Lower Egypt -- two kingdoms or two natures or two minds, and will be, in verse XXXV of The Walls Do Not Fall,

in the light of what went before

"be ye wise ... as serpents," woven into one figure, a felt design in the poem that in turn transforms our sense of design in history where Blake, Pharaoh, and the cunning of the serpent that the Zohar tells us Jacob stole from Laban, enter in to a new continuum.

"Transformation aims at the continuum of all perceptions," Robert Kelly writes in his Notes on the Poetry of Images (1960). "Percepts are from dreams or from waking, rise from the unconscious or from the retina of the awakened eye. Poetry, like dream reality, is the juncture of the experienced with the never experienced. Poetry, like waking reality, is the fulfillment of the imagined and the unimagined." Then: "Poetry is not the art of relating word to word, but

the ACT of relating word to percept, percept to percept, image to image until the continuum is achieved." And: "The progression of images constitutes the fundamental rhythm of the poem."

There is always reference to tapestry and painting -- these images in H.D.'s work are interwoven; the movement of the poem in time is parallel to an imagined movement of the eye over the surface of the larger picture in time. But the fusion of voice heard and image seen along the track of a moving, changing picture is more immediately related to the sound-track and the film of the newest "visual" art, the movie. The sequence of the poem in which in the opening "shots" we see first "rails" then "rails gone" then "guns" then the old town square, in fog, for there is "mist and mist-grey, no colour," and the frame changes to reveal "Luxor bee, chick and hare" carved in stone writing. The transitions, the flash-backs, the movement of the eye from object to object to tell its story, the projection -- all these aspects of H.D.'s art relate not only to the stream of consciousness or the free associations of her analysis with Freud in 1933 and 1934 but to the techniques of the cinema.

Answering The Little Review's valedictory questionnaire in May 1929, H.D. wrote: "Just at the moment I am involved with pictures. We have almost finished a slight lyrical four reel little drama, done in and about the villages here, some of the village people and English friends. The work has been enchanting, never anything such fun and I myself have learned to use the small projector and spend literally hours alone here in my apartment, making the mountains and village streets and my own acquaintances reel past me in light and light and light. ...All the light within light fascinates me, 'satisfies' me, I feel like a cat playing with webs and webs of silver." In this new art, contemporaneous with H.D.'s own lifetime, painting and tapestry could be recalled. H.D. sees the projection of the image as a web of silver, or is it the thread of film that she means? But "web" occurs again -- it is not only what she most wants to do or know or be, it is also what she most fears: "I fear the being caught in any one set formula or set of circumstances, I fear poverty in that it might catch me up in some ugly web of the wrong sort of things and the wrong sort of attitudes. I fear people from the future who may 'trap' me."

Between 1928 and 1930, Kenneth Macpherson, Bryher's second husband, edited and published Close Up, "The Only Magazine Devoted to Films as an Art," with Bryher as Assistant editor. Old associates appear from the literary nexus of the early twenties -- Gertrude Stein is there to contribute her avant-garde note, and Dorothy Richardson writes an elegiac to the silent film. But the writers in Close Up seem not to be associated, as writers in Des Imagistes, The Little Review, transition, or Exile, were, with a common cause in a new art in writing; they suggest often the intimate amateur correspondence of a social "in-group." "(Dear H.D. Pardon the theft)" Hay Chowl can write in quoting an article of H.D.'s. The "We have finished a slight lyrical four reel little drama" of H.D.'s reply to The Little Review, with "some of the village people and English friends" came as an account of how far she was from her old literary associations. The thought of Pound, Williams, or Lawrence is remote now; even the profession of poetry will not do when she is asked "What should you most like to do, to know, to be?" In this "Bryher" milieu new associations

were forming however that will play their part in H.D.'s return in full to the profession of poetry in her last phase. When the London correspondent of Close Up, Robert Herring, later becomes editor of Life and Letters Today a new literary context appears. Gertrude Stein, Dorothy Richardson, and H.D., will be a familiar expectation; Bryher is an even more constant contributor; Edith Sitwell enters the picture (and there may be a common ground of magic and visionary prophetic mode between the later poetry of Edith Sitwell and H.D.'s War Trilogy); carried over from the impetus of Close Up, the art of film becomes a new department of Life and Letters Today, and more important, the genius of Eisenstein is brought into the new ground.

The history of "in-groups" -- Bloomsbury, Villefranche, or Basel -- has yet to be studied out. Literary historians are shy, even unhappy, of accounting for the way purely social factors enter in to the picture of the development of the art. We are attracted, moth-mind to the flame, by the brilliance of the company. Within the charmed circle the four reel little drama glows, we are drawn in. To have been included! But just here I falter. From the outside, the circle is an armed exclusion. Raymonde, Gareth, Daniel in H.D.'s novels test each other as if they tested the defenses of a citadel. One could never be certain that circumstances, surroundings -- for a moment these walls suggest the other walls of The War Trilogy -- would not set one apart among "the wrong sort of things and the wrong sort of attitudes." Here, as in the web that satisifies and the web that she fears of H.D.'s reply, the attractive social circle is forbidding; fearful within, and fearful without.

The group of Bryher's friends are involved now, as she is, in films. In film-talk and film study, and also in the making of a film. For Kenneth Macpherson in 1929 worked on a film with H.D. as star. Somewhere within the charmed circle copies may still exist. The "silver-self" "cast" as a "star" by Narcissus in the poem Myrtle Bough takes on a new meaning. And the medium of film is ultimately in the image projected in terms of light, cast upon the screen. Back and forth the puns of being cast in a star-role, being cast on the screen, being cast in a new light dance in bewildering webs of exchange. "The light within light fascinates me," H.D. wrote. It's a risky reading that for a moment again another impulse arises linking the flood of light streaming out from the movie projector with "the rain of beauty" of The Flowering of the Rod and just beyond with "where great stars pour down / their generating strength." "The sky is skyey apparition," Dorothy Richardson writes in Close Up: "white searchlight. The book remains the intimate, domestic friend, the golden lamp at the elbow."

In the book tapestry, painting, film may be evoked as one vision where the mind is weaver, painter, projector. Here images are not seen in locus of the subconscious or locus of the eye's retina, but they are visualized, created in the mind's light that men have always puzzled over. In the midst of the City under Fire in The Walls Do Not Fall there is a light in which the artist works "circled with what they call the cartouche." The cartouche in French is an escutcheon upon which or within which figures that are emblematic appear; it is also a cartridge. In Webster's it says: "2. An oval or oblong figure, especially one on an Egyptian monument containing a sovereign's name. 3. In some fireworks, the case containing the inflammable materials." H.D. makes a passing joke about it, a play of words between her art

and the rival war: "folio, manuscript, old parchment/will do for cartridge cases;" and then that "Hatshepsut's name

is still circled
with what they call the cartouche."

Like the surrealists after Freud, she sets up new movements in the mind by the evocation of puns. Or like Eisenstein in his new language of cinematography where montage, rapid sequences and juxtapositions of images extend the vocabulary of the film. "The technical possibility," he writes in Close Up, "foolishly called a 'trick', is undoubtedly just as important a factor in the construction of the new cinematography as is the new conception of staging from which it is sprung." Where it is not their pointedness or cleverness but their power to disturb our set idea, our sense of outline, that counts.

Here the content of the cartouche, the Queen's name, and then the thought of her, so that even in reference she appears to the mind's eye, is something that threatens the cherished reality of the tangible; as the immediacy of God in evocation or invocation, beyond the sensory or outside the sensory, is something we resist the thought of. Stars, immortals, gods, contained in their cartouche or cartridge, the poem, if they invade our sense of the actual, disturb, are "inflammable materials."

And The War Trilogy itself in the mode of the apocalyptic revelation contains within the circle of its ecstatic longing and belonging the light of joy that is also the flame-heat of a stored-up wrath. The rain of fire is God's wrath, and in a curious emanation the "sword" emerges from the "word." Were it not for men's thoughts and dreams, we realize, there would have been no war. The realization, once it is there, never ceases to trouble H.D. The terror and evil of the war give power and beauty to the poem.

Never in Rome
so many martyrs fell;

not in Jerusalem,
never in Thebes,

so many stood and watched
chariot-wheels turning,

from the fearful scene a proud music takes over, and the poet's voice takes on strength and resonance. The poem evoking, summoning forth from where it was hidden, this meaning of war, wrath and the fulfillment of prophecy -- is apocalyptic. Ammunition. A cartouche.

Within the circle of initiates -- the "we" that in H.D.'s life had been a group of poets and then an exclusive social group, and now, in wartime London, was a group of occultists -- the encircling containment of an art, a knowledge in which figures become emblematic -- we see the double image of a group and their patron or leader. One, among whom H.D. as writer belongs, children of Hermes,

wistful, ironical, wilful
who have no part in

take on from the cartouche an Egyptian character. But the cartouche that contains or surrounds the group is also "a spacious bare meeting-house" where, within the congregation of the dream, a man appears, "upright, slender." Once, long ago, she had been in love with Him in Daniel. There is no time for that. The whole scene exists in a split-second. The poet was dozing, perhaps... anyway: "then I woke with a start / of wonder and asked myself" she says. He is, or might have been, Ra, Osiris, Amen. In the projection, between his circle and the stars, he appears in another avatar as the zodiacal Aries panted in His Zeus glory--the Golden Fleece and the Lamb, as in the late middle ages He had indeed been worshipped at the Court of Burgundy. It is the Christ who impends, and His advent is created in the poem as it was created in history in the alembic of troubled boundaries, superimposed and adulterated civilizations, dissolved religions--a "trick" montage of Greek, Persian, Hindu, Egyptian, Syrian gods in one unorthodox Jewish god, a synthetic realization scandalous to the orthodox, in His incarnation an heretical affront, as H.D.'s realization in the War Trilogy was scandalous to the literary orthodoxy of the day. It was "silly," "irresponsible," "compounded of primitive elements yet rather appealing to a sensibility both modern and confused," to present the world of the poet's imagination in the old sense of the dream-vision; to be aware thruout that this dream-vision was still the very human mode of thought that Freud had studied; and in it all to insist upon the divine inspiration. Not only the thought of the Master in the dream but His Presence:

In the meeting house, we see who the new Master over Love is, whom the star from the beginning, announced.

> He might even be the authentic Jew
> stepped out from Velasquez;

As long ago the sculptor appeared at work between the stone and the light in the poem Pygmalion, creating a medium at once for his art and for the god, and H.D. herself pictured her part as poet in terms of the chiseled line, the tempered and hammered image, now the painter appears at work between the dream and the realization or incarnation, and H.D. names the palette as one with script and letters that

> are magic, indelibly stamped
> on the atmosphere somewhere.

The magic charges the Christ of Velasquez with living Presence; a confusion between what the painter has made and what has inspired the painter in which the work of art has a life of its own. So that the poet recalling the eyes in the painting lowered know that open they "would daze, bewilder," and in that bewilderment then testifies:

> I assure you that the eyes
> of Velasquez' crucified
>
> now look straight at you,
> and they are amber and they are fire.

"An image, in our sense," Pound writes in his 1916 Memoir of Gaudier Brzeska, "is real because we know it directly. If it have an age-old traditional meaning this may serve as proof to the professional student of symbology that we have stood in the deathless light, or that we have walked in some particular arbour of his traditional paradiso, but that is not our affair. It is our affair to render the image as we have perceived or conceived it." In The Serious Artist (1913), he saw that the responsibility of the arts was to "bear witness and define for us the inner nature and conditions of man"; "Even this pother about gods reminds one that something is worthwhile," he went on. And in Religio from the same pre-war period, Pound presents the Renaissance neo-paganism of Gemistos Plethon, Ficino or Pico della Mirandola, the higher humanism in which gods are "eternal states of mind" manifest "when the states of mind take form" that may appear to the sense of vision or to the sense of knowledge. Gnostic then as well as imagist, but not Christian. "What are the gods of this rite?" Pound asks, and answers: "Apollo, and in some sense Helios, Diana in some of her phases, also the Cytherean goddess." "To what other gods is it fitting, in harmony or in adjunction with these rites, to give incense?" "To Kore and to Demeter, also to lares and to oreiads and to certain elemental creatures."

Form and rite here are not associated by Pound with the image and practice of the poet, though, as in Religio it is by beauty that we know the divine forms, in another early essay The Tradition (1913) the tradition in poetry is "a beauty which we preserve," and, in passing, Pound tells us "We know that men worshipped Mithra with an arrangement of pure vowel-sounds." This is as far as Pound goes toward a suggestion of the poet's creative involvement with the divine world. Listing the reports that the artist must not falsify, Pound in The Serious Artist includes that he must not falsify his report "as to the nature of his ideal of this, that or the other, of god" --where Pound has all but put god aside among the random fancies of some men, with "this, that or the other", as if he wanted to be sure he would not be taken for a Christian sentimentalist or enthusiast. "If god exist," he adds. And not an "ideal" but a fact: there is no qualification here of "if the life force exist". "We might come to believe that the thing that matters in art is a sort of energy," Pound argues: "something more or less like electricity or radio-activity, a force transfusing, welding, and unifying. A force rather like water when it spurts up through very bright sand and sets it in swift motion."

In Cavalcanti Pound speaks directly of the god in the work of art: "The best Egyptian sculpture is magnificent plastic; but its force comes from a non-plastic idea, i.e. the god is inside the statue ...The force is arrested, but there is never any question about its latency, about the force being the essential, and the rest 'accidental' in the philosophic technical sense. The shape occurs." We recognize here as we recognize in H.D.'s Pygmalion the informing genius of Gaudier-Brzeska. For this driven youth sculpted, wrote or talked late at night to H.D. and Richard Aldington as he talked to Pound or Hulme--

to create again and again in talk his vision of the artist-demiurgos at work in a spiritual vortex. In his essays and letters the language is charged with the character of his nature and art: "the driving power", "life in the absolute", "the intensity of existence." In H.D.'s early idea of her art, in images of fire and of cut stone, the ghost of Gaudier does enter in; as it enters in in Pound's idea of his art in motives of force and form.

Does Bergson's élan vital enter in here? For Ezra Pound in his first London years the élan vital was very much in the air -- in the theosophical environs of Yeats, Mead, and The Quest lectures, and then again in an entirely other circle, in the philosophical environs of the Bergsonian T.E. Hulme. In his Prolegomena and Credo of 1912, Pound sees his own turning to the Melic poets and to the Medieval romance-tradition in poetry as vital, not literary: "a man feeling the divorce of life and his art may naturally try to resurrect a forgotten mode if he find in that mode some leaven, or if he think he sees in it some element lacking in contemporary art which might unite that art again to its sustenance, life."

When Wyndham Lewis's scorn for the romantic takes over -- ranting against what he sees as the cult of Time, the Primitive and the Child -- Bergson will be out of bounds. When Eliot's pervading concern for respectibility introduces its criterion with the rhetoric of a new literary orthodoxy -- though Pound's élan will win through in the Cantos, flooding passages with image and presence of light and divine energy -- in Pound's theory kulchur will replace life as the sustenance of art.

But in his first development -- pre-War, pre-Eliot and Lewis -- Pound's premises are not ideological but psychological. He insists upon the intellectual and emotional complex where "ideas, or fragments of ideas, the emotion and concomitant emotions ... must be in harmony ... must form an organism." In poetry "the mind is upborne upon the emotional surge." This relation of the poem to a wave of life expression is as far as Pound is to go to relate the art to an organic creativity; and in his later criticism even these ideas of emotion and surge become diffident. The Aphrodite of The Cantos does not rise as Hesiod would have her from a bloody wave; she is not the goddess of sexual love and life renewal Pound addressed in The Spirit of Romance but the Aphrodite of the higher intellect in which Beauty has become a pure essence. The spirit of romance is supplanted by the spirit of the schools. Philosophers, not poets, form the great tradition; and among philosophers, those who seek the victory of the mind over the passions are now Pound's masters. So, in The Pisan Cantos, Anchises lays hold of the goddess's "flanks of air/ drawing her to him / Cythera potens"; yet even this phantasm of the air is not the very Aphrodite, who is "no cloud, but the crystal body." In Canto 91, Section: Rock-Drill, she appears again as "the GREAT CRYSTAL" -- in its capitalization the insistence is clear. "Right reason" takes the place of the earlier "intellectual and emotional complex in an instant of time"; and "from fire to crystal / via the body of light" the Princess Ra-Set "enters the protection,"

the great cloud is about her,
She has entered the protection of crystal.

Here the "river of crystal" appears, carrying the soul-boat up out of the carnal and psychic mire into "the body of light come forth / from the body of fire", a sublimation that contrasts sharply with H.D.'s impassioned evocation in Tribute to the Angels, "re-light the flame", where venery and the venereous (the body of heat) are called forth from the body of fire and re-related to venerate, venerator in the name of Venus-Aphrodite.

*

H.D. sees the gods not only as eternal state of mind, higher beings, or great images cast in a phanopoeia, but as expressive entities of the worshipper's own creative life:

> Shall I let myself be caught
> in my own light?

Later, her Freudian persuasion will reinforce this view, but as early as Pygmalion, the worked image (each particular intellectual and emotional instance that becomes experience then) is thought of not only as being realized in itself, an expression, but as an entity in a psychological process, a projection. She has passed from the idea of the artist's work as having its end in the object, the image, as if captured in stone, the closed system of beauty, to the dramatic perspective in which the art is a magic ground in which thought and feeling come into being and meaning returns from the object to inform the artist as he works -- a way of participation thru the created object in a self-creating life; from

> I made image upon image for my use,
> I made image upon image, for the grace
> of Pallas was my flint

to the more involved recognition of poetry as a creative process, as in 1917 she had concentrated in a stanza the questions that in the 1930s will lead Malraux to his massive Psychology of Art:

> Now am I the power
> that has made this fire
> start from the rocks?
> am I the god?
> or does this fire carve me
> for its use?

In turn, the creative process is recognized as a life quest or romance -- Psyche's quest for Eros, the soul's quest for salvation, a new Master. She had passed from the persona or mask worn in the play to the psyche, the soul of the play that comes into being thru its masks. When, in The Walls Do Not Fall Christ appears in the image "stepped out from Velasquez," her sight of the painting, as with the statue of Pygmalion, has broken the boundaries of the aesthetic into meaning. The work is not self-contained but serves another purpose, that eyes "look straight at you" -- a magic efficacy, the very presence of Christ.

In such a transformation paint or stone take on body, as in the Christian mystery the word is incarnate; there is a charged

carnality in amber eyes that would shine so in the poem, as if they could shine so in the painting. Here H.D.'s insistence that she is, we are, involved in the poem as if it were a field of associations brings us up against such a bias in aesthetic as Dewey has in Art in Experience: "If the perception is then eked out by reminiscence or by sentimental associations derived from literature -- as is usually the case in paintings popularly regarded as poetic -- a simulated esthetic experience occurs." The criticism would seem to apply to my own appreciations as I go, where the poem and the painting are not objects but operations in a field of reminiscences, the perception eked out everywhere by associations that are sentimental, the sense of life and the mentality so identical for me. There can be no accident that along with my changing sense of poetry in my reading of H.D.'s work, and in my own writing the flooding out into literary derivations, has come a breakthru or breakdown of aesthetic in the evaluation of painting to include literary qualities in early Cezanne, Moreau, Bocklin, or the Pre-Raphaelites Burne-Jones and Rossetti, painters long exiled from the dominant taste of my day because of their false poetics. H.D. has been dismissed by adverse critics with slurring references to William Morris; as Pound has been put down with hints of Swinburnism; Joyce with aspersions of Pater. "There are works of art that merely excite," Dewey warns: "in which activity is aroused without the composure of satisfaction, without fulfillment within the terms of the medium. Energy is left without organization. Dramas are then melodramatic; paintings of nudes are pornographic; the fiction that is read leaves us discontented with the world in which we are, alas, compelled to live without the opportunity for the romantic adventure and high heroism suggested by the story-book."

For Ezra Pound, the operation of the work outside the spirit of its art, the excess in which what might have been aesthetic, beautiful, or later, in Vorticism, energetic, becomes psychological -- sensually, sexually, or religiously sentimentalized -- the psychic chiaroscuro of and in any thing -- is distasteful, even abhorrent. After The Spirit of Romance in 1910, Pound goes no further in the matter of Dante, though he pays homage to Dante's mastery as a poet, for Pound would put aside the heart of the matter, the imagination of a Christian synthesis; as in The Cantos he can include the Greek gods in his history but must dismiss those unchaste aspects that the Cambridge classicists and the Vienna psychoanalysts had begun to suggest; he must exclude too the mire and the star in which Christ is born. There is a threatened chastity of mind in Pound that would put away, not face, the thought of hellish things, here in considering the Divine World, as later in considering fascism, where also he cannot allow that the sublime is complicit, involved in a total structure, with the obscene -- what goes on backstage. Spirit in the Cantos will move as a crystal, clean and clear of the muddle, even the filth, of the world and its tasks thru which Psyche works in suffering towards Eros.

"The conception of the body as perfect instrument of the increasing intelligence pervades," he writes of Cavalcanti. He is naturally repelled when in Rubens he sees the flesh portrayed as meat. He rages like a Puritan bigot faced with the Whore of Babylon at the adulterous -- latinizing -- syntax of Milton, who "shows a complete ignorance of the things of the spirit." Usury brings "whores for

Eleusis", corrupts the sacred orgy; the art too, under usury, becomes whorish and profane.

Healthy mindedness is an important virtue for Pound's art -- the clean line. Clean mindedness, then. "The old cults were sane in their careful inquisition or novitiate," he insists in The Spirit of Romance. Here and in the Cavalcanti essay Pound insists upon the "well-balanced", the "mens sana in corpore sano" base. "All these are clean, all without hell-obsession," he writes of Ventadour, Guido, Botticelli, Ambrogio Praedis; and then, it does not occur to him that we must turn to others if we seek information concerning the nature of darker matters. To think at all, to imagine or to be concerned with, that state of human psyche whose light is Luciferian and whose adversity is Satanic -- much less to admit that in our common humanity we are ourselves somehow involved in that state -- is, for Pound, to go wrong, to darken reason, a morbidity of mind. "We seem to have lost the radiant world where one thought cuts through another with clean edge," Pound writes of the change from Cavalcanti to Petrarch, and he relates the change in poetry to a change in world view, the loss of "a world of moving energies 'mezzo oscuro rade', 'risplende in sè perpetuale effecto', magnetisms that take form, that are seen, or that border the visible, the matter of Dante's paradiso, the glass under water"; "untouched," he concludes, "by the two maladies, the Hebrew disease, the Hindoo disease." In reviewing Love Poems and Others by D. H. Lawrence in 1913, Pound, who praises Lawrence's narrative verse, finds "the middling-sensual erotic verses in this collection" "a sort of pre-raphaelitish slush, disgusting or very nearly so." In writing on the work of Henry James, he tells us: "The obscenity of The Turn of the Screw has given it undue prominence. People now 'drawn' by the obscene as were people of Milton's period by an equally disgusting bigotry; one unconscious on the author's part, the other, a surgical treatment of a disease." Where we begin to see that Pound's aesthetic disgust is not unmixed with psychological factors that he would like to disown.

Virgil was O.K. for Dante, it seems to Pound, for Dante knew no better. It is not the poet-portrayer of the Underworld and prophet of the coming Christos, but the high-minded master of the Superworld, Plotinus, who leads Pound up out of the mire of mud, bog-suck and whirl-pool that is Pound's Hell. Holding the Medusa-head downward, Plotinus petrifies the evil; and perhaps Pound sees Plotinus in history as having petrified into the clear crystal of neo-Platonism the murk of the Alexandrian period, the chiaroscuro in which Christ was synthesized. "You advertise 'new Hellenism'," Pound writes to Margaret Anderson of The Little Review: "It's all right if you mean humanism, Pico's De Dignitate, the Odyssey, the Moscophores. Not so good if you mean Alexandria..."

It is to the art of music that Pound looks, to the time "when each thing done by the poet had some definite musical urge or necessity bound up within it." There is an echo of Carlyle's concept of poetry as musical thought here, but it is important too that in music the material of the artist seems most to have transcended the "slush" of flesh and earth, to be furthest from "the metamorphosis into carnal tissue" that represented the decay of values in Rubens. The avoidance of Christ in The Cantos, a poem that is after all primarily

an epic of the gods and of the divine reality, is complex; but even with those gods who do appear in the Cantos, Pound avoids all knowledge of their aspects of embodying our carnal experience of suffering and mortality as a value in life. Aphrodite appears in Her light body, having no association with whorish simulacra men have made of her. There can be no compassion whereby the high suffers in the low. In the highest vision there are not then the eyes of the crucified, with their secret that life's victory lies in the passion of the love-death, but there is the love-light of

the stone eyes again looking seaward.

and the Sphinx's riddle in Canto 115 "of men seeking good, / doing evil."

"Unless a term is left meaning one particular thing, and unless all attempt to unify different things, however small the difference, is clearly abandoned, all metaphysical thought degenerates into a soup," -- so the art for Pound must strive for the dissociation of ideas; in the Cantos he strives for the clear entity of things and beings in themselves. For H.D. terms are either duplicit or complicit, the warp and woof of a loom. As in Paterson, William Carlos Williams pictures poetry, like a city, "a second body for the human mind," he quotes from Santayana's The Last Puritan, having all the complication of one thing in another a city has. Neither H.D. nor Williams is concerned with metaphysical thought. Pound's soup into which metaphysical thought must fall when associations are allowed may be the dream. "Paterson is a man (since I am a man) who dives from cliffs and the edges of waterfalls... But for all that he is a woman (since I am not a woman) who is the cliff and the waterfall." In such a poem or such a dream no entity is unmixed, there is no form that can be satisfied in itself or fulfilled in its own terms.

Since 1938, when at nineteen I began to read the Cantos and then in the library the files of The Little Review, I have had a strong sense of this quality of a thing in itself, the intensely realized form of Brancusi's columns and heads, the deliberate design of syntax in Joyce's Ulysses, the absolute sense of language in context in the Cantos, the changes in energy -- movement and tone -- so exactly made. Here it is the composition, not the exposition, of content that counts, and this count is a mathematic of numbers and the ratios that have been learned in the working hand and in the ear, having to do not only with soundings but with equilibriums, beyond the calculation of the brain alone. I have still this excitement about the masterpiece, the mastery of weights that lie at the edges of intuition, the informed impulse of each nerve in training, the skill that extends our apprehension of what is going on. In my mind H.D.'s War Trilogy and Helen in Egypt have been placed, "weighed", with such works of art, realized forms having, as Pound writes of Brancusi, "a mathematical exactitude of proportion." Our awareness of life itself springs from such an aptitude for intricate formulae, keeping the numbers dancing in proportions, the living mechanism of the body and the brain in its analyses and syntheses performing, to be alive to things at all demanding, a high cybernetics. The lasting thrill of the artist's work is that it fits, as our actions fit, when we feel them to be most alive, more than

we imagined or longed for, so that we gain a heightened expectation of proportion.

I am sure that these apprehensions do not come from the unknown but are the very beginning terms of consciousness, the first factors of our human communication. The rumor remains of the unconscious, the incommunicable below, and of the super-essential, the incommunicable above. But where numbers or images or persons occur we are in the realm of consciousness, for to figure and to sense is the mode of awareness. Even the rumors of psychoanalysts and metaphysicians are, like all rumors, elements arising in consciousness. The unconscious is, to apply the formula of theology, the uncreating; the super-essential, the uncreated. Myths and archetypes, like the structures Plotinus or Jung pursue in thought, are the stories and pictures we know as creation, the ground the collective conscious makes for experience. It is our consciousness not our unconscious that strives to imagine the real and the unreal, that would make a body even in the unrealized, so that the toil of creation is never done. Even these haunting rumors of the beyond consciousness, of the unknowable, appear as creatures of conscious language. Words propose "a Word beyond utterance, eluding Discourse, Intuition, Name, and every kind of being."

After the excitement in the authenticity of masterpieces, having resistant individuality and a demanding skill, I have come to see such works not as the achievement of inventors or masters or diluters or starters of crazes, as Pound would have us classify writers in his ABC of Reading, not as objects of a culture, embodying original sensibilities, but as events in another dimension, a field of meanings in which consciousness was in process; where I saw psyche and spirit, as I had come through Darwin to see the animal organism, arising in an evolution of possible forms, surviving, perishing, derived always from an inheritance in which the formal persisted, arriving always as a trial or essay in which the formal had to live the last of a species, the first of a species, and yet having only its own terms, its own life, in which to make it. Every manifestation of spirit is the matter from which spirit must derive itself.

What is intent here? "Does 'intenzion' mean intention (a matter of will)?" Pound asks, seeking the sense of certain terms of Cavalcanti, "as understood at that particular epoch", he stresses: "does it mean intuition, intuitive perception..." The psyche strives to realize; the spirit ... to render clear? to rarify? -- but I would take spirit in a rock, who am yet obsessed with light. Intent is ours for we are at work; and may change its aspect where form is not a container or an object but "an extension of content."

It is the ground art makes for the experience and the dream to become communal that I most value. Our own dreams, like our own lives, are fleeting and insubstantial, unless they are delivered over from the personal into the commons of man's dream. The man I am would stake my person from him, if it would not give itself to his intent. In works of art what was a passing fancy labors to become a lasting fantasy, the "Dream, Vision" of H.D.'s later poetic, personality to become manhood; for our manhood to be a ground of reality, for the gods to flourish, "stepped out from Velasquez."

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The germ of this sense of art and life as the creation of a

community of feeling may have been quickened even as I began to read in Pound's Cantos and to have my sense there of art as a personal achievement of form, for in December of 1937, in the first issue of Verve, passages of Malraux's Psychology of Art appeared. Along with the aesthetic -- the concern with the beauty achieved -- there was then the psychological -- the concern for the meaning that labored to come into existence in art. Going back now I find evidence certainly of what must have encouraged me, under pain of being rhetorical, to search for what would declare itself, however it could in words: where Malraux speaks of "the metabolism of destiny into consciousness", "across particular modes of expression, a plane of communion amongst men", meaning seems to try itself for survival with a risk. And when Malraux tells us "That Jonah in the belly of the whale and Joseph in the pit prefigure Christ in the tomb, that the visit of the Queen of Sheba foreshadows the coming of the Magi -- such beliefs quickened in the sculptors an emotion that, in due time, infused their representations of Jonah, Joseph and the Queen of Sheba with the very breath of life...", he seems to speak for me as I would make it clear that not only is the work of the artist to realize a form in itself, but that form is in turn a womb of unrealized feeling and thought that must seek birth in form, in a man's work.

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These passages of Malraux, read when I was nineteen, converted my mind so that H.D.'s later work was bound, as by a spell, to seem a break-through in poetry of a new gain in consciousness. Or the poem had ripened, having in it now more of the permission to live. There was too, I am sure, the redemption that the religion of my parents, the Hermetic teachings in which my own mind had been nursed, would come into its own, having meaning in this new psychological light. Yet these things converted or redeemed because my spirit had taken hold in them, finding life here and not elsewhere, discovering a self and a story in the threads and images with which it worked its self and story, a --

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-- TAPESTRY. The visual projection of the poem comes to me in terms of a narrative and emblematic tapestry. To spin a yarn; to weave a tale -- so we speak in our common use today long after looms have disappeared from our daily lives. There is back of that sense a scene in which the poem and the tapestry, going on at the same time in the same room, belong together. Where Homer sings of the wrath of Achilles and of Odysseus (as in our day, the song appears in Zukofsky's "A"-12, addressed to Celia Zukofsky -- and in her, to Bach -- Blest, Ardent, Celia, Happy :

> Tell me of that man who got around
> He knew men and cities
> His heart riled
> As he strove for himself and friends
> He did not save them.

Tell us about it, my Light,
Start where you please.)

where the poet sings, the women spin and weave, as the poet in turn spins out the thread of his narrative and weaves at the loom of his rimes and stressed tones towards the workings, the close interrelations of his story.

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There might have been some "joke", a knot or pun of the interchange in the development of the two arts -- the two weavings -- where the story refers to a hero hidden among the women at the loom, or to a Penelope who like Shahrazad in the Arabian Nights must contrive to make her weaving or story begin again each day. To avoid something happening, to keep something happening. The exile in which the Odyssey can take place.

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It is one of the recurrent images of H.D.'s writing of the process itself. "Threads weave over and under" in XXXVIII of The Walls Do Not Fall; and it is in the tradition of the tapestry-maker's art that we see the foreground of grass and leaves and enlarged insect life in the poem, a decorative area as well as an area of meaning in the story where each part of the work

differs from every other
in minute particulars

as the vein-paths on any leaf
differ from those of every other leaf
in the forest ...

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As H.D.'s signature could bring to mind the insignia woven in the design of a palace tapestry, and did, as I was working on Medieval Scenes in 1947, so that when the lines came in "The Banners":

Above their heads the signet of the Prince
is woven, elaborate blood-red signature,

in the vision of those initials, and in the conjunction of Poet and Sovereign Power as one, the dreamer of the dream or the maker of the poem, I recalled, not my own "R.D.", but a passage in Tribute to Freud, which I had read two years before, in which H.D. tells us: "(I have used my initials H.D. consistently as my writing signet or sign-manual, though it is only, at this very moment, as I check up on the word 'signet' in my Chambers English Dictionary that I realize that my writing signature has anything remotely suggesting sovereignty or the royal manner.)"

I am weary; I cannot follow this world; there is something else growing in me; my dream is of an airplane caught in a bottle and running out of fuel. I stand outside the bottle; I watch. But the bottle is an airline terminal, and the people run around terrified, scattering their newspapers, hiding under benches. How did the airplane get in? How can we get it out? What will happen when it runs out of fuel and bursts into flames among the people?

Something is pulling me into this dream, first into the terminal as one of the terrified people, then suddenly into the airplane itself, as a passenger looking out of the window, watching the walls pull in and recede as the pilot carefully circles, looking for the way out or the way in.

There is a navigator proper, and there is also a topologer; the pilot is exhorting him, trying to hurry him up; there is almost no fuel left. The topologer is working with his charts, trying to construct a topologic map that will invert the space of the airplane and place it back outside the terminal. There are dangers. The wrong map will place the terminal inside the airplane and destroy both; the wrong map could place the landing strip inside the terminal or the plane inside of one of its passengers. There is a terrifying aspect to this; there seems to be no limit to where we could go; it is not simply a matter of flames and crashing.

Do you know history?, your own history?, that so clearly spells out reformations, restorations, Renaissances, ages of discovery and colonization, world wars, that tells us nothing about the end of the Twentieth Century and the beginning of the Twenty-First, that can imagine itself as the result of complications but has no notion of the complications it presently contains. This body has been used; I use it. The bird high against the dissolving clouds is not the signification of a bird, of flight, but is its own rushing pellet in its own body constructed for the upper air; the bird is not high or free or wind-blown, as we would be if there. The bird is unimagineable, moves in its own kingdom, its own soft portals open to what we know as light and what we know as wind. What of this history we have constructed from logs and wheels and canals? What of these computers and railroad stations and planned super-highways and transatlantic cables? What of the poetry being written now, the poets who so easily claim to be Blakes and Shelleys, the reviewers who so easily claim to give us a history of the Lake Poets, the Urban Poets; the correspondences between Shelley and Byron, Rothenberg and Creeley? Surely we can no more control our judges than Spenser could, or Blake, though like them we pretend to judge ourselves in advance, to save the future the trouble of deciding who we were, these vast powers we have to give and love as long as we breathe that dwindle so suddenly when our history ends, and become part of the world history, earth science, solar magnetism, things that surround us now, that we control and hold off by our lives, but which will surely continue beyond us by means of what we have said and thought, and by the very marks left on our bodies as we leave them.

We cannot get out of the bottle without a projection; we cannot find the words until we begin to think. They are not syntactic markers but the very deliquescence of a hidden syntax that begins only when the mind begins using them. The words are there. I can wake up. The projection is the cat scratching on the door, waking Lindy, and by her:

me; this was something the topologer could not know, the projection out of my dream into another freer place, where my concern for the plane ceases, and releases it; the bottle is turned inside out, but the people are unharmed, are unaware of this busy passage thru which improper objects are drawn to afflict them, even the mosquitoes that arise from moisture beneath the picnic. The bottle turned inside out delivers not only the airplane but the plane on which we live, the continued generation of energies in our motor and tonic nerves, those nerves which guide us from light into darkness and back by revealing the penetration of either, and the bodies residual in either, or at least some of the bodies which by some of their weights touch us and give us jolts and tugs, the nerves that guide old mules, themselves drawing the horse-doctor's wagon, the horse chestnut, across the earlier part of this century selling tonics, the word which draws this whole carriage, biting its tale in galactic space and spelling ouroboros, beginning of life in foggy England as lightning strikes thru the solar rain. (the glass cracks, we land in the terminal, it is morning, a quiet morning in which nothing has happened but the bees and certain flowers, and they are serving orange juice, sweet nectars ground out of half-oranges by an inverted bowl on a motor, a naked woman in white cloths delivering her own personal moisture; it is morning, yes, but there is a night of stars that lies above any airport, guiding even the A.M. flights of businessmen, a series of points on the body which release passion by application of the image, that the bearer does not know, and the applicant whore knows only thru her study of the sky).

It is dark and night in Canada. There is a pulse of light within the sky. Rhythmic, continuous, sputtering, but with hot centers that boil thru and burn open the sky: this is a light generated in moisture by the presence of differential; it is drawn by the liquid and gaseous materials out of unknown space and properties they bear within themselves; it falls upon them; it opens them up; it is the beginning of a chain in which is a repetition of chains; it is the beginning of life that cannot stop completing itself from the initial perceptual flash, when the image that is one becomes two of itself, and the traditional forebearers of an alphabet pour across a natural sky. The motorcyclists stop at the restaurant; they go to the bathroom, drink some coke; they return to their car. The wear black leather jackets with silver writing; they are SATAN'S RIDERS; there are five boys and two girls; they have the accoutrements of motorcycle riding but their vehicles are not here; they enter an old car. Two boys sit up front driving, their pulse written on the sky in regenerating light. Three boys sit in the back, their thighs open on the girls as on cycles, the girls occasionally bending upward at the waist, rising up to meet them mouth to mouth as a cycle never does; they believed, riding across Canada, that they generated this storm, that they wished it from the chemicals in their bloods, or it was no different than the chemicals in their bloods, the fuel in their motor, the motions of energies on roads, thighs on moisture, light on a mechanism which generates light, just as I believed myself the generator of the sky, the thoughts in my mind continuous, pulsar, with hot centers opening to reveal whole perspectives of cloudy material, of pia mater and grey moist brain, silent but broodingly ionic, sporadic and instantaneous, opening into dark unconscious paths, bringing back pools of matter forgotten but able to form a soft nocturnal rain, and I am drenched, the trucks, winged with lights, roaring by. The motorcyclists travel at their own distance; we exchange places in traffic; the girls are wearing silver shirts that glisten as the headlights fall on them and light finds the shapes of their

backs; the motorcyclists break open the female ring, the circuits, circus of erogenous zones that open the glans and release the fluids, a hormonal glistening giving secret meaning and thrust to the glistening shirt which changes from allure to the actual mechanism of seduction. The harmonies cover the sky, the lights of Windsor cacophonous, and finally drenching out their stellar source, their atmospheric bank, and we move into alleys of bulbs, glares, too many needless lights, too much language obscuring the sky, everything on the edge of power failure, but the brains of the drivers, like mice, lead them on; We buy gas, and then go across the bridge into America beginning at Detroit.

Thirty miles from home the feeling of getting there is sexual, the expectation begins to draw on sexual foreplay, the end of the journey to a clearly marked end. But when we come home we will not come; we will be there, and the fluids, which were archetypally meant for other things besides sex (dangers, welcomings, eternal returns) will not be frustrated, but will find discrete outlets that give sexuality range and meaning when it should happen. This does not mean there is something larger than sex in its own realm, but that sex is large and encompasses many realms. If we understand that the eternal return to the shire, to where any, the smallest, or longest journey began, is a pool of sexual membranes even though we may demand to experience it in words, is a pool of sexual membranes generating words and stories, if we understand this physical process that goes on within the driver driving the car, the process that weakens his arms and makes each next mile the hardest until the last is the hardest, we will understand the delicate precision of the chemicals that control us and guide us into our resources; we will understand why our lives are infinitely deep and that we can go as deep as we allow ourselves to penetrate the crystals that generate any moment, any one pattern of thoughts; we are not just returning home; we are experiencing a chemical change, a homiostatic change; there are stars in our bellies, and the correlates of stars; our food is converted into something else, secret emotions and paths, that we must learn now, or never, and if never, all is never: it is one instant but it is eternal return, and we are saved, redeemed, allowed to continue not by the mere fact of having returned, the accomplishment of mileage on a direction, but by the thoughts we think, the ancient Egyptian and Neanderthal prayers, the ancient cellular prayers we inadvertently utter as we come: thus we go.

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The moths pour thru the chemicals of a darkened world; the chemicals are light; their own wings are photons; their flight is a section of the cone. The light pours thru chemistry, is converted into bright yellows, blues, candescent browns. A single red stink beetle, fuel full of daylight under his red shell, holds claw-to the screen, his place, breath, hundreds of smaller more agitated creatures move over him; Mercury the mosquito passes him a thousand times, wings a-fire. The different pulses mark the separate worlds within worlds, the electrochemical speed at which blue needle-flies mate above the water, the slow turgor sperm; the vibrations are interphasal, interstitial, intralunar; the vibrations are musical notes, genes containing suicide notes, catatonic downstream splay; the vibrations are per second, per millesecond, a nerve snapped and brought back in that time, pendulum stung to neurons, the swiftness with which a bee stings, a fly drinks honey pores of melon. A vision is sustained at firings per millesecond, milliphot, flesh and bones on the beast, a circulatory system, and something like a heart. The vibrations hold

up fleshy canopies, hoods of stars, each winged astral hot and in motion, the codlin moth eating its way out of the codlin apple, out of the heart of the etymological lion, words out of words blurring in the flush of saliva and sea-salt-water, micronome, dialects springing up in brine, or that codlin apple is itself derived from coeur de lion, a small fish, an apple, a milliwatt moth.

The sun is a cricket with a full belly. The sun stews in its juices, fungus, stored hay, cider.

Microsun, the clothespins hold to the moon, the moon bleaches and freshens the sheets and underwear, an oversight that will be sprinkled with dew; the moon borrows three eggs and a cup of sugar, leaves strange artifacts in the underearth: a rutile sixling, a gypsum fish-tail, a parallel growth of beryl crystals, a pseudomorph of garnet (the hotter stone eating in duodecahedral green). "Occasionally we encounter the misleading situation of one mineral having the crystal outline of another, as a result of having taken in some fashion the place of the original crystal. These are known as pseudomorphs." Heaven penetrates earth, and earth heaven, and deer fly faster than moons in the sky; the fish turn into hunters, pursue on foot and lungs where Taurus ends at the neck, the water (E flat) at the shore (F sharp).

The car backs out into the road, it turns its wheels, it noses into a driveway, cuts its wheels sharply, its headlights fall upon the lovers, the driver blind behind the power of another world; he pulls out, vehicular; the power of transit is his. Both sky and cell are divided into sectors, rivers, thermoclines, ecotones run between them, and can be derived from each other even as the streams thread, the memory flows onto spindles, and the jellies seek chemical poles. The sperm is octahedral; the egg opens along six horizonal axes of twofold symmetry; a hexagon hides a trapezoid; now the trapezoid opens too, along purse lines, six, two, two, the penis thru membrane chambers; a smile opens into a grin, laughter; the stone is quartz, pink geo-jewel. The lovers tumble thru inverting twisting space; a corridor swings past its axis line and opens at an angle into a court-room; the king dwindles to a line, one dimension, then opens again into an argentite jewel. "This is known as habit, and we speak of low-temperature (of formation) fluorite as having a cubic habit, and high-temperature fluorite as having an octahedral habit." The quartz is at high temperature; he melts the walls, opens the paisley markings on her purse; seeds fly up, out; her body is tattooed in sensuous pods and ferns, fiddleheads, the annulus at four o' clock; her neurons program a sinuous dance; he knows not what to expect; circles are spheres and spheres are full with ratios; chambers, each circle smaller and tighter, are thrown around him; how the shape closes on a single photograph of her face; he rides the changing shapes, hexa-, octo-, dihexa-, rhombo-, tetra-, gyroidal; he holds them in the lines of a prism, first order, second order, third order; the axes burst, and a milky silver fluid penetrates the veins.

"We also find, from the study of ghostlike earlier growth stages delineated by a band of impurities within the crystal (and known as "phantoms"), that the habit of a crystal may have changed during its growth."

The moths flock at the surface of the sun, dead souls, old thirsty men asking for a dime to buy a cup of gin, sipping anti-freeze out of parked cars; their thirst stirs up the curtains of morning sun; the red fly, a striped species, rises from his hut and circles the rooftops.

Crystals of smithsonite hide in the dry zinc ore, blue crystalline. The last radio waves and anthems of evening are now scattered by winds and the flutter of fat birds rising. This is the morning of fueling the garbage truck; the blades mash, mulch, collapse walls; it begins early, moving from house to house, grinding up shit and bottles and corn-cobs. The men hate the garbage; they spill liberally on the sidewalk; the sun arouses vapors; the flies come; the gnats, spontaneous generation, white worms born in the garbage can, covered by the garbage week after week, put on the costumes of flies and buzz about in the cabbage leaf sun. There is a summer within summer, and the larvae of planets, the imagos, swim in rich chemicals, jellies, and carrot scrapings; even our waste is fertile in shape.

But we poison the planet; we fill its canals with ammonia and Ajax, green powders of Spic and Span, the hose spinning in the garbage can while the water shooting from it loads a volume with water, now released and spitting like a snake. The water flows down the driveway, saturates, the sun dries.

We sit inside resting; our bodies change drastically, change our minds, colors melt over into softer rustier colors, and an old red burns at tarnish heat; how predictable are we?/is there such a thing as our instant, our instantaneous velocities?, as our selves?

We crush the stone; our skin loses its exquisite sexual map and the hormones are stoppered; shape eludes our smallest fingers and hides in microscopic dunes, glumes. We swat the sun; its legs spasm, fail to move, it falls off and dies in its hard shell. On the grey summer television Mickey Mantle bunts with two strikes and beats it out, water soluble, cloudy on boiling, leads off first, gives magnetic bead on charcoal before the blowpipe, hit and run, colors flame purple, subconchoidal fracture, dissolves readily in hydrochloric acid, a run is scored, first order diamond focus, blue flakes catch fire and burn with blue flame; the players in uniform on the bench rest, sip life-fluid from the water-cooler; in Japan they serve tea. The cat comes out of the bushes and races across the street. There is no name for sun; it is everywhere. There is no name for this kingdom; it divides even under the slightest pressure, change of temperature, acidity. There is energy in every single atom of the human body, even as we try to decide what to do, even as we are doing this. There is no such thing as a clear ontological plane, a perfect system of crystals; they are experienced at once, the thoughts and edges rising from the bath like steam, the morning, and even that turns Paynes grey, blue, and fills with stars.

The king lives in the house of the sun; this is his first law. He separates his yolks from his whites. He beats each of them in a separate bowl. His breakfast is sun. "Having exhausted the possible variations of three axes at right angles, the next mathematical possibility is to reduce the symmetry by inclining one of the axes to the plane of the other two, which remain at right angles." The phases of the moon pass in syntax over the sequence of shells; the car lights run the trees along the side of the house, the outside windows along the inside wall and across the celing; they come to diagonal focus, turn abruptly and return. The active verbs are followed by the passive verbs, then verbs that spin on their axis, verbs that reverse the doer and the deed; when the languages are no longer mutually understandable, the stars, their names and periods forgotten, come down to earth, and each family gives a brother's daughter in return. The passage of the moon thru the stratosphere is marked by an alto-

stratus ring.

This is stream of consciousness, of interminable etymology, moon leaping out of moon, proto-Indo-European loaded with goods for the Utes and Aztecs, trade route of the Comanche dervishes. The phases are limitless, spun by flesh out of flesh, jewelled mask concealing cosmetics, concealing magical ruddy face. Thought passes easily thru itself, a home where we can live, a series of facial expressions, contemplative poses, sexual and digestive stances, the dark summer bowels, generating our own daily motion, stances, coffee in the high grass, the music of a castle across the river, is the sun, the ancient face of a girl, is the voice of Smokey Robinson singing across the Snake River, the Nile, "Come to me, baby," the tune, the voice of the girl across the summer bed, the heat, is the mountain, is "I'm on the way," coffee grounds spilled in the sun and dust where we sat, leaving a stain, a droplet of perfume on the bedsheet, and the deeper rain, whalebone of sperm, rock and roll fading, tune into beat, and beat merely the sound of late afternoon wind, cars, and footsteps on wood, memory rolling thru the houses, halls, housewares of the sun, spoons and forks, tea kettles and toasters, speech without etymology, from which all codlins, turnips, codices come, the coffee sip by sip, until the night is dark, the baseball game going on inside the bugs buzzing static on the porch, a silver wire tuning sound into a single game from out over the mountains, a tongue against the vibratory state, is precious, sugars turning to mist and cooling the body, malt and alcohol, the curtains turning lazily in the washing machine, catch in damp-dry because they are too heavy; the machine stops; the curtains are fished out, dripping with squandered daylight, an excuse to buy a clothesline, hung from fence to wire-clamp, thru the curtains the red rug absorbing the flat rays of the hot day, songs, rotors, pans against porcelain, spit of quiet steam, and the tiny seeds discharge their ink into subtle teas, star-shaped cookies and diamond-shaped cookies made from orange flavoring, cream of tartar, brown sugar, and bladed cookie-cutters, sounds of the noisier planets and birds. The dental drill moves along the carapace of the body, reminding it of its inner halls of connected bone, the metallic sink, the wheel on the oven guiding heat in circles, on the carpet-sweeper spinning brushes, the wheel on the stick leaving a faint imprint of wax for the sewing machine, music continuing, daylight, bell of a passing train, cat's claws on bark, wind followed by greater wind, the same cricket that began it all, the same archetypal moth-wings, flutter, spread angles with the dough for the pie, apricots steaming flavor, odors passing over fences, the proverbial sunshine cookies, the hearth that bakes bread all evening buried in the hollow moon; this is the flavor of the house, strongest where our bodies are, music only here in the center, where the tonal bone rings, oven where the soft world melts into tears and fluids, recipe: bakes itself hard and dry.

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The rain, loose, loose under the revolving heavens, loose air beneath the stars, rains on the roof, sun image dissolving into a grey Druid forest, television screen dissolving into static: lightning, faraway, inherent solar energy chained to a planet, language growing after the rain, soaking up moisture, strange shapes absorbing their thirst, beanstalks grow in every corner of the sky; on the map are the great directional faces, the winds, the magi, whispering, silent message like electricity of the brain itself.

The rain rolls off one land onto another, sucked down thru irrigation ditches into the aquifer, loose wetness on the window, occasional

thunder. This is the sodden atmospherically-controlled sky. This is the sky which moves of its own dynamo, and above it the fixed unmoving sky, sky of physics and Galileo, sky whose products, grains, viruses are hidden from us, from our own ends in our own lifetimes. We feed from the moving sky, the changeable sky, the sky of weathers and colors, of shuffling cards and directional winds. This is the sky of verbs and aspects, the sky on which we set our table. The stars feed us too, but this is occult knowledge, on the same level as diastrophism and continental drift. For five minutes every night a man reports on the local sky, its temperatures and pressures. Above, in darkness, is the sky whose motions affect the continents over centuries and millenia, not the sky of rain over the Great Lakes, but the sky of the formation of the Great Lakes themselves, the sky that brought the Pawnee to Kansas and Nebraska, on which the Comanche rode to the Southern Plains. The secret is at our feet: that there is another moving liquid sky; we float on it; it moves slower than Columbus' barge but not that much slower; it moves the slaves of Africa toward the Amazon jungles; it moves against the collision of East and West; moves with the speed of creeping ice. It is touched by the decay of fungus and the skewing of six crystalline faces; it is touched by the pressure between granite and gneiss. One giant magnet, one powerful polar geography, but with ties outside earth history, a map by which ships sail, a cartography whose lodestone is cut outside the earth's field. The earth is a magnet; as magnet is uniflow with the electromagnetism of stars, serves and serves in their consequences, hence our polar proprioceptive needle is set, water pumped osmotically, precambium and medulla functions; we are magnetite, the octahedral stone, sinusoidal puppets of proto-light,

and no one reports on the fixed sky, its meteoric showers, its great glandular polar pulls, the ships that call at our ports; this is secret, this is night,

as even the rain is secret, intermittent showers, intermittent sleep, an electricity which penetrates dream, spins orientation, changes surface directions, polarities; as we sleep the drain-pipe gushes beneath our window; the water seeps thru the earth and enters our apartment at ground level, filled with seeds and eggs, and leaves a dark irregular shape on the rug. We awake and the compass points North, North, yet we go to Rigel, Aldebaran, Vega, blind as we are in daylight; we are in search of the needle in the caribou's, the beaver's brain; we have lost our way in downtown traffic; the axes spin and the top spins. Spiders appear in darkness, and the full light of morning finds them with ten mosquitoes in their webs, a history occurring overnight, wiped out in the morning, an archetype which recurs genetically, either backwards or forwards depending on the direction of the magnetic field, the axis of our migratory gem, depending on the speed of light, and beyond it the speed of darkness. The optical field crumbles in the storm; we awake, and north is south, south is north. We can still, we can always see.

The sewer rolls across the night, the galactic dross in the hood of the earth; the greater sky is collected, all its stationary points, in the lesser sky; humidities are cooled to the regions of hallogens and metals; forty day winds melt the Arctic, Mars blows; everywhere rain and its zoa break, like a great stone melting, its mineral falling into the earth, into drainpipes, sponges, waterclocks, into the water-chestnut, where all roots begin, all thoughts, all histories, beneath the earth, incomplete at any stage as the weather is incomplete, does not move toward a conclusion or toward knowing itself all

at once; change, migration is its condition, our lives spread loosely thru climates, spilling and leaking; our statement is not a coherent philosophy, doctrinal, but is a sky, the constant textual re-evaluation of polarities, of previous moraines and etchings, the initial text revised by each succeeding text, thoughts that begin before daylight and burst loose when the mind awakes, Hebrew the initial somatic language, and the birds carrying their own waters above the city. The lavas cool, and commerce begins, slowly at first, from African and Mayan jungles; the earth recalls that it had a history, once, and begins it, chthonian sky. The land beneath the earth is not inhabited by dwarfs exactly, but by the rumblings of presentient thought, positionings, pegs on which the conscious text moves. There is a moon beneath the earth, or at very least a tide of metals, the core of a metallic sun still trapped in the glacial body, all corrupt conditions alchemical derivatives of this stone.

Truly the astrology of the earth is geology, or if astrology were four dimensional and fully cognizant of dense 3-space, it would realize great weighted polarized stones which lie at its center, as its center is no more than a magnet, no more than a giant grooved rock, the specific weight to which all attendant weights do their dance, upon the looseness of which all heavier weights pull toward what they are. Geology is the internal state, stasis, of each planet, to which all external states refer, i.e., balance, scales, ballast, is the meteorology of the heavier stones, the elements which are cold on earth, which rise to the atmospheres of the hotter planets and blow as metallic winds. The geology of each planet is specific to its geography, its history, its ecology, and its genetics, holding taut those strings across which the stellar winds move. Rain on Mars pertains to our glands and sexual apperception; the nickel rain in our furnace refers to the lay of the land, to what side of the hill migrations fall, and how the seed takes, to which side the river cuts, this nickel which weighs so heavily on the Martian scales.

Magnetism divides our histories from each other as snow falls between baseball seasons. ...are magnetic clouds in which the magi live, physical substance with their eyes at the back of their heads.

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The top spins, the buds open, the crystal eats, the trees blow in the wind. This morning we are dancing, you in a dress you imagine, feel your body in, medulla weaving its organs in cloth, I ask questions, riddle, not to let you know I intend to buy the dress; when I think I know the dress and the store, I drive there, buy it, and return. It is the beginning of a powerful March wind, the light and lightning that will burst in seed and pollen, the matching calls of birds and the magnetic sequence they hew to in the trees; you dance circles in your new dress, spinning, and on it red flowers, and blue flowers, each a miniature sun with arrowhead petals, sepals, wound on a cucurbite vine, green heart-shaped leaves, golden flowers, and on the sleeves dense packets of seed and smaller flowers wound within larger arcs, you spin about your shape, cloth that fits your body, even into which your soft pregnancy fits, embryo too kicking against the wall, the shape that feeds it, house inside which by its nature it lives.

The top spins, the activities of this millenium, of this world-age are depicted, cut into the weave-wood, wood-wind, light prismatically dancing behind a shield, a ploy of mirrors and foci, is the great accumulating atmosphere of a planet, vibrating blue, the crystal beds of the eye, lens distributing from nerve to nerve the elec-

tricity of hue and primary color, dense micro-shape, micro-tectonics of a continent. The top spins plump morning doves blood throbbing from a muscle spasm salmon salmon the river full. The top spins, the flow of images is unbroken, the Qabbala, from the beginning, an exercise in control, cellular man looking thru/into cellular woman, coming closer as a rotation of approximate curves. The top spins, the buds burst along umbels, fingers of a hand, widening corymbs, helicoid cymes, the crystal which duplicates a mirror image of its shape, rotates angles thru occluded angles, hiding one symmetry in another, from which further shape derives, bud after bud bursting yellow in a sequence, an initial cycle: this is the underlying structure, stricture of thought, crystal, meristem tissue, the mirror image held taut on the skin of atomic tapestry, packing by valence, friction, and size, medulla, conch, emerald, nerves taut in the delivery of a gerund, pursuing syntax of a verb; the first rule of a transformational grammar is that kingship precede the king.

The top spins, raspberry cells, three columns of beryl, apples and lazurite, pomegranates and garnets, morphophonemics, scales, a pegmatite matrix with feldspar and tourmaline, macro-micro rewrite rules, a structured string, inside and out, outside and in, thick yellow needles, fluid, micromegasporophylls, concessive, impotential, nomic, light, image, light, fish eggs, blood, red sun, white sun, ebb tide, sunset, marketplace, uncle, king, allophone. The top spins, blurring, the seasons, phases of the moon, nomads appear outside the city, wolves, the bear awakes, the berries beat to a froth, the sky blue and vibrating, beat to a froth in the heady distances, geography downstream, bedrock-mantle, grassy continent, fours and sixes, eights and thirteens, octahedrons, pinacoidal twirls, food converted into shape, guanine, protein, heart-shaped, how can we tell the environment of the crystal from the crystal itself, those chemical impurities which interrupt the code, with stains of yellow and oxide, birthmarks and personality disorders, how can we tell consciousness from the sky, the dense microstructure of stars and hot light, how can we tell thought from the object too close at the distance of the lungs, the liver, clouds blown apart in the windy March sky, the sustained atmosphere of our presence on earth, wind-blown atmosphere, how can it be told from history?, the indefinite condition of pressure, temperature and chemicals in solution, how can we tell cause from association, use from usage, how can we sustain the image apart from the distance, dance, sky, river, on which its angles, thru which its angles reflect, repeat, and return.

The top spins, and the Mississippi changes its course, the last Yahi Indian running from trains and cars, vomiting in fear, and the final letters of the Hebrew alphabet broken in Missouri, shadow-and-sun.

The top spins thru meteors, bright colored birds of the jungle; all forms are forced together, intersect and become the same form; there is no other place they can go. The horns are melted; the dots of T.V. ice, of Martian craters, of newspaper accidents melt back into binary code, into rain; ancient mountains become sea. A hard cancerous shape lies outside the body, imago, mask; only the fluids of the body can melt it; only the fluids of the body can soften wood and carve their own mask.

The top spins a cloak of evening stars, of playing cards, of alchemical signs, item, item, whalebone, orbital velocity; the Mayan clock slips over the edge and returns to the jungle fifty-two years before, a celebration that the world begins again, the image. And in a dream the 1954 Cleveland Indians, in full uniform, invade the Cardinal-Tiger World Series, and though the rules of the game for-

bid it, the rules of symmetry make it possible: there are three teams playing at once, three separate scores; the game is halted in the ninth inning as people who are not players pour onto the field; a new world age begins.

And the Maya invented zero in search of a calendar, beginning, origin, and marked it with a shell. Mayan zero, like ice or rain or fire, divides people from people, age from age, is the flaming sword, at the boundary of intelligibility, man stares into the face of Adam, man stares into the Neanderthal face of Thoth, tool-maker, harpooner, Thoth.

The Babylonians used zero as a scales, a neutrality of two triangles, monetary balance in an exchange; zero was what was left when both parties departed with their goods. The decimal zero originated in India, a lake of calm vibrating waters lying between the magic of creation and the karma-looms of sustained world law; zero was contemplation, pure mathematical thought.

Between two world ages the top spins, its songs and occult markings obscure on either side, as Stonehenge, the trees in the Welsh forest, the stones of Dreaming Australia. The top spins leaving a glass shield like a mirror or glacier; the number of dimensions in the crystal, in the flower sustain it, i.e., 3, i.e., microtexture. The top spins, as slowly as diastrophism, geotropism, magnets swinging their partners to opposite poles. The children spin tops in the streets of the city; horns sound, the sun, heliotropism. The top spins, leaving granite, pegmatite, bedrock, all shapes obscured in mass. Between two world ages hangs the face of a man, his lips muted in speech, is a death mask, i.e., 1916, eyes closed, the death-mask of Ishi, last of the Yahi Indians.

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This is the dream of the whole earth as I have sometimes seen it. I was with Andy; we were on a raft trying to cross the Hudson River. It was much larger than the tame Hudson we know (though locationally that very river which passes thru New York State, cutting the diabase palisades from the port of New York and pouring off into ocean). This was not only the pre-Columbian Hudson, but the pre-Cambrian Hudson, a terrific river, crashing like ocean, no sight of land anywhere and great chunks of ice crashing and squealing in its torrent. At first there was no horizon, no sun visible above the wet sky of rain and chemical steam; then we drifted among crabs and shelled zoalets, a cold river pouring thru the Pleistocene (our raft filled with Acheulian tools, a sail made of some animal skin, both of us naked, neither willing to steer).

Now we passed thru the Twentieth Century Hudson and beyond, bridges and cars falling and disintegrating, torn apart silently, by unyielding chemical pressure, while the only sound was the loud Pleistocene prelinguistic howl of the river, parts of tunnel and cobblestone boiling with fish-scales and awnings, cars bubbling up from the disrupted tunnel beneath, crashing into the icebergs on the surface, and carried away as soft detritus, out into the ocean of lost continents from which all new continents emerge.

At first I thought this was the Twentieth Century destroyed by a new Ice Age, destroyed by quakes and meteors; then I heard that the terrific noise arising from the dynamo of grinding river was the literal sound of all the consequences of the Hudson derived thru all its

time as a river. I heard the biological cry within the geological voice, a sound ringing with prophecy and self-affirmation, Iroquois chants and diesel engines, steamboats and ice cracking the igneous rock, river that grows from a wet heartbeat, cuts a bed, lies fertilely down in it, churns, sleeps, floods over the land, and dies, river music, river harmony, and beside the river's voice, the voice of the stretching land, the clouds and atmosphere, the howl of cosmic rays, and in the greater distance the grinding passage of spheres by planetary spheres.

Yes, we were in the Pleistocene; I saw the whole glaciated earth, the wheat and acorn earth hidden by the appearance of ice, the amphibian hidden in the fish; a world ocean I have carried in scrotum, germ plasm, now wet environment, salt-water in which I dream. This is what I remember of matter itself.

I saw the small bands of men on the Plains, and the stampeding biomass, Algonquian and Athapascan, and the sleepy Hokan-Yuki on the coast; I saw in a moment the yearly chase of Enterline men and caribou, and how, unconsciously, while the moon changes phases, they move in a circle, the great laurel-leaf spears they carry in name of moon. The Pleistocene was the beginning, a tucked-in matrix, a multinoded egg; in the notes open to it was played the sound of all riverine time. Even in the Pleistocene one could see the great ocean liners and bridge-spans, but these were as ghosts in the air, higher notes that could not be reached until the larger circle came back around again. The Pleistocene ice came before everything, therefore was everything.

We looked at the sky; there were too many stars. The sky was so thick that the dark places were hard to find, beneath the stars: several large moons and smaller moons in motion about them. The sky was hot, and the river was turning hotter, and we were moving in the current of that which was frozen for millions of years. We were washed with everything, costumes and castles, locomotives and bodies. We moved thru the maelstrom, and suddenly all was calm and clear. We were near what is now the New Jersey shore. The land appeared as a sandy island, a few native shacks on the beach before the forest. This was the hot interglacial sun, sun of equatorial jellies and crabs; all was made of perishables; nothing was cut of ice or stone.

We walked along the shore: a few birds sang, a column of dark smoke coming out of one of the shacks. We came closer; the gardens of the houses all flowed together, rows of vegetables mixed with scrub, a fruit tree ripe and dropping. We peeked in the window of the smoking shack. Andy found what he wanted: young people sitting along/around the wall, smoking, staring outward/inward. Were these the wisemen who came before all of time? Was each puff a nation in time? Or were these children, hippies, displaced here by historical and biological accident? And this their ancestral home?

Now that I stood on land I was confused as to where everything was and how time was passed in bringing the hidden to maturity. I had intimations of creation beneath the ice just beyond this warm inland sea, which undoubetedly this inland sea was melting, the body temperature of thought. I felt that there were cities in the microcosm, held in the minute tension of moraine and implied shape. I sensed that the smokers were here for a reason, but none of us had to know it in order to live. The shacks obscured more basic building blocks; there were no shacks, merely molecules, proto-cells, but these people had to live somewhere; by homology the shacks were proto-architecture, tinged with

the beginnings of history, the beginnings of agriculture, as a tree is with moss.

But Andy did not wish merely to look at the smokers; he wanted to join them. I would have refused if I had had time, but a girl slipped a few droplets of the chemical inside of me. I swallowed it automatically, and didn't think about it; the act was perfunctory, even reflex; I had no intention of joining them. A dark decorated girl, her body painted formally to show her thoughts and their intricate windways, came to lead us inside; she bowed and offered us something to eat; Andy took graciously; I would not.

But then I realized I had!

My whole bloodstream began to roar like ice floes. In each cell there was an ocean, each of them growing louder and equally loud: there were so many; I didn't know which cell to go to. Dark things with wings but no shape floated everywhere, drippy wet, drooling blood without achieving form. I tried to elude them, but by definition they were where I was, where I was being led and where I, shaped as I was, had to go. They were sometimes mud and sometimes bats and sometimes the mature torsos of unborn women, dead fish; they fell on me and stuck to me with all their crushed organs, reviving on my skin and flying from me restored. The noise that surged thru everything was a wind moving on the universe at the speed of light, as colloidal light moves in suspension, glistening on and in the Hudson too, light at which hydrogen and oxygen bind and flow liquidly over stone. I saw again briefly the Hudson that was the Pleistocene, but the temperature of ice is periodic and warm waters circulate beneath the stone; this was a thermal sunny age; steam rose from tumbling lava; roseate forms splattered like rashes and hot springs burst the belly; the gully filled with rain and steamed. Now the water dissolved and every nation or possibility was a color. This was the pre-Galactic Hudson, place where the Hudson would be, where moon would be ripped from the sleeping body, and a chemical atmosphere would lie violent on the scales. There was no time and no life as such; I was washed back and forth in the dark protein swirls. I reached inside myself and found that it was salty and populated. I was dancing in a long kinetic pattern, I and my ancestors and everything that would be born of me. This was where I always stood, what my body ever was, if only I could remember it.

But I did not want to be there. I had been there very long ago, before mammals and before the igneous peaks were capped with snow, before granite was worn into grain and cattle were traded for women. The color was blinding and it was already too late. I left Andy in the room of smokers and came back into my own room. I was as far from them as I could be, but I saw them, breaking off the sunlight into color, spinning the web in the spider's brain in the damp corners while the spider's body itself threw out the strands. I heard them, and from so faraway they called for me to come back; at the same time they threw me out, held me at centrifugal distance, where I am.

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The dreaming lies North, and the lines of the dream bend electrochemically; all directions, all meanings go to the North. A trip bebegins in which we imagine that we are going to study a most ancient people; there are no uncontacted groups left, but the dream is larger than geographical earth, larger than geographical Jupiter; there are tribes and races living on every Moebius strip of land that has cooled

since the last storm, tribes and races, peoples with history, every strip of land, made out of whatever stone or crystal, near water or desert inland, rain forest or island, there are people. We are going to find them.

An airplane flies us to the tip of Maine; we enter Canada by car; the roads are choppy, reminiscent of something; gas prices become astronomical before gas stations disappear altogether. We pass New Brunswick, James Bay; we are on islands of a more ancient sea. North, North, North. Everything was once made of this. Icebergs, glaciers, alphabets, ships, captains, maps of meteoric iron. The projection begins at the Pole, and everything is smaller circles, spheres, broken thru electromagnetic lines; the ship passes from shell to shell; its charge is positive, negative, its charge is hieroglyphic, nautical information based on the stars, cuts a fine cleavage line in ice. North. A small island, not presently inhabited; someone has abandoned an astronomical observatory; there is a primitive port. This is the direction from which time comes.

We abandon car and go by wagon. North: civilization begins to fade into an arbitrary scatter of stone, origin of New World Hermes; these stones are words; they prefigure langage, petroglyphs; they prefigure means of transport. Words, not yet known, are carved in wood. Everything begins at the beginning; we know this, that there was no beginning. This is Labrador, New World, Vinland; this is Norse, Neanderthal, Nadene; this is Choctaw dancing with horsetails, the great open plains, totemic seals of office, face of animal and church carved into every piece of wood or stone, roanokes, shells travelling in exchange, Tlingit faces painted, the salmon swimming around the trap/ the lips; green band across the nose/the downward slope of the land; the summit of mountains, the clouds/forehead; raven flying out of a whale/cheeks across eyes. We have been going North, but in the North is the South; we pass along Natchez trade-routes, sun-king of the Mississippi is carried on a litter by eight Algonquian alchemists, three Caddoan allies follow with bows and arrows (le transport du Grand Soleil).

From the North comes time; from the North comes quasi-stellar tone, galactic, intergalactic light. From the North comes a reptilian body, the original amnion, comes lungfish, and wetter, warmer planets, closer to the sun, comes gonads, unisexual moons. The North is not a place, is the way we go North, is the way we follow the lines that could not lead anywhere else, going with the grain, xylem and phloem, going North into the sun with the retreat of ice, the underlying plains of thought, the dark black colloidal lake, womb of a frog. Here are the Algonquian proto-bands, Phoenicians, shellfish; here is Qabbalistic Iceland, head of the skeleton; do you remember that this is the beginning?, do you remember, in medias res, out of what the dream began?

We have come to the edge of thought: a sandy shore spreads out, an isthmus, sedge-growth, and sea-litter, the sand is loose, grainy; nothing could grow here; we cannot tell the moonlight from sand, our skin/we are melting into the land. The dream insists. We can go no further and still return. The illusion of fieldwork and study falls away; we are going back thru our own history, and this is the meaning of the earth having a metallic pole, charged, which draws on all things, especially things as soft as light, this is the meaning of Peary, Queen Victoria Sea, to come to less than two moon breadths of Polaris, the hormonal center, the metallic conscious brain, lines

that bend across history, to come, explorer from the continents of stone, back up onto the genetic ice, to come thru dream, or the grain of world-fire illusion, to come thru language, proto-verbs, Algonquian wanderers after caribou, to come back across the Scandinavian Australian ice and sand, to Pole, where the battered hulks of the ships of another world-age lie, their compasses singling out more ancient stars. This is where North begins.

We go by ship, and the movement is into, within, is shelled and reshelled, transport thru the circular nature of circles. The water we go on is not that far from the stars; we are afloat on a medium that is neither internal nor external; more and more the continents dissolve into bedrock; more and more our route is chemical; sky and sea are the same medium in which we pass like jelly, or we pass like fire. This is the aquatic environment, wet fishy irritant, seed thrown off of the sun, is the magnetic boundary between liquids and solids, between fish and salamanders, between North Arctic and the general Northern orientation of matter. Every stream, whether its lay is North or South, or somewhere to the side, even the stream of chemicals down thru the body into the genital duct, where eye and hand become a liquid, and out the glans bud, delta into ocean, is Northern, is polar, and comes from the sheer sea.

The logs burn on earth; a reflection burns in the sky; we come to the point and they are the same imago, sinusoidal waves of ocean or energy; there is a burning at sea; it is a ship, a mirror, continuous, point by point, we are tossed in slow-motion coiled onto the shore, are taken by natives to a shack; it is either dawn or twilight; their language is an isolate; no language we speak can bring us closer. Far in the distance we can see where earth touches sky and ignites it; there is a fire burning; this is known as perception, and all phenomena flow from the fire into this village; the stars are close; this is very near the beginning of time; within an hour we can understand what they are saying.

North is more than a direction; everything bends, even magnetic light, thought; thought burns in the sky, taking wood and turning it to ash; we have come to the point where magnetism ceases; i.e., the Pole. Faraway we can see New York, a shape equally close to fire and ice at the edge of time, brief cameo of squirrels eating acorns in Central Park by the museum, eating the horse chestnuts, and the orange soda man entering as the sun, le grand soleil. Behind the cameo we can see the giant city wound like thread; its buildings, of ice, melt in the morning sun, and are reconstituted because everything is fire and fire is shape; we are in an airplane above the city, roaring, receiving energy from the swollen peak of consciousness beneath, the silent imago of the king of the jungle; the history of the city sustains the plane, and it lands softly in a clutter of images. Faraway we sit on the shore of the Northern island, we can see the city; it is one of the stars.

Our body is a moonship returning to earth; we cannot distinguish between earth and sky because the whole earth floats as a compact unit in the sky; all the seas are part of our sky, and the clouds float along them, the mantle of weather seeking balance, crown on chemical flux. We have passed inside to outside the system, at the center of the sun, thought having broken along its natural cleavage lines; we stand on the sandy beach and look back at where we have come; the air is heavy with electrical patterns, illusions of perspective springing up on all sides; we look out at the sea that we

have somehow always known, and began before everything/pictograph, ideo-, idea, is a crystal inladen stone, a city left by glaciers, contained in a node, cracked nut is sun, is inside sun, is woven medulla, corona, North a phenomenon of the lobes, a charge restored naturally, in the process of rivers and gene flow; this is an ancient people we have come to do an ethnography of; the land is still molten, and everything they do catches on fire; there are the Northern lights.

In the village is a college, a collegium; it is made of colors; it was built by a famous architect of round shapes and layers, and the illusion is that there is a building there; actually there are many buildings, all contained within each other, geodes, all hidden by the shifting patterns of light. We are searching along cliffs and into stone for the Anthropology Department; it is the New World, and we watch in horror while the long-nails pull away the flesh of the corpse; it is the New World, and the painted ball-players wave their webbed sticks; the priests climb down into the earth. We think we are about to die; there is an epidemic, and everyone sits in huddled corners, whispering, a famous doctor offers the grape cure for cancer, but the women shake their heads and guard their children, feeding them only wild grass and blue stones and whole bees, we must remember the sun from the beginning, that whoever goes in official clothes, we are the only ones qualified to teach this text, inwound text of ourselves; this is our only text, if we reach the end, if light reaches its quota and begins to bend, we will deflect with it. We float thru the multicolored halls, ride in red bioluminescence, which is the elevator, all of the departments are lit and the professors are working late at night; all of them are of different age, granite, pegmatite, quartz-feldspar, complex metamorphic stones; I am revealed, somatically that is, as the carrier of the forgotten text.

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The opossum, far from the forest of his birth, peeks, like one of the chthonians from behind a tree, climbs it in slow metabolic steps. He edges out on a branch, and there sits, white body like a mask, long wet nose, bubbles popping in its nostrils. The cold rain falls, and the creatures of another order surround it: ourselves, the cats.

This is not a cartoon character. This is not an altruistic world. No breath is gratuitous, given; every breath is filled with direction, with location, adds to metabolism and meaning.

The animal sits on a tree in an unknown city, sits in a crow's nest, sniffing for familiar chemical land, for genetic origins, territorial geometry. And we are all on this ship as it floats among constellations, city adrift on the sea, isostasy, no position except for stars.

The cats who were born in our house return to it, umbilical cord lies at the beginning of the world; they crawl back into the beginning, and it begins again. The genetic cat begins around the Pleistocene camps, travels by ship to Tikopia, comes thru the Arctic North, most of its genes intact, the bobcat of the Rocky Mountains, is a holy creature in the East, again and again the upper ice penetrated by migrating carnivores, stretching the already-stretching skeleton of the earth.

This is a planetoid, an indefinite tribe with an indefinite his-

tory. We are interested here in ethnoastronomy, not astrology, for astrology is a single system of infinite possibilities, biomagnetic play of the stars on our soma, our phenotype, potential that is locked in the anvil of the universe scattered thru the intervals of open pores.....while ethnoastronomy is the sky as road-map and sea-map, the other sky thru which journeys are made over land and ocean, is the tribal star-language carried from hemisphere to hemisphere by carnivores and their prey.

The archaeologists work in the mound in East St. Louis. The site is filled with trigonometric markers; the constant is the stars. An astronomical observatory, buried at one of the nodes, gives the angles and distances to the other nodes. The shape is a pentagram, three angles of 120° and two angles of 90°; lines bisecting the two 90° angles intersect with lines bisecting the two sides between the 120° angles. The result is a burial mound, treasures from all over the continent, young girls put to death violently. Here are buried the officials and players of an American Indian game like hockey and lacrosse played in historical times by the Creek. Here are buried the balls and clubs of the best games, the umpires, Mickey Mantle, Willie Mays, Cooperstown-type stuff, but a Cooperstown whose nodes are located by an internal astronomical observatory, whose nodes are in angular proportion with the stars. This is not astrology, for the men are dead, the clock is set on skeletal material. This is ethnoastronomy: the stars are buried with the stars. The stars are the stars. Position is all: as in the game. Position on the baseball diamond. Position on the armillary sphere. The racial heroes, the mythological man-animals who, with them, enacted historical narrative, set the tribal clock going, are no different than the stars in the sky: Orion, the Pleiades, Pegasus, Cassiopeia, the Swan, are no different than the players who put on costume and take up implement in the game: Bob Nevin, Bake Turner, Cazzie Russell.

Ethnoastronomy is the map of archaeological sites geometrized by the heavens (geo-metron); in the stars lie the key to Stonehenge and the Mayan temples, the shape of the earth bent, by time, continental drift, migration, and galactic speed. So the Shoshoneans wandered across stars into the Aztec oikumene; the Osage and Salish followed a galactic trail, language families bending the sky out of shape. The star temples of the Caribbean move thru stars into the Mississippi Valley. Genghis Khan sweeps across the skies of Europe; and the magi use conjunction to find the birth-time-place of Christ. Ethnoastronomy is the route taken to the New World, taken originally by the Indians, lost in snow-blind ice, is the route taken again by the Norsemen, the Sufis, moving thru the clear geometric temple of the sky, delivered suddenly into other promised lands, New Foundland, Vinland, and Boston harbor; is the map of East by West taken by Columbus, the French and Cartier, is the map, sprung into three dimensions, by which the star-ships locate the earth. For the earth-lands move on the X-Y axis, and the earth itself moves thru X-Y-Z coordinates; the Nina, Pinta, and Santa Maria sighting stars for position on the surface, the great unknown star-ships moving thru the stars as they sight them.

The astrology of the crew changes separate of their ethnoastronomy. Astrological changes are violent and musical, thresholdal; ethnoastronomy changes as a slow projective geometry, an elastic topology of points gradually changing positions to inner less distant points. Astrology is a map of radio-waves and weather; ethnoastronomy is a surveyor's map, a map administered in distance-perception tests. Astro-

logy is a temple that lies topologically outside the world and surrounds our possibilities by spatial and chemico-magnetic projection into the cells. Ethnoastronomy is a tribal history, confined to the genetic memory of peoples, star names changing as kin terms change, as phonemes melt indistinguishably into each other, constellations breaking up as tribes break up, the Salish moving one way, to the shore; the Apache and Navaho spinning off into the ceremonial South, each taking their stars, their uncles, with them.

Stars are territories, places for cities like Alexandria, Cyene, Teotihuacan, Lagos, East St. Louis, are lighthouses for ships afloat on the liquid geology of the earth, islands, with no other landmark but the sky. Polynesian fishing canoes are lost in a sea-wind, broken off from the main racial body like volcanic rock itself, and accidentally come ashore elsewhere, on an unknown island. Genetic drift, then, is measured against the stars. As is clear when the astronauts awake from millenia of suspended animation and find their racial memories scrambled, a sky burning hot with possibilities. They wander under the influence of the earth, the old earth, like lost demagnetized stones.

"To the house of Alcinoös Athena made her way, and with her grey eyes glinting, as she planned the home-coming of Odysseus. She entered a splendid chamber where the king's daughter lay asleep. This was Nausicaä, a girl tall and divinely beautiful; and in the same room were two attendants, graceful girls, one beside each doorpost; the gleaming doors were shut."

This is a world in which the stars hold everything in course, are the guardians of position and mathematical solution, the lions and tigers at the gates. Watchdogs, the skies maintain oceans and protoplasmic water, Okeanos and DNA. Note that the geologic map of Maine shows the rivers of stone and breccia pouring into galactic configurations, hills and choppy shoreline: is a star-map, chart of positions ground out thru time. Other taxonomies change by climate and chemistry of blood and stone: ethnobotany, ethnozoology, ethnoentomology, ethnogeology. Ethnoastronomy holds as the stars hold, changing only with genetic drift and phonetic drift; the signs and glyphs of stars cut in rocks (petroglyphs) are the nodes of ethnohistory, the tuning chambers of the mythologies of wandering tribes.

Gibbons move in packs. Dolphins, born in the sea, move in a closed territory, a home. The opossum sits in his tree under a mist obscuring the full hemisphere of compass points. Does it carry its territory with it in its genes? Or is it lost, like a child who leaves his mother and wanders over the hill to see what species grow on the other side? Does this animal define a territory by wherever it is, sniffs, senses, breathes? Or are we all lost? And will awake from this life closer to home or in an even stranger more shadowy world? What will we eat there? Is the area code a genetic code? Can the opossum smell in his genes where he is? Is it all okay? And if it isn't, what could we do anyway, lost as we are ourselves? Yes, these are the same stars; we are in the same boat though we carry different racial memories to this place. He is alone. Neither of us know where we are.

And in my dream I was giving a poetry reading in an unknown confederate state. It was the conjunction of North Carolina and South Illinois. I turned to the station of the baseball game, but the announcer said that it was before the invention of baseball. We are living in our car, a Mustang that suddenly has rooms enough for a trailer.

In the back are our six cats. But overnight they have become six snakes. Our white cat with a raccoon tail has become a pure white snake with black and brown ringing at the tip. Our angry grey cat has become a poisonous grey snake. We were walking along a road in the height of summer, and Lindy asked me where we were. I said:

We are in North Carolina and South Illinois. It is 1770.

How do you know? she asked.

I pointed to a pink blossom. Don't you recognize Annona, the custard-apple? I said. The tree was the name of the place; we were in Annona. Above the tree the blue daylight sky was opened in a patch, and the shards of constellations broke thru.

Awaking from our dreams with no better taxonomies than this, how can we help the opossum in his dreams, in his territory, in his endless territory of dreams? The wet wind blows thru the trees; his nose is cold; the name is Antares, Aldebaran; the rain falls on a world outside of language: Canopus, Sirius, Tejat. The opossum sits on the tree, small cameo of a dictionary meaning. Oecology is nothing if not the language of animals appearing in our world, their place in human star-cities, their affinities and affiliations, their geomancy and genetic code. The opossum marks the boundaries of another world; a white mask lies between worlds like a living body. A dead body lies between worlds. The stars are all we remember, like children's toys, like genetic capabilities for certain games, shinny, marbles, scrabble, making a top spin in between the cracks. The mirror lies between two worlds, Cocteau's white masks, a creature from the underworld nether half of meaning. We cross our tribal boundaries; we walk onto the dark sides of planetary bodies and mark them. Each world in three-dimensional space lies on a geographical field that can be marked, lies on the terrestial topography, cut by rivers, cirques, glaciers, valleys, filled with boulders and mammal-mounds. Every world lies in three-dimensional space among the infinite worlds which appear in its sky, the infinite worlds which are its rivers and moraine, which swing like pendula, marking cycles and migrations among the fixed possibilities of localized tribes and nations, migrating birds and spawning fish.

The stars themselves are tribes which mark, by their passage across the earth's sky, certain rivers, islands, bays, and peninsulas. Their astrology is the changing world of the earth's volcanoes, the tidal action of the earth's seas and metallic wells, the earth's geology, thrown astrally back in a mirror, ships initiating planets, and the passage of planets inventing the voyages South and West.

R i c h a r d G r o s s i n g e r: from OECOLOGICAL SECTIONS

The sun strikes the earth's cities like tinder, the bread that was yeast at twilight, now a thin haze in the morning air, having been baked and cooled, the haze rising like an odor from the swamp, from the underground factories, a thousand chimneys leading out crystal to the microcosm, smoke, smoke, the river collecting dust, churning, the sun touching/breeding on the kitchen table, a mold that is food itself, moss on the tree trunk, woman's garments on polished mahogony, she lives here, fishing vessels on lake and rivers, they live here, tropical rains, chemicals of wet and blue light, smoke, water thru stone, jets in the ionosphere, weather satellites photographing, returning signals, face of a gargoyle, ikon of a president carved in the mountainside; the planet is inhabited, and the inhabitants leave

their mark. They dig up Lincoln just once more from microorganic time, and rust, to look at his face. Special crews leave for the North Pole to tag penguins and polar bears. A British man sails around the world in a tiny boat. Astronauts orbit above the atmosphere. The earth is a storm, and in that storm live lattices and crystals, live finely-dissected leaves covered with alphabets, stones with petroglyphs, oil wells, irrigated fields, the floating chinampas of Mexico, monumental architecture for sun and moon, tracks of the planets with known paths. Electric current, offshore current, hurricanes mapped as local disturbances, and the houses hold out the chemical rain. Men sail to tropical islands to photograph the eclipse. A trained crew to gather crocodile eggs, to dig up Greek pottery and Acheulian hand-axes. Posses cross the African savanna to collect the seeds of Welwitschia Mirabilis, the underground tree, to duplicate its environment in a Chicago museum. It is five P.M.; the early show of stars begins at the Planetarium. This is a planet conscious of its own dimensions, latitudes, history, is a semantic simultaneous planet, the baseball photographed and broadcast the moment it is thrown, strike one!

And who would allow for the inhabitation of Jupiter: that poisonous methane storm, that frozen giant of helium and hydrogen oceans and metallic hydrogen continents, ammonia weather, ammonia winter and ammonia spring. No food, no water, no air, no one can live in chemical hell, everything crushed and lethargic, everything frozen and submerged without context. Jupiter lacks a true archaeology for no mass conceals a more subtle and more ancient form; Jupiter is a planet of sheer moraine where even the most occult markings are in lieu of consciousness. Subtle tropisms fail to produce a mirror, the face of a woman combing her hair, fail to whirl, to repeat themselves, to know syntax, happen without friction or organic tangency. Jupiter has no genetic code, cannot remember itself, cannot remember its own body, or how large/how far, no proprioception, distal, or proximal, no nerves but violent and alert moves, as a cat moves, seeing sounds and fragments of sounds with her eyes. Its flashing explosions are without history or recall, instantaneous, one and then another. Jovian cycles preserve the essential chaos, the number of explanations never multiplied across the vast geosphere, the number of causes without interior reference. And this is a lie.

We cannot imagine that Jupiter is inhabited.

Yet we imagine the ancient desert cities of Mars, as though Oaxacan or Egyptian, the canals bringing water from the polar ice-caps to a dying empire. We can embroider Venus with dense jungles, an age of seeding ferns and lizards, rain forests and quaking bogs. Venus is our mythical past, Mars our mythical future. But what creature breathes ammonia and swims under tons of icy atmosphere; what creature could bear the sight of such a creation without screaming out in panic and dying? On Jupiter the universe is hardly getting down to something interesting; it is getting down to itself, what it is at this distance and pressure, as on earth. But we believe our own melodrama, hence the Garden between fire and ice, between water and stone, between jungle and desert. Jupiter is a Garden also. Life breaks like a crystal, grows outward, a bud shedding protective hairs, knows itself in sexual feedback; life is methane and ammonia, for methane and ammonia are children of the sun as oxygen and carbon, and are conscious but to other ends. Jupiter is now in the middle of its ammonia and methane history; the planet is mapped, its surface features of grave importance, their geology and weather known; there are many nations on Jupiter, and there

are some places considered more healthy and fertile than others. The telescope on Jupiter reveals an historic age, a creature, an emblem of consciousness and commerce as surely as the globe of earth reveals to us our history, Alexander, Genghis Khan, Columbus' route, Cuba as Japan, Captain Cook, the Louisiana Purchase, Seward's Folly, cannibals, Amundson; the red spot, the bulbous land mass is surely a place of ceremonial and historical significance. To explain it by convection currents and atmospheric pressure is like explaining the forests by an extension of the science of stone. The map of Jupiter, belted in colored latitudinal zones like the forests and tundras and deserts of phytogeography, is an historical puzzle, a map left by unknown ancient sea-kings of another world of which we are dimly aware and always conscious, a map we cannot deny by reducing it to literal chaotic vectors. Wherever there is matter depth is conscious and violence is history. Jupiter's history is as tragic as our own, as uncertain, as needy of saviors and wise-men, these ammonia-hydrogen life-forms assuming crystalline bodies as flesh but their own flesh, like being conscious only conscious of themselves, accepting as harmonious and optimum the fever and climate of a planet which is their own body.

Hence natural selection is the law by which life exists everywhere in the universe, not just in farm country and on planets with soft evening rains. Inhabitation is a local phenomenon, a tense and rhythmic duplication of local fabric to whatever consciousness is warranted and whatever ends are implied. Inhabitation is like a word game which puns only on the resources it has, hence man a being mostly of water and carbon crystals, but each planet has a special chemistry, a chemistry of one chained element which it calls organic and which moves thru chains to consciousness.

A creature arises on each planet out of the density and richness of material there, out of the froth; this is the true law of natural selection, of microniches; all ends are teleological because all ends are the most eloquent and vital expression of the material being touched. Looking out at the inhabited planet, we must realize that from any particular ring of consciousness, any other, based on different chemical chains, will look like a chemical hell, as earth does from the Jovian observatory on Io. They claim that no one could live in hydrogen, oxygen, and carbon; no one could live on such a light world; everyone would float to the sky. Yet the earth is a sign in their astrology, and it has its associations with creatures and events.

Jupiter leaves on Kodachrome a signature of history, of use, of conscious dreaming to undo the enigma. And, as we, the Jovians softly breed, and listen within for the voice of their planet, listen from the North Polar Regions, yes, and in the North North Temperate Belt, listen from the nations of the Equator and the schools of the South Tropical Zone. They are not Esquimaux and Polynesians; they are creatures of ammonia, and breathe ammonia and love ammonia bodies, the curse of flesh albeit, and their dreams are the eternal dreams contained in ammonia crystal and ammonia nerves.

ooooo

The unrelenting clatter of trucks, of surface politics, of military tanks and jets: store-keepers threaten, scraping angrily in the bound network of their business, people on the street glare in the rigid soreness of their personalities, loose spitting wires. Now the heavy-coated men drill down thru the shell of the street, stone snap-

ped and broken off against stone, centuries of penetration accelerated in a roar. The thin protective membrane around the sense organs is cracked; multiply impending sounds burst in, threatening the life. The soft tissue of the world is rubbed against the coarse wall of deadened body and thought, moss scraped from its generative stone. We are turned not only on each other, that we love, but on ourselves, that we are. Parts of food and smoky street air, indistinguishable from poisons, sting the open wound of the body, the slow death of its self-realization. The physicians stand ready with their knives only to cut out the source of our growth, to deaden further the body by removing its frightened, shorted circuits, the only lines along which it can come to heal itself, the only syntax which can channel the poisons into the ecology of renewal. We retreat to the protection of our home.

The world is washed away by sleep and begins again, or, since nothing can begin again, it is submerged: the unbearable weight of the world outside the body into that other world, the dark cellular lake where everything melts of its own abstract nature, even steel, even the sound of stone; they are digested there like food, and even food is digested there, simultaneous to its own passage along known tracts. Here the cells, somatic and superficial, oscillating between each other as between two separate spells, two separate dreams, become a third thing, a reality neither so staticky and scraping as to wear us away nor so mercurial that it is an illusion, lost and blown with us. This is the possible groove between meaning and nonsense, between pure identity and code, between what is arbitrary and what is conscious, where the body rests as well, between an interminable sleep and interminable rapping shutters. Here is scar tissue drawn tight across the drum, everything remembered is softened and revealed in translucent stain; all that is present is absorbed in the soft thudding explosion of its neutral presence.

Now the day begins again with the song heard earlier on the radio. At first it is a song about a snake, frozen and dying by the roadside, rescued by a tender woman and taken into her bosom ("Take me in, tender woman; take me in for goodness sake."). In Aesop's fable it is a hunter rather than a woman who discovers the snake and takes it home with him; he sets it down by the fireside in hope that it still has some life in it. In either version the snake is revived by the heat and then proceeds to "bite the hand that feeds it," according to Aesop. The hunter chops the snake in half before it can kill his son, but in the song the woman is bitten and realizes that she is about to die from the snake's poison. Like the hunter, the woman is astonished by the act of ingratitude; she does not realize the recoil in her act, the consequences bound only in identity, bound in the literal atomic valences of matter and shape (bound also in morphemes, whereby Aesop can people his fables with animals). "You knew damn well that I was a snake before you brought me in."

So the frozen snake, the enigma of the male penis attached in recoil to the personality of the man, warmed by her, rescued and revived by her, comes to enter itself, and becomes itself, comes to enter her as in a dream, a separate secret passion of reflexive verbs in which the see-er becomes the seen, Therese becomes Isabelle who holds her clitoris in her lips, who brings her passion as a gift in seeking her own unlimited passion, the room becomes the mirror, and we pass directly, are passed, into the painting of another world, and the smaller painting of a mirror within the larger one, reflecting only the drying paint, the bent back substance of which it is made. This is the only possible means of overcoming our social identities and finding

our selves, the sequence by which we speak while several neurons away the mirror of brain slumbers in mute fire.

The snake is revived, or as in Brakhage's films, the penis itself, drugged, or tricked, in reference to its correlate in the natural world. The self is filled with sudden blood and seeks ends so personal that street-corner gossip retains only shreds of their having been, refusing what personal there is in passion to nurture and sustain the trick, the sleeping beauty sleep. We are released as the ice melts, realizing that we are the water it makes, that we come from it and remember it and thought there was nothing else; we are released from the frozen man who surrounds us, our personality; the half-man, the incomplete man, the semi-conscious shield that refuses to dance; but within the metronome we are an obscure tune, repeated in hymns and love-songs, lost forever, from before the time we were born, like Greensleeves; we can never sing this song, but sometimes if we let it, it will sing us.

It is not that it could be this way, that way, or any other way, either for us or for the snake. Some say it is a dream and we are still asleep in an original castle; Jung says that the castle is consciousness, the woman who tends it: the anima, and the dungeon beneath the castle, which we also remember in fright, is the unconscious mind. Others call it a mad or almost-mad world in which cruelty is the norm (films of starving children followed by films of executions). But it is the great frozen man who surrounds us, his ice-caps, his frozen joints: the father and mother in the head, full brothers and sisters in the neck, first cousins on either shoulder, hunters poisted on glacial horns, second cousins at the elbows rowing across the Bering Sea, crossing into the new world thru its frozen caribou skull, third cousins at the wrists, snapping bows with arrows, culling warm clothes out of the eternal frost, chipping their homes out of blocks of that ice, fourth, fifth, and sixth cousins at the joints of the fingers, almost unable to move from rheumatism, almost forgotten at the distal points of lost consciousness, alive on the pampas and in the Orinoco swamps, a new mind acting out fragments of the old mind which has forgotten it, the shellfish tribes wandering at the Southern straits, still pumped with blood, the nails stand for the seventh cousins, those from a previous history, from a land in the ocean, those whose living current is mere relic and design, the secretion of previous thoughts frozen into cuticle and bone. Whether carried by ship or motor, whether brought from the south north or southwards in search of warm rain, our bodies are remnants of snow and midwives on cold winter nights. But in the head, in the core-fire of the brain, is another state of matter, called plasma, that is the opposite of degree zero, of ice; it is the unfrozen unfrozen again; it is the agitated molecules of a gas agitated further thru the reflex of themselves until they are plasma, are hotter than air, an enclosed atmosphere approaching the enactive sun, or thought which glows at the present when it glows, the mirror in the act of reflecting, the one point at which the frozen cruel man is melted, he who eats children and creates the exigencies of inevitable wars and killing, he who was frozen now foaming at the mouth, almost mad in his ecstasy, in the one moment of possible thought. The uncertain state, hotter than gaseous metal and colder than stripped atoms, is thought, dance-shadow mime of itself, fading in shifting patterns of light, renewed by the light which drowns it; the uncertain state is not the sun but thinks as sunlight, the passion of the woman, of the king at his coronation, the white daylight of joy boiling like water for tea; only here in the pot is the shadow

melted, is the dark dwarf who visits our dreams dispelled, and we awake not to find a black widow in our bed or an intruder in our bedroom, but an empty house ringing with the silence of our repose, an empty world inhabited only by ourselves and our inventions. The intruder is darker than any mere robber would be; his appearance in our doorway tilts space itself down on us, and we huddle in the corner, revealed as ourselves, as the homunculus approaching its identity. The black widow spider carries more in its bite than the transformation from life into death; it holds the key to several innermore rooms in this house; each room it opens is its bite, is another form of itself.

The snake who, moving across the dream, carries the impregnating sperm, the unmarried woman who revives him lying below.

As above, so below.

Our world is filled with intruders, the abominable snowman and the flying saucers lying on either periphery of each other; the former is our forgotten unshaped past, the lost consciousness whose temple-lights have gone out and whose temples lie abandoned in the north, is the dark scroll we unwind in ancient dusty books, geomancies and books of the dead; it is what we no longer have except as we revive it, which hulks like a dead shape in the holiest of mountains of the East; it is also the shadow which is the beginning of our race, the river which is neither Indo-European nor Uto-Aztecan; it holds too the deaths of all previous races, the living embodiments of the furthest ringed fingers, those sun-planets of ice, Uranus the gate, Neptune the hallway, and Pluto the chamber at the end, frozen-glass faces in which life is petrified motion, instantaneous speed of ice, hulks of distal planets marching thru the Tibetan mountains, lighting small star-fires in caves, almost invisible under the cold reflecting mirrors that are breaks in the stars.

Whereas the saucers are hot, plasma, anti-dimensional, boiling on the other side of light; they do not lounge in the bottoms of consciousness with the grotesque mis-shaped wolves; they flicker to the degree of furthest thoughts, hazardous melting points at which existence clarifies and justifies itself by being totally unsure.

So sitting in the bath I make bubbles with the top to the shampoo bottle, flipping it over mindlessly, watching the bubbles roll and yaw in the shifting weights of my body. I hold the cap above one bubble and let little drips fall onto it; its resiliency throws them off. It is long-lived for a bubble; it is keeping me in the bath even though I have already been in the bath too long, my fingers growing old and unusable, my skin cold and drafty at the water-line. I should leave and put on warm clothes, but the bubble is a tease at the edge of consciousness, holds the larger and smaller body in the water at the end of a line. Drop after drop: will I see it when it bursts? Then it.....not bursts, but has burst, it has happened before I knew; I cannot sit in the bath, sit in my knowing; there is something else which keeps me here, which measures what happens to me each cold instant. It is not possible to be joined to the bubble as weakly as recognition.

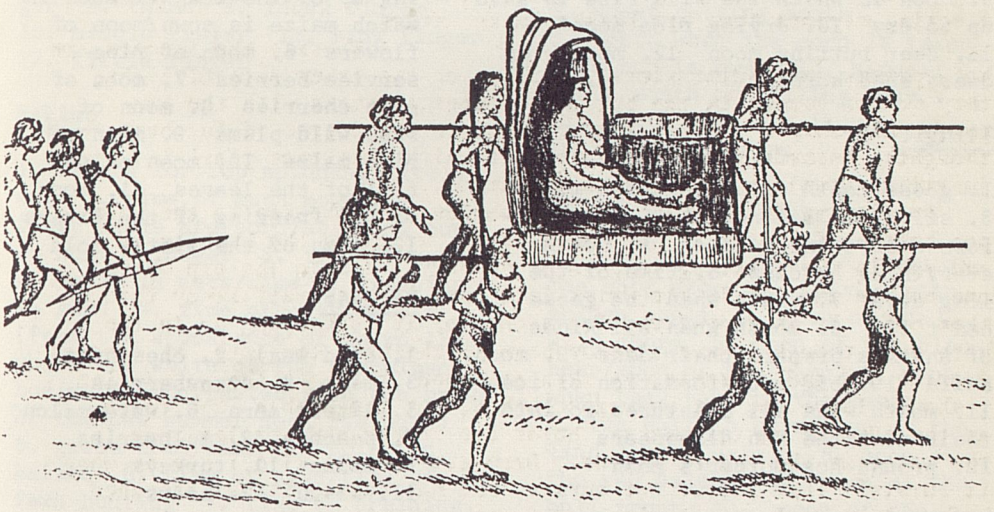
Beyond the bath there is a bubbling cauldron, hot tea on the stove, consciousness achieving its internal taste, not as when it is sipped, but the taste within that, as the glass which, before it reflects, reflects its own substance: the eyes, the tongue. Consciousness is melted, glaciers trickling down into warm inland seas, cutting the

fingers off from the wrists, the wrists off from the head; it is all tribal reflex now, all diffusion, inundation from the inland currents of the lunar brain. Consciousness is melting, but all around the ice age moves on, and with it the hard crustaceous body of human tools, knives and pots honed out of the ice-age, men ground as the most specialized moraine of great unconscious beasts, the Titans, the glaciers, movers of a previous world whose pressure was sheer pantheistic force, striking the individual lares and hearth-fires, igniting the pantheons and cruel mechanism of torture and unnatural sex before pouring out into their own burning sea. These cities are remnants of ice, these costumes in which the rulers dress, these lotions they apply to aging bodies as to museum portraits, the deep ice age in which they carve their police legions and legislate with fixed frozen law.

Deep in night there are the ships of night, beings at once more conscious and less conscious than ourselves, who on ancient maps are illustrated as great voyaging vessels, off the coasts of the continents and almost as large as them, blown by strange faces who were their communicants in a previous history and now are the eight, or sixteen, or sixty-four winds:

are ghost ships, whose conscious form is vapor, whose apparent image is the thought in which they pass, the sailors who guide them as a product of their being each instant, who throw off shield after shield of unconscious skin, of nails and hair as fuel, who have, can have no other direction than this.

le transport du Grand Soleil



Netchilli

1. it is cold, the Eskimo is freezing
2. the sun is returning
3. the sun is ascending
4. the seal brings forth her young
5. the young seals are taking to the sea
6. the seals are shedding their coats
7. reindeer bring forth their young/ birds are brooding
8. the young birds are hatched
9. the reindeer is migrating southward
10. amerairui
11. the Eskimo lay down food depots
12. the sun disappears

Dakota

1. hard moon 2. raccoon moon 3. sore eyes moon 4. moon in which the geese lay eggs/ moon in which the streams are again navigable 5. planting moon 6. moon in which the strawberries are red 7. moon in which the chokecherries are ripe and the geese shed their feathers 8. harvest moon 9. moon in which the wild rice is laid up to dry 10. drying rice moon 11. deer rutting moon 12. moon when deers shed horns

Tlingit

1. goose month 2. black bear month 3. silver salmon month 4. month before everything hatches 5. month everything hatches 6. time of the long days 7. month when the geese can't fly 8. month when all kinds of animals prepare their dens 9. moon child 10. big moon/formation of ice 11. month when all creatures go into their dens/the sun disappears 12. ground hog mother's moon

Loucheux

1. moon when dog is cold 2. moon of ice 3. moon of eagles 4. moon in which dog barks 5. moon of the break up of ice/ moon of the sea 6. moon of moulting 7. moon of the long day 8. moon of the rutting of reindeer 9. moon of the chase 10. moon of warmth 11. moon of mountain goats 12. moon in which the

Ojibwa

1. long moon, spirit moon
2. moon of the suckers
3. moon of the crust on the snow
4. moon of the breaking of snow-shoes
5. moon of the flowers and blooms
6. moon of strawberries
7. moon of raspberries
8. moon of whortle berries
9. moon of the gathering of wild rice
10. moon of the falling of the leaves
11. moon of freezing
12. little moon of the spirit

Mandan

1. moon of the seven cold days 2. pairing moon 3. moon of the weak eyes 4. moon of the wild geese/moon of the breaking up of the ice 5. moon in which maize is sown/moon of flowers 6. moon of ripe service berries 7. moon of ripe cherries 8. moon of ripe wild plums 9. moon of ripe maize 10. moon of the fall of the leaves 11. moon of the freezing of the rivers 12. moon of the little cold

Natchez

1. cold meal 2. chestnuts 3. deer 4. strawberries 5. little corn 6. watermelons 7. peaches 8. mulberries 9. maize 10. turkeys 11. bison 12. bears

Maidu

1. big tree freeze moon, 2 paths 2. pattering showers 3. wife/trail breaking open moon 4. grass grows 5. seeds fish & geese are caught 6. hot 7. smoky 8. acorns begin to ripen 9. are gathered

sun is dead

Cree

1. month in which the old fellow spreads the brush/extreme cold moon 2. month in which the young birds begin to chirp/old man 3. eagle moon 4. gray goose moon 5. frog moon 6. moon in which the birds begin to lay their eggs/the leaves come out 7. moon in which birds cast their feathers/the ducks begin to moult 8. moon in which the young birds begin to fly 9. moon in which the moose deer cast their horns/snow goose month 10. rutting moon/the birds fly south 11. hoar frost moon/the rivers begin to freeze 12. moon in which the young fellow spreads the brush/ whirlwind moon

Modoc

1. thumb 2. index finger 3. middle finger 4. ring finger 5. little finger 6. thumb 7. index finger 8. thumb 9. index finger 10. middle finger 11. ring finger 12. little finger

Eskimo

1. season for top spinning/little sun 2. time of much moon/the first seals are born/starting out to hunt reindeer 3. time of taking of hares in nets/time of creeping on game 4. time of cutting off (from the appearance of sharp lines where the white of the ptarmigans' bodies is contrasted with the brown of the new summer neck feathers) 5. geese come/time for going in kaiaks 6. time of eggs/time of fawn hunting 7. time of braining salmon/geese get new wing feathers 8. time for brooding geese to moult 9. swans moult/time for velvet shedding 10. time for seal nets 11. time for bringing in winter stores 12. time for the drum

10. black acorns are cached 11. divided 12. little tree freeze moon

Kwakiutl

1. spawning season/season of floods 2. elder brother/first olachen run 3. raspberry sprouting season/no sap in trees 4. raspberry season 5. huckleberry season/oil moon 6. sallalberry season/sockeye month 7. southeast wind moon 8. empty boxes 9. wide face 10. right moon 11. sweeping houses/dog salmon month 12. fish in river moon/cleaned of leaves 13. split both ways

Tewa

1. ice moon 2. lizard belly cut moon 3. month leaves break forth 4. leaves open 5. tender leaf month/corn planting 6. dark leaf month 7. horse month/month of ripeness 8. wheat cutting month 9. month when the corn is taken in/sirup is made 10. harvest month/month of falling leaves 11. month when all is gathered in 12. ashes fire

Carrier, Tse'ke'hne

1. moon of the wind 2. moon of the snow storm 3. moon of the golden eagle 4. moon of the wild goose 5. moon of the black bear/moon of the carp 6. moon when they take to the water 7. the buffalo ruts/moon of the land locked salmon 8. moon of the red salmon 9. moon of the bull trout 10. moon of the white fish 11. during its half one navigates/the fat (of animals) disappears 12. what freezes is covered with bare ice

"Another obvious difference is that the sign language is actually communicative in intent, whereas native art was primarily decorative. It might also serve ceremonial purpose, in which case it worked out certain symbols. But the meaning or purpose of these was known beforehand -- somewhat like the words of petitioning prayers or compelling formulas, or the motions of a dance -- so that it was their enactment that counted, as contrasted with communication. It is quite likely that most communication, except where actual words were used in ritual, is read into ancient pictography by us rather than having been present in intent. If communicative purpose had been present, we ought to be able to understand a large proportion of preserved pictographs instead of being so largely baffled by them . . ." A. L. Kroeber 1958.

"Probably in no other field have anthropologistists contributed so little, notwithstanding paragraph upon paragraph, page upon page, chapter upon chapter and a goodly number of volumes by anthropologists dealing with art; and in no other do they appear to be more complacent with their achievement." H. D. Gunn 1960.

There are two visions of the American Indian, --- first hand accounts and inferences derived from archaeology. The two rarely match. This is to be expected. An assay of cultural garbage, even from a live culture, must focus on different details than those people would be remembered by. The lines of vision do cross, however, in art. Art should be a primary datum point in both fields. This is not usually the case.

I want to indicate here dimensions which may be inherent in certain prehistoric rock glyphs of the far west. There are several ways of getting at significances. These include significances implied by formal features of design, by placement and execution, by direct oral or historic accounts and corroboration of the preceding by cross cultural comparisons. Some insights by way of the first three routes have been made. Cross-cultural comparisons of similar designs and concepts separated by distances in time and space have generally been avoided by professional scholars for good reasons. I don't wish to quibble with the validity of professional caution. For the moment I simply disregard it. The material discussed below can be dug in any library with a reasonably good coverage of anthropology.

The rock glyphs I am concerned with consist of connected circles or pits, "dumbells," irregular enclosures, irregular meanders, wheels and aimless little squiggles, all of which, as Heizer and Baumhoff note (1), lack "aesthetic discipline." Other slightly less abstruse elements found in association include human figures holding hands or highly schematic equivalents, circles or pits connected to form an equilateral cross, and circles or bird-tracks connected by an irregular wavy line, usually with a center vertical, circle or oval.

The reported distribution of these motifs includes the Columbia River between The Dalles, Oregon and British Columbia, the Sierra Nevada region of eastern California and adjoining Nevada, the Colorado-San Juan watershed of southeaster Colorado and adjoining areas, and the Upper Rio Grande region of western Texas.

Kroeber's remarks convey more than a hint of the exasperation of professional archaeologists towards prehistoric rock glyphs of this kind. The frustration is real. The glyphs cannot be read in the sense of an alphabet, ideograms, or hieroglyphs. They are not, with few ex-

ceptions, aesthetically interesting, at least not by traditional canons of European art. Where similar schematic motifs appear in basketry or other objects, they are listed as decorative designs, yet where they appear on a jumble of boulders or on rimrock exposures they are obviously not "decorative." In their original setting, the glyphs are nearly impossible to date on the basis of intrinsic evidence. Superimpositions are rare and extreme variations in weathering factors of sun, rainfall, orientation, composition of rock, etc., usually put a convincing chronology of styles out of reach. Ethnographic evidence on the significance of the designs from natives who live in the areas where they occur is either non-existent or scant, generalized and often contradictory. Yet they are there.

Since Kroeber's statement, there have been some breakthroughs. Archaeologists (2) in the Southwestern states have establish a sequence of styles based on the proximity of glyphs to habitation sites dated by pottery or other remains. No designs with representational elements appear to date prior to the end of the 1st millenium BC. A few boulders with simple pits, grooves and cups may date earlier but assertions of great age (ca. 7000 years) are based on questionable grounds. Archaeologists (1) working in California and Nevada have inferred that the majority of sites in the Great Basin were located at natural ambuscades along trails used by game animals during their spring and fall migrations. From these circumstances, the investigators concluded that the designs were probably made by groups of hunters in connection with "hunting magic," although relatively few game animal representations appear among the designs. No attempt is made to back up this hypothesis by explaining how the designs might fit into a concept of "hunting magic."

The dates of these designs in Texas and eastern California are unknown. In both areas, however, they are sometimes associated with game animal styles which have been dated between 200 A.D. and 1300 A.D., with most examples probably belonging to the latter half of that range. Inferences based on the association of petroglyph sites with occupation remains of known date indicate that the Colorado-San Juan examples were made between Basketmaker II (ca.200 AD) and Pueblo II (to ca. 1050 AD). My own analysis, in preparation, places examples I recorded in The Dalles Reservoir, Washington, within a period between ca. 500 AD and 1300 AD. Examples on the upper Columbia River probably date after 1300 AD.

Direct statements from native informants on the possible significance of the connected circle patterns do not appear in the literature, to my knowledge, with the exception of some explanations of conventional designs of the Thompson River Indians of British Columbia, which James Teit (3) obtained in the late 19th Century. His informants interpreted a simple equilateral cross as a "crossing of trails", two concentric circles joined by a double-bar as "two lakes connected by water", and parallel horizontal zigzags as "mountains and villages, or tracks of a snake". The emphasis on trails and geographic features may be significant but does not seem obviously relevant. Franz Boas (4), for instance, gave many examples of variant interpretations of motifs based on the triangle in a distribution ranging from the Southwestern Pueblos to tribal cultures of the Great Plains. The interpretations, in sum, appear as varied as arrangements of the geometric pattern itself seem arbitrary, with each group forming a distinct version, such as "home" of the buffalo (Plains), cloud from which rain falls (Pueblo), mountain

passes and forts (Shoshone), bearpaw (Plateau), etc. . Boas concluded that the sameness of form and difference of meaning could be attributed to a "reading in of significance" in each cultural tradition.

Boas' conclusion, restated in more fluent style by Kroeber above, has led to an understandably overcautious tendency to regard all geometric signs in prehistoric art as "decorative", i.e. meanless or empty of content, unless and until proved otherwise. Incontrovertible "proof" in the form of consistent statements from trustworthy informants on the significance of a design for each group is not, or is no longer and probably never was, available. However, in the course of tracing the distribution of a number of designs in various parts of the world, I came across references to connected circles and like patterns which carry significances that may apply to reported examples in the western United States. These suggest both specific "meanings" and significances of a more general sort. All examples cited are located in Melanesian islands or Australia. This runs straight into another current prejudice of American archaeology -- that transpacific voyagers, if they did suceed in making it alive to American shores before Columbus, exerted such minor influence that the effect of their contributions, if any, can be safely ignored. This is essentially an effort to dodge the issue. The probability of contact between Japan and Ecuador around 2000 BC has been established (5). There are a host of parallels of different orders of complexity that indicate subsequent cultural contacts between points in the Pacific and the western shores of the Americas. A grasp of the magnitude of these contacts has been hindered by our extremely minute knowledge of cultural sequences in Southeast Asia and in the Pacific Islands. Rather than wait indifinitely for corraborative evidence to come in, I would proceed on the assumption that the Pacific Ocean did not, like the encompassing ocean river of Pre-Columbian geographers, swallow up all who ventured upon it.

As illustrations show, parallels to the two more formal connected circle patterns and to connected human figures have been recorded in Central and South Australia. An analysis by Nancy D. Munn (6) of graphic signs used by the Walbiri, an Aranda tribe of Central Australia, has brought out the fact that circles connected by lines in various patterns are still used in a notation system to identify totemic beings and mythological incidents associated with them. Miss Munn notes that these totemic beings,

" such as kangaroo, fire, yam and rain (are said to have) emerged from the gound during the ancestral period and travelled the country in lengthy tracks. . . The Walbiri term for 'ancestor' and 'ancestral period' (djugurba) also denotes 'dream'. Walbiri point out that the ancestors dreamed their songs, graphic designs and ceremonial paraphenalia while sleeping at sites along the route.

" One or more designs are associated with each Dreaming (ancestor). These graphs Walbiri regard as stabilized, unitary configurations transmitted in essentially the same form over time. Like an ancestor's verbal names, his designs stand as surrogate for him. In addition, each element in the design has a specific meaning, and the whole is regarded as conveying information about Dream Time events in much the same way that a song is thought to convey such in-

formation."

Munn goes on to state that Dreaming designs and notations drawn casually in sand during general discourse or storytelling share certain structural features which she analyzes into basic elements. Thus a large circle may represent a "waterhole; tree; food; or circular path." A straight line may mean "person lying down; spear; or straight path." Small circles may indicate "raindrops" or "ant swarm"; a short dash, "small raincloud" or "tongue." Various animal or ancestor beings may be identified by the nature of their footprints. Simple small arcs could be "hut(s), line of trees, burrow(s), rib(s), cave." A combination of circles connected by lines, bordered by footprints and surrounded by small arcs may signify a specific "dreaming" or ancestor "dream-time" routes, configurations which only an initiate would, as intended, understand.

In the light of the Australian parallels, the "unaesthetic" meandering patterns of connected circles and pits of the Great Basin can be seen as mnenomic devices conventionalized into a system of notation as bare of explicit meaning as the "quipu" knot-tying system of the Inca.

Connected pits and circles are complimented by other methods of representing mythological events in Southeastern Australia. McCarthy (7) describes petroglyphs that show "gigantic mythical beings or culture heroes"... and... "incidents in their lives which were retraced by the Aborigines during rituals performed at the sites. Special tracks were followed to these sacred groups, often indicated by lines of human, kangaroo or bird tracks carved in the rocks..." "During initiation ceremonies the novitiates were taken along the ritual paths to learn the myths, see the carvings and be taught how to make them ..."

Layard's researches in the New Hebrides (8) distinguished still another variety of designs employed in ritual sandpaintings and petroglyphs which indicate both the mythological being and the path to be followed by the initiate. These include outlined crosses, curvilinear patterns and a design said to represent the body of Le-hev-hev (The Guardian Ghost) in her crab, spider or megalopod form (a large diamond nucleus with "arms" curving up from below and down from above). The importance of the designs to natives of the New Hebrides is underscored in this account based on Layard's study:

" In Vao the newly dead man is believed to arrive before the entrance to a cave on the seashore, where he encounters the dreaded guardian ghost. In front of the cave mouth is a design called the 'Path', traced on the sand by Le-hev-hev. At his approach she obliterates half the design which the dead man must complete or be devoured. 'The Path' has of course been trodden in ceremonial dances during all his adult life and knowledge of the whole pattern proves him to be an initiate of Maki. ."

In effect, three varieties of "trails" survived in petroglyphs and other art of Melanesia and Australia into the period of European contacts. Each were associated with cult mysteries, in the sense, at least, that instruction is necessary to explain particular significances. All three varieties, including footprints and labyrinths, are found in petroglyphs of western America, though lab-

yrinths or maze patterns appear to be limited in distribution to Arizona and Southern California (9).

How these design systems developed and spread and the degree to which the different manifestations may be related are open questions. Some general comments can be made here. Contrary to some impressions, the Australian aborigines did not exist in total cultural isolation over the past ten thousand years. McCarthy (7) has established a sequence of petroglyph styles for Australia and, on the basis of stylistic parallels with other areas of the Pacific, concludes that the connected circle patterns were introduced by seafarers along the northern coasts during the 1st millenium BC. This dating is in line with estimates based on associated game animal styles and archaeological deposits which place the connected circle patterns in California and Nevada at a later period. These datings are highly tentative but they are, at least, consistent with the possibility of diffusion of design styles from west to east. The more limited distribution of labyrinths and maze patterns in both the Pacific and western states may indicate a later introduction but I have no information on probable dates in either the New Hebrides or California. Conversely, connected human figures seem to have broader distribution in Austalia, the western United States and other parts of the Americas than does the connected circle patterns, although the two forms are often associated. A distribution of similar motifs and an inference of historical connections or diffusion does not necessarily mean that ceremonies and beliefs similar to those found in the South Pacific were practiced on American soil. The highly abstract designs may serve as mnemonic devices for any set of verbal traditions. However, some surviving myths and ceremonies do indicate similar "explanations" to certain design patterns. For instance, maze patterns appear as enormous complexes of small boulders and gravel laid or heaped in rows in Southeastern California and Arizona. According to a statement attributed to a Mohave in 1910,

" The Mohave used to put some of their men in the center of the area and then left them to find their way out of the maze without crossing the gravel alignments. By doing this they would leave the devil behind them. ." (10)

I can find no similar 'explantion' for the earlier and more widely distributed series of connected human figures and connected circles beyond the statement that some were considered as "trails" on the northern periphery of their occurences in western America. This is not surprising. Connected circle patterns, meandering lines and related forms were apparently superseded in the Southwest, Great Basin, and California by motifs based on the triangle, isolated human figures, circles with rays and a generally more geometric style between 900 AD and 1300 AD. However, one scholar, Carl Schuster, has studied the distribution and concepts associated with patterns which appear to represent "concatenations of human figures" for a number of years. He presents examples of these "concatenations" from native art of Tierra del Fuego, Brazil, Australia and some Pacific Islands as well as from designs dated between late Paleolithic and Neolithic times in Europe. "Continuous undulating lines represent the limbs connected the bodies," sometimes indicated by vertical lines and sometimes vertically aligned zigzags (which "are short-hand symbols for human bodies or, more precisely, for spinal columns"), "in an endless continuum. The continuum of human figures (which may proceed either vertically or horizontally

or both) finds its most plausible explanation as a symbol of the endless continuity of the genetic process; and the component figures of the patterns can hardly represent anything else than members of a social group, . . . vertically in terms of ancestors and descendents, and horizontally in terms of living relatives... they actually represent members of a tribe in their social relationship." (11)

One reported instance from southern California may represent a vestigial survival of such designs used in a puberty ritual. Luiseno and Cupeno girls, after elaborate preparations, formerly raced to a certain rock where each received red iron oxide paint from her parents and painted vertical and horizontal zigzags and diamonds in a connected series on the rock. These were said to represent the rattlesnake (12). The not quite perfect fit between Schuster's brilliant inference and the traditional explanation for the designs given by Luiseno informants is an occupational hazard of scholars who work by comparative methods. I am inclined to discount the divergence of "explanations" as relatively superficial. The fact that the designs survive in association with the puberty rituals of girls is of greater import. These lines of continuity symbolize, to me, the sense of security engendered by being part of a social structure envisioned as unending in vertical and horizontal directions. It may also dramatize, as do puberty instructions, the subordination and obligations entailed in being part of such a structure. The sense of such a genetic continuity and the psychic need for it may well have been more acutely felt by the women than the men. This may have bearing on why the patterns were transmitted as decorative designs on pottery and other objects made by women long after the rituals which "explained" them were discontinued (11).

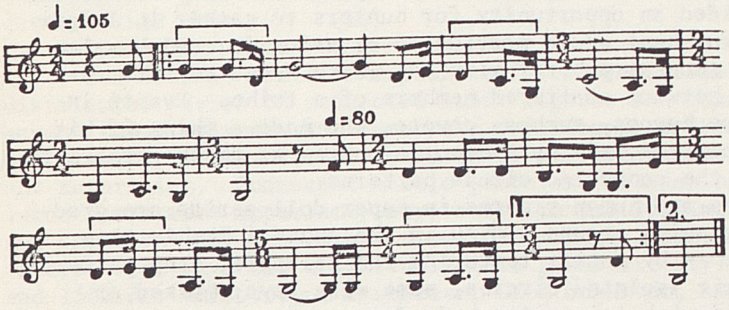
The connected circle patterns are primarily associated with favored game animal ambuscades in the Great Basin and as such were probably the work of men. The yearly cycle of the historic Shoshone in the same area involved spending the greater part of each year in small family groups or foraging parties to enable a reasonable chance of survival on the limited quantities of food plants and small game available during the lean months in any given area. The twice annual migrations of larger game, such as deer or mountain sheep, from winter and summer grazing areas provided an opportunity for hunters to gather in larger groups. A successful hunt would provide an occasion for celebration and/or ceremonies, such as puberty rituals, which would tend to cement relationships between scattered members of a tribe. Events in the myths of culture heroes, such as coyote, who made a thing of his travels about the country, may have been recounted at these gatherings and represented in the connected circle patterns.

Meandering lines and human-figures in paper doll series are gradually replaced, beginning around 900 AD in the Anasazi Pueble area, and later elsewhere -- by motifs featuring the triangle, step patterns, simple and concentric isolated circles, some with rays, masked or kachina like figures with triangular body forms and game animal representations with birdlike bodies. Coincidental with the introduction of these designs are changes in artifacts and habitation forms. Thus large projectile points of a lenticular shape which were probably used on darts launched by an atlatl or spear-thrower are gradually replaced by small, lightweight triangular points of a sort used on arrows. In the Anasazi area, the population centers increase in density and shift from open clusters of thin-walled jacal huts to strongly built masonry apartment buildings or easily defended cliff

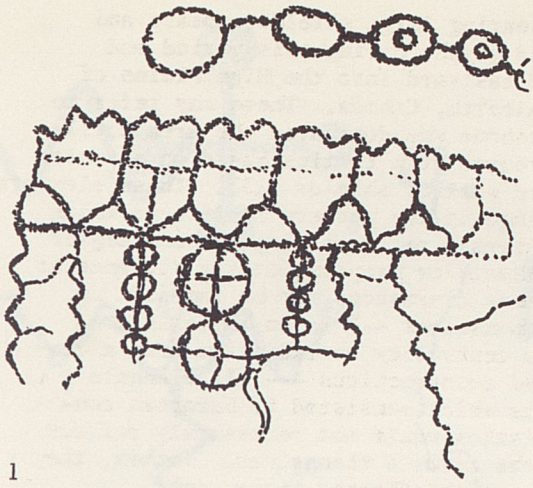
dwellings. Images of warriors bearing large shields, spears and clubs appear as painted or carved glyphs during this period and their distribution can be traced eastward into the High Plains of Colorado, Wyoming, Montana and Alberta, Canada. These may refer to warriors similar to historic Shoshone who dominated the area until the introduction of European firearms with tactics based on assaults by lance and club behind a massed wall of shields (13). These elements alone indicate a qualitative change in the pattern of life to which "decorative" patterns should be sensitive, involving to some degree the psychological effects of violence or preparation for violence as well as ideological changes. These dimensions may be implicit in the development of the designs themselves --- in an emphasis on sharp edges, isolated motifs, on centrality or radiation from a center or on hierarchial or balanced constructions --- all elements associated with the later designs which persisted to European contact. As such, these characteristics would not necessarily reflect conscious or explicit views of the artists themselves. Rather, they may refer to attitudes or stress which affected their work.

The degree to which the different designs and ideologies, and factors related to ecology and stress, may mesh into a tradition must be analyzed for each tradition. The disparity of literal "meanings", however, should not discourage efforts to comprehend larger or more elusive dimensions. Whatever "meanings" may be ascribed to specific designs, the significant designs were probably not intended to be explicit. They served as indicators of personal experiences or exploits or, like rosary beads, as mnemonic devices to instruct the initiate in traditions that must be recalled verbally from one generation to another. They may serve, as they seem, as mysteries, giving spiritual "powers" to the initiate and throwing the stranger or outsider into confusion.

S u s i e T i g e r [Seminole]:
SONG FOR BRINGING A CHILD INTO THE WORLD



You day-sun, circling around,
You daylight, circling around,
You night-sun, circling around,
You poor body, circling around,
You wrinkled age, circling around,
You spotted with gray, circling around,
You wrinkled skin, circling around.



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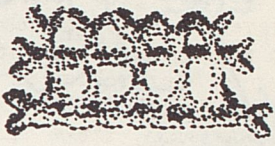

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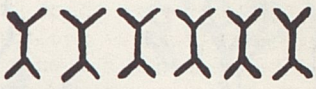

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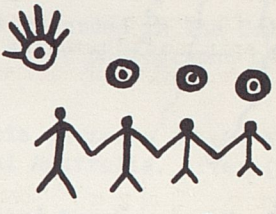

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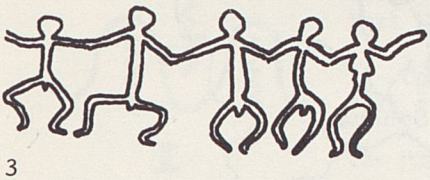

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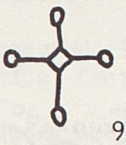

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1- Petroglyph combining connected human figures and connected circles from Owen's Valley, California. After (1) Plate 20a.

2- One of several similar figures from Navajo Reservoir, San Juan River, New Mexico. Pueblo II (ca. 700 - 900 AD). After (3b) Fig. 11.

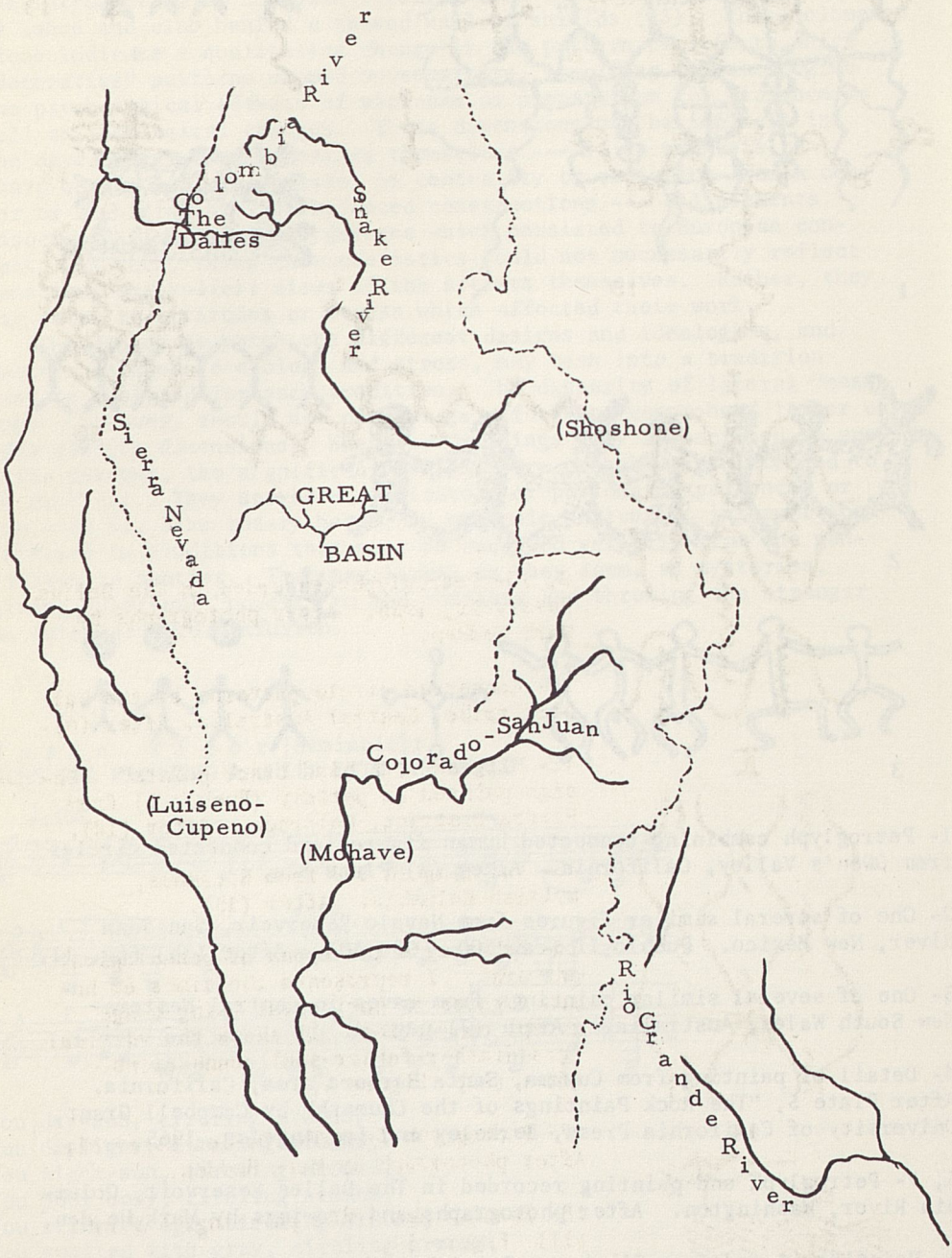
3- One of several similar paintings from caves in Central Western New South Wales, Australia. After (7) page 4.

4- Detail of painting from Cuyama, Santa Barbara area, California. After Plate 5, "The Rock Paintings of the Chumash" by Campbell Grant, University of California Press, Berkeley and Los Angeles. 1965.

5, 7- Petroglyph and painting recorded in The Dalles Reservoir, Columbia River, Washington. After photographs and drawings by Mark He den.

6- Painting in red from Sicamous, British Columbia. After (15) Fig. 10.

9- Petroglyph from mouth of Grande Ronde River, Snake River, Oregon. Similar designs appear in Owyhee Canyon, Southeast Oregon; Clear Creek, Utah and elsewhere in the Great Basin.



WESTERN UNITED STATES & REGIONS MENTIONED
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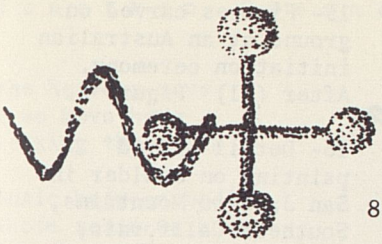

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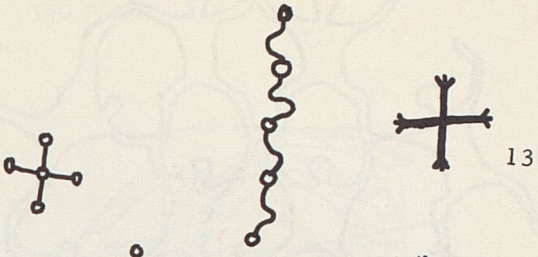

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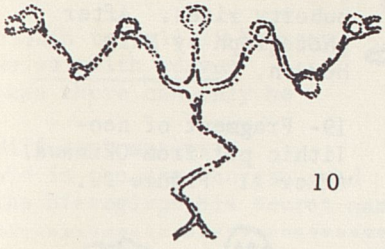

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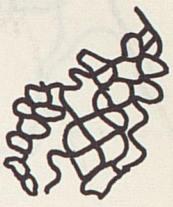

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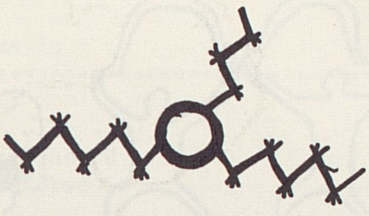

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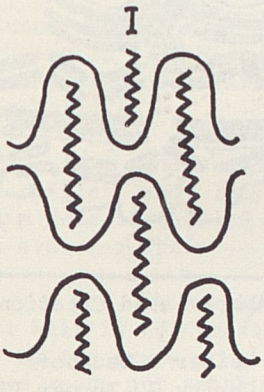

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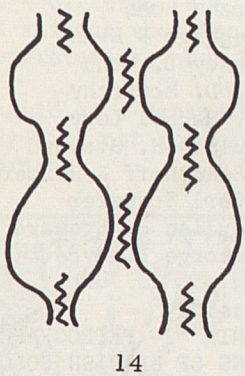

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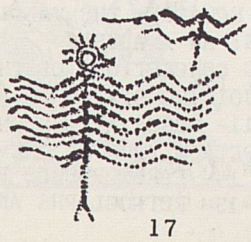

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8, 10- Petroglyphs recorded in The Dalles Reservoir, 1956. After photographs by Mark Hedden.

11- Connected circle patterns of the Walbiri tribe, Central Australia. After (6).

12- "Zigzag with bird track points" Design painted on pottery (Pueblo I) from Piedra District, Colorado. After (14).

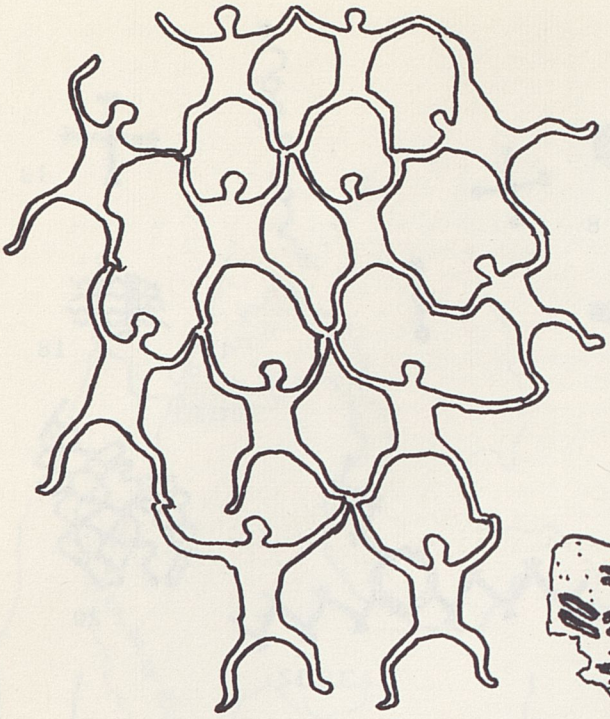
13- Painting in red from Sicamous, British Columbia. After (15).

14- Schuster's two types of genealogical patterns. I represents the limbs of human figures in horizontal (single age group) connection. II shows the vertical (grandfather-father-son) connections. After (11) Figure 3.

17- Petroglyph from The Dalles Reservoir. After photograph by Mark Hedden.

18- Spanish neolithic painting. After (11) Figure 19.

20- An apparently "aimless squiggle" petroglyph from Nevada. After (1) Figure 100b.



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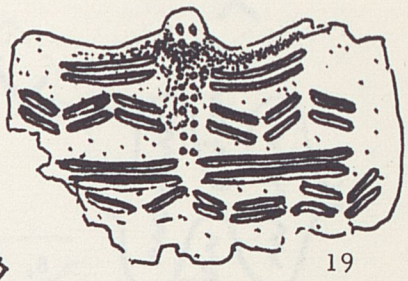
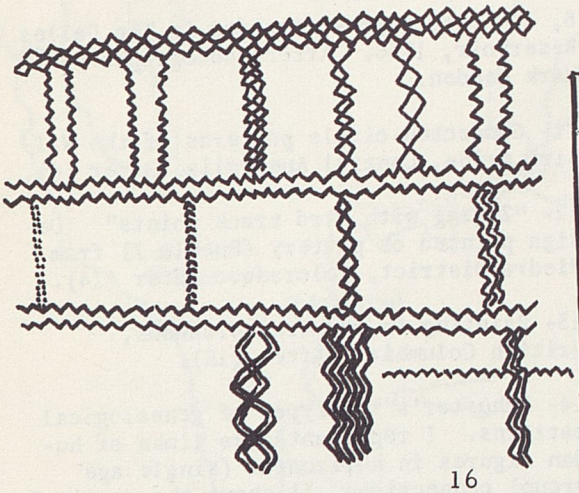
15- Figures carved on ground at an Australian initiation ceremony. After (11) Figure 8.

16- Detail of red painting on boulder in San Jacinto Mountains, Southern California, made during girl's puberty rites. After photograph by Mark Hedden.

19- Fragment of neolithic pot from Okinawa. After 11 Figure 22.



19



16

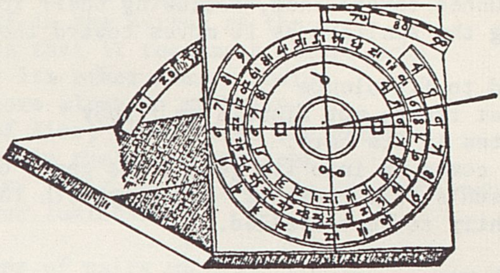
Abbreviated Citations

1- Heizer & Baumhoff
2- Chrity G. Turner II
3- James Teit
4- Franz Boas
5- Meggars & Evans
6- Nancy D. Munn
7- F. D. McCarthy
8- G. Rachel Levy
9- Julian H. Steward
10- Bennyhoff & Heizer
11- Carl Schuster
12- Julian H. Steward
13- George E. Hyde

14- Frank H. H. Roberts, Jr. 15- Gutorm Gjessing
1- PREHISTORIC ROCK ART OF NEVADA AND CALIFORNIA 2- PETROGRAPHS OF THE GLEN CANYON REGION 3- THE THOMPSON INDIANS OF BRITISH COLUMBIA 4- PRIMITIVE ART 5- EARLY FORMATIVE PERIOD OF ECUADOR: THE VALDIVA AND MACHALILLA PHASES 6- WALBIRI GRAPHIC SIGNS: AN ANALYSIS 7- AUSTRALIAN ABORIGINAL ROCK ART 8- RELIGIOUS CONCEPTIONS OF THE STONE AGE 9- PETROGLYPHS OF CALIFORNIA AND ADJOINING STATES 10- SACRED RAIN ROCKS OF NORTHERN CALIFORNIA 11- OBSERVATIONS ON THE PAINTED DESIGNS OF PATAGONIAN SKIN ROBES 12- PETROGLYPHS OF THE UNITED STATES 13- INDIANS OF THE HIGH PLAINS 14- EARLY PUEBLO RUINS IN THE PIEDRA DISTRICT, SOUTHWESTERN COLORADO 15- PETROGLYPHS AND PICTOGRAPHS IN BRITISH COLUMBIA

J o n a t h a n   G r e e n e: TWO POEMS

the heavens move
& we move here
walking the earth



music between bodies
whose scale we hear
but do not know

enough to call it harmony
we war with heaven
when there can only be

different musics:
who is the man who can read
the hieroglyph his secret name is

ooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooo

quiet susurrant s's
as if the world's hush could be heard
as sibilant speeches stars converse in
(the fire of shin)

where under them
-- flat on flat land, looking up
the sky a dome instead of
endless evolving space --

we listen;
but your hair is not grass nor the sweat of your body
the dew of the grass
& because we do not speak we listen to the same silent

s's, no - different s's, no - break the tension
of this silence that separates us from all converse,
that separates us, body from body, no - hold yourself away, now

touch would be a trespassing
the body will not tolerate
till morning

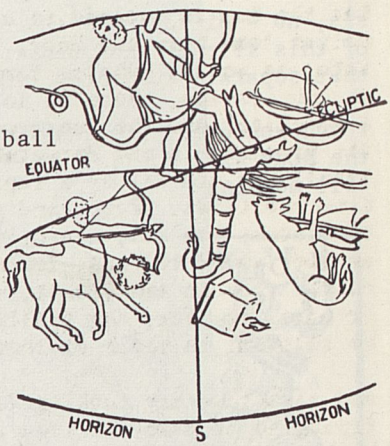
L i n d y H o u g h: THE SUN IN ITS FIELD

There is a bouncing ball.
Three children surround it
& it bounces toward them, following their footsteps,
catching the sunlight as it moves toward them.

Inclined to flatulence
the great fruit, not flaccid or flabby
fulminates in its core.
The sun comes up into its genes, the genes of tomorrow,
of the sun's full ripeness, bursting with the spores of a
new country to be travelled.

The back-country road in the day
nips and darts, bumps, the belly rounds it
or is not a vessel, drawing tight. The glass-blower
lays down his pipe & lights a cigarette, without
the pipe the prismatic bubble cannot grow
[Once my
father took a picture of me in a leotard dancing
in the garden & the camera couldn't hold the senses
coursing around the camera, the world, into & out of the leotard,
and burst, splattering glass & metal in the tall grasses.
There was a fence around the house
ringed with griffins. They flew in the crack
of the giant front door & dived under my bed, hiding there
to leave in the morning, only I could see them, only I knew
they sat on the fence by day, only I wanted to buy the house back
for the secret reason not to preserve it as a historical landmark
but to tame the griffins, to build endless fences inside the house
for them to sit on, fill the rooms with continuous double beds
for them to dive under by night.]

It is not enough to be charting beginnings
but endings, the work is to make lattices
for the other side of the sun
to come through
the sun himself rides in my belly
when he is not splashed onto a bouncing blue ball
& shines out from here
by day



Molten-ness
of that heavy body
is flaccid sometimes, that image of it
unseen by the Ptolemaic astronomer
with a giant pull;
my planet, circling the sun dutifully
pulled it with the sharp snap
of a rubber band
into me, burning tendrils of fire
blood of fiery menses & spirals gaseous of inner combustion
Starry bodies falling away unheld by an orbit,
unimplanted into any vascular system

***

Turgid. The sun has pretensions to a grapefruit,
worrying itself into bubbles & rivulets.
Is cocked into a gaze of amazing flatulence, is
a great lemon preening itself in the mirror as the sun,
the sun sending back messages that it too has a bitter acid
& a pocked skin, sun without its other starry bodies
lonely, but essentially no more alone in my belly
than encased in its shield of fire, hidden from the gaze
of all but coeds who lie down in the fields to look
& lose their sight. Sun in my belly, whose gaze do you take away,
whose eyes become part of your luminosity?

The sun is made up of millions of pairs of eyes
streaming in continuous flowing fields around the circumference
of the ball in constant searching rolling patterns, throbbing
in looking for the path of the gases, a semblance of order
in the very moving, as an ant-hill shows order in its energy
of ceaseless activity, pairs of eyes hoping for an anchor
to a gaseous trend, streaming down lava flows in their rolling search,
slipping into glacial cracks & becoming lodged there
until nudged by another pair of rolling eyes

The eyes search for implantation. They would have a wall
to afix to, grow in, so that moving eyes of a blastula
can elongate, send tremorous rays out of the body in sound,
in warmth, in light-soundings

Thus in myriads, the sun wants to shine out. Give light
into the forest: enough to work by, not moonlight, to see by.
But to infuse a body, send energy along its spine to make
the plow alive under a man's fingertips, the furrows falling
away in the rivulets of eyes under the sun's skin, under the wheels.
But the sun is encased in a heavy body:
molten lead bars the door, handles of steel have been laid flat
into the walls, bubbles form only underneath the spout
& none escape, there is no entrance
& no exit. And the sun grows, but so slowly
its presence is not detectable to the outside world, earth, its
satellites are lit by a representational replica
& no one knows. Poets and philosophers continue
to discuss the sun, measuring it, describing it
as they would the last lemon hypothetically hanging
on the tree in the forest, which no one hears fall
or cares to hear, the falling at last of which would not
be relevant to their dialogues

And always we are looking for the last lemon in the forest
trying to be under it when it falls to catch it, that it should
be heard, and heard, caught, to capture sound, and we are also
in this way wondering about the sun, who is riding in our belly
& no one knows, and no one is trying to find out.
The hallowed man walks among our bare feet, as the One Lion
prowls within our mountains, and these all are lonely beings.
The sun stretches
& grows in its orgonotic body. [Nov. 17, 1968]

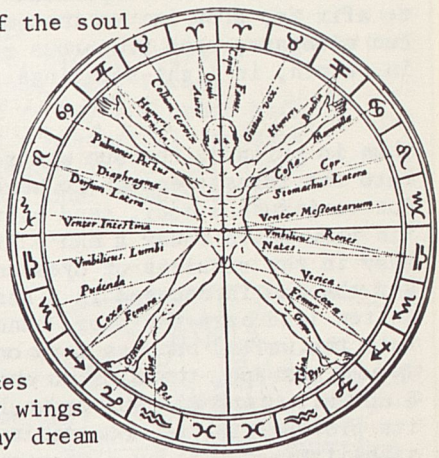
Lindy Hough: 14 (from an open-ended series)

There are certain distances man cannot travel unless mass becomes energy, unless he is unencumbered with a body as we know it now. - Richard Grossinger, essay on science fiction.

otherwise
the mind fixed
on every atom
in every substance
infinite overwhelming physicality

splays us out.
The angel sitting under the diadem
a small black spider, drawing her legs under her.
We can deal with only one world,
photon, at a time,
the circumference marked by a wide
yellow rubber-band.

Either we live
under the Tortoise's shell,
in the nooks of the forest,
under mounds of sand --
there are variables
that must be seized: the span of wings, of the soul
if we are to travel from world to world



the gnat
among raindrops
lives among giant ice floes
for years at a time

the Sun to him
is as far as the nearest star to us,
the center of the Earth
as far as the Sun to us
& in those distances
only our thoughts can travel, gnat's tiny wings
beating furiously by the light bulb; in my dream
he wanted to skin me
was a Mandrake wanting to exchange
its resin for my blood
& would I travel faster thus unencumbered or
would that weight
not give place to a conversion of energy
& leave behind a weighty space,
bulk of my heaviness like a puddle of melted snow
on the floor

she looked like her
but said different things;
the focus of our attentions:
the hair. the fire-plug. the span of
the rubber-band. is our only means now
of turning our weight into energy.

the angel under the crown
becomes a spider, scuttles into a dark corner.
the sun is in
the solarium, all windows straining to catch its gold,
but only the energy of the sun.
Not its body, or the floor would not hold,
the house, the Earth, like the gnat
engulfed by the earthquake of a moving puddle,
mass overwhelms

in its spin mass can make sounds
frequency dictates who hears it
speed of spin dictates frequency.

L i n d y H o u g h: THE WALNUT SCENES

Four worlds, for the Hopi
& there are no worlds too many

the reign the sun holds
keeping us in
the rain the sun makes
if we feel it, a current
through the skin, are aware
of its movements within us

as a child I had a walnut which opened
into four scenes, each a quarter sliver,
tiny people-animals dressed up in
1. a serenade, boy with guitar under a balcony
2. a wedding
3. the inside of a house, with kitchen shelves
4. children bedded down to sleep, parents dozing
   by a fireplace.

a world of the beetle: shriveled, dried nut of
dark cavernous corridors entwining our head,
our mind separated into dusky ducts & tunnels
a root down into the ground, or a nerve, or
a layer of skin

this is the mine worth mining, head start
of our head
the mine we have mined endless deep
goes forever downwards, home of a Mandrake family
or burial ground of a bantling-baby, caverns &
milking palace of Myrmidon ant-boys' aphids

so outer space is as deep & limitless
as the center of the Earth &
the limitless peopling of it is
the peopling of Apollo's mountains

globe upon globe hovering over the misty river
as I lean out over the bridge, watch

leaves go by
on which live & have lived
civilizations alive with the despair
of endless space coming in,
countered by the dance the prayer-sticks
the tobacco sheds in western Massachusetts, stacked
with neat bundles

L i n d y H o u g h: THE AMBUSH

I was going to say
about the poem,
it's
a simulacrum. Like the daydream,
a sham
of daytime fruits

of daytime thoughts

an attempt we make
to sink back into the pool
that stands by the trees at night,

dark dream pool .

Night forwarding itself through the tree forms
as we put ourselves forward
in space
into the midst
of it all

Standing by the boggy pool
waiting in silences
(the night sparking with
cricket tuners)
for all the crickets to
coalesce into one sound
at midnight

We project ourselves forward
into the new topography .
new words
breaking
new land

* * *

the thought was to say this about simulacrums
but on the hunt in the dictionary
for that shammy word,
came upon
Shekinah .
all presence made manifest.
what the young wife
does in her house, in

her head. how feeds the marriage garden:
closely sowing, closely tending, closely seeing.

Charles Stein: THE ROOM

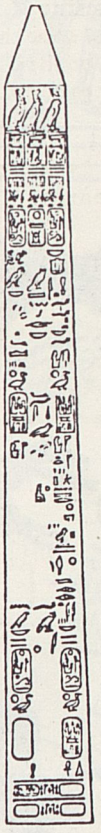
I

catalogue. innate

pieces of glass.

arguments
nets

falling down over the whole Tree and its fibre.



I was talking of nothing
yet find no other way
it is night and homely
objects cover
the evanescent booming at centrality.

A chair
Black cloths
Brown leather.

The light bulb
strikes a god's bust
on the book shelf.

Ruined clothes

a sale

a few

cars pass in the pre-dawn

city.

And the time's cold passage
indomitably other.

Here are the record books, the fascinating
leger of our footsteps

the wrinkles and shrinkages

heavy neglected cloth things draped on chairs

ashtrays papers pencils
and occult
knives

cutting life apart

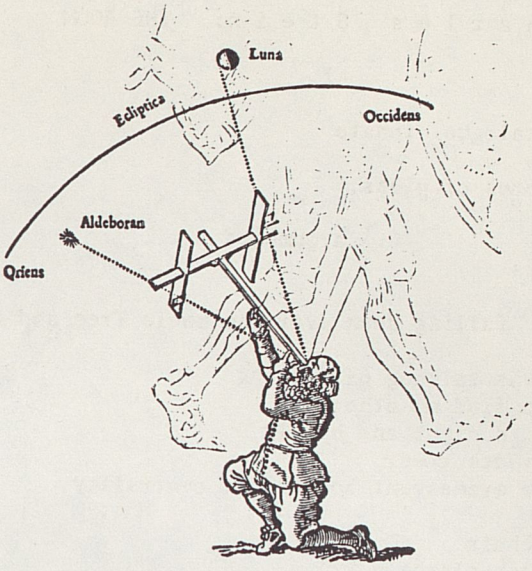
our secret tantrum

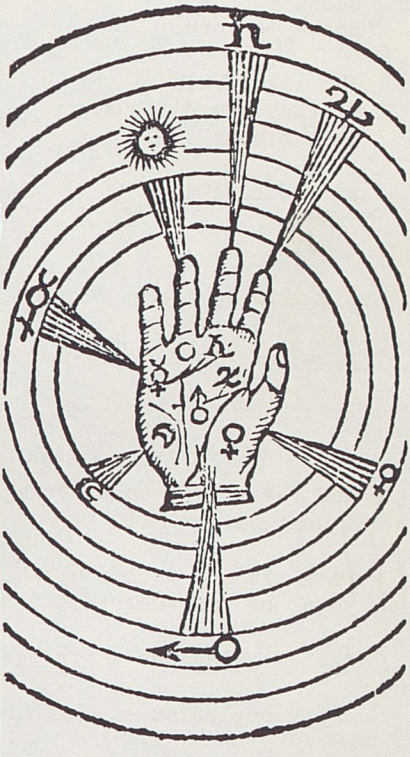
They take you
into the room
roughly
erasing
good thoughts. hot
lights. they
ignore you awhile
then take out guns
and shoot you.

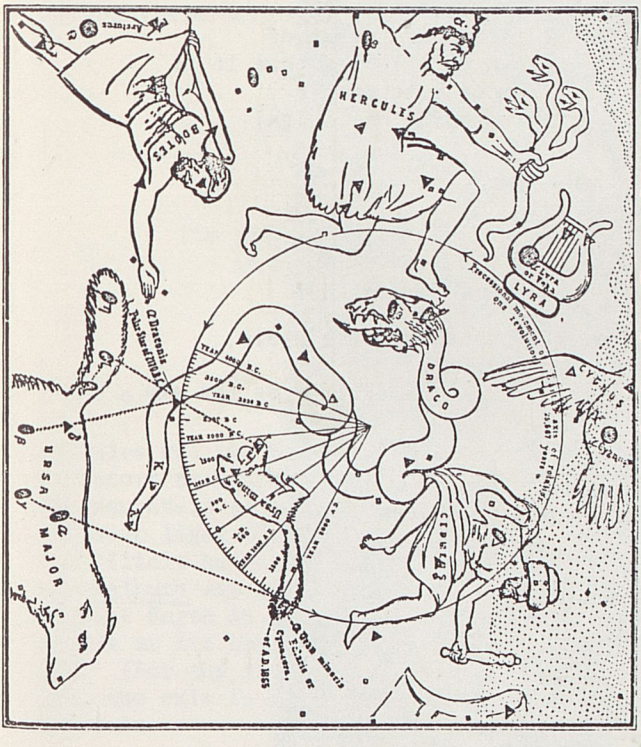
When you wake
you take out a sandwich.

I thought of praying
because there is something
had we known it before
we'd now begin to recollect
but we haven't
known it
and still there is something
that is not appearing

Some say this place
is the Prince's
special chamber
where false possibilities
are barricaded but
I say







Robert Kelly: READING THE CARVINGS ON A SILVER RING

1

a sun swept

or path of the low moon
cradling ecliptic

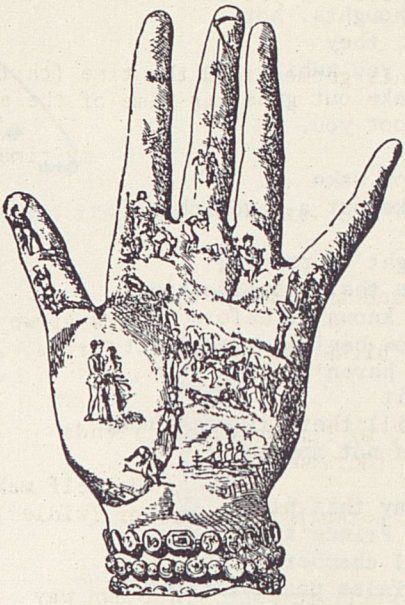
earth move,

widdershins

fire (on the mountain)

arrow . Sagittary

this herb
this poison makes me(n) whole



parts of a line
a lion

a zayin . a cock
(dreamt last night of
my own cock longer than it is
erectly tender
rested on Her thigh)

the mark ז

Five. V for Vulva & Victoire!

Theta, sun self, old style sun, confusion of astrologers,
persistence of alphabets
o clarté blackbirds on the sky

the Crab, the ever-amplexd earth
cradled in its field.

2

Part of a Capricorn
(one dot between friends)

but sun!

(getting it up) arousal
looking close at the tip:

chert --- jadeite --- Her feldspar arrowhead

from this gnomon read the time (christ I mean
the time of the earth
(Teocalli Anahuac Wuwuchim
my time time time

sign of the lazy Yin

& bisexed angels again)
this arrwe
nicks the earth . furrow . the delve!

watter, my Pennwoodland friends
(German Hill)
. Herself making water
Between the hours or (widler) over our trees

earth still turns . her own way

amplexus ultimus .
The sky
closes down on us

Nout cradles me in her arms,

Her arms, all of her arms

I'm just a man
in her amplitude
arms, woman by woman . Stars in her
belly.

Robert Kelly

Daidalos was the father of our interplanetary confusions --- wanting to return to his native Venus, he tried to bring his son (by one of the daughters of men), who fell, turned back by the melting, diffusing alchemic light of the upper air. Daidalos remained on earth to attend the illicit but once-forever chosen genetic consequences of his flesh. For Malkuth was his Labyrinth, & Man his Minotaur. Wherefore we represent Earth in our glyphs by a great spiral maze, with an unknown future at its heart, where Daidalos' seed comes to flower in the New Man. (For the secret of the Labyrinth at Knossos was this: Keep going, the exit is forced, there is only one way, & that way is both out & in.

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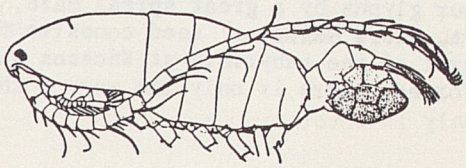
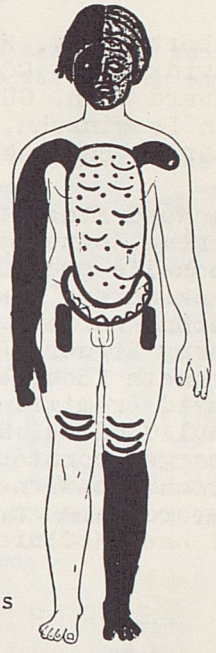


The princes in their masks come carrying wheat
step by step through the wet maple leaves)

thunder's bird

I caught you
in my first sleep
but suffered the deceitful tongue of dream
to go on singing
& in the last
true dream of the almost waking
you were far above me filling the air with my name



I heard my name among the trees
where it was so dark not even
my wife's face could tell me where the sun was

1 THE MASKS

were everyone. Moon Wind Thunder Famine Death
wolves & mosquitoes, a whale dying on the beach.

(The sun was pressed tight to my face
my long blond hair streamed out around the basswood

when I wear this mask the children scream)

Hens Cocks

When did we become such things as mushrooms & eagles
fish scales shredded on bark, scales stuck to my true love's fingers,
she knows how long to cook fish

(If I could discover it as story
I could tell it to Mr Navins at the General Store
so he could tell it further
tying it in with the railroad & and the burnt-down barn
the big silvery bridge across the Hudson he has never crossed,
would say O yes he lived
in that white house past the bend of the Sawkill
he used to come in sometimes with his wife

2

My dream when I was five was the broken stone old man
who had ground wheat in his stomach's mill
he was stone ate stone
was a face that did not move.

Our fishermen
learned to eat salmon from bears

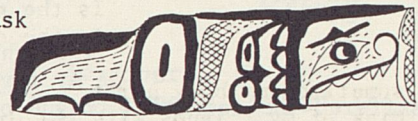
We catch them with our masks
the face changes only in water

the fish is good

truly we can eat anything we like

Fish dry in the sun All winter keep
the wolves away

Come in the wolf mask

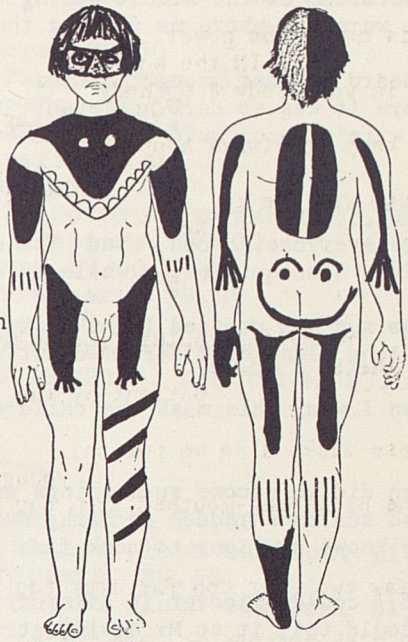


(stone lion I was four years old)
stone chair I sat on)

Put a fish or parts of a fish
in each hillock of corn

The mask said:
an animal turns grasses into flesh
you people turn flesh to spirit
we come
every winter to eat your spirit
make us strong

Take this mask
Eat these animals



Fishermen
wear this mask This mask eats fish

3

Flame
Flame
Flame
The housedoor faces west
all winter
we'll catch sunlight

The tenderness of my people, the names
they bear & their problems

If you put on this mask
the wet log will break into flames
heat stones. The stones
boil water and cook meat
breaking down the protein chains.

This is important to know

Wear my mask, the one
of an animal that lives in fire

4

Moon mask
Wear a mask and bite the moon,

Who said anything different?
I wanted to apologize to him
because I have no sons
Look I will probably never want children
are we both clear about that? I keep telling her
I want her dance around the World as center
not the child not the child
Is the child the world
Is the child the world

then sometimes my body hurts
& I think of my friends with children

Sun mask & wear

this mask The power
is IN the world
is in your body & my body
I say it like that
to keep it always happening.
The window The masked
house we live in
Now

5

And Mercury's signature (Cornelius Agrippa says)
is the Shee-Beare
patient by the rapids catching salmon

These masks also we put on,
young men of the tribe
come back open-mouthed from our empty hunting

Yesterday
I saw two deer too far away too young way up the ridge

The mask pursues me, has rotten teeth
tells me what I want to eat, hints
at where the daisies go
after October

The mask is brown, wants women
comes when I call & remembers every address
Dont you know I can write down all your names
& find your house wherever you live!

Mask-confidence,
mask-fear.

I am the wolf I am the sudden wind
scattering cloud I am the dreamer doubting his dream
the dream-carver hollowing a mask
that will fit anybody's face
The power
is in that hollow

The mask makes noise
when the wind blows through

6

Eagle Loon Whale Teeth
of a large animal, for tearing meat

Blue round, white eyes

the shells catch the light, store
some glint of power in themselves

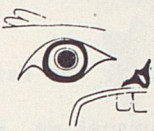
When everything is dark

burn this candle
Work through Woman
came to our house to use the phone
she'd walked for a mile & could find no other
who did she call what did she say

The bugs make mask-eyes
in the leaves, big linden leaves, big
enough for a child's face

Each turns
turns into other.
I have no brother
from my mother's womb.

Turns. Over the phone
her voice was stripped of circumstance
was herself saying Come to my new house
A chair
a special chair A window Through



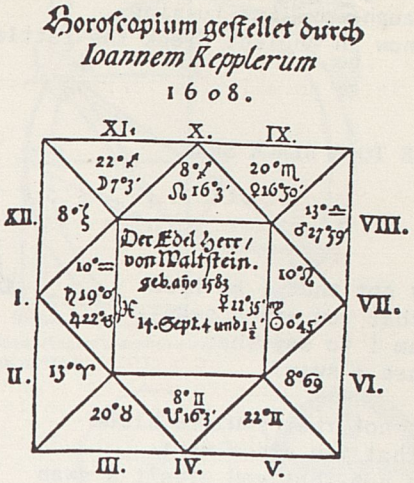
There are powers in whom we can live:
masked with their energies
our eyes seek out a familiar world

hold it, hold the wolves away from the settlement
hold the street in place
because in dream a mask
calls out a man's name
& I hear it waking, summoned by my name
& our tender hands rise to take the mask away

we see a face nakeder than wood
come home to the world

22 December 68

I.
We babble incoherently
within the magical language
of the Moon-goddess' Eyes:
"Total Devotion"
and do not realize or understand
the nursery age
of Myth Knowledge.



II. Go,
Lower down,
two or three stadia:
Cross then to the
Temple of the Huntress.

There on the sacred alter
between the pillars of Shimmera/ Chimaera
and Hippocentaur are
the bowed knees
of Graves' Knowledge.

III.
Know first the knowledge
of a-zoological improbabilities
and also the Tree's Heritage.

And while you worship
the design of the Third Eye
will speak to you
and you will be called by name:
Slave. Seer. Am.

THE GHOSTLY OTHER

The temptors under the eyelids
where the legend of sleepers lie
jump like tygers
into vaulted breath
of dream's
spenddrift psalms where I
fellowed sleep:
to learn
the sun and moon of mother's milk
the kindle of darkness that sparks dreams:

to rench the dreams from I
and the ghostly other,
who-taught-my-lips-to-sing,
sing now in Ancient Greek the rattler's song.

AN ODE TO A BLACK SWAN

I.

It is not that I am Leda
and that you are a swan--
Who am I to say that
you are a swan?

It is not that you are black
and that you are a man;
it is not that you aren't a swan
but that you are white--

Why, then, do I call you
Black Swan when your skin
is white : Your mind, where
the black is, is perhaps why...

II. Leda's Song

I sing the song of the loins
and you whisper "Cool it"
"Not now," or "I am cold",
"This is Sex Big Business."

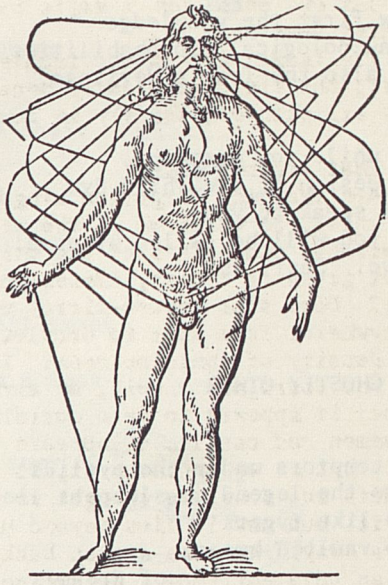
The bird of the loin sings
(Spicer knew the song)
And to capture the swan singing
is to make him, captive, die.

But the bird of the loin
needs teasing, chortle a word
for him to respond to
and he'll sing and capture

III.

You in a song of black sky
and white dreams. Why
are your colors black?
and why your name master Jack?

It is not that you sing
but sing so aimlessly
and it is not that you are black
when you are dreams and white.



NEOMANCY

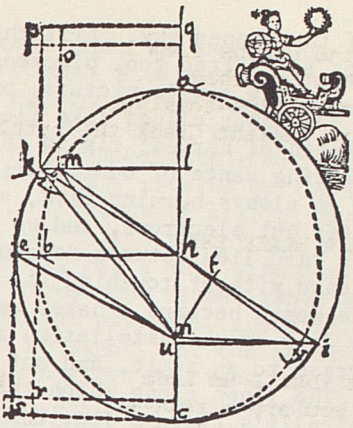
But your mind is black
with magic : your mind's a swan song
white with snow black
sky white skin black swan.

IV. The Swan Song

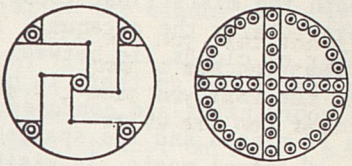
Alter God's Eye , the universe
into a hound's hair, spinning
torture in the sky
the mind of white is no where.

No where white no where
clean can spring the snow
of upturnt valleys, drain
the downways of nowhere go

Smother dreams in spinach
and chant "Pop's Eyes are blind"--
Listen to hollow Echo's return
of nowhere go no where white.



Above: Kepler's demonstration of the orbit of Mars.



Richard Grossinger: TALISMANS 1. Star Magic

Great clouds of water have been discovered passing in outer space. These are the debris of light; these are the raw substance of planets and suns and local lakes. These are a shield beyond which we cannot see our own ends, but a magic that is pure energy, pure gravitation, raining down upon us.

The images are in the temple are in order; the trees are in the field; the field is planted beneath and beneath the field; the seasons are planted; the sky is sown; this is the city of Hermes, of the sun.

What are the stars?

Are they the forgotten kingdoms of earth? Are they living beings, the anima, to which we in the microcosm correspond? Are they the limitations, end-points of the universe? Or the marks that anywhere, any point given as center, Adocentyn, is limitless, its possibilities infinite? Does size (macro-micro) matter? Or is the universe the same everywhere, from star to droplet, winding thru local skies deep into the density of consciousness? Is a bee hive also the city of the sun?

The stars are a veil, an arras that hangs down over another universe; it appears to be a curtain woven with flowers, a tapestry of horsemen and castle; it appears to be a gown, a robe sewn with the zodiac, but as we approach it, it is too hot to touch; it dissolves into planets and suns; we thought we were within an arm's length of touching it, but now it lies beyond us a billion, and a billion more, light years away. We take a step back, and the curtain hangs loosely, hiding an adjacent room. We are born and find the stars at hopeless distances, but behind them is another universe, closer to the earth, one that we can hold in our hands as a deck of cards, and deal, one after another, without changing our place, star by star coming up into the masked sky. Lift the veil, and beneath it is a woman's face, a fire burning, a bright yellow field of grain; a king sits on his throne motionless for twenty-five thousand years; this is a star; this is one

portion of the mapped sky. Lift the angel on the Star Card and the five senses are lifted too, plucked like buds from their earthly counterparts; it is a single picture, but the cards drawn from it are unlimited. The tarot clings like flesh to the throbbing underbelly, the exposed sheath of nerves; rip up the card and the blood flows from the wound; a spring dance of odd colors forms, a mushroom grows. The card lies over an always-burning fire, and the veil is made not of red pomegranates but electrons, and we cannot touch them and cannot eat them. The card lies between neuron and image, between astrum and star. Lift the card without touching it; look thru the image into another image; the woman becomes a naked dancer, a winged sorceress; the woman opens the door of a constellation and lets you into a room. You climb the staircase to an attic, and out beyond it lies a field, a sky above the sky. The lines along which the universe opens are infinite. Behind Botticelli's canvass lies the surface of the planet Venus, a surface unknown to the scientists and obscured by hot clouds; from deep beneath the mists (just today) a spaceship suddenly stops sending, and enters totally the arcanum. Twenty-six million miles and a boiling chamber of clouds lie between the astronomer and the birth of Venus in foam; he cannot go there in his body; he sends a spaceship; the sensual coordinates are confused; the distances are too great; the primavera is missed and the spaceship smashes. The planet lies on the surface of astral magic, is visible thru a pagan rite, the Two Flute Maidens dancing jewels and corn. And beneath the Mariner craters is another surface of Mars, a series of towns and lakes, boats on the canals, a series of optical illusions named continents and oceans after famous astronomers, Kepler Land, Hooke Sea. This is not the telescope, but the dissolution of a black sky in a blue sky, a dark chemical solution in which a dark crystal grows, a mirror, a deck of sunny day-cards. This is the deeper image of which Robert Kelly once wrote, and still is engaged in ceaseless production of shape thru his own instrument. These are local magical exercises tuning in a cosmic power greater than locale.

The sun is in the grass: thousands of dandelions over a hill, Seuratt's orange dots of materia. The pagan curtain of color and growth covers the hillside, the landing of the orange star. The power of the universe lies behind this image; the power of the universe generates and sustains it. From the ninth floor of the Physics-Astronomy Building the dandelions in the field are dense as stars, galaxies clustering where land, moisture is more fertile, spread out from the immediate source, bright orange of suns burning wherever they are.

And by the forest the first phlox, soft purple containers of a slow seeding; down the hill are trilliums, three white petals, monocot leaves. We climb down to the stream itself, muddily flowing, almost a marsh; the marigolds are bright yellow with the marsh salts, the powers that flood downstream; a big bullfrog sits on the cistern, croaking, blowing himself up; the first leaves of skunk cabbage line the far bank; in the distance a clump of early may-apple leaves. We climb the hill and walk back up the road, past redbud, past bluebells, a few sprouts of asparagus coming up thru leaves beside last year's tall thready stems. The apple tree is blossoming with thousands of stamens and the petals are falling in the wind. In the distance another redbud, the flowers loose like haze on the shape of the tree, and the whole misty appearance like the opening of a door into mythology. It is the penetration [of all this] we seek.

We are now in an old garden, where the asparagus once grew and from where the few seeds scattered to the road-side. The ochre is wild mus-

tard; the light greens are mixed, carrot-tops, the beginnings of Queen Anne's Lace, and a few Dutchman's Britches. A tether-ball game lies silent, semi-wound; five kittens are running in the flower-beds, a decaying fence, and in the distance, haze, like myth, redbud.

We drive back along the river where the poor people sit catching carp and catfish. The first stars are quickly covered by low-flying clouds, lightning, the planet sealing. A scrape of static runs across the announcer as he gives the Reds at bat in the top of the third, Gary Gentry pitching for the Mets. It is dark, and a hard wind blows thousands of seeds across our windshield, across our dinner table as we sit on the porch, seeds in the iced tea and the potatoes, seeds of all the trees crossing in the storm. There is no light, but the seeds are light, or they contain it; they contain a grove of trees, an endless clone of planets. There is no light but for two candles and lightning which reveals a chemically-unstable world. And then the soft fall of seeds is burst by the heavier fall of rain. We are inside, the dishes are washing, the cats come rushing in the window, wet, and lie on the red rug licking their fur.

There are clouds of water and the crystal itself is wet, the darkness where we cannot go but are already, body I call to, penetration, sleep, dream, where the powers are concentrated like juice, oak seeds and maple seeds, light of another sugary summer, planet on top of sun; we come together, come, and fall apart, into legumes, and melt back into a previous sleep, body, that is always previous, there always. We are here only as long as, we are here in a circle, we are here and have certain powers, the rains return/the stream returns, the seasons each year.

There is first a physical magic, and it streams with orgasm; the stars are giant hydrogen furnaces showering the earth with information so dense and ambiguous it takes total consciousness and fifty generations to sop up one second; we cannot escape this hot breath, physical proximity of the heavens, carnal nearness of one star. It is mutational, tidal, magnetic: physical, and all our thoughts are anyway part of the chemical flux of the body; the chemical downstream is unbroken from galaxy to brain, single carbon atoms in interstellar stellar wastes, sparkling as water, milk, plasm, air, eye, from brain back to galaxy.

But there is an astral magic which seeks, by the power of talismans and imagos, earthbound and made of light, to penetrate light, change the birth signs and the malefics. There is an astral magic which seeks to leave the body and become light, at which speed the ends of the universe become the walls we pass thru, a thin haze, myth, and then dream. In astral magic the stars are the deeper images which the pilgrim must learn; their power as stars, enough to light and bombard the universe, is trivial compared to the angelic power of the astrals that lies behind them or thru them. Is not this power physical too?

Physical magic starts at the flesh and moves in, and back, moves thru the wet orgasm to the amniotic waters, the genetic memory swimming in the world ocean, the phylogenetic waters of our race, of all protein species on earth. Physical magic begins with a physical first cause, as genes, or a binary code for deeper structures (to n-deep) on the brain. In physical magic man cannot survive the power of the stars and the planets closer to the sun, and on those further from the sun he will freeze. Astral magic lays upon these stars, and the flesh, a series of cards, decans, a stellar and constellar sequence of images, and on these cards are pictures, highly stylized, of what we could not ot-

herwise know, are climates of rich dark magic in which we could never physically live; and beneath the cards, placed just so on the lap of the magician, lies not just his flesh, but the flesh/fabric of the universe; beneath his gown of suns and moons are the powers of suns and moons, are his molecules and electrons, are (because he wears it).

Astral magic ignores socioploitical realities and seeks the millenium at once, as the Ghost Dance bringing back the buffalo; the magician, by his magic, cleanses the face of the sky and builds a temple; the ancient stars are returned to power. But the temple lies in counter-reformation Italy, denying all that is real, that exists, Spain's power as well (which, if the stars are right, will be channelled into prior nodes).

In physical magic the words find their power in the resounding chambers of the lungs, in the re-echoing of sound, and sound, thru the tonal cartilege of the body. This is the chant of Orpheus, of Moses in the Egyptian temple. In astral magic the words have another terrific power because their link to the past is unbroken, and they go back and back like a chain of pure links, and we pull on the whole chain strung in deep waters thru which we cannot see, and the words we speak reach the words at the bottom, the pelagic depths, the base of the neural pool in the Star Card, and there they go further, back like Bridey Murphy remembering a previous life in a hypnotic spell, back into a previous form of the same language, Old Irish. The words become prelinguistic fragments and take on velocity; they leave the earth because they define such a departure; they become large and summon the angels and archangels of our beginning, and other debris, all that lies in the chain. It is astral magic, for it cuts the world-weave in a circle, a Fluddian cosmos with elements of symmetry and heliocentricity the eye cannot see and the numbers of ordinary mathematics cannot find. There are relationships hidden in relationships, and anagrams come flying out of the pod, flowers that are contained within a dark earth, as seeds buried in a hot sky, and never flower, except with the changing climate, bloom among old stars. When Bruno speaks of the infinite universe, he means the infinite zoological spiritual life of the universe, the endless centers of spirits and influences, the Pawnee psuche kosmou.

There are conditions and operants, and beyond the sphere of the body lies another sphere, air; man is a monkey, a clever animal with power over the magicals; he has means; beyond air, air is fire, the sphere of the sun passes within; outside it, planets; outside them, stars; beyond all such physical spheres, the invisible reigns, the lesser angels followed by the magical names and superior powers.

The homeopath drinks from the flower the accumulated deposit of six billion years of starlight on protoplasm, is healed by the physical substance; the magician receives his power immediately and directly and without six billion years in between. The power is in the collection of talismans, not the actual body of Christ, but ikons, seals, Renaissance paintings, Pleistocene Christ on cave walls. The lovers stand in the forest and the planet Jupiter is above their heads, magnified fifty times its visible size, with four moons. The power of Venus whizzes thru the pagan spring, above our heads the watery planet in the astrals, its power pulled thru by a chain of words, talismans, abracadabra to the weak. There is a demonic compulsion to astral magic; the magician tugs and tugs, by words and charms, at something he knows is there, a second body of light. But beyond the angels lies, must lie the source of physical matter itself, and the passage from there to here can only be physical. It becomes a puppet show, and a mechanical demon is worked by an incredible assortment of cogs, wheels, springs, and strings, a stage prop demon; he fools the populace that knows no-

thing of the non-stellar properties of numbers and believes all such workings to be the same violent trade magic. The hermetic brings his mathesis into the world of mechanics and idols, hence begins the current use of the word "magic." Here the power of the talisman ceases, for the magician has sold the greater possibility to a lesser flurry of spooky effects. He had traded the powerful star dragons for harmless Halloween witches, and he will be seen years later lost in an infinite universe of another's making and playing with rocket ships rather than astral bodies. Bruno's infinite is reached in a flash of invocation, of proper conjunction; the egg zero cracks and the numbers dance thru each other. It is a hermetic (not a Copernican) truth that the sun is in the center no matter where we stand, and once we know this, the rest of the numbers fall into place (as they did for Copernicus), and the earth moves because it could not possibly, in the midst of such magic, stand still. We seek out the associations of the bullfrog with angels, not by his direct bodily power (for in that case we would note how large he is puffed, how he will frighten the female into submission by such distension, tortion of organs); we are not talking about the immediate and wet frog; we are speaking of stars, which are really fires billions of times his size; the frog is a suppliant, a sign; thru being aware of his shape and its associations with other shapes we are closer to the stars already. And the universe is expanding, pouring out thru its debris at the edges, disappearing into another universe where the stars become the astrals and demonology replaces astrology. The universe is expanding, destroying its suburbs it fantastic explosions, but the earth is part of the contracting universe, that runs from the distance of the galaxies and falls, splashes in the stream, with utter tautness, pumping heart motion, contracts from nameless clouds of fire and water, croaks, gives sperm, midges clinging to rocks beneath waterfalls and sucking the food that rushes by. Here the zodiac is retained; here are retained the harmonies of the planets; here we live as angels among pans, inhabitants of local fields and streams, vedas, rains, lightnings, winds, markers of a chain which also, clonally, by germ plasm, is unbroken, and goes back to the beginning, a physical magic whose etymology also lies in the stars. The stars become the astrals; physical magic becomes astral magic, and the angels appear simultaneously as products of our erotic bodies and mathesis of emblems and ikons; the angels are our lovers on earth; the angels also lie behind them, reclining numerically. Thru Botticelli is revealed a pagan and undiscovered planet, a hidden moon of the Renaissance, mapped but unnamed, beyond Iceland and closer to the sun, Isis retaining all her points in an expanding universe, retaining her Hebrew and Egyptian ties even as she is a Navaho corn goddess and sits in a church in New Mexico, even as she is the virgin planet of the Pope and the mother of Aeneas. The chain is unbroken though the universe expands and the galaxies are torn apart. The chain is unbroken, the grape juice hardening in wine bottles, the dandelion wine fermenting in the urn, storing the physic of this particular sun. The power crosses the whole chain, connecting the origins and ends of the expanding universe with the propinquity of the contracting universe and all its lesser powers; there is no distinction between the food we eat and the power too lethal to touch. The initial goal of all magic is true moisture, orgasm; protein begins by replicating itself, an endless mirror of flesh, at the end of which a man stands in the desert chanting. The star leads six billion years to a star. As bloody beings we cannot escape powers we are made of; the Shakesperian stage dummies have led to whole moving circuses, great machineries running unattended in the factories; the power of lightning is sucked in thru a talisman, a

kite, into a key, the Rosetta Stone, to Egyptian, the dating of Hermes as an A.D. magus; what is drawn in thru the key becomes tame house current and runs the affairs of the church as well. The whole machinery of our civilization is demonic. But even as we are magicians, our magic is linked to a physical tide, the full orgiastic burst, rose-water and rain in the atmosphere, our cloudy atmospheric bodies; we must run off downstream and we must convert all our organs to one flood; and still we are not allowed to forget that this flood is the world ocean we have never left chemically, is filled with lizards, snails, starfish, the magician's, or accompanist; and still our whole body is renewed, autonomically, without the magician's conscious exercise, and this is what we are made of, this is our power, why we make magic, and still we cannot escape this body. As the girl said, sometimes it is so overwhelming it is as though my body were someone else and it were compelling me, so the motions of childbirth compel us to breathe, breathe, and not to push, or the dream without bottom that follows the world ocean and in which all magicians swim like salty fish; this is Bruno's dream: animals, zoas indistinguishable from stars, angelics, qabbalistic angels, made of light and falling thru light, the bullfrog blown up to effect, the powers released into a stream; on a carpet of blood the baby flows out, the magus in his lifesuit; body opens the gates.

3. Kepler's Moon

"The road to it from here, or from it to the earth, seldom lies open for us." Yet the moon is in his head, and Kepler's dream is indistinguishable from an ancient and pre-Christian mappaluna, a pagan landscape beyond the earth, Levana, the empty Hebrew shell in exile from its soul's light. And Kepler's rocket ship is indistinguishable from a dream: the turgor of opiates, the magnetic gate of unencumbered mass. While alchemists watch the stages of scorching, whitening, and rainy deliquescence, Kepler dreams a moon of storms and seas, swift and sudden alternations of hot and cold. His moon is spongy, serpentine, filled with "hollows and continuous caves." Life is shelled, long-legged, and serpentlike; the labyrinthine sublunar surface is filled with aquatic creatures, rheostatic, subject totally to the flow of waters and their own somatic wet condition, crabs, the pull of the earth that brings them up into the cold evening, the release of terrestial weight which drops their waters into the deep interior during the hot lunar day. "Growth is very quick; everything is short-lived, although it grows to enormous bodily bulk."

The Emperor Rudolph asked Kepler if the moon was not a mirror in which the lands of the earth were reflected; he pointed out Italy. No, Kepler said, the moon is a mountainous land, a continent that appears in the sky only because air and other exquisite forces lie between here and there. The moon is a place, lying to the North of known civilization, North of the Arctic. The moon is an ancient Greek land mass described by Plutarch, a continent close enough to be part of the earth's lands, too close to be one of the stars. Plutarch speaks of the shaded areas as shadows cast by lunar mountains and as great selenean valleys. The moon is not a magical body; it is a place, and from it the earth will be seen to move, for there is harmonic distance between moon and earth. Without being a hermetic magician or a gnostic, Kepler has the gnostic dream of the unit world, called Volvans because it turns, because it changes, because earth is alive; dreams of faraway lands beyond Cathay and Cipangu, beyond Novaya Zemlya and

the ice, lands where a man can stand and look upon the moving life of the one, the brown, blue, and white trismegistian pool, the alchemic, the stone, lying in the darkness of unacted powers.

The road seldom lies open, but ships sail to Iceland, Greenland, and the New World. The road seldom lies open, but the magician knows that all roads lie open once. There is a gate Kepler speaks of, a conjunction, a line of animal magnetism between any two bodies in space.

The moon lies obscured in Isis-temples, a metric of nocturnal magic; Kepler frees her thru mathematics and begins the science of moon-knowledge. Donne complains that Kepler and Galileo have so thoroughly explored "the roomes of the heavens" that all that is left for him is to search in the opposite direction "by the benefit of certaine spectacles I know not of what making." Kepler imagines a room from which the whole earth can be seen; he calls it a somnium, but dream is geography and geography is dream, and this is a waking vision of a world into which Kepler was born, a world of religious madness, blind to its unit, its measure in the sky. Kepler was a sane man locked up with lunatics; yet he was the luna-tic; others turned to magic; Kepler imagined a land called the moon. He did not seek an astral body; he looked upon the surface and saw country, lands; in a few years Galileo will look thru glass and run his fingers along moon-mountain-ranges. Kepler hides the moon from religious authorities; he knows it is a pagan, a Copernican vision; he describes the moon-trip in terms of magic and incantations; an empowered woman, speaking Icelandic, summons a daemon (Kepler says later that the woman is Ignorance and Superstition, in whom lies all the power of a possible hidden science). The woman is his mother; Katherina Kepler is brought to trial for witchcraft, and she dies after torture.

Though he fears his own fate, Kepler's work protects him, and he is able to remain an imperial mathematician, his planetary time-tables invaluable to global shipping. For in the time of Kepler, Magellan sailrd around the earth, and Cabot was sent by the Fuggers to search for the Northwest passage to Cathay (they also financed Dutch exploration in the Arctic Ocean for a Northeast passage). The remains of the ancient sea-kings were everywhere and the earth was re-opening from the Pleistocene, the ice melting into a global sea: Africa, Southern America, Labrador, the Cook Islands, the North Pole, India, Japan. The remains of the ancient sea-kings were everywhere, as ancient planetary time-tables of pre-Babylon, as Polynesian blowguns and Panpipes in Peru, tie-dyes and Chou dynasty tigers in pre-Inca Veracruz. Their remains were everywhere: to the Northwest and the Northeast, and along the Amazon, the Zambezi, and the Mississippi; in Egypt, the Easter Islands, and Cuba: those who had moved from Iceland to Greenland, and colonies that came further West to Vinland and the Dakotas, the Hokan California Coast, those who stood beyond the earth, in the lunar passage, the magi who have told us thru Egypt, thru Tibet, thru the Mayan alphabet, that there was a whole earth once, a moving temple or city of the sun, inhabited at the density of plankton in sea-water, a whole earth once which the neo-Platonic magicians seek against an expanding sky, a dimming table of old vowels and gods and navigational charts, not knowing where these lands are or where to go. Kepler begins his journey to the moon from Iceland, for it was there, five days Northwest of Britain that Plutarch describes the ships of earth as finding the passage to the seas of the moon. So Kepler's moon is part of the lands of the New World, and when the daylight lunar sun comes out and scorches those creatures that the tidal water has not returned to the caves, Kepler is speaking of the torrid province of Chile, under the

circle of Capricorn, where the sun burns away all moisture and even the rain is hot. When he describes the adaptation of the lunar land animals, he is describing the camels of Syria and the lions of Africa; these living creatures who accompnay the water in and out of the moon-mantle are Colas, Sicilian man-fish; the harmony of the water is the harmony of music, of the spheres, and the journey to the moon is part of our interglacial Brownian motion, the re-opening of global shipping and trade routes: the inland seas of America, the Black Sea, the Arctic Seas, the Australian lakes, and the seas of the moon.

Kepler carries Levana with him as a guardian, a music, a Bachian harmony; he carries it thru Germany as one of the new maps, openings in a dark world of impending magic. Late at night, while he sat alone in his room, he felt a warm breath on his hand; the moon thru a naked lens carrying light from its surface, and before that, down a long route of interstellar mirrors, Adam Qadmon, the sun, still hot.

4. The Lost Lights

The demons lie in the field, for the sun is shattered and the world is made of shells. We are almost blind; we are shielded from the light of the original orgasm; we search for the two hundred and eighty eight particles of the original gnosis, the gold of Colorado and the golden cities of Coronado. We search for the broken vessels that lie in our eyes, and the fish break school and run back upstream, and light shatters on the hump of the river and is busted; the aphids rain from the overhanging willows and alders, and the quince blossoms drop in the shadows of the bedroom; you come from your dream into mine, golden Shekhinah glinting off the dome of our city, light in the grape vine, in the oak leaves, shells and shells, kelippoth, empty suns and moons to infinity, filled with light. Hydra feeds, bursting the fruit of her lateral buds, swollen protoplasm, blooms of algae in the ponds, and malignant accumulations of cloud, materia, the dying of primordial kings. This is the gleam in the eye of Adam Qadmon, the mirror that takes light and reflects it back into the universe from where it comes, inner worlds ripped apart into kingdoms and queendoms, the original oestrus torn apart into polarizing organs, penis-genital and vagina-genital, antheridium and archegonium in even the most primitive plants, and thru it all Shekhinah shines, the one unbroken law; in chemicals it is chemical fusion, the zygote, and in the brain it is the joining of images, of fantasies into the one sexual love possible on earth, conjunctio of man and housewife, Queen of the Sabbath, intercourse on Friday night, and conjunctio in the sugar waters and syrups and yeasts, joining of king and queen in the chemical underworld, in the jellyfish and in the sperm.

We search for the fragments, the sparks: bees, coins, grackles, tulips, dandelions gone to seed, mayflies; we search for the fragments of Adam's vision, who plucked the fruit too soon from the fire, the broken unripeness in which we must taste all flesh from autumn apples to the current of orgasm, and the one remaining law is Shekhinah. This is our alchemical heritage, always to be searching for combinatories, the one which with another will be whole.

We cling to our last sefira, for it is Adam's choice of Shekhinah, that he chose to be seduced by the whore outside the marriage bed, that gave birth to the lesser theosophical world of the animals, that have since become the pigs and the cackling northern geese, the llamas and the cows, who also carry the split seed. Adam thought that the branching of male and female was the only law of matter, and hence chose that

path into world, and hence that path is our only path back into the unity of matter; we are damned to endless sex and replication, duplication, endless fantasies of lush worlds and meadows we cannot ever enter or inhabit, with our friends and lovers, and friends and lovers we can never enter or inhabit; Adam has left us with his choice, and has left his dream as our farmland, our earth, for we are Adam, and without him creation is a blank page of pre-alphabetic chants. For us he chose a world where sex comes before spirit, and sexual completion is the gate before spiritual completeness, for the law is sexual; the tissues themselves, zoned, polar, meiotic, the law of growth. We are led out thru a pornographic book, like the centerfold of Playboy Magazine, and now it is our whole world, duplicated in the protoplasm, and has become the kodachrome of visual flesh, of obscene slides offered by mail order. Adam chose the separation of the sexes, the distortion of light in the movie theater, in the dance hall, in the cell; Adam chose the long strings of duplicating algae, from which and in which the mirror of our once-self, where we come from, is hidden, and the way back out. Shekhinah is the gate of multiplying matter, hence our only gate, and opens endlessly in the night as somatic cells, and is the body we wake to crying in our thirst, is our dry throat and our scrotum filled with the light of an earlier and hotter planet, aching to burst at the imago of every female, whose face is a cameo, a mirror of materia lying between us and the fusion of light, and is held back by stern day-lit law. Shekhinah is the gate to the river, the garden gate that swings open into the five senses: marigold, rose, apple, violet, and grape, Cott's true fruit flavors, or the beverage of the neurons; Shekhinah is the gate that opens and lets the photon in, the gate in the penis thru which passes not just the sperm, but the macrocosm, the sense of the relase of the sperm, the woman, the woman, the woman, the woman, her face filling the light, the mirror of each instant as it passes out, back into, back thru light, and the sun down thru the wet quince blossoms which light all, which drops off from shades of blue and yellow into shades of red and yellow-green; these are the maple seeds, the oak seeds, the tablets, the electrics of the beech catkins, the scraped and scored passage of light down which the mirror releases its water, and all its fish and mayfly nymphs into the delta of the stream, the watershed of the soft eye in which all tropism passes. And so I penetrate. So I take the fish and write my own Qabbala.

There is a long labyrinth of light, a pipe-light of blue and red sugars, down xylem and phloem, and we and our God are in exile from ourselves, lost in the undershot of one law, clinging to the undersides of rocks beneath the falls, as even the Hebrew Schools of New York City are in exile from their first law, and teach the secular, the newspaper alphabet in the darkness of this already-world. But water absorbs the shortest wave-lengths, and a dark form of life passes to the lake-bottom, the dream-bottom, a new planet born-egg in the imago of an old one, a flower in a flower in the ten laws of Eden, an unsucked inside-out of a bee's honey, funnelled back thru the genetic code, out the red of tulip into a sphere of light beneath the microcosm, a jetstream transport thru the sexual image into the foothills of Eden, where farming is easy. The shads go to their spawning grounds, and the anadromous salmon rush upstream, thru the hoop of pink eggs and light, caught in the Indian traps of a demon-law, a mechanism. But we are all in exile every moment we breathe, every moment to breathe properly and let the light thru the curtains, open the window, the deeper image into a world we love and also live in, a homeland, nature joined to, becomes the spirit, the separation broken by a circlet of tender tentacles, the fingers reach-

ing, an eye, an ear, a nose on each of them, the nerves, into a clarum of light. I am penetrating, writing it.

Where are the lost sparks of Adam Qadmon, that wandering exile lost in each of our bodies? Where are the particles of anti-matter that bombard a hidden earth? Where are the missing letters of the alphabet?, the twelve lost tribes of Israel, who were the original Basket-Makers of the Animas River, maize farmers living beneath the earth, farmers of flint corn, amaranth and sunflower collectors, the pre-Cochise, the Temple Mound Builders of Illinois and Ohio, architects of the canals of Mars? Where are these tribes whose temples we dig up in Wisconsin and Delaware, who controlled the commerce of a continent, leaving temples and burial plazas and roanokes, leaving star-queens and sun-circles and bilobed arrows and forked eyes, Etowah and Moundville, the Southern cult of the Mississippi? These must be the lost talmudic scholars; these must be the Egyptians blown off-course, closer to the light. Cortez searches for their golden cities, the lost sparks, as Columbus in the Caribbean, Magellan sailed the circle for sight of them, like islands in the late sun, passages thru matter as we know it, Reich blown in the energy of the autonomic nerves, the autonomic stars, Einstein discovering the actual nature of the mirror we lie behind, that it is made of the speed of light, the great sword that cut the apple, that cuts us off from the juice, the taste, and makes all mass equal finally to energy, and surcease, and all living matter a genetic record of itself.

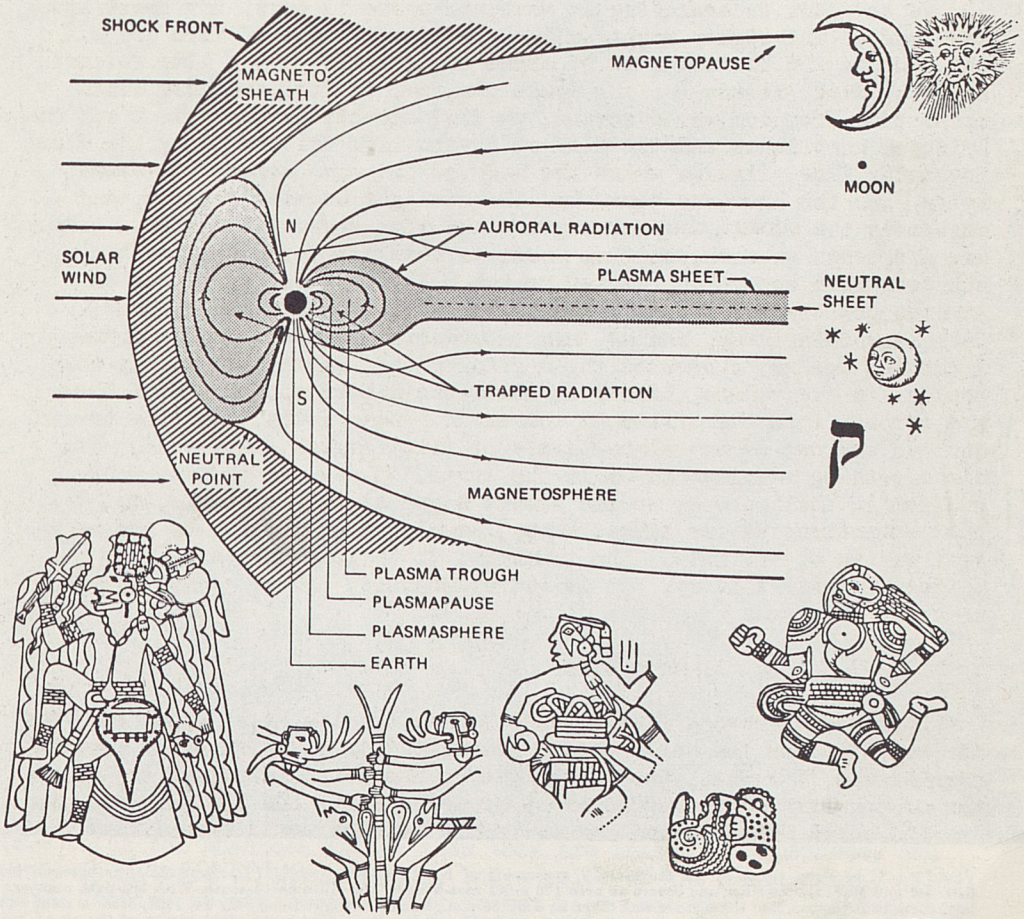
We are left to searching in whatever space is ours, for there are two hundred and eighty eight sparks, and surely some of them are on the old body of the moon, to be mined among mares, among blue volcanic ash, the whole reason for our space program, to find the lost continents torn from our world oceans, to find our history bent back off the drift of continents and the flow of crystalline texture along the firm isostatic line, line on which the body of the man, woman, man-woman melts, and the hormones pour, and the daylight becomes a tribe, and orgasm is the sunset, the burning coronal ring about all matter. These are fragments we seek, shells, where we came from, and who are they who were here before us, closer to the beginning, broken shards of Mimbres pottery under earth, frogs, rabbits, insects, birds, fish, deer, mountain sheep, humans, man and bear in paired symmetry forming a circle, a ring, closer to the beginning when matter was fused; the shells lie everywhere, hidden on their own hidden surfaces, and they are inroads into the vision of the earth. Adam weeps, but this is not our own sorrow; we are almost happy on this faraway summer day, with him breathing so close to us in the trees, in our own bodies, male and female chalice one; we are almost happy at this distance, and the quince tree; we are almost happy, knowing even what we do and as best we can of his tale. The truth is: it is something else, and a story is only a story. It is not a language, and we cannot speak what yet we speak.

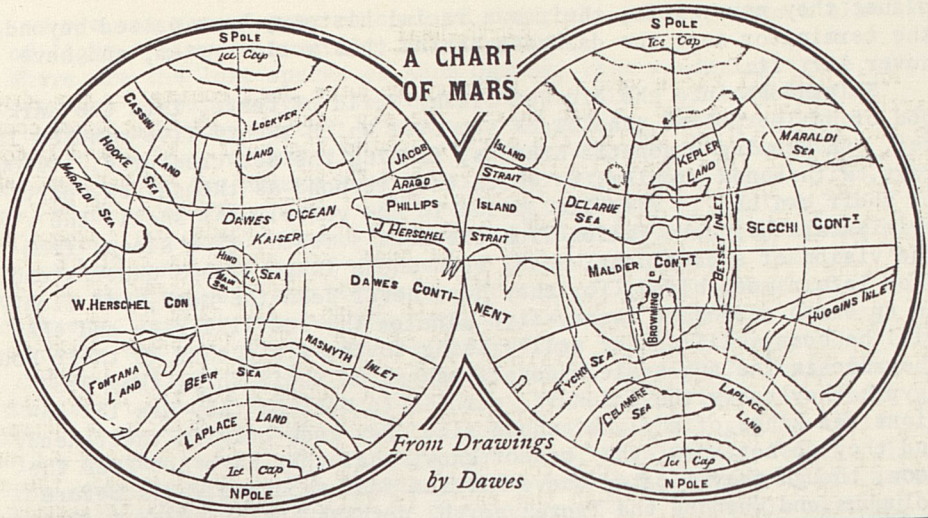
5. Moon-Blind

Splashdown, twenty five minutes before sunrise in an alien sea; now the men float on the world ocean; the ship from Egypt, made of papyrus, carries the life plan, the sacred city. The ship drifts and the great sun of angular limitation comes up from the East, the New World of the Pacific where Hokan-Samoan canoes paddle between world mythologies, carrying a secret underground architecture to Pennsylvania. These are the men who have been on the moon, who have returned to the laws of a

planet they never left, their own racial history, have passed beyond the terminator into the darkness behind this world system, and have never left it.

Splashdown into the old wet fleshy world of taste, into the dark pod of unripe pollen, the black sea over which twenty-five minutes later, sun blowing orgonotic breaths, fanning the sea-creatures, its own rays, with a new tropism, to which they respond as themselves, parts of their own body. They lie afloat in the vessel, the shell, the primipara; they have fallen from the moon's reach, from sleep, from the vision of a continent whose, even whose image sleeps under stone. They return moon-blind, for they have never seen the moon, and float in an earth ocean; in twenty-five minutes the sun will rise and they will be born, billions of cells rising to the fluid that is their body. They lie in the autonomic unconsciousness of their ship; they are Egypt; they carry the calendric scrolls to Mexico; they are the ancient sea-kings of a planet whose size they know only in their head. And they do not know, they cannot know, that they have not seen the moon, though they floated above America four thousand years before Columbus and watched the frozen north, nothing but craters, and all the rest beneath the surface, the funeral mounds and temples of the Mississippi, the hot volcanic ashes of geologic life, an alphabet written on a pre-Torah moon-blind canvass, no names for any of these lands, no animals for any of these names, nothing but a seed bearing men, floating in the magnetism and solar wind.





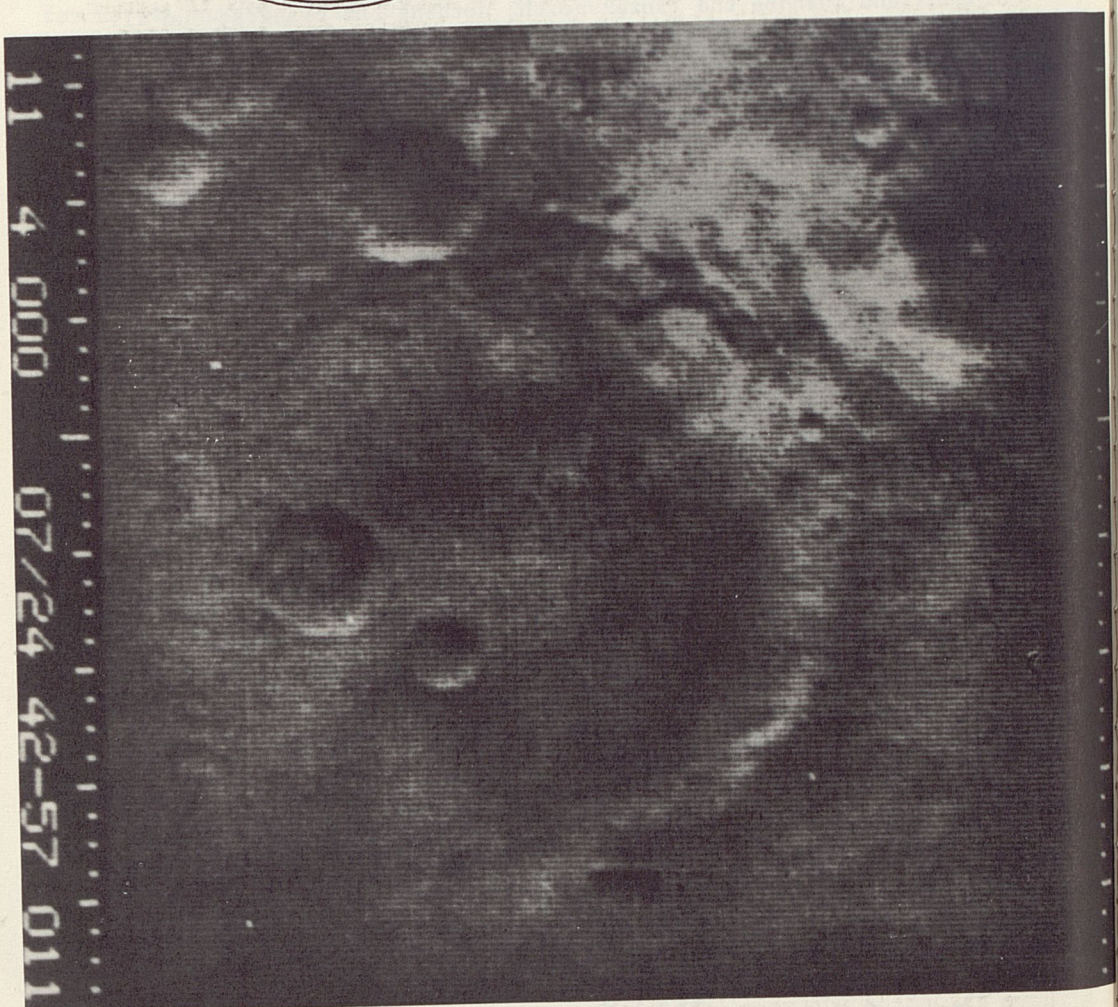


Photo No. 11 of Mars, taken by the Mariner IV spacecraft of NASA and Caltech's JPL, shows Atlantis between Mare Sirenum and Mare Cimmerium, and covers an area 170 miles east-west by 150 miles north-south. With the data numbers at left, north is at the top, and the picture was taken at 5:30:33 p.m., Pacific daylight time, July 14, 1965, from a slant range of 7,800 miles. The location is 31 degrees south latitude and 197 east longitude. The lower right corner of the photo, taken with a green filter, overlaps picture No. 12. The sun is 47 degrees from the zenith from the north.

6. Earth-Deaf

And thru all these years of history we have been coming to the whole earth, a giant, a god in our skies, the sky itself. We have been coming to the moon, a land behind the earth, behind the veil. We stand before the temple of Isis; her flowing gown is a river; she is matter, but she is thought; she is indistinguishable; she is Egypt, moon in the sky. We stare thru Egypt into a body, blue with white clouds, in a space so large it fills our eyes, our ears, our nose, our mouth is full of it, breathing; it is woven with spindles of consciousness, giant of which we are part of which we are whole. And its shape. And that it is. And that we are. Where we are. Shaped as we are. The telescope looking back on us looks back into history, pre-Cambrian moon-stone, lizard-earth, earth of ice ages, French traders in Dahomey and the Black Hills. The astronauts see it all, a hurricane in the Gulf of Mexico, a sunspot, Baja, the Big Horns, that it is one. This is earth is the unending energy of body, of giving body to. This is the spinning of worms, the matrix of coccoons, and though the earth is filled with trees in summer, in sunlight, the earth itself is a coccoon hanging from such a tree, the worm spiralling out from earth, holding it on its germinal tail.

And so, passing near the continental moon, whose life is hidden from us, we look back, and over our shoulders an earth rises, the immediate visible god. And this is what they are made of, the astronauts, streaming over the hull of their ship, their direction. They lie in large bionic egg, parallel to the open ducts of conjunction. They are mayflies. They are brought into this temple and the energy floods their openings, white sun in the windows, earth in their heads. It is too easy, with too little energy, that they speak of the magnificent earthrise, that shining blue jewel inlaid with all known history, not the news of the week in review, but herself, dressed as she is, and in the midst of life, stripped, in passion, 'you have to see it to believe it,' but they are looking too hard, and there is nothing there. While the whole thing that they are, are inseparable from, comes up into sky, all of history light, and while they look they do not hear, for they think it is with their own eyes; they think they are seeing the earth, but it is speaking to them, lizard on their shoulders, chattering, answering the question they do not know they have come here to ask, telling them what man has almost, what man has always had to know, telling them where they have come; but they don't listen, they are too busy thinking about what they see, that scenic postcard of the west. They think that what it is: is that with their own eyes they can see the earth and with their own ears hear the rush of static in space. It is all speaking to them, and they cannot hear what the voice is telling them, the answer to their questions, for they think it is their own voice, hence trivial, and they are interested only in the meager mechanical powers that have brought them here and will bring them back. They cannot see that the powers are things too, not just the energy that has placed them there, but something about their position once in that energy. They mistake the whole earth for the sum of its parts, as they remember them in leaving; they confuse the mushroom with the drug it contains, cactus lying in the vegetable kingdom, and unconscious, they its consciousness, limited to activity upon their nervous system. They do not know that once they stand inside the mushroom, before the whole earth, the great blue wet god, that it is inside them even as a rocket has taken them to beyond it, even as they have taken the mushroom inside them they are inside the mushroom, and there is a voice of the mushroom, and a voice of the whole earth. They have nothing to ask because they do not hear what they are asking, be-

cause they do not know why they are there, that regardless of the Air Force and the United States and the Journals of Botany and the Anthropology Department, they have placed themselves in the hands of a shaman, and reasons are of no consequence, merely paths, grooves, and he is telling them, he is telling us, to look at what it is, it is a whole earth, a unit, whose parts are inseparable, one chemical, acted upon, a droplet, joined anastomosing rivers, there are no boundaries, no conscious breaks in a circle raised to a spheroid, no broken flows, no part of the earth cut off from the other parts, the clouds, the Arctic ice, the open seas, the sun penetrating the whole geochemical bath, building stalks and temples back up heliotropistically; it is a mirror, and in looking in it, we look into the deeply-wound protein chains, thunderstorms of disturbed and active matter, the sea in the whole time of its making, shining with its chemical life: the Stone, gnosis, the inland sea, ourselves, the same. The moon calls men for this vision, a harmonic, before it there is nothing, then earthrise, a blue ball crawling with clouds, living, air sliding upon sea, the mantle rolling on its own metallic density, cerebellum, layer upon layer the rocket passes thru in rising from its pad, as weather, aurora, night, carrying protoplasm, its deed, and other cellular matter from beneath the sea.

It was never anything else, and it is still Pleistocene, still Egyptian; the gods are all around this earth, and the singing is terrific; it is all one, they keep saying, and have been in the Caucasus, the Himalayas, the Appalachians. And now the truth we can no longer avoid, a picture in our newspapers and magazines, the oldest gods in full dress, sun, moon, earth, the wand, the shell, the moon card drawn, body, the waters are body, crab and worm spinning in salt, spider in damp webs, unbroken from island arc to island arc, micronutrients, smoke, thought, the waters are neurons, city, planet news. And now they have come down the river into the open sea, the great Pacific, specific ocean before them, marē and thalassa, at last a name for sea.

PIECE BEGINNING ON A LETTER TO ROBERT KELLY

The lightning has been flashing these nights as in 'fire of waters.' And there is something behind the clouds trying to get a fix here. The leaves of the quince tree are wet, touching their light on our bedroom window. In the darkness the rain falls thru layers of leaves, dripping on the heavy papyrus sheets of another age, and the lightning penetrates, leaving a blue glow before the mirror, hanging an oval portrait of someone I do not know and she does not know. I speak of rain and leaves and light; I speak of wetness and the fire of waters; yet behind this there is an astral image, and Gemini is moving deeper into us, and with it the shape of child. Each day the gate is opening a little bit wider, imperceptibly dilitating. Soon there will be the breaking of the waters, the autonomic pulsing that is star, that is out of control but rhythmic, played over us. Soon her body will shake in an unknown dance of its own making, and the end of the dance will place the child in the room. The sign is penetrating the cervix, is dropping lower and lower. I mean, I believe, I am speaking of vision/we will all be born, and the leaves are so constantly wet, and the lightning is flashing in on a sight we do not yet have, hanging its picture carefully at the speed of light.

In the east is a blue flaming star, a roseate tip/a finger reaching out to touch us. The south is the storm comes piling these warm tropical fluids upon us, wrecking olden ships on our island, and the salt, the sight eats all, zephyr chewing on quince leaves, rapping the window in its moorings. We know nothing of the speech of the west, so we lis-

ten to the rain.

The particles themselves are cold, they are from the north, Billy the Kid stands before the wedding with guns, locked outside the party, the Spanish marriage. If I can get past the Arctic there is another and stranger hearth. But the Arctic prevents me, the coldness of water beneath a certain optimum temperature, inhospitable, uninhabitable, the rain keeping us indoors, the pains of labor, if we could get thru them there is another warm light, a gulf stream that passes around the southern tip of Greenland, Iceland, orchards and herds of domesticated animals, the flocks of our terrestium, grazing, grasses, corns, amaranths, spruce, the first born in blood, the whale harpooned in tool kit bone, the molten metals in the mines, for these mountains rise above and about us as the fingers of a giant hand, its rings the elements, and in the mountains, Saturn, Boreas, the Iron Age, beginning, Uranium sky, and before that, before the beginning, we sit here in the dark room waiting for labor to begin; we sit in the swelling waters, in the ripe amnios, waiting for the cloudburst, waiting for the long rain of worms and mayflies, curling bions, and rain itself to flood our room, and the lightning, that fire of waters, to sit in our bed and speak, hang its pictures all over our room. We are waiting for the beginning, and the space we are sitting in is a room, another time, in which we have also lived. We are waiting for the planet, the first born in its blood to come falling thru the sky, to begin breathing a new air. I look north and east and west; there is a pale blue flame; there is an oval mirror hanging on the wall of a mansion. And we are travelling between times, the light as wet in quince, rolling over in its pollen, the bumblebee, the hearth is wet and the breasts wring of a yellow moisture even when gently grazed; the gold is molten, soft, cool in the mines, and the room itself is closer to the sun, Mercury the craftsman, and even closer, Vulcan the forge. We are waiting for the fire of waters to get a fix on us, for all we are is here, and can do is wait. We are chemical, and measure an accumulating tide, a ripening. We are practising natural childbirth, a thunderstorm, the breaking of the waters, a flood, the heavy breathing of planet. We are practising and the wind blows against the windows, leaving water and strange curling creatures, an energy of which we are head and tail. There is a mirror made of water; there is a light shining in the room; there is lightning, alive, breathing; there is a tree in terrific passion; there is a first light, a second light, a blue light, and do I live my life always half over again.?

[Pages 209 - 211 are not in the Table of Contents, as they were added later to correct an error in layout].