The Scientific Notebooks of Thomas Townsend Brown

Volume 1

[Volume 2] // [Volume 4]

Please visit these T.T. Brown Websites: www.soteria.com // www.ttbrown.com

Commentary from ttbrown.com :

"Back in the 1970s and 1980s a researcher and author named Willam Moore --- best known as the co-author of such folk-lore as "The Roswell Incident" and "The Philadelphia Experiment" (there, I said it...), wrote a couple of articles about Townsend Brown. Moore was also the last journalist to interview and photograph Brown shortly before his death in 1985.

"Somehow, during that period, Moore obtained access to Brown's personal laboratory notebooks, and, presumably, obtained permission to "publish" three volumes of those journals. Photo-copies of those journals have been in circulation ever since."

Contents

Page 1

Notes & Ideas

This is to be the first of a series of record books of notes and ideas, of greater or lesser importance, just as they occur to me. The pages are numbered and the subject reference will be given in an index. Where it appears of importance at the moment, the entries will be witnessed.

All of my life, it seems, I have jotted down notes on paper napkins and the like, which have ultimately been lost or destroyed. In many cases, these original notes and the dates of conception have turned out to be important and the loss of the record has been a serious handicap.

In the main, the ideas recorded herein and the hypotheses developed from these ideas will relate to the subject of gravitation and the relationships between gravitation and electrodynamics. They may present from time to time certain seemingly practical applications which may be patentable. All entries therefore are dated.

Thomas Townsend Brown

Leesburg, VA; October 1, 1955

Page 2 [blank]

Page 3

1. A Review of the Situation regarding Gravitational Isotopes

Leesburg VA, Oct. 7, 1955

(a) An announcement has been made both in the newspapers and on the radio (within the last few days) that the contract for the launching gear of the proposed space satellite has been awarded the Glenn S. Martin Co and the contract for the rocket motor to General Electric.

This brings to mind the statement of M. K. Jessup in "The Case for the UFO" --- "If the money, thought, time and energy now being poured uselessly into the development of rocket propulsion were invested in a basic study of gravitation, it is altogether likely that we could have effective and economical space travel, at a small fraction of the ultimate cost which we are now incurring, within one decade".

As to a study of gravitation, there are two phases --- (a) the dynamic and (b) the static. In dynamic considerations, electrical energy causes a local distortion in the gravitational field which results in the generation of a ponderomotive force and motion results. In the static considerations, an electric situation exists which causes matter to be lighter (or heavier) than it normally should be.

Page 4

In nature, matter has gravitational susceptibility, that is --- it is acted upon and responds to a gravitational field. This is expressed as gravitational mass, and bears no direct relationship to the inertial mass or reluctance to acceleration. The measure of gravitational mass is specific gravity.

A study of the specific gravity of the elements reveals that, in many instances, a wide range of values are observed for the same element. Even where the chemical purity of the element is uniform a change or range of specific gravity values appears commonplace.

It is my hypothesis that all elements are composed of lighter and heavier isotopes (values of specific gravity) which differ from the mean value of the composition as a whole. Where the lighter fractions predominate, the mean value of specific gravity is less than normal. It may be said to have a predominance of negative gravitational isotopes. Where the mean values are greater than normal, the composition may be said to have a predominance of positive gravitational isotopes. No element appears to be completely "normal" or free from this effect.

For any given element, there probably exists (and this remains to be shown) a reciprocal relationship between the gravitational mass and the inertial mass.

Page 5

Heavier gravitational isotopes of the element possess less inertial mass --- and vice versa. The product of the two forms of mass probably equal a constant.

$m_g \, m_i = E$.

The energy relationships probably are unstable, the tendency being to reach an equilibrium condition of equality.

$m_g = m_i$

The spontaneous evolution of heat as observed by Brush and Harrington appears to be associated with light gravitational isotopes. This means excessive inertial mass, the energy of which is radiated and lost, and this in turn is the cause of decay of the anomalous gravitational effect.

For example, the rare earth group of elements appears to have strong negative anomalies --- that is, they are lighter than they should be. That they should also exhibit relatively high evolution of heat (spontaneously) follows. (This heating effect by rare earth elements remains to be discovered). Assuming that such is the case, the heating effect is present only where equilibrium has not been reached, and the temperature differential is quantitatively related to the abnormal lightness.

Page 6

Since energy (thermal) is released until equilibrium between M_g and M_i is realized, it is obvious that the effect is subject to the usual rate of decay, reaching zero asymptotically.

In the case of positive isotopes --- an absorption of that would be expected. Such absorption would cause the sample to be colder than its environment.

If the effect noted above is not actually present (and there is as yet no evidence of heat absorption), it is possible that positive isotopes as such do not exist and that the present indicated mean specific gravity is actually negative and that the true "normal" or base is at least as high as the heaviest value indicated.

Methods of beneficiation are the subject of current patent applications. Methods involve successive steps of settling and centrifuging. The separation is of the isotopes in the mixture, (a) the lighter weight and more massive fraction and (b) the heavier and less massive fraction respectively.

No information has come to light regarding the modus operand of the creation of the light gravitational isotopes in the first place. It has been assumed, as in the case of mass isotopes that they have been present since the creation of the physical world.

Page 7

2. Nascent Gravitational Isotopes

Leesburg VA, Oct. 7, 1955.

The creation of light gravitational isotopes requires energy. Thermal energy is evolved during the decay of these isotopes, but it is probable that a greater source of energy than that available from heat is necessary for the creation of these lighter fractions. An exception may be taken, of course, to the high thermal energies present for example in the sun or during nuclear reactions.

Atomic piles provide energy through the fissioning of nuclei of the radioactive group to form nuclei of the rare earth group. These nascent isotopes may turn out to be a rich source --- produced in the same fashion as the rare earth elements were produced in the original creation (a primordial explosion).

One may speculate on other ways of creating gravitational isotopes, such as ---

(a) In targets receiving positive charges.
1. Hydrogen nuclei --- from cyclotrons or accelerators.
2. Hydrogen ions --- in electrolytic solutions.
3. Complex positive ions --- separation in semi-permeable membranes.
4. [illegible, blurred photocopy]
5. Cosmic ray showers.

Page 8

It is to be recorded here that C.F. Brush once performed some experiments producing what he termed super-light hydrogen. It is said that this was done by some sort of preferred selection of ions in or during the electrolysis of water.

Page 9

3. Increase in Weight and Density of Certain Rocks

Leesburg, VA, October 7, 1955.

There appears to be evidence, however tenuous and perhaps controversial, that a civilization existed on the earth 70,000 to 200,000 years ago. It may be said that this civilization had simple and effective ways of moving stone --- based on today's standards.

In the high Andes of Peru --- the Sachahuaman Fortress --- stones weighing 200 tons each were fitted together so closely that a knife blade cannot be inserted between them.

Enormous stones --- 14' x 17' x 70', weighing upwards to 1200 tons, were moved and placed in position in various parts of the world. Baalbek, Easter Island, as well as in Peru. (See "Case for the UFO" by Jessup). It has been suggested that some form of levitation employed by the ancients made possible the moving of these enormous stones.

I submit that the weight of these stones may have changed since they were quarried, that the change may have been rapid at first and then slowed down as the years passed.

To develop this hypothesis, the following is suggested:

Page 10

At some time between 70,000 and 200,000 years ago, a worldwide change occurred which created or recreated light gravitational isotopes. This could have been a sudden increase in the intensity of cosmic radiation or it could have been a close approach or contact with a comet.

The result nevertheless was a rapid and effective increase in the content of light gravitational isotopes in certain susceptible materials. This increase presumably was limited to certain clays and rocks. The resulting loss of weight caused tectonic forces and started mountain building processes.

The continent of Atlantis may have risen from the ocean during this period. During the height of this gravitational revolution, many materials were phenomenally light and could be transported with ease. Certain substances may have had negative gravitational mass and escaped from the earth. Structures to fly in the air may have been constructed from common materials by beneficiating from entrapping or loading materials.

Men turned with ease toward the quarrying of huge masses of stone simply because they were able to lift and move them. It is my hypothesis that the largest stones cold be carried by a relatively few men. They literally floated through the air, like huge logs floating on water. Their inertial mass, however, must have been enormous. When motionless they must have required great force to start them moving and, when in motion, they must have required equally great effort to stop them!

Page 11

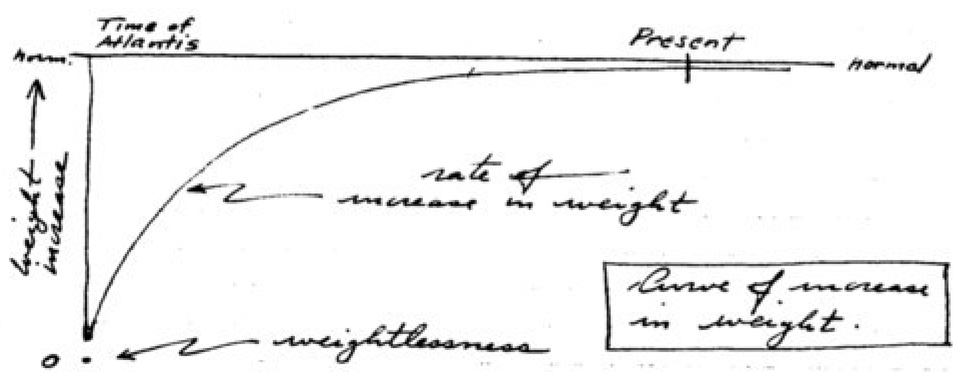
This period of "lightness" must have lasted many centuries, because during that time a flourishing, highly developed human society evolved.

Decay of the light gravitational isotopes began when the factor causing their synthesis ceased to be operative. This decay, similar to radioactive decay, was very rapid at the start, diminishing in rate as the centuries passed.

It is presumed that unless synthesis is now operating or has been more or less regularly operating during the intervening time, decay of this original effect is still proceeding. The result then would be a continuing increase in the weight of these rocks.

During the first few centuries of weight "increase", great tectonic forces similar but opposite to those which originally created "Atlantis", now served to destroy it. Great loading due to the increase in weight of these specific rocks, together with isostatic flow, would have caused the sinking of the mythical continent.

In brief, therefore, the disappearance of Atlantis may be related to and concurrent with the termination of quarrying operations of the huge stones. The same increase of weight, caused by the decay of light isotopes, caused by the decay of light isotopes, is the reason, so it seems.



As the weight of the monoliths, such as the Easter Island images, increased, their supporting foundations gave way and caused them to fall. Most of these images have fallen backward.

It is proposed that samples of these monoliths (and others) be accurately weighed each year for several years, to determine if weight is still increasing. If so, and if rate has been undisturbed, curve may be extrapolated to indicate approximate date of vertical weightlessness (See above curve).

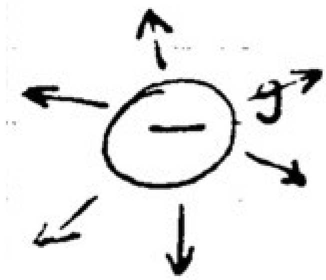
Typical half-life curve --- similar to decay of radioactive materials.

4. Effects of Electrical Potential upon Gravitational Isotopes --- Controlled Lifting.

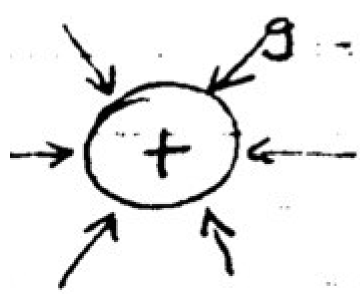
Leesburg, VA, October 7, 1955.

Two possibilities are foreseen:

(1) A static condition in which sustained electrical potential causes the effect, or
(2) A dynamic condition in which rate of change of potential causes the effect.



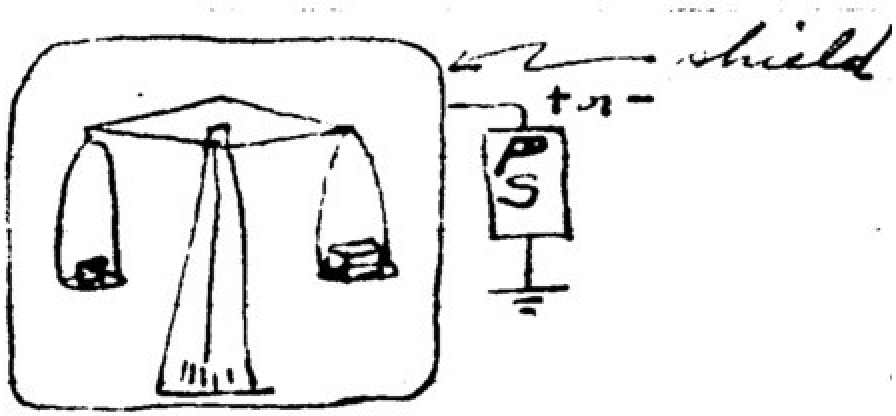
Increase of negativity causes exogravitic field, increase of grav. mass (weight). Decrease of inertial mass and gravitational attraction.



Increase of positivity causes endogravitic field, Decrease of grav. mass (weight). Increase of inertial mass, and gravitational attraction

Tests: No. 1

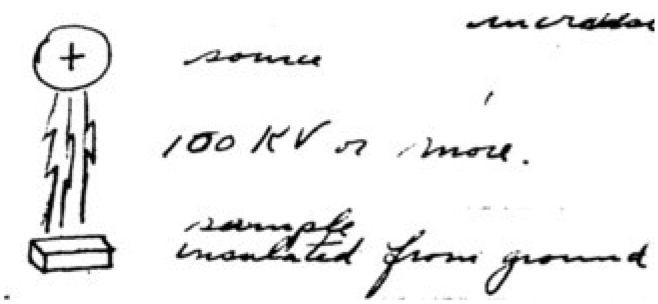
A shielded analytical precision balance charged + or – , 50KV or more.
Weight (brass) on one pan
Sample of rock on other pan



Page 14

In the foregoing test, advantage is made of the differential effect between brass and the sample susceptible to grav. change.

Test No. 2 --- Sustained effects of sudden increase of + potential source 100 KV or more. Sample insulated from ground.



Test No. 3 --- Same as above, but sample arranged to be struck by lightning!

In this connection, it is interesting to speculate upon the reasons for the levitation or lofting of certain terrestrial materials, such as pebbles, sand, etc., which subsequently fell back to earth.

Could it be that certain materials in the "target regions struck by lightning (from positively charged clouds) acquire lofting properties temporarily? Certainly it would escape notice.

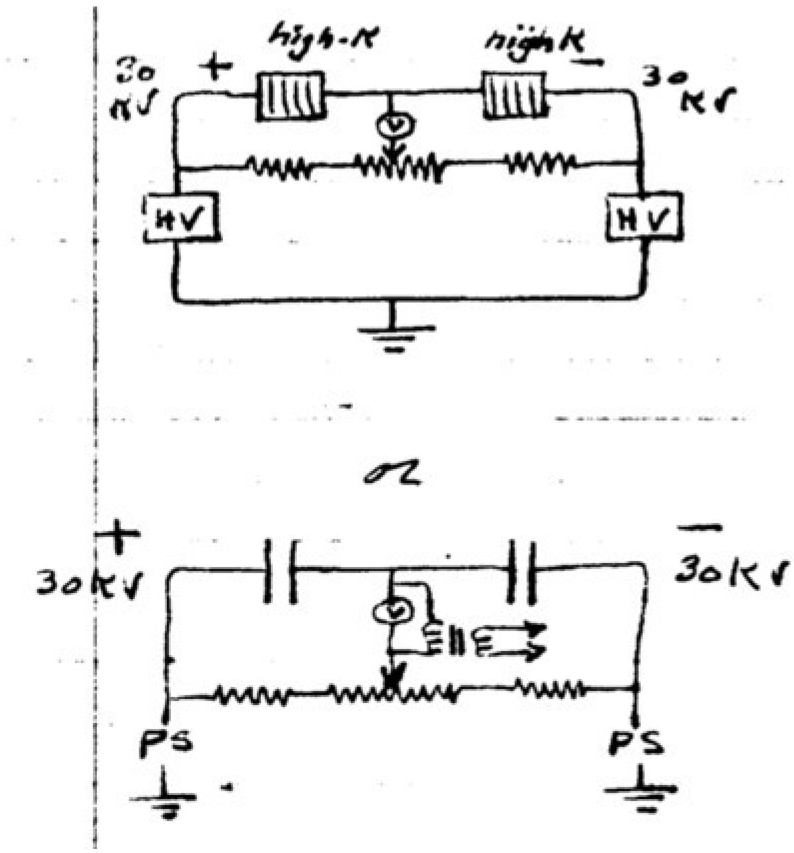
Subsequently, as the lofting properties decay, the material will fall back to earth. One of the steps toward testing such a hypothesis would be to measure over a period of successive weeks the weight of a stone or pebble known to have recently fallen. Evidence of increase in weigh would be sought.

Page 15

5. Shift of Capacitance Mid-Point

Leesburg VA, October 10, 1955

This is a review and restatement of principles underlying the differential electrometer. The basic tests which are proposed are for the purpose of clarifying the operation of the long wave electrogravitic receiver, and to reduce its functions to simplest possible terms.



Audio transformer coupling to amplifier.
Potentiometer automatically seeking null position, with chart recorder.

Page 16

6. Nascent Gravitational Isotopes --- Sec. 2 --- Excitation by Photons.

Leesburg VA, Dec. 25, 1955

An exact definition of a gravitational isotope, particularly one which sets forth physical forms, is urgently needed. It is almost impossible to make progress in any direction until this is done.

In searching various possibilities, the following interesting facts present themselves:

(1) In transistor theory, conductivity s attributed to the migration of "holes", as well as to electrons. The holes appear to possess (or at least exhibit the equivalence of unit positive

charges, equal to the unit negative charges carried by electrons. As a matter of mathematical convenience, the holes may be treated as having the same mass as an electron.

(2) The definition of a hole is as elusive as that of a negative gravitational isotope. It is interesting to speculate for the time being on the possibility that there may be a relationship.

To begin with, they are holes in what? Apparently, valence positions in the crystal lattice where valence electrons are missing. But the mechanisms by which a vacancy can be passed on progressively, with the physical property of a mass in motion, is not clear.

Page 17

The revisions in the theory of conductivity, which have resulted of necessity from the study of semi-conductors, have provided evidence of "positive carriers" hitherto unknown or unrecognized.

It is significant that these positive carriers are influenced by electric and/or magnetic fields in a way which is equivalent in every respect to the behavior of positive charges. They are indistinguishable, therefore, from charges.

That they may exist in paired, dipole or neutralized relation with charges of opposite sign necessarily follows.

Just as in other examples of pair creation, a photon may supply the energy. It is not clear, for example, whether the photon actually "creates" the positive-negative pair(with a mass of 2m), representing the equivalent mass energy value of the photon, or whether the total mass (2m) remains the same, with the photon merely supplying the energy to dissociate the pair.

Furthermore, if a valence hole is filled by an electron of the same but opposite charge, both are annihilated, and an extra electron is necessary to produce any net effect.

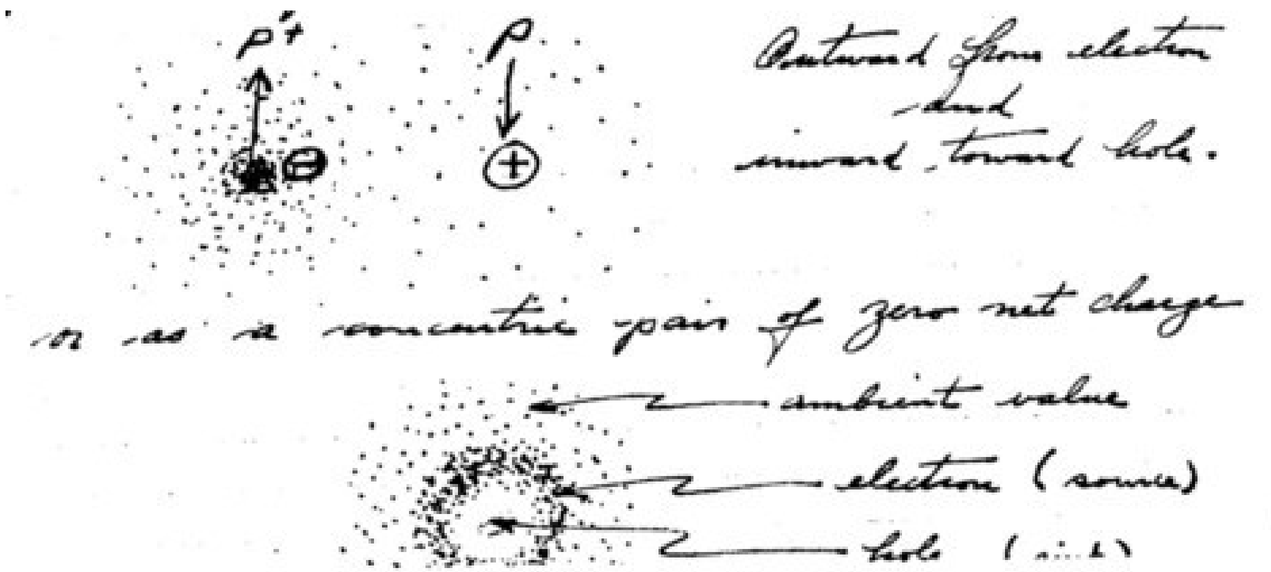
The energy of annihilation is radiated as a photon.

Page 18

If valence holes are representative of a class of positive charges found occasionally in the electronic shells of atoms, one may speculate upon similar charges in the nucleus. In most cases, such charges would be neutralized by electrons, and not enter into the electric balance of the atom.

Now, therefore, if one takes the bold step of postulating that holes (either as found in crystal lattice, complex electronic shells or nuclei) are holes in the negative effluvium, what is their gravitational mass (weight)? Let us postulate the existence of an entity which is merely a rarefaction of the negative effluvium, as contrasted with a local compression of effluvium which may be an electron.

If then, gravitational potential is synchronous with the potential of the negative effluvium, gravitational gradients exist as follows:

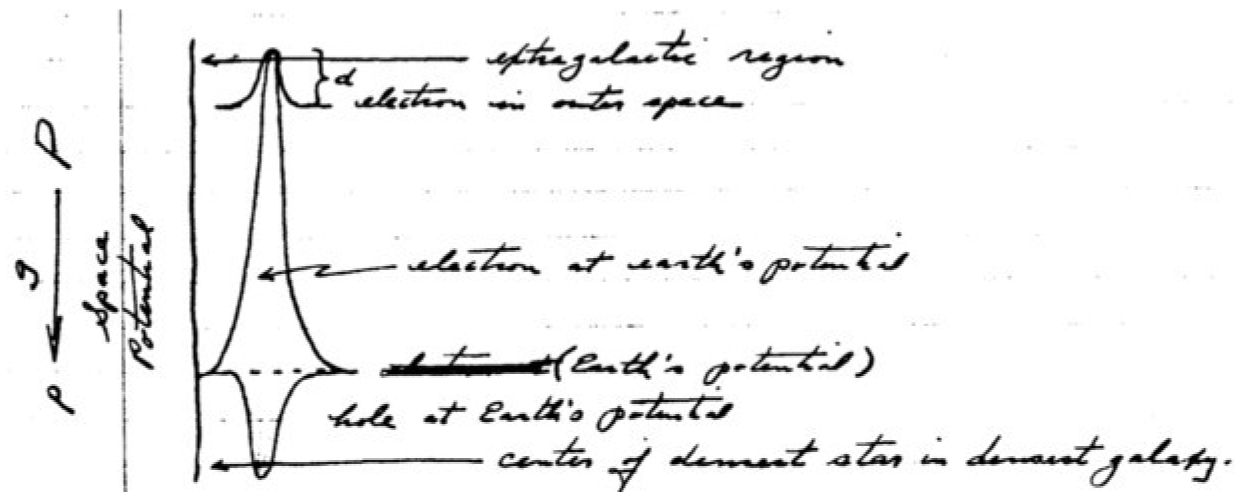


Outward from electron and inward toward hole.
Or as a concentric pair of zero net charge

Page 19

In other terms, the ether is the negative effluvium, the "elastic" compression of which represents potential energy. In the vicinity of large masses, the ether is less compressed, the potential energy of space is lower, but the potential energy of the mass is considerable (as represented by $E + mc^2$), so that the total potential energy resident in the region is roughly constant everywhere.

In "free" intergalactic space --- let us say, in a mass free region (midway between the galaxies), negativity, and the compression of the ether is maximum. Space potential (gravitationally) is maximum. The potential difference exiting within an electron would be minimum. Electrons, as such, would be virtually indistinguishable from the ambient. "Holes", perhaps also positrons) would have maximum potential difference to their "interiors".



Page 20

At first impression, and this may be ultimately borne out, the electrons would possess weight (gravitational mass in the positive sense) whereas the "holes" may be lofting (negative gravitational mass). Both would possess inertial mass. A pair would be gravitationally and electrically neutral but would possess 2m initially.

When struck by a photon, a latent pair would be split, the energy of the binding supplied by the photon, with any excess providing recoil momentum to the pieces or parts so split.

Upon recombination, energy would be radiated as photons.

In summary, certain photo-emissive substances (perhaps complex silicates, lavas, and many other materials found in nature), when irradiated, may be found to lose weight. These materials would acquire a positive charge if insulated, but usually, in the process of weighing, the charge is lost. Similarly, the inertial mass (or the inertia with respect to the weight) will increase.

Upon standing, where recombination is permitted, heat (photons) is slowly evolved, causing the specimen to be continually warmer than its environment.

Page 21

7. Fatigue on Metals and the Creation of Light Gravitational Isotopes

Leesburg, VA, Jan. 7, 1956

In the Brush experiment relating to heat-treated metals, certain case-hardened steels indicated an actual loss of weight following the heat treatment. In measurements of the specific gravity (or density) of various metal wires (platinum, tungsten, etc.), the values observed seem to vary in an unpredictable way with the amount of drawing or working which has preceded the measurement. In most cases, working decreases the specific gravity.

In the measurement of specific gravity, it is desirable always to use the specimen which is most representative of the physical state of the material tested. In the main, the specimen should be free of porosity. Compression usually reduces this porosity and increases density.

After a certain point, further compression, hammering and/or working does not increase the apparent density of the specimen but actually decreases. The result appears to be an actual decrease in the weight of the specimen due to the working.

Page 22

One may summarize, therefore, that if the effects of porosity are not considered, continued working of certain metals reduces their specific gravity.

One may speculate, as a further step, that there may be a concurrent reduction of tensile strength with specific gravity, ad further, that the entire problem of fatigue in metals may be related to this phenomenon.

In pursuance of such a hypothesis, the following ideas emerge:

(a) Because of continuing flexing, a strip of metal becomes heated presumably due to inter-molecular friction. If course, the question as to whether the molecules in the crystal lattice actually rub together in the mechanical sense gives one misgivings. It is more accurate probably to say that the coulomb damping in and between the electric shells of the component atoms, carried in part by the valence electrons, causes the release of these electrons and the creation of "holes". Or, similarly, from an energy standpoint, the available heat (as photons) causes "electron-hole" pair creation, with a possible increase in the electrical conductivity in the flexed specimen.

Page 23

Based on the assumption that flexing increases the population of holes, it is reasonable to look for a decrease in weight. If the holes represent loss of valence electrons (binding energy or cohesive force), it is reasonable to look for a gradual or progressive weakening of the metal or fatigue.

(c) In and specific region, saturation of holes is reached when fracture occurs, or vice versa. This is also the point at which specific gravity is minimum, i.e., the sample is gravitationally lightest.

(d) A critical experiment suggests itself: A thin specimen of susceptible metals (aluminum, tantalum, tungsten, platinum) is carefully weighed. It is then continually stressed (or simply bent back and forth) until it fractures, care being taken to lose no pieces. The broken parts (in toto) are then weighed and the loss of weight (if any) is noted immediately.

(e) Due to the decay of the holes by recombination with electrons, the weighing of the broken specimen (pieces) must be performed as quickly after fracture as possible.

Page 24

(f) If such an experiment gives positive results, the following possibilities are of great interest:

(1). The production of light gravitational isotopes by mechanical manipulation.

(2) Large scale changes in weight due to tectonic forces and movement in the crust of the Earth.

(3) Nascent gravitational isotopes in recent lava "coolings" that have moved until cool.

(4) Loss of weight of recently forged specimens, hammered, hot or cold rolled, especially after excessive mechanical working.

(5) Loss of weight of recently crushed rock, pulverized sand or clays.

(6) Extension of knowledge as to the cause of fatigue (crystallization) in mtals.

(7) Change in properties due to cold flow as distinguished from elasticity.

(8) Spontaneous generation of heat as gravitational isotopes decay through annihilation of electron-hole pairs and emission of photons.

(9) Decay of heating effect according to half-life curve.

(10) Warmth of recently crushed rock or sand and the decay of the warmth with time.

(11) Altering the rate of decay, i.e., speeding up decay by negativity (elec.), slowing up decay by positivity.

(12) Effects of elastic field rate-of-change.

Page 25

8. Creation of Gravitational Isotopes. Sec. I.

Leesburg, VA, Jan 7, 1956.

The Possibility of creating (or energizing materials lighter than normal has interesting implications. It simply means that certain normal materials (in the sense that the ratio of m_g to m_i = 1) may be energized or activated so hat the ratio is less than 1.

Energy is stored in electron-hole pair creation which is returned to the environment only upon annihilation of the pair. Photons are absorbed and photons are radiated.

The following possibilities are inherent in the idea:

(a) Irradiation of loess by light (visible), ultraviolet, x-rays and gamma rays, producing lofting particles which decay and return to Earth.

(b) Sparked loess (positive sparks. Irradiate both by UV light and electric discharge).

(c) Pulverizing (additional grinding. Mechanical irradiation. See Sec. 7).

(d) In or near atomic piles or sites of nuclear explosions.

Page 26

9. The Postulation of an Anti-Gravitational Particle. Definition and Characteristics.

Leesburg, VA. Jan, 9, 1956.

In the foregoing hypotheses, the existence of lighter (than normal) gravitational fractions is proposed. It is reasoned that certain presently unexplained behavior of matter (such as the Brush Effects and the anomalous densities of many elements and compounds) may be adequately accounted for if one postulates the existence in nature of lighter and/or heavier fractions in the gravitational sense.

Development of this view introduces the necessity to define "mass" and to distinguish two kinds of mass:---

(1) Gravitational Mass (m_g) as being the quality of matter susceptible to or reacting upon the (any) gravitational field, and

(2) Inertial Mass (m_i) as being the quality of matter susceptible to or reacting with acceleration or centrifuging force.

A tentative relationship would be:

m_e m_i = , constant,

where *e* is an unknown exponent.

The constant represents the total potential energy E of the mass in the equation $E = mc^2$.

Page 27

Therefore, for any given mass, since $E = m_g^e\ m_i\ C^2$; therefore, $m_g^e \parallel 1 / m_i$.

For any given mass, the alteration of weight must accompany an alteration of inertial mass in an inverse relationship.

In the first concept of gravitational isotopes, the accepted value for the density (gr/cc) of an element or compound represented merely a mean value, with both lighter and heavier fractions in varying proportions being present.

If, for example, the mean value is less than the theoretically normal value (see chart of gravity anomalies of the elements), it is reasoned that the element, or at least that particular sample of the element, contains gravitationally lighter components.

Let us consider the nature of these lighter components.

It would appear that inasmuch as all elements exhibits the presence of those components, the active agent is probably common to all and may take the form of a fundamental particle --- of anti-gravitational properties.

Page 28

Such a particle may be said to have negative gravitational permeability and exhibit negative g. In free state, it would accelerate "upward" or loft. Its potential energy would be greatest, for example, at the surface of the earth and it would diminish as the particle "falls away" from the earth --- converting this gravitational potential energy into kinetic energy.

It will be seen that this property is the converse of that of ordinary mater. In this sense, such a lofting particle may be described as "contra-terrene". While the gravitational mass of such a particle may be said to be negative (for the reason that it is repelled in a gravitational field), the inertial mass is positive.

Hence, as the particle accelerates in escaping, it acquires momentum. This positive mass is revealed during acceleration and in any centrifugal situation.

Now, as to the nature of the anti-gravitational particle, considerable uncertainty exists in my mind. I shall try to resolve some of this, but the final answers can be given only after definitive experiments have provided the answers.

Page 29

In the foregoing entries in this book wherein gravitational isotopes were mentioned, the concept seemed to revolve around the possibilities of holes in the effluvium wherein a kind of gravitational buoyancy existed.

The holes of a semi-conductor appear as possibilities in this respect. If so, the anti-gravitational particle must be associated with electrical positivity. This would be particularly true if the effluvium itself is negative --- as an indefinitely extended diffuse electron ocean, but with a potential gradient to provide the direction of force.

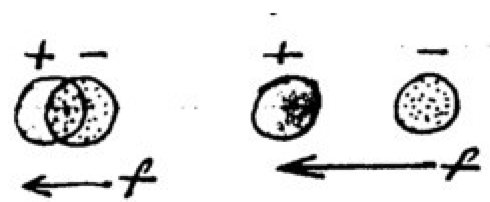
Such holes are observed as the absence of electrons and hence behave as positrons. They are, therefore, of the same general magnitude as electrons. Holes and electrons are created n pairs by

the action of a photon of the proper energy. It would tentatively appear that a low energy photon (heat) causes a slight separation of hole and electron, as in a dipole creation, whereas a high energy photon causes a further separation to the point where binding is lost and the separated particles take up independent lives. Here the energy of the photon equals or exceeds the binding energy of the pair.

Page 30

On a much smaller scale, but perhaps equally significant, is the creation of the neutrino and the anti-neutrino. Energy is required to create such a pair and that energy is released upon recombination or annihilation of the pair.

For the moment, let us consider only the possibilities of the larger scale effect; that is, those effects which can be operative in the shells of atoms rather than in the nucleus. Holes and electrons (as pairs), electrically neutral, can certainly be trapped in shells. Complex structures, such as are obviously present, for example, in the rare earth atoms, may contain such dipole structures or concentric structures formed of electron-hole combinations. Photons (energy) could cause and maintain such dipole or concentric structures. Heat energy could therefore cause expansion by the effects of increasing the physical separation of these pairs and the resulting chasing action (primary Brownian movement) of such dipoles.

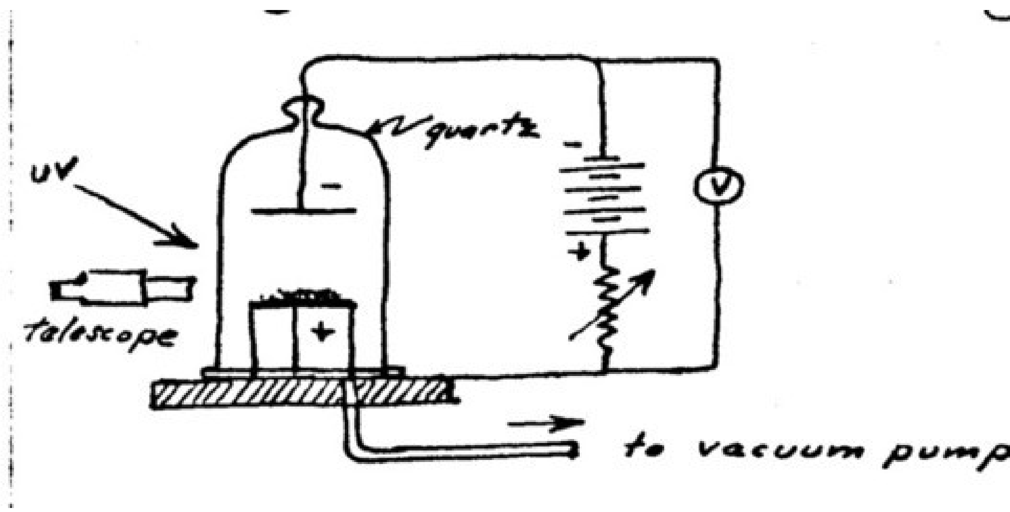


Chasing action of an electron-hole dipole.

Page 31

10. An Experiment to Show Lofting Effects of an Irradiated Dust.

Leesburg, VA, Jan 29, 1956.



A pulverized material, or a natural clay or loess, is placed on an electrode within a chamber capable of being evacuated. It is irradiated by a source of ultraviolet and/or visible radiation. The dust is observed through a telescope.

The pan maintaining the dust is charged electro-positively and the lighter particles are observed to "take off" and migrate under the action of the field toward the negative electrode.

However, the impressed electrostatic field is for purposes of control only. If true change of weight of a particle is observed, the electric field may be reduced, eliminated or reversed.

It is conceivable, however, that the lofting particles may bear electropositive charges naturally, hence will be more affected by the field and tend to separate from the unelectrified (normal) particles.

Page 32

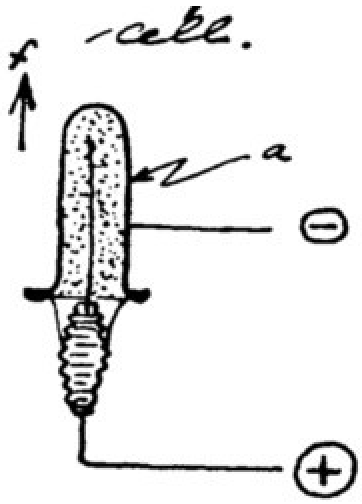
11. Quantitative Weighing of Photo-Isotopes in a Precision Balance.

Leesburg, VA, Jan 29, 1956.

If it is found possible to create negative gravitational isotopes by irradiation, a measurement may be possible simply by weighing a shallow sample on a precision balance:

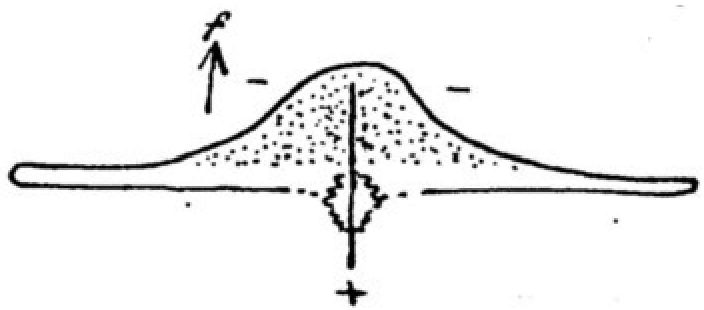
(1) under conditions of darkness
(2) " intense visible illumination.
(3) " " ultraviolet.
(4) " x-rays.

12. The Photo-Isotope (Electroluminescence)



A metal can (a) is filled with loess (or equivalent). A fine ionizing wire is placed at the center, very highly positively charged.

Coronal glow irradiates the region immediately adjacent to the ionizing wire and the effects tend to spread to the inside walls of the cell, irradiating all of the material in the cell.



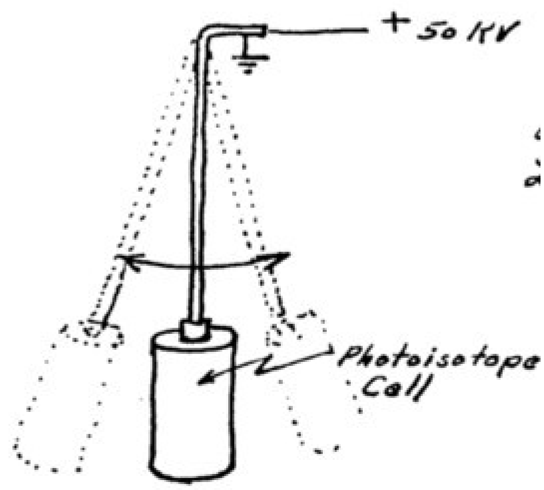
Active photoisotopic material in disc.

Page 33.

13. Increase of Inertial Mass in the Photo-Isotopic Cell, along with decrease in weight.

Leesburg, VA , Jan 27, 1956.

Proposed method of testing:



Arranged as a pendulum. Leads --- coaxial polyethylene cable. 50 KV +.
Observations of period.

(1) Tests to be made with no charge.
(2) ""”"” (+) " applied.
(3) ""”"” (–) "".

According to theory, the observed period with + charge applied should be longest, indicating:

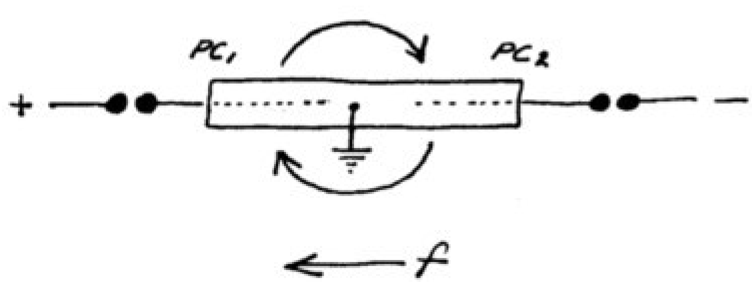
(a) increase of inertial mass, or
(b) decrease of weight, or
(c) both.

To separate these effects, an inertial device such as an anniversary clock or centrifugal (rotor) device may be used. (See Inertial Differential Electrogravitic Motor., Sec. 39).

Page 34

14. Centrifugal Inertial Effects on Electrically Modulated Photoisotopic Cells.

Leesburg VA, Jan. 29, 1956.



In the position as shown PC, is electropositive, hence gravitationally lighter but inertially more massive. The opposite is true of PC_2 in the position shown.

A net force should therefore result as indicated, acting in the direction toward the positive electrode.

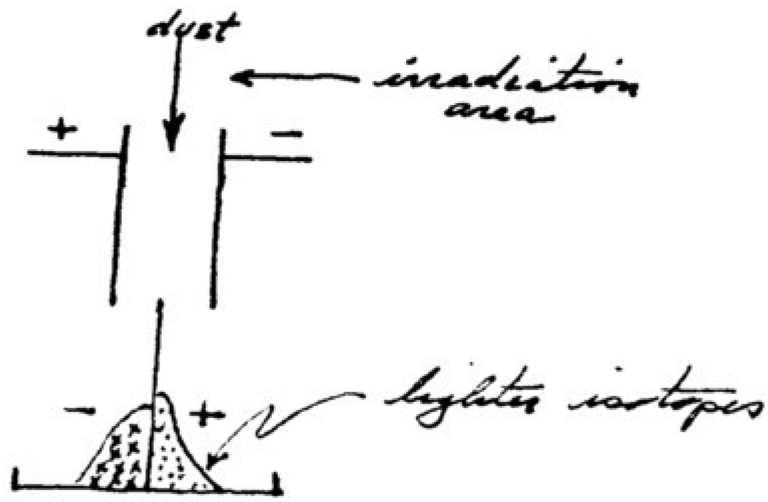
Rapid rotation should increase the force effective.

(This system, used as a motor, is described further in Sec. 39.)

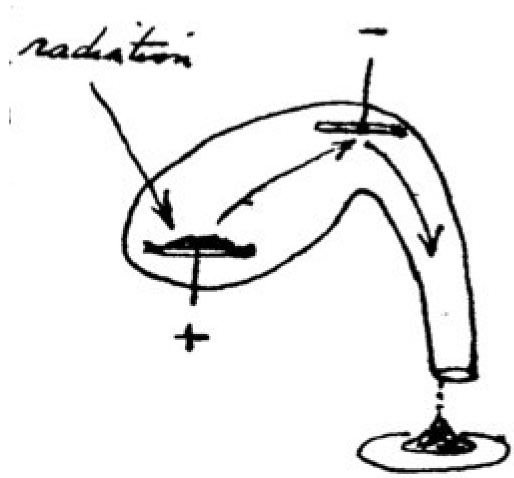
Page 35

15. Beneficiation by Ion Separation

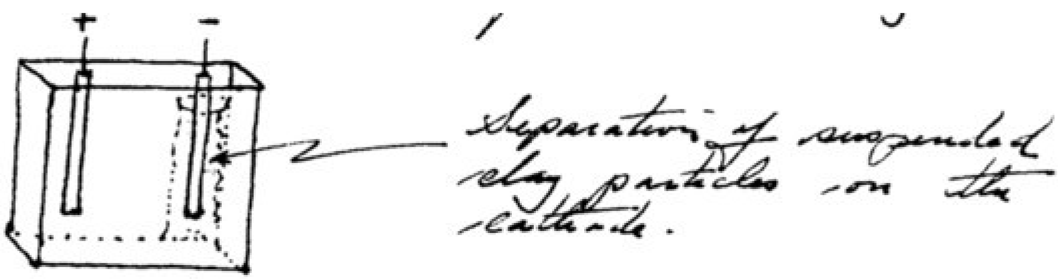
Leesburg VA, Feb 3, 1956



When irradiated, susceptible dust which bears a positive charge is attracted electrostatically to the negative electrode and falls to the right of center.



Heat and radiation is applied at positive electrode (which may be mechanically agitated). Sensitive dust which had become excited rises in electrostatic field to the negative electrode where it is neutralized and falls immediately.

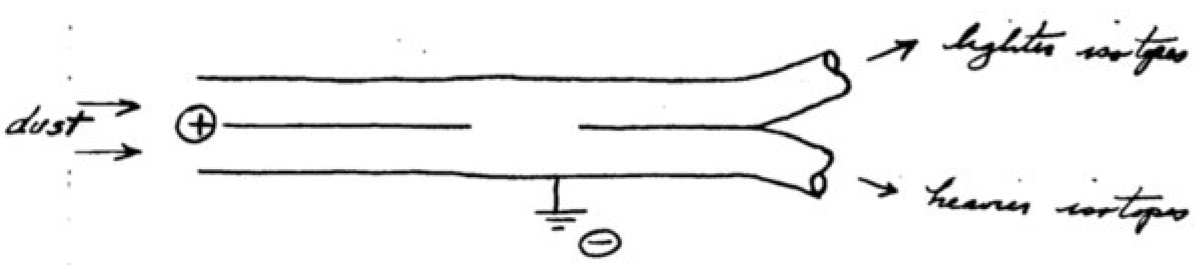


Separation of suspended clay particles on the cathode.

(1) Heavy conductivity (water) fluid
(2) Non-conductivity (oil) fluid

Page 36

15. (Continued)



Separation by lofting property of dust, upon being excited.

16. Beneficiation by Differential Centrifugal Action

Leesburg, VA, Feb. 4, 1956.

As described in the project submitted to DuPont, one method of beneficiating light gravitational isotopes is the centrifugal action upon materials floating in heavy liquids. To go into detail, the following may be said:

To beneficiate kaolinite (aluminum silicate, density 2.5), the finely ground material is floated upon an aqueous solution of thallium malonate-thallium formate adjusted to approx. 3.0 density (sp. gr.).

In a gravitational field, the material floats on the surface of the liquid, but in a strong centrifugal "field", the aluminum silicate particles having a low g/i ratio will sink. If the settlings are fixed, either by freezing or compaction, they may be removed en masse after the centrifuge has stopped.

Page 37

17. Regarding a Measure of Centrifugal Force as Distinguished from Gravity.

Leesburg, VA, Feb. 5, 1956.

To rate a centrifuge as so many "g's" is obviously incorrect and basically unsound, if one is to distinguish between the effects of acceleration and gravitation.

One "g" is defined as that force (due to gravity) which will impact an acceleration to a mass equivalent to that experienced at the surface of the earth, i.e., approx. 980 cm/sec^2.

Centrifugal force, on the other hand, depends upon inertial mass only and is in no way equivalent to the force of gravitation.

Three factors affect the rate of fall, or, more accurately, the acceleration of a free-falling body, (1) The intensity of the gravitational field or gradient, (2) the susceptibility of the material being acted upon by that field, and (3) the inertial mass of that material.

Obviously, and contrary to the currently accepted postulate of Relativity, all materials in nature do no react to the same extent to gravitation and, further, the weight-inertial mass ratio is not the same with all materials.

Page 38

17. (Continued)

In a gravitational gradient or field f_g, accel. = $m_g f_g / m_i$ where

m_g = gravitational (susceptibility) mass,
m_i = inertial mass

Where $m_g = m_i$, the accel. is only dependent upon f_g. A field f_g which will cause the acceleration of 980 cm/sec^2 under these circumstances is considered to be 1 "g".

Hence, we may refer to the ratio m_g/m_i, or simply the ratio g/i, as the "g-i" ratio. Under average conditions, when the ratio equals unity, there is said to be equivalence between weight and mass, as postulated by Einstein. However, when the "g-i" ratio is less than unity, the acceleration due to gravity is less and the acceleration in an inertial field is greater. When the ratio is greater than unity, the opposite appears to be true.

g / i = 1 (normal, mass-weight equivalence).

g / i > 1 (heavy gravitational isotopes prevail)

g / i < 1 (light gravitational isotopes prevail)

Page 39

18. The g / i (gee-eye) Ratio

Leesburg, VA, Feb 5, 1956.

The g-i ratio represents the gravity-inertial property of a material. It differs with different materials and with the same materials at different times or under different states of excitation.

When the g-i ratio is unity, there is an exact equivalence of weight and inertial mass. This may be described as average or mean condition.

Certain materials in nature apparently have less or greater inertial mass for a given weight (under similar circumstances) and such materials therefore have a g-i ratio differing from unity.

A g-i ratio is said to be high, normal or low depending upon whether it is above unity, at unity or below unity, respectively. Light gravitational isotopes present predominantly in a mass tends to lower the g-i ratio.

Examples:

Material A. Given a g-i ratio of 0.901, weight (gravitationally) 10 grams, Centrifuge rating 10,000 g's; What is actual centrifugal equivalent?

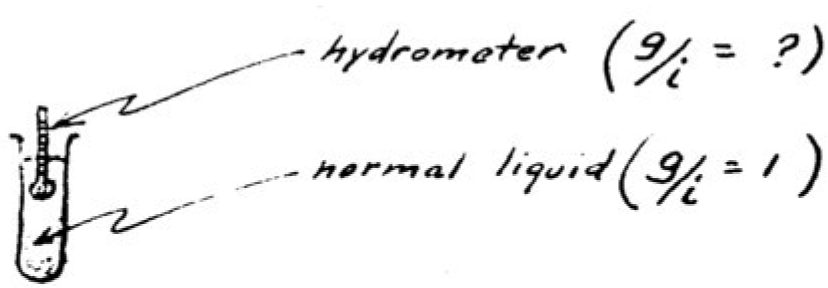
10,000 / 0.901 = 11,090+ g's equiv.

Page 40

19. Centrifugal Differential Hydrometry

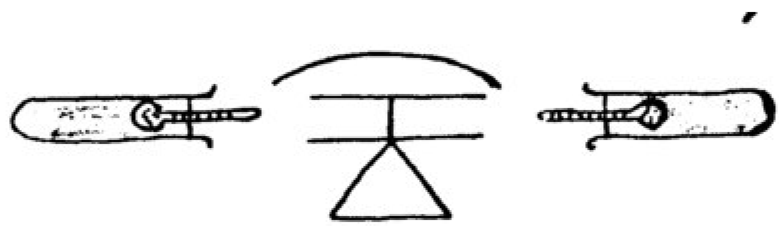
Leesburg, VA, Feb 5, 1956.

Principles set forth in Sec. 16 and touched upon further in Sec. 18, are basically described as follows:



In gravity field of any value of g, scale set to zero hydrometer reading.

Then: When in centrifuge.



If material in hydrometer bulbs has a g-i ratio of 1, no other reading will be indicated whatever the speed of rotation.

If, however, material in bulb has a g-i ratio less than 1, hydrometer will sink lower in liquid as centrifugal force increases, the change in reading being proportional to the rate of rotation.

If, however, material in bulb has a g-i ratio less than 1, hydometer will sink lower in liquid, as centrifugal force increases, the change in reading being proportional to the rate of rotation (of the centrifuge).

If the material in the bulb has a g-i ratio greater than 1, the hydrometer bulb will rise in the liquid as the centrifugal force increases.

Page 41

The reading of a floating hydrometer during centrifuging may be accomplished by using an indicator coating on the stem of the hydrometer, the color or shading of which changes when in contact with the liquid. Such an arrangement will permit reading the position (maximum) after the centrifuge has stopped and the hydrometer returned to zero position.

The method is useful in determining the g-i ratio of any unknown material, simply by placing a known amount in the bulb of a standardized form of hydrometer, using a liquid the g-i ratio of

which is 1, and centrifuging at a known rate. These materials may be in liquid as well as solid sate. The sensitivity increases in proportion to the speed of the centrifuge.

The advantages of the hydrometer method of determining the g-i ratio of a material is that it is self-balancing and independent of the compaction of material during centrifuging. The hydrometer bulbs, since they are made of glass (a silicate), must be carefully checked and isotopically balanced to prevent a contribution to the reading. Change in geometry due to compression of the bulb must also be taken into account, but this may be balanced out and disregarded when liquids or semi-fluids are tested.

Witnessed this 5th day of February 1956.
T. Townsend Brown
Witnessed Feb. 5, 1956 at Leesburg, VA,
Helen Brasafort
Joesphine B. Brown

Page 42

20. Energy Changes and Excited States in the Creation and Determination of Gravitational Isotopes

Leesburg, VA, Feb 5, 1956.

Energy is required to create negative gravitational isotopes. This energy may be supplied in the form of protons (from infrared to gamma radiation) and conceivably also from high speed particles.

When applied to susceptible materials, this energy causes a temporary excited state, and this state accompanies a change in the g-i ratio to a lower value.

This excited state gradually deteriorates (probably according to a half-life curve) at different rates according to the material irradiated. The g-i ratio increases accordingly and approaches a value of 1 asymptotically. During this decay, energy is released, mainly in the form of heat, and to a small extant, possibly also as visible light.

This evolution of energy at a high rate may not necessarily indicate a low gi ratio but more probably a high rate of decay, i.e., a short half-life, and to some extent also, a recent irradiation. The evolution of light (if it does occur) would immediately follow cessation of irradiation --- and, as a matter of fact, may be present during irradiation, for decay would be proceeding at the same time as irradiation.

Page 43

The effect may be similar to photoexcitation of phosphors, the persistence of the radiation determined by the rate of decay of the excited state.

Immediately following removal of the exciting radiation, the luminescence and heating effect is greatest. The radiation diminishes as the excited state decays.

This suggests a beneficiated clay or other material which may be periodically excited and then (following irradiation) gives off heat slowly during the decay of the excited state. Thus such a material would serve as a heat reservoir with the energy stored as an electrogravitic excited state.

21. Certain Complex Silicates (natural clays, etc.) as Heat Reservoirs Following Irradiation by Sunlight.

Leesburg, VA, Feb. 11, 1956.

It is interesting speculation at this point to consider the possibility that certain desert sands and clays may thus become irradiated during the intense illumination of the day, and thus retain an ability to evolve heat through the night which exceeds the basic thermal capacity of the material.

Page 44

Concurrent with the irradiation, the material may become gravitationally lighter and, at the same time, inertially more massive.

If there is a fraction of the irradiated desert sand or clay which is sufficiently susceptible, to the extent that the g-i ratio decreases to zero or goes negative, the particles comprising that fraction may actually rise (loft) until nightfall stops the irradiation. At which time, the particles may start to return to earth --- falling perhaps like micro-meteorites.

Needless to say, a collection of this material --- beneficiated in this way by nature --- would be susceptible again to the same radiation. If the natural radiation could be intensified by a quartz lens or metallic parabolic mirror and focused upon a small sample of highly susceptible material, the probability is that the material would quickly loft. This would provide a simple and effective confirmation.

Along this line, it has always been a mystery to me why magnetite is found frequently on top of sand at the waterline on beaches both in rivers and at the ocean. If it were merely that the sand had washed away, leaving the magnetite on top, an explanation might be provided. But, in many cases, the sand has been recently deposited and it is not clear how the magnetite can be carried along with the sand in the initial process of beach formation unless the densities were of the same order and/or unless the magnetite fell as micrometeorites during or subsequent to the formation of the beach. The density of average beach sand is 2.5 gr/cm^3 while that of normal magnetite is 5.5 gr/cm^3, more than twice as heavy.

Page 45

Magnetite found in beach sands may therefore be a susceptible material. It should be investigated.

The same may be said for loess. The beach sand deposits of monazite at Jacksonville Beach, FL are also interesting in this connection.

22. Beneficiation of Light Gravitational Isotopes (by irradiation and selective lofting and falling) as it may occur on the Moon.

Leesburg, VA, Feb. 11, 1956.

Another purely speculative matter of interest at this point is the possibility of natural beneficiation occurring on the surface of the moon.

Due to the slow rate of rotation of the moon, the moon's daylight is approx. 14 days in length and night is also 14 days in length.

Page 46.

During the long lunar day, temperatures rise well above 200-300° F in the surface materials. The radiation of the sun (due to the absence of atmosphere) is strong also in the ultraviolet. Conditions are sustained for 14 days which are especially favorable for the excitation of photoisotopes. Lofting of susceptible fractions of surface dust is indicated. This material rises to great height and part of it may escape into space. If a positive space charge is created by the first waves of lofting material, electrostatic repulsive forces may slow up further lofting.

Assuming then, a continuing lofting and falling process, the moon's surface may become covered with a fine dust which engages every lunar day in a lofting-falling cycle.

The surface then becomes covered with an especially deep layer at the end of the lunar night. This may be a rich deposit of photoisotopic material actually beneficiated by Nature.

The question, of course, may be asked if similar conditions exist or may be made to exist, upon the earth. One may search expectantly, it would seem, at the edge of deserts --- especially on the downwind side.

Page 47

23. The value of "g" is not constant for all materials

Leesburg, VA, Feb. 10, 1956.

The acceleration due to gravity "g", normally about 980 cm/cm^2, is the result of a force acting upon a mass.
a = f / m.

If the *f* does no increase in proportion to *m*, a lower acceleration results: But this is inertia mass mi --- the reluctance to acceleration. The *f* is the force resulting from the action of the gravitational field upon the specific material. That action may be expressed as:

m_g x f_g. Hence,

$a = m_g / m_i$ x f_g.

$m_g / m_i = g / i$ (ratio) , therefore

$a =$ (g-i ratio) x f_g

when (g-i ratio) is a characteristic of the material under (or at) a certain state of excitation where g-i ratio = 1, no excitation exists.

f_g is a function of the inertial mass of the attracting body.

Page 48

24. Contact Excitation of Photoisotopes by Highly Energized Isotopes.

Leesburg, VA, Feb. 10, 1956.

A question presents itself as to the possibility that a highly energized body may transfer energy to a less energized body, either by conduction thru direct contact or by induction thru merely being in proximity.

Can, for example, a highly excited sand or clay energize rock? Can an excited gas (as in a positively charged fireball of nitrogen) excite the sand, gravel or other material by which it has been grounded and annihilated? Can the mere presence of contra-terrene material induce an effect of similar nature in a susceptible material?

Probably only experiment will reveal the answers. It is worth considering, however, for there are similar effects observable in other manifestations of energy --- such as heat, electrostatics, etc.

One immediately ponders the question as to energy excitation capacity, such as specific heat. Does a material of low specific (excitation) capacity transfer its energy to a material of higher excitation capacity, where there is only a slight difference in potential.

Page 49

This would raise the question that materials may differ in excitation energy) capacity. Hence, more energy would be required to excite certain atoms (or materials generally) than others. More energy would be released, and hence the rate of evolution would be greater, or the rate of decay would be greater --- or possibly both.

A measure of potential must then be foreseen. Raising the potential from one value to another, multiplied by the specific capacity, would consume energy, as

$E = P_{dif}$ x capacity.

If then, a material of high capacity were to come into contact with a material of low capacity and would discharge thereinto, would the P reach a higher value in the second material? Based on analogous heat or electric situations, the answer would seem to be that the potential governs the flow, not the capacity.

Therefore, if a transfer of energy takes place, it is because a difference in potential exists. Energy will flow until the potential is equalized.

In energizing a material of high capacity, a flow similar to the electric charging of a storage battery takes place, with the potential rising as the charging continues.

Page 50

If the g-i ratio is a measure of excitation potential, then I must be in reciprocal relation. As an arbitrary zero, the g-i ratio of 1 can be taken. The excitation potential increases as the ratio decreases to zero. It continues to increase as the ratio goes negative. Let us divide the scale so that the distance from 1 to zero is 100 units. The distance from zero to –1 is then also 100 units, As: ---

Excitation Potential // g-i ratio

200 units // -1
100 " // 0
0 " // +1

Therefore, in summary, a material will have mass-weight equivalence at zero potential, weightlessness and double mass (or some larger exponent) at 100 units and lofting at 1g and some still larger inertial mass at 200 units of excitation.

To excite a material, the energy (photon) equivalent of the excitation potential required must be supplied. In effect, this is electromagnetic excitation. This excitation must be continued for a length of time determined by the excitation capacity of the material.

Page 51

Just as in charging a storage battery, a longer time is required or a greater flow to charge a material of higher capacity.

Once charged, a material of higher capacity will continue in the excited state until discharged, and will last longer or discharge at a higher rate, or both.

If there is a difference in capacity of materials, it is logical to assume, at least to start with, that the capacity may be a direct function of the inertial mass at zero potential or grav. mass at any potential.

Hence, to irradiate a rare earth metal or tantalum would require more energy than aluminum or silicon, but the radiated energy during decay would likewise be greater. When once energized to a given potential, tantalum would give off more energy during decay to zero potential and would do so at a greater rate or for a longer time, or both.

Aluminum silicate could be excited to a given potential with less energy because its excitation capacity is less.

Now therefore, on the basis that the specific excitation is less than that of tantalum, it is clear that the decay radiation total will be different to the same extent.

Tantalum will absorb more energy and give off more energy in reaching the same excitation potential. The rate of charging will depend (1) upon the potential of the charging source and (2) upon the rate of charging (or flow).

Therefore, to return to the subject of this reaction, the rate of flow (conductivity) may depend upon the proximity and/or contact with the charging source.

If, for example, two pieces of tantalum having been differently excited (that is at presently different potentials) were brought into contact, energy would most certainly flow from one to the other. The flow would cease when their potentials balanced. This would constitute contact excitation of one by the other.

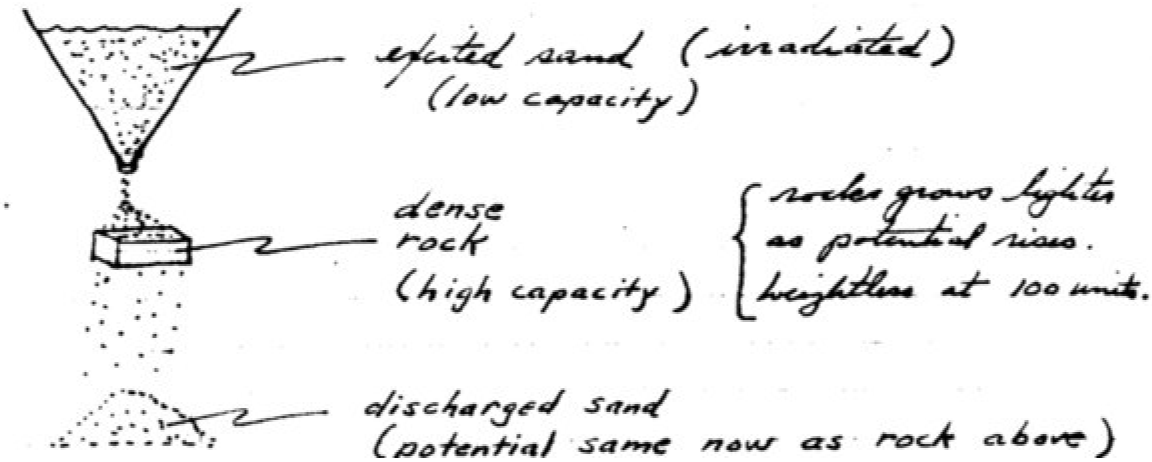
If highly excited aluminum silicate were placed in an envelope or container made of tantalum, contact would tend to cause the excitation of the tantalum, but the difference in the specific capacity would be so great as to virtually discharge the aluminum silicate without effectively draining the potential of the tantalum, unless, of course, the volume of aluminum silicate makes up for the difference in specific capacity.

On the other hand, highly excited tantalum could energize a large quantity of aluminum silicate without an appreciable drop in potential of the tantalum.

Page 53

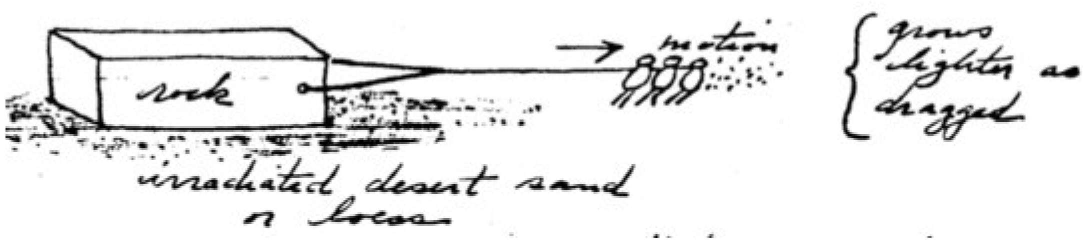
One may speculate then that excitation in this respect is contagious from one element to the other, that there may be a variation from element to element, (1) in capacity, (2) in rates of spontaneous decay.

The more interesting elements, therefore, are those which have reasonably high capacity and very slow rates of decay.

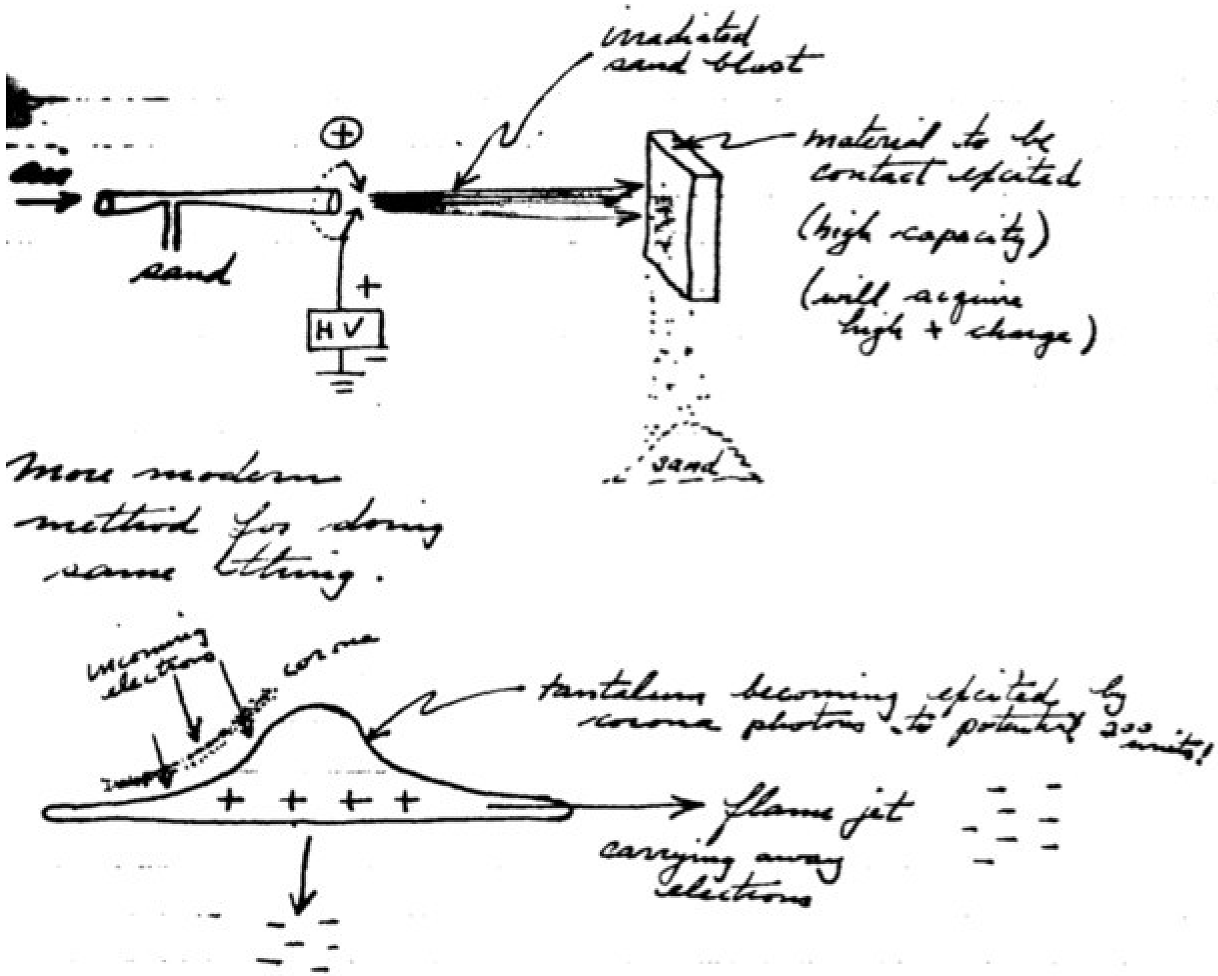


Possible method for exciting rock through continuing contact excitation by irradiated sand.

Loess may be used in place of irradiated sand, and would be especially effective if beneficiated.



Beneficiating by contact excitation by dragging rock over desert sand.



More modern method for doing same thing.

Tantalum lofting by excitation from corona photons.

The use of irradiated clay as a method to energize rock. In this respect, clay serves as an impedance matching device --- between the high potential of the exciting photons and the low potential of the rock or other solid material.

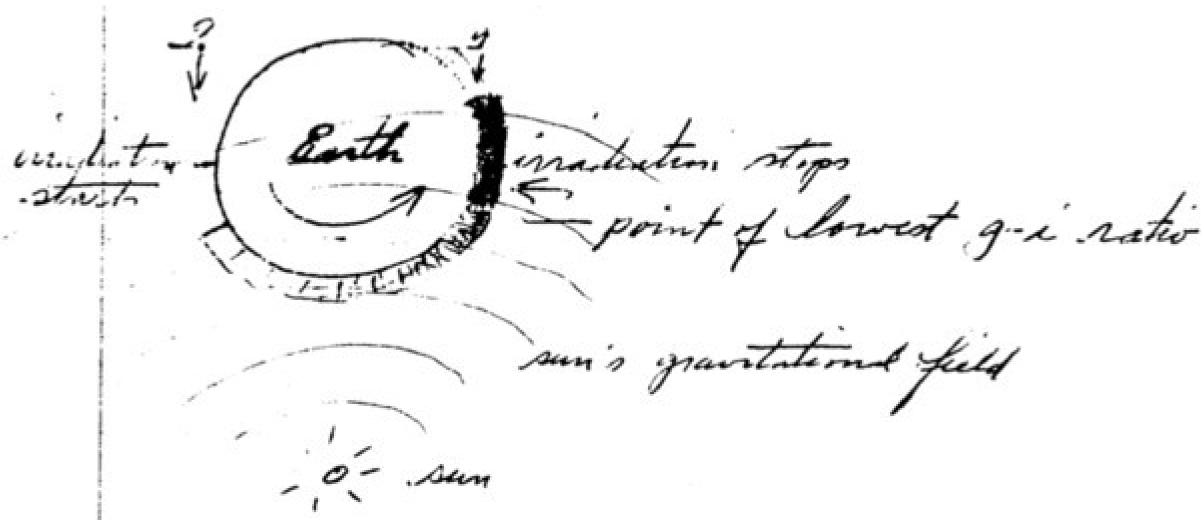
The ancients may have known that if they rubbed (Nile) mud, irradiated by the desert sun, on large rocks that the rocks lost weight until they could be easily carried.

Page 55

25. Preservation of the Rotation of the Earth by the Gravitational Differential of the Field of the Sun --- Due to Solar Irradiation of Photoisotopes.

Leesburg, VA, Feb. 15, 1956.

If the g-i ratio of the materials comprising the surface of the earth (including the atmosphere) is decreased by the action of sunlight, the following effect may account for sustaining the rotation:



The atmosphere, being free to slip, would move in the direction from W to E because of the differential field.

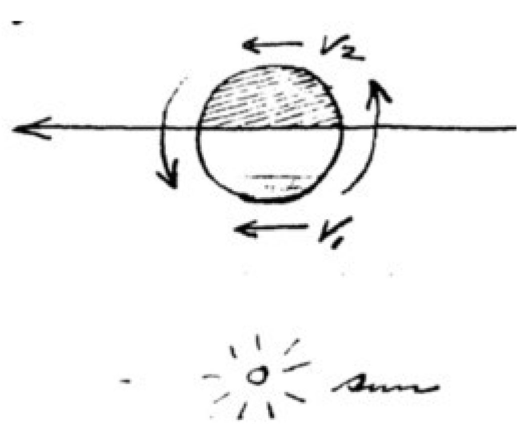
Correction: Perhaps it should not be called a differential field. What I intend to say is that it is a differential effect caused by two values of g large value on the west limb and small value on the east limb (of the Earth) in the gravitational field of the Sun.

Page 56

26. Factors which may cause the Rotation of the Earth.

Leesburg, VA, Feb. 18, 1956.

Neglecting all velocity components except the basic orbital velocity of the Earth, a situation with respect to the irradiation of the Earth by the Sun, and the inertial mass differential developed therefrom, may possibly account for a torque upon the Earth, as:--



Orbital motion of Earth.
Daylight side --- due to irradiation, m_g/m_i decreasing, m_i increasing

Assuming conservation of momentum, then since m_i is increasing V_1 must decrease. On the night side, since mi is decreasing V_2 must increase. Hence, a torque is present tending to revolve Earth in the direction indicated.

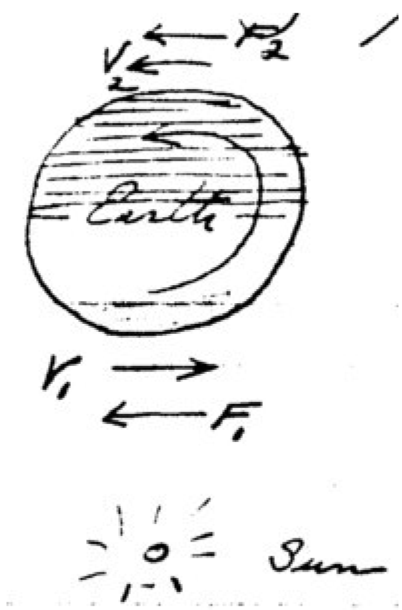
This torque would be continuously applied and would increase the rate of rotation of the Earth without the present (low) limit were it not for the factors mentioned in Sec. 27.

Page 57.

27. Counter-Rotational Torque Tending to Limit the Rate of Rotation of the Earth.

Leesburg, VA, Feb. 18, 1956.

Considering now the rotation of the Earth as given, and neglecting all other velocity components, the following situation may exist:

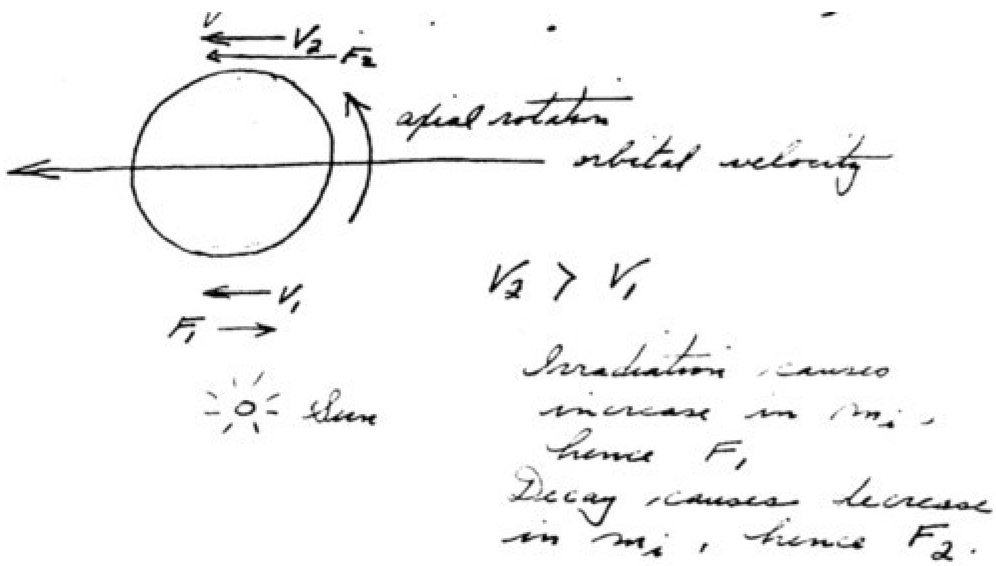


On the daylight side, irradiation causes increase in m_i, and a force tending to decrease V_1 as shown as F_1.

On the night side, decay causes decrease in m_i and a force tending to increase V_2, as shown as F_2.

Since both of these forces are in the same direction, the result is a contribution to the orbital motion. It is this force which ma account for the basic orbital velocity (given in Sec. 26).

However, since the actual velocity of the Earth surface is the result of both orbital and axial rotation, the forces actually acting are as follows:



$V_2 > V_1$
Irradiation causes increase in mi, hence F_1.
Decay causes decrease in mi, hence F_2.

Since F_1 and F_2 contribute to the axial rotation, the result is similar to that indicated in Sec. 26, and we must look elsewhere for the counter-rotational torque.

It would appear at the moment that we must look elsewhere for this effect, and probably the most fruitful place to look would be in the solar-tidal friction produced upon and within the body of the Earth (including the oceans) as it revolves.

Such friction would increase quite rapidly as the rate of rotation increases, hence would soon reach an equilibrium revolution at a certain rate.

We can assume, I believe, that this equilibrium (in the case of the Earth) has been reached.

28. The Equilibrium Condition Between the Amount of Irradiation and the Orbital and Axial Motion of the Earth.

Leesburg, VA, Feb. 18, 1956.

In Sec. 26, orbital motion plus irradiation causes axial rotation.

In Sec. 27, axial rotation plus irradiation caused orbital motion.

Obviously, there is an interaction between all three factors, so that an equilibrium condition exists for all values of irradiation.

It is apparent that, in the foregoing, orbital motion per se is not required. What is required is that the relative position of the source of irradiation shall not change with respect to the body being irradiated. Hence to maintain a fixed relative position, orbital motion satisfies this requirement.

At any instant, therefore, orbital motion is equivalent to linear motion.

A summary of the situation, therefore, points to a possible interaction between linear motion, irradiation and particle rotation.

This inter-relationship may be observed in the laboratory.

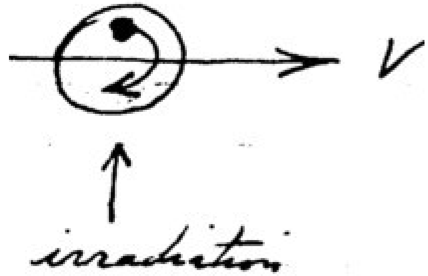
Page 60

29. Conservation of Momentum and the Change of Velocity with Change in Inertial Mass

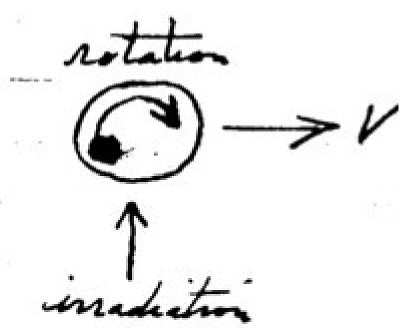
Leesburg, VA, Feb. 18, 1956

Basic considerations:

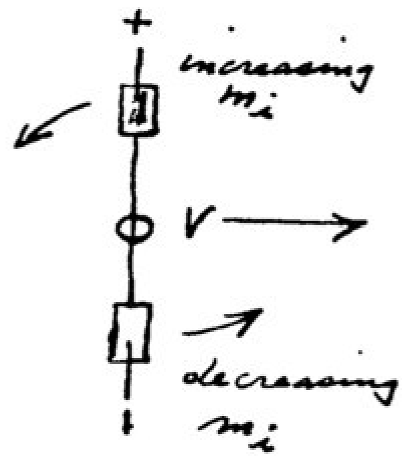
As m_i increases, V must decrease, and vice versa.



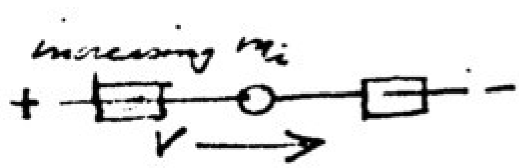
If V is given, Rotation results is irradiation is maintained on one side of a photo-sensitive material.



If rotation is given, V results under same circumstances.
And the three factors are related in an equilibrium depending upon al three.



Torque such that mi increasing resists V, and falls behind.



Stable position.

Page 61

30. Detection of Absolute Motion by Means of Modulated Inertial Mass

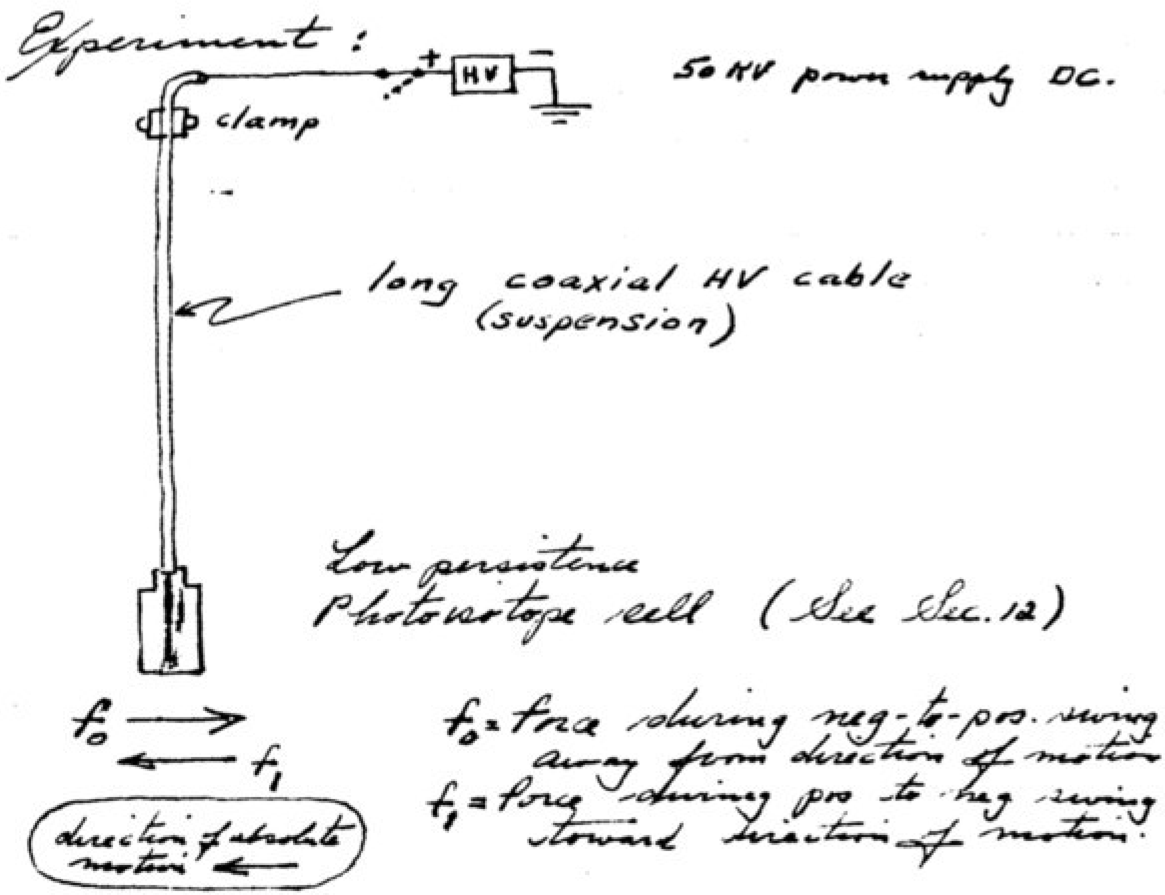
Leesburg, VA, Feb. 18, 1956.

Postulate:

A force vector becomes apparent (1) in the direction of absolute motion whenever mi is decreased, and (2) away from the direction of motion whenever m_i is increased.

The tendency is to conserve momentum.

Experiment:



When an alternating emf is employed (at a frequency synchronous with period of pendulum), the system will swing in an alignment with direction of absolute motion.

Witnessed this 18th of Feb 1956.
Helen Brasufort
Josephine B. Brown

Page 62

31. Electrogravitic Radio Using Photoisotopic Cells.

Leesburg, VA, Feb 18, 1956

An improvement over the use of highly conducting metals as antennae (see pat. Appl. On subject) appears to present itself in the photoisotopic cell (See Sec. 12).

In Sec. 29 and 30, the effect of changing inertial mass was set forth. This is in accord with the law of conservation of momentum. This calls for a change in velocity according to the equation for kinetic energy $E = \frac{1}{2} mV^2$.

Hence, for a given momentum

$m \parallel V^2$ or $mi \parallel V^2$

m being inertial mass as distinguished from gravitational mass (m_g).

Any modulating inertial mass (mi) must exert a force during the time of change tending to increase or decrease its absolute velocity. As stated in Sec. 30, the direction of this force must be toward or away from the exact direction of its absolute motion (in space).

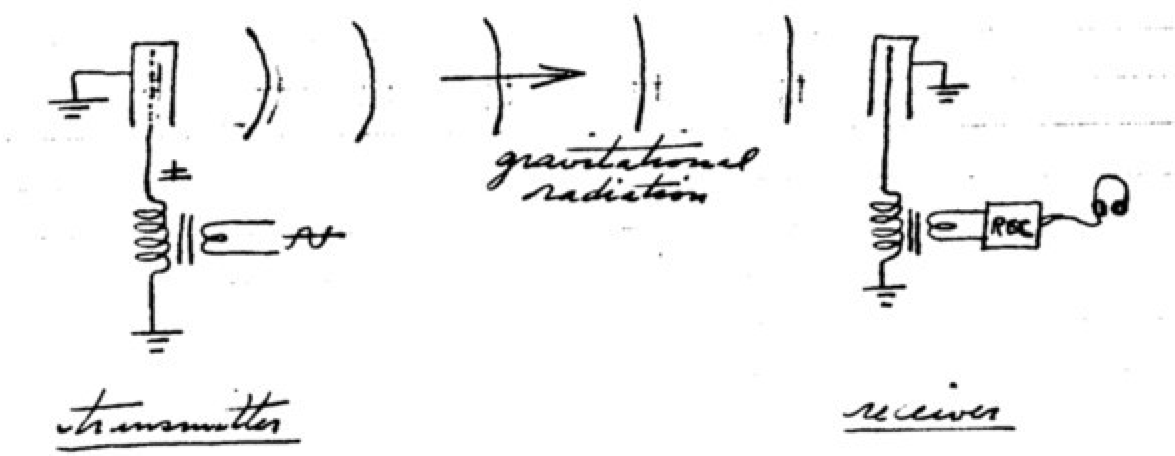
Hence, if an antenna (of an electro-gravitic radio transmitter) is electrically or photo-isotopically modulated, it will tend to vibrate mechanically in the alignment of its absolute motion.

Page 63

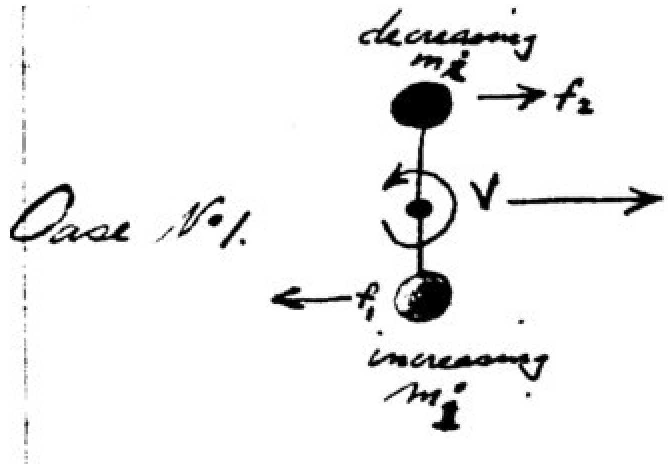
Conversely, one may look for the generation of an alternating potential if such a mass is vibrated in the alignment of its absolute motion (in space).

Since the velocity enters the equation with /as an experiment, it is possible that the voltage may turn out to be a function of the absolute velocity, but this will be discussed in a later chapter.

In any case, the use of photoisotope cells in electrogravitic radio transmitters is indicated. A fundamental circuit is as follows:



Transmitter >> gravitational radiation >> receiver



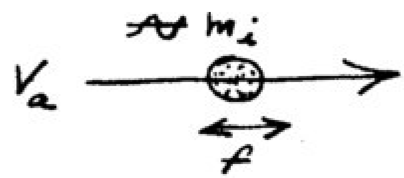
A transmitting antenna using a multiplicity of photoisotopic cells for modulating m_i.

Page 64

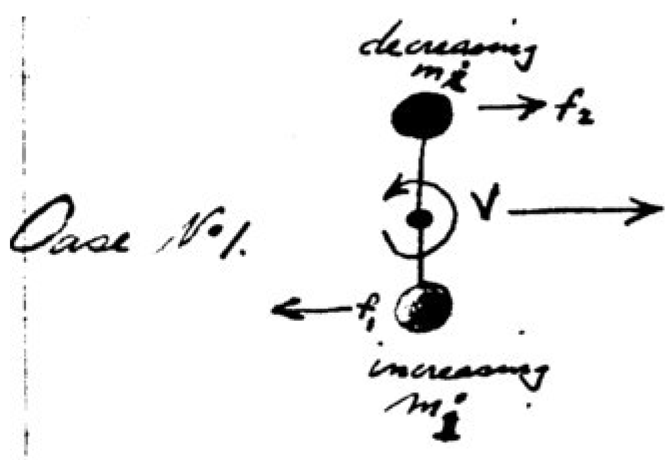
32. A Rotating Electrogravitic Motor or Generator Using a "Velocity" Field.

Leesburg, VA, Feb 19, 1956

In the foregoing chapters, it was pointed out that the rapid modulation of inertial mass would cause mechanical forces resulting in vibration. The direction of the principal vibration would be parallel to the absolute motion of the mass.



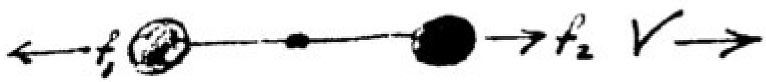
Therefore, if a rotating system were synchronously excited (phased in with the rotation),



In this case, rotation would be impeded.

If turning clockwise, rotation would be assisted, and system would operate as a motor.

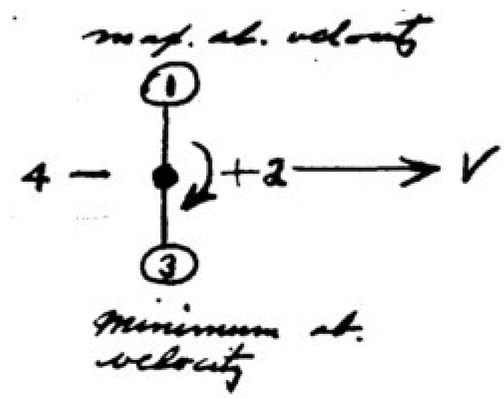
Case No. 2



Stable position. Same as Sec. 29, Fig. 5.

Page 65

Case No. 3

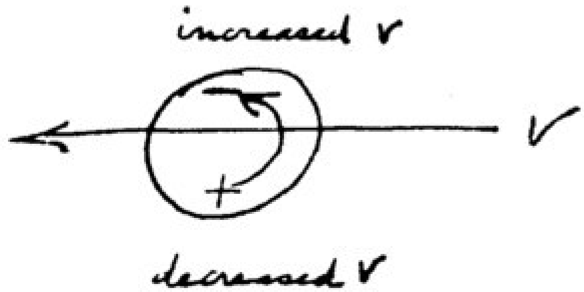


Given --- absolute V
" --- rotation as shown
" --- unmodulated mass
Then a potential would be generated.

When a given inertial mass is at position 1, its absolute velocity is maximum. When the rate of velocity change is greatest (slowing), this corresponds to greatest positive excitation, etc., etc.

Any whirling dipole (uncharged initially) will acquire an alternating emf due to the "velocity" field, synchronized with the rotation. Or,

A revolving disc or sphere will do the same, as



The increased V is equivalent to a negative charge or high g-i ratio.

The decreased V is equivalent to a positive charge or low g-i ratio.

This generator effect may account for the day-night difference in potential in the surface of the Earth.

Page 66

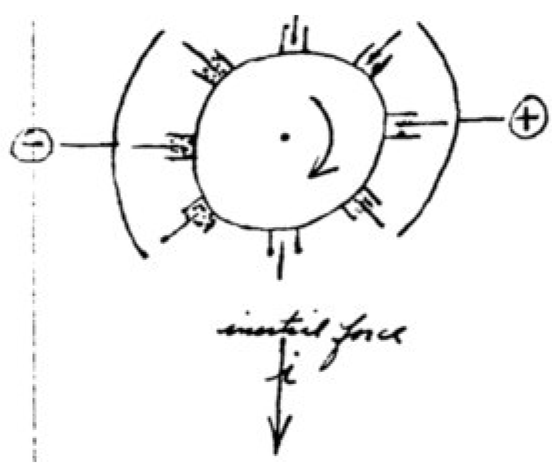
33. A Rotating Electro-Gravitic Motor or Generator Using an "Inertial" Field.

Leesburg, VA, Feb 19, 1956.

The inertial field differs from the velocity field in this respect:

An inertial field is due to an acceleration or a change in velocity. It is measured as the rate of change of velocity.

The inertial field affects m_i directly and produces a mechanical force proportional to mi, whereas the velocity field produces a mechanical force only when there is a change in m_i and to an amount proportional to the rate of change of m_i.



When excited as shown, (+) causes increase in m_i, (-) causes decreases in m_i, hence rotation results.

The inertial field can be created either by acceleration or centrifugal action. But in either case, force must be in direction as indicated to produce rotation as indicated.

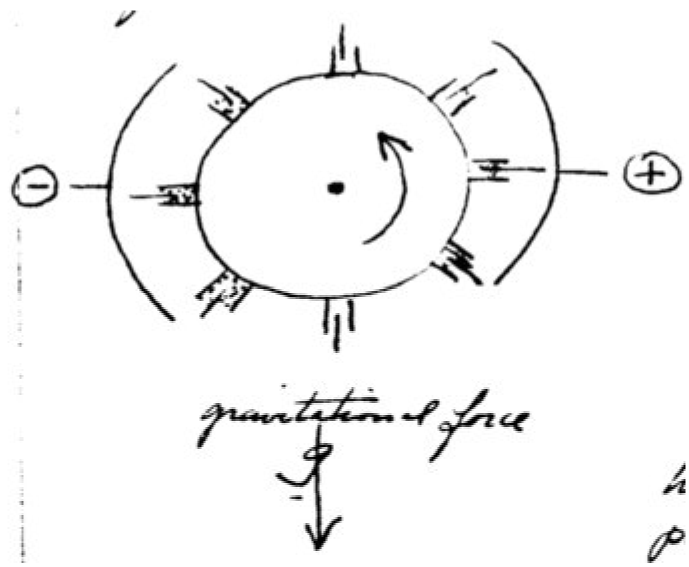
When operated as a generator, polarity is opposite to that shown.

Page 67.

34. A Rotating Electrogravitic Motor or Generator Using a Gravitational Field

Leesburg, VA, Feb, 19, 1956.

The gravitational field has a similar but opposite effect from the inertial field as set forth in Sec. 33.



When excited as shown, (+) causes decreases in m_g, (-) causes increase in mg, hence rotation is as indicated.

When used as a generator, polarity is opposite to that shown.

It will be seen that when wired in the same way, rotation is opposite to that of the inertial field motor.

Used in a detecting device, such a motor being identical to the inertial field motor, would rotate in clockwise direction of the inertial field predominated and in a counter-clockwise direction of the gravitational field predominates.

In this respect, this device would operate differentially.

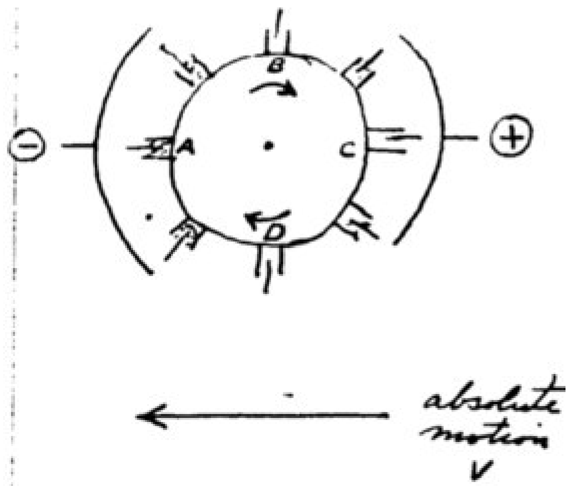
When turned as a generator, the electric current generated would also act differentially, reading zero upon balance.

Page 68

35. Rotating Electrogravitic Motor or Generator Using a Velocity" Field.

Leesburg, VA, Feb. 19, 1956.

In order to describe it in a comparable way, the material set forth in Sec. 32 is redrafted as follows:



If m_i in moving from A to B to C increases, absolute motion should be decreased, hence a force as indicated. In moving from C to D to A, mi decreases, hence V should tend to increase as also indicated.

The additional torque will cause the device to continue in operation after once started in the direction of the arrows.

When not excited and when used as a generator, the polarity is opposite to that shown. The reason is as follows:

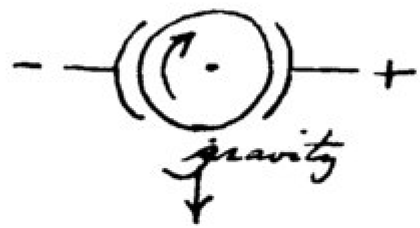
When a mass is at point D, the V is greatest. When it moves to A, its rate of decrease of velocity is maximum. During this decrease of V, a positive charge appears, being a function of the rate. Similarly during the increase of V a negative charge appears, equal in magnitude to the rate at which the equivalent mass m_i is decreasing.

Page 69

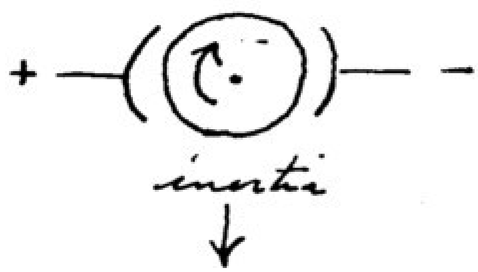
36. Use of Electrogravitic Generators as Measuring Instruments for g, i, and V 'Fields".

Leesburg, VA; Feb 19, 1956.

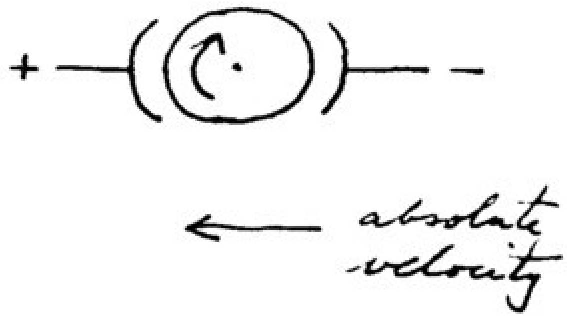
When driven, the following rotors may develop an emf which depends upon the strength of gravity, inertial and (fixed velocity) "fields".



Rotation clockwise as shown, Polarity as indicated. Susceptible materials (unexcited).



Rotation same as above. Polarity is now opposite to that above.



To measure absolute velocity, an emf is developed as indicated.

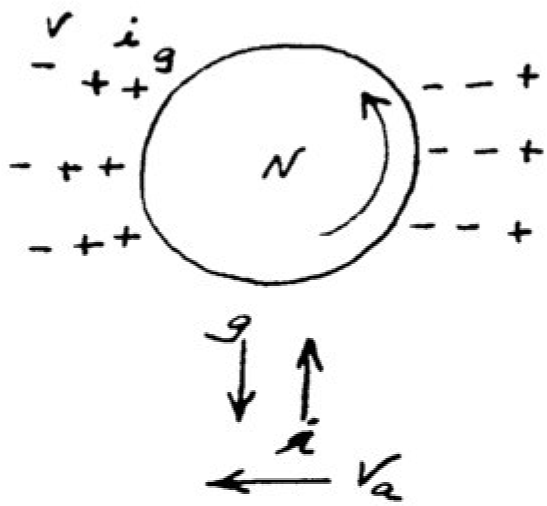
This is a summary of the information set forth in Sec. 33, 34, and 35.

It is readily apparent that various combinations of the above may be used in balancing circuits to obtain special information as to relative "field" strengths.

Page 70

37. The Earth as the Rotor of an Electrogravitic Generator.

Leesburg, VA; Feb. 19, 1956.

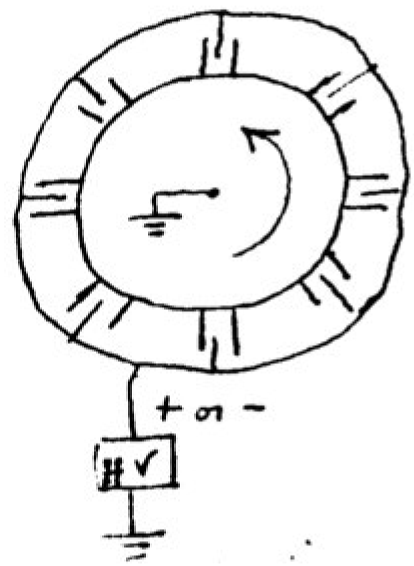


It now appears that the polarities developed by both the *g* and *i* fields are in the same direction, but that the polarity developed by the velocity "field" opposes.

This situation is not clearly understood at the present writing. It will be reviewed at a later time.

38. Change of angular velocity with change in mi in order to conserve Angular Momentum.

Leesburg, VA; Feb 19, 1956.



Initial rotation given, when photoisotope cells on periphery of rotor are:

(1) negatively charged --- m_i is decreased and rotor speeds up.
(2) positively charged --- m_i is increased and rotor slows
The above is based on the conservation of angular momentum.

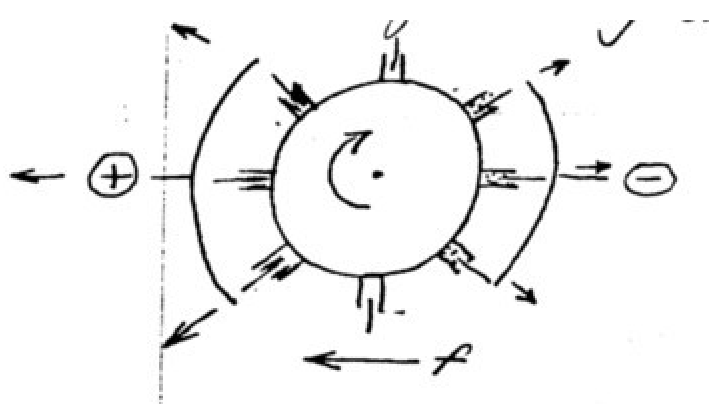
Page 71

39. Inertial Differential Electrogravitic Motor

Leesburg, VA; Feb 19 1956.

In Sec. 13 and 14, attention was called to the possibility that the change in inertial mass mi, when modulated, could give rise to an unbalanced centrifugal force which could move the rotating system persistently in one direction.

This possibility is further explored:



When rotated at high speed and when using photosensitive material of very short persistence.

On the (+) side, g / i < 1 , or at least i (+) <> i (-), hence a force due to the unbalance of the opposing centrifugal forces is created.

This force (*f*) tends to move the system as a whole in the direction indicated.

It is clear that, at high rotational speeds, even a small inertial mass difference on the two sides could cause a substantial force upon the system as a whole. Even with crude materials the effect may be found to be easily observable.

Page 72.

40. The Loss of Weight of Quartz Capsules Containing a Photosensitive Isotope when Irradiated by UV Light

Leesburg, VA ; Feb 19, 1956.

A quick and yet convincing test (of Sec. 11) is possible by sealing a given amount of photoisotope in a capsule of fused quartz and weighing.

Weight should be taken of the capsule (1) in total darkness, (2) in normal light of the laboratory, (3) under UV light and (4) intense sunlight (without intervening glass).

The use of the quartz capsule prevents escape (evolution) of moisture during the irradiation, without filtering out the uv by absorption.

A standardized size of capsule may be adopted containing say 10 cc of material for comparison tests for loss of weight.

A laboratory precision balance, preferably "chainomatic" or equivalent is suggested due to the need for rapid determination of weight which is continually changing.

A curve showing loss of weight during excitation and gain of weight during decay will be required for a variety of materials.

Page 73

41. The Results of a Change of Inertial Mass Following Modulated Beneficiation (with Low Persistence)

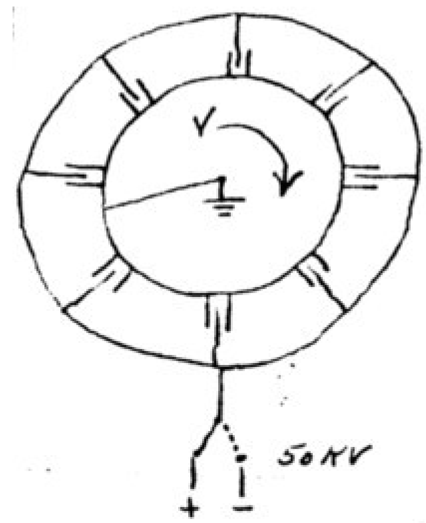
Leesburg, VA; Feb. 26, 1956.

Part I. Change of Angular Velocity to Conserve Angular Momentum.

In Sec. 13, the possibility of a change in inertia mass of the photoisotope cell was considered. A laboratory experiment was described I which the period of a pendulum containing a photoisotope cell could be measured. The observations, however, would be non-specific as to the change in

inertial mass per se, except when performed in an anniversary clock or centrifugal (rotor) device. It is the purpose of the present section to develop this idea.

Using several photoisotope cells (of low persistence) arranged on the periphery of a wheel-like support and connected so as to be charged in unison, as:

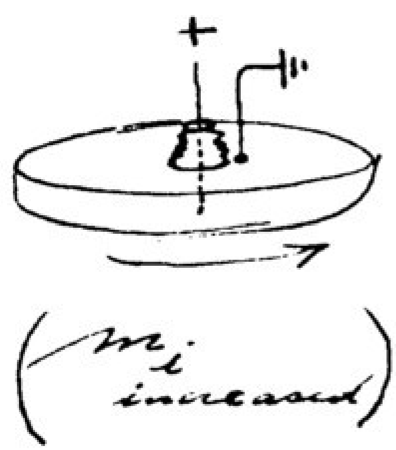


Given initial velocity --- when positively charged, mass mi increases, hence V decreases, or, When negatively charged, mass mi decreases, and V increases.

AC would cause periodic change in V.

Page 74

Another form of this experiment may be a disc which is energized (photoisotopically) from the center, as:

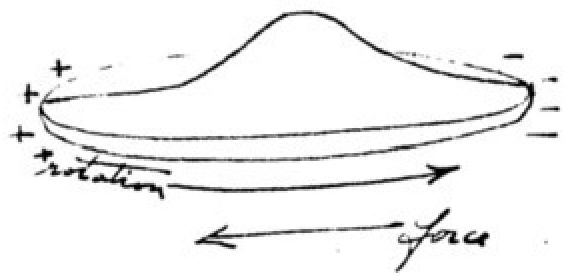


When unexcited and spinning at a known rate, then excited positively as shown, the inertial mass mi is increased, causing the rate of rotation to decrease.

When used as an anniversary clock, the period is lengthened by the application of a positive charge.

Part II. The Disc-Type Inertial Differential Electrogravitic Motor.

A development of the form of motor described in Sec. 39 is as follows:



In the "forward" part of the disc, sectors are being electropositively charged. Hence mi is increased.

The opposite is arranged for the trailing sectors, so as to produce a decreased m_i. Rotation of these sectors having a mass (inertial) differential may cause the forward-acting thrust as indicated.

Page 75

42. The Impulse Effect in the Force Developed by a Simple Capacitor in Vacuum.

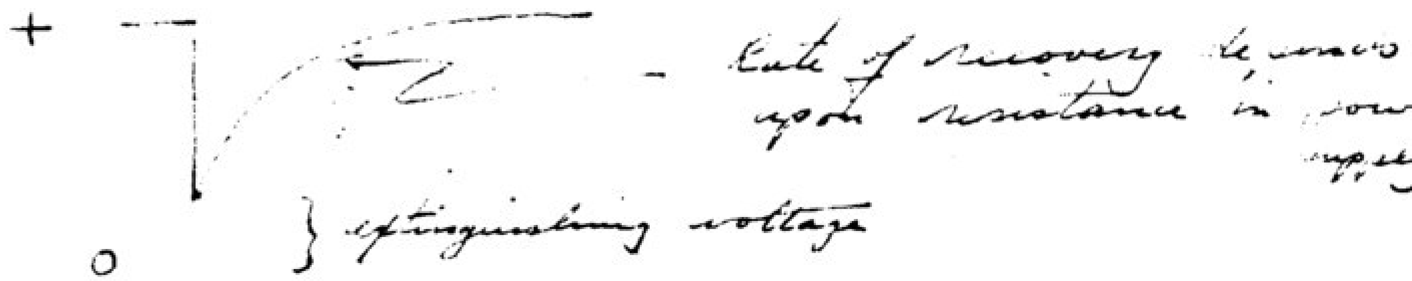
Leesburg, VA; April 7, 1956.

In the dynamic phase of the electrogravitic interaction, the force developed by a system of electric dipoles is believed to vary with the rate-of-change of the voltage between the dipoles.

This force, independent of the movement of ions or any mechanical reaction therefrom, operates in the direction of negative-to-positive as the voltage is increasing, and, presumably, in the opposite direction as the voltage is decreasing.

In vacuum (10^{-6} mm Hg or less), an interesting effect is observed.

Any simple vacuum capacitor will appear to flash as the voltage increases, and, concurrent with the vacuum spark, an impulse force is noted in the direction of the negative to positive. It is noted that the wave shape is as follows:



Page 76

According to theory, the impulse is associated with the recovery of potential and not with the rapid decrease brought on by the vacuum spark.

Two possibilities present themselves in explanation: (1) the decrease in potential is too rapid to produce an observable force mechanically, or (2) a balancing effect serving to prevent the force from being created may be present in the k-mu (ether) medium.

Therefore, since the downward voltage produces no force, the upward voltage is responsible for the observed force.

There is evidence to support the belief that a local balancing effect actually exists in the k-mu medium or field between or surrounding the electrodes, in that the effect is primarily observed when the voltage change is caused by a vacuum spark or flash between the electrodes and not when wholly due to a chopper in the external circuit.

The principal movement of the dipoles is therefore always associated with (and probably caused by) the vacuum spark or flash.

Page 77

43. The Nature of the Vacuum Spark, as related to the initiation of an electrogravitic impulse.

The vacuum spark is apparently not due to a flow of electrons, although a flow of electrons may accompany the discharge.

Initiation of the "flash", as it is called from observations in the dark, appear to be related to anode conditions such as shape (field intensity) and the metal comprising the anode. In a recently evacuated system, flashing starts at a comparatively low voltage, 30-40 KV. It becomes less frequent at this low range and then ceases altogether. A higher voltage is then required --- 50 to 60 KV, which causes a succession of flashes which, in turn, cease. At 80-90 KV, flashing is intense for a time, but finally ceases. At 130-140 KV, the flashing is quite intense and cease only after a considerable time. It is believed that a threshold may be reached between 150-200 KV where flashing will be sustained and continuous.

The electrogravitic forces developed by the rapid succession of impulses which accompany the flashing in the higher voltage ranges is indeed a first order effect, measurable in thousands of dynes, even with small scale equipment.

While the nature of the flash (or its cause) is not wholly understood, it is reasonable a this stage to suspect positive conduction, at least as the initiator. Emission from the anode, bombarding the cathode, may (and probably does) release electrons which contribute to the electrical conduction. Since the effect takes place in very high vacuum, it is unlikely that atmospheric ions or the like are involved. Occluded atoms or molecules are probably pulled from the anode material, and these, of course, may be oxygen, nitrogen, hydrogen, or any of the atmospheric gases. Metallic ions of the anode material may be involved, or perhaps even microscopic pieces of metal.

One of the spectacular features of the flash is the colored luminescence which appears on or immediately adjacent to the anode and/or the shifting areas of light and color across the face of the anode. The color is reddish --- like hot metal, although in reality the surface is not hot: Cadmium is especially active in this respect although other metals reveal the same red coloration. White star-like spots of considerable brilliance appear on the cathode.

44. Scale of Beneficiation

Leesburg, VA; April 7, 1956.

g cm/sec^2	g/i ratio (scalar)	i inertials/gram	Potential (gho) milli-ghos	
980.0	1.0	980.0	0	10^0
490.0	.5	~~490~~	500	10^2
0	0		10000	10^4
-490.0	-.5		100000000	10^8
-980.0	-1.0			10^{16}

The above scale indicates a rough approximation based upon the hypothesis that normal g of 980 cm/sec^2 represents an equal amount of inertia, so that the g/i ratio is unity. As the ratio decreases, the potential equivalent increases.

Energy is required to reduce weight, this energy increases exponentially as g is decreased linearly. The inertial mass (mi) increases exponentially to the same extent as the potential. Excitation is represented as potential and expressed in ghos. Decay of gravitational isotopes results from the evolution of this energy and the resulting decrease of potential.

45. Possible Excitation of Gravitational Isotopes by Friction (Triboisotopes)

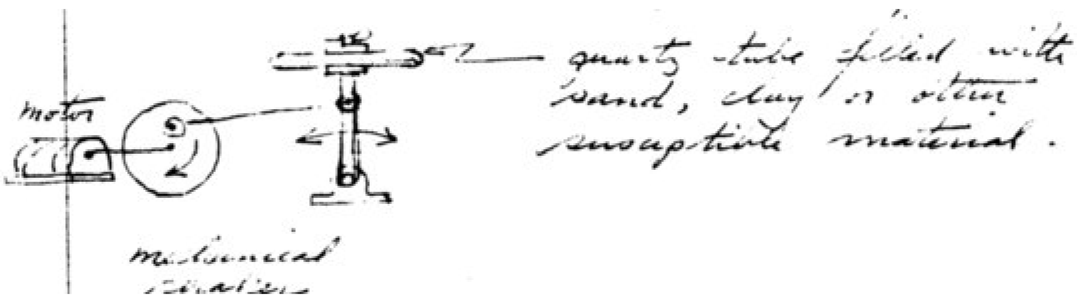
Leesburg, VA; Aug 26, 1956.

The possibility that loss of weight may be produced by friction should not be overlooked.

If a state of excitation, similar to that induced by uv light, can be induced by inter-molecular friction or by constant friction, the loss of weight may be readily detectable.

In Sec. 7, p. 21, the possibility that fatigue in metals, resulting from inter-molecular friction, may cause a reduction in weight was discussed at length. It was pointed out that coulomb damping may be accompanied by loss of weight in powdered susceptible materials.

A simple test may be as follows:

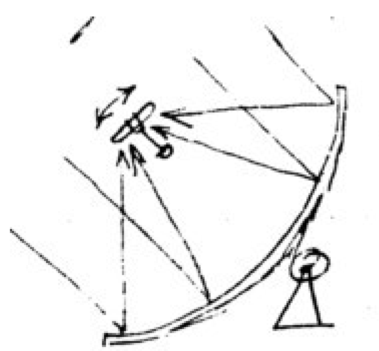


Quartz tube filled with sand, clay or other susceptible material. Weighed before and after shaking, the entire quartz tube with contents may show a loss of weight due to inter-particle friction.

Page 81

It may be found desirable to irradiate the tube and contents with strong sunlight or uv light while shaking is in progress. [N.B. – Ultrasonic resonance plus laser]

Beside the use of artificial light, sunlight may be intensified by quartz lenses or by a large parabolic reflector as follows;



Concentrated irradiation by sunlight plus violent shaking.

Using a large 60-inch Sperry Anti-aircraft searchlight mirror (without glass door), the radiation of the sun is focused upon the quartz tube filled with sand or clay or other susceptible material while being violently shaken by a motor device (not shown).

If effects are observed, quantitative measurements of the effects of the following may be undertake:

Shaking only --- various speeds, etc.
IR radiation only.
IR " with visible.
Sunlight (intensified).
UV only.
And all combinations of these.

Page 82

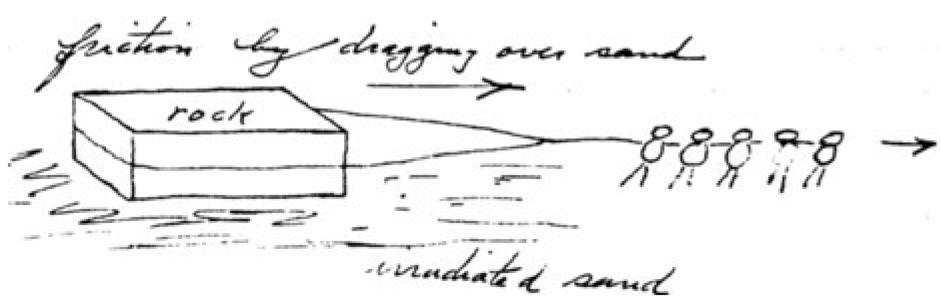
46. Excitation of gravitational isotopes by friction irradiation and distribution and accumulation of the effects by conduction.

Leesburg, VA; Sept 9, 1956.

In Sec. 24, P. 48, it was proposed that rock ma be caused to lose weight by being dragged over desert sand which has been irradiated for some time by sunlight.

In Sec. 45, P. 80, it was proposed that friction alone may cause a loss of weight.

It is now proposed that a large effect may be caused by both.



Method which may have been used by the ancients to cause a loss of weight in very large and heavy rocks.

The effect would decay, causing the return of original weight, according to a half-life curve dependent upon the nature of the rock contents.

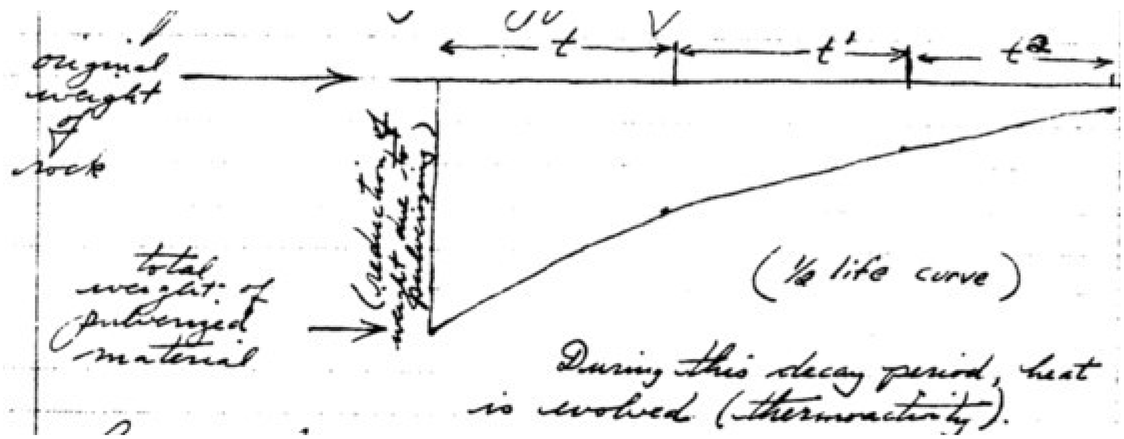
Page 83

47. Loss of Weight by Grinding or Pulverizing.

Leesburg, VA Sept 9, 1956

In the foregoing, it is suggested that fraction may be effective in bringing about a loss of weight, and that the loss of weight is temporary (after friction has ceased), so that the original weight will eventually return.

This may mean that a given weight of rock (of certain composition) may actually lose weight when pulverized and that the weight of the freshly pulverized material will be least and therefore increase according to the following type of curve.



During this decay period heat is evolved (thermoactivity).

Conversely, by observing accurately the increase in weight of certain pulverized materials (aluminates, silicates, etc.) the curve may be constructed and the approximate date of grinding may be determined.

Page 84

48. Spontaneous Evolution of Heat (Thermoactivity) of recently pulverized silicates or aluminates.

Leesburg VA; Sept 9, 1956.

Following the grinding of certain materials, a state of excitation is maintained for some time. This excitation gradually diminishes according to the same half-life curve which represents its return to normal weight. See Sec. 47., P. 83.

It is proposed that the foregoing be tested as follows:

Freshly ground material is placed in an ice calorimeter with a sensitive thermocouple in the center of the mass of material. Readings taken at frequent intervals for a period of at least 3 months.

It is believed that the energy represented in thermoactivity is that of an excited state in the electronic shells of the atoms or in the relations (valency electrons or holes) within certain molecular configurations. This energy is supplied initially by the mechanical action of friction (and/or irradiation) during the process of grinding. This energy is gradually dissipated as heat and the rate of evolution falls off with time.

Page 85

49. Discussion of Loss of Weight by Friction as present in Nature.

Leesburg, VA; Sept 9, 1956.

The mechanism of dust storms, where wind causes fine particles of sand or clay to rub over one another for a considerable distance may be responsible for a temporary loss of weight. The same effect may be present under water where the current causes sand to flow to and fro (as in wave actions) or straightway (as in rivers).

Due to the presence of sunlight irradiation, the phenomena of "rising" sand wind long noticed in the Sahara may be evidence of the above effect. Sand grains rubbing over other sand grains, by saltation, by the action of the wind, may cause the more susceptible grains to rise en masse and actually to loft to a considerable height, higher than they would normally go under the action of wind alone.

Aircraft flying at great altitudes over the Sahara often encounter these sand winds which are difficult to account for merely on the basis of wind-blown dust.

Page 86

50. The Possibilities of a New Type of Time-Space Data Preservation. A Method of Recording or "Memory".

Leesburg, VA; Jan 30, 1957.

All methods of recording music, sounds or time-series data, up to the present, have required the use of elements which are electrically or mechanically moving at a constant rate.

The phonograph is a classic example. Here, sounds are translated into mechanical vibrations which are recorded in a wax plate or equivalent which is moving at a constant rate. The magnetic tape or wire recorder is similar, except that magnetic variations are impresses upon the moving element.

In computing machines so-called electronic brains, memory devices are employed for the storage of data. These may be in the form of magnetic wire or tape records or, if greater speeds are required, mercury (transducer) memory tubes or television-like sustained images. Memory tubes require a recirculating sonic or ultrasonic path wherein the data is stored, and the cathode ray

systems require continuous rescanning systems. Such recirculating or rescanning systems require a continuing source of energy in order to preserve the data indefinitely.

Page 87

It is suggested that a kind of memory may be inherent in the dielectric materials under certain conditions, so that, in effect, they may remember the manner of recharging. It appears possible that such memory may persist as long as the charge is retained.

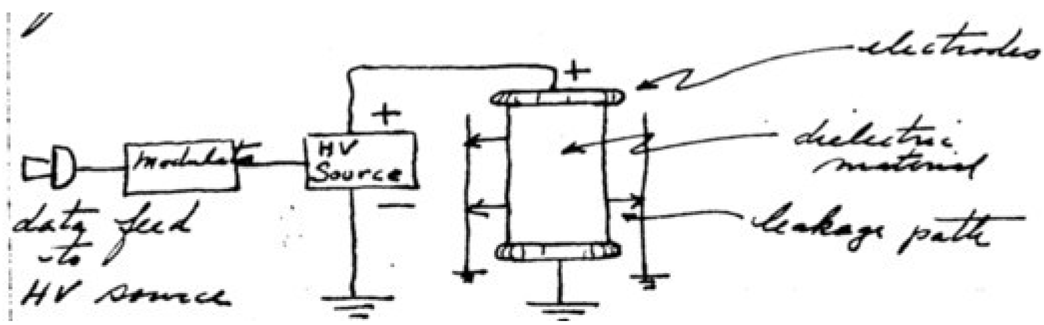
The same characteristic may be present in certain magnetic materials and in a fashion which may be homologous.

Now therefore, it would appear to be desirable to explore these possibilities.

In general, it is suggested that two new forms of memory may be possible:

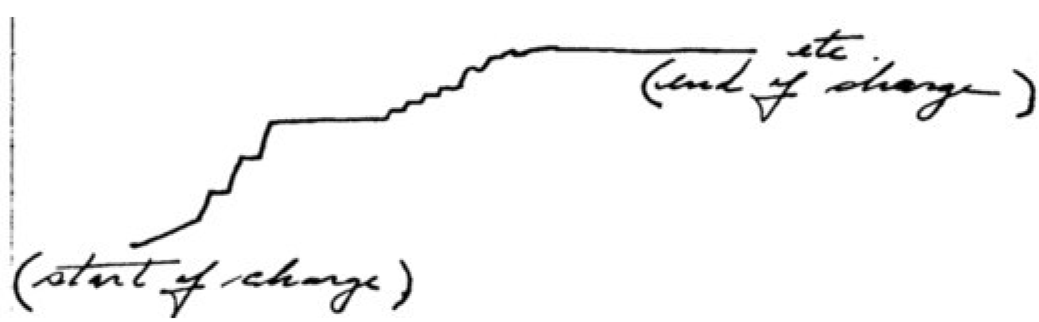
(1) Dielectric or capacitor memory.
(2) Magnetic or ferrite memory.

A simple form of capacitor memory, for purposes of illustration is as follows:



Page 88.

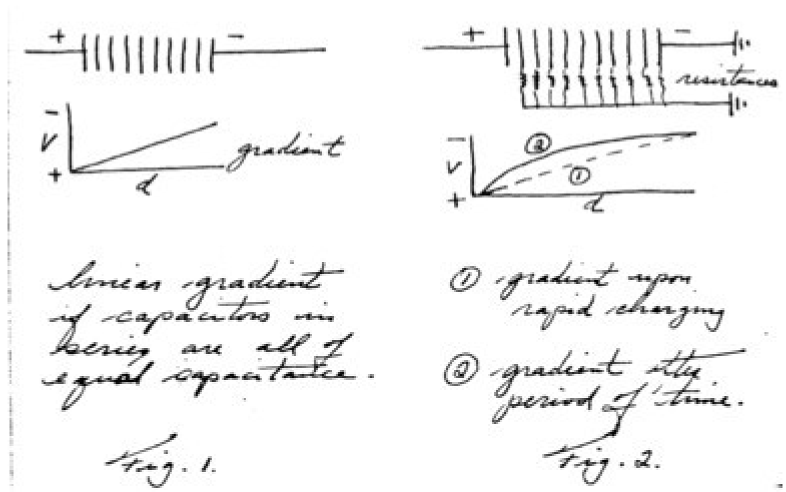
By charging the capacitor at a variable rate as:



Domain progression. The electric orientation of dipoles proceeds at an irregular rate according to pattern prescribed by data feed. Upon reducing the electric field during subsequent discharge of

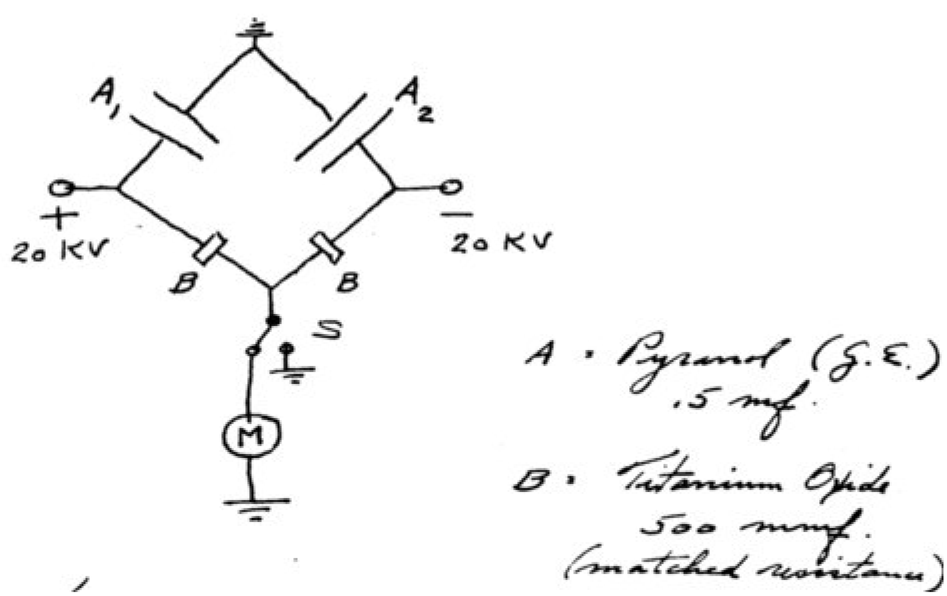
capacitor, dipoles return to random (discharged) alignment progressively, according same or reversed pattern.

By introducing a leakage path, other and further paths may be produced.



Page 89

Capacitor Bridge for Exploratory Measurements



Procedure:

Charge A_2 to –20KV steadily and without stopping.

Charge A to +20 KV irregularly and with frequent stops.

During charging, B-B is grounded by switch S, then switch is closed to meter M for duration of discharge.

Any irregularity in rate of discharge of A will show as a temporary imbalance of the bridge and a voltage indicated at M. (Brush recording galvanometer). Rapid transient imbalances will be most pronounced.

Page 90

51. Shift of Capacitance Mid-Point

Leesburg, VA; Feb. 1, 1957.

This is a continuation of discussion set forth in the Sec. 5, p. 15 of this record book. It relates to experiments conducted at Pearl Harbor Navy Yard in 1950-51. These preliminary experiments gave positive results, indicating a real shift of the mid-points with respect to each other with time.

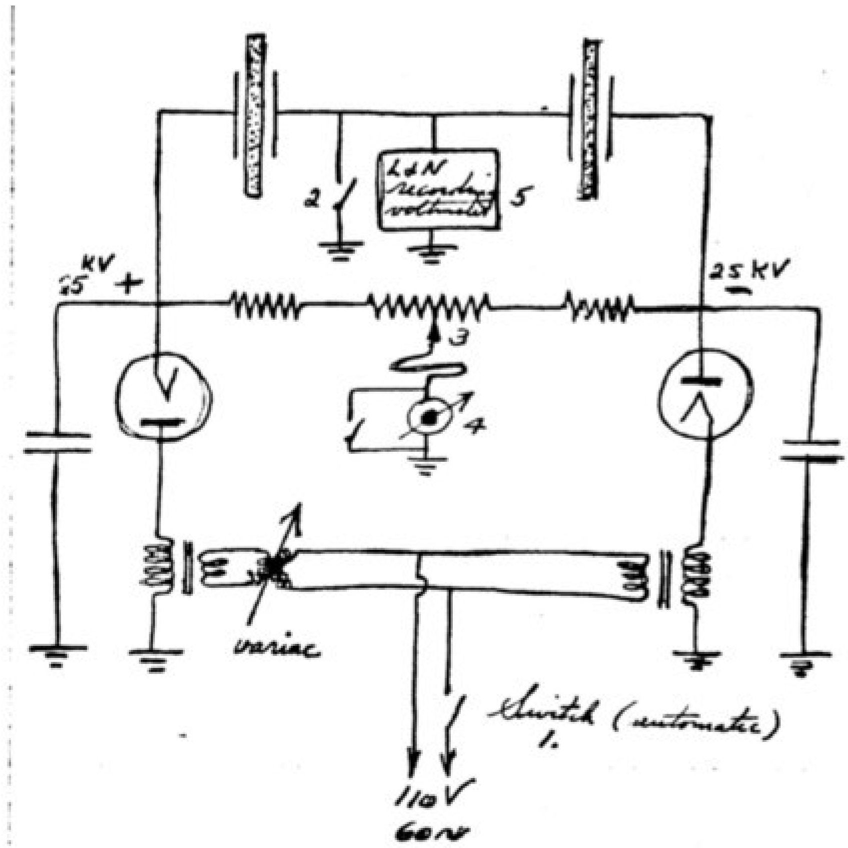
Successive tests over an extended period of time and under conditions usually called equivalent revealed continuing (sometimes gradual and sometimes abrupt) circuit changes causing the indicated shift of (relative) mid-point.

It is thought that this phenomena relates to the action of the so-called sidereal radiation electrometer and that the variations or shift of the mid-point may have lunar, solar and sidereal cycles as recorded by the electrometer.

With automatic charging and discharging of the capacitors and means for continuous recording, it is believed that a pattern similar to the electrometer readings may be revealed.

The following circuit is suggested:

Page 91



Switch 1 closes for 30 sec each 3 minutes. Variac is so adjusted as to zero galvanometer 4 but at mid-point of 3, when 2 is closed. When 2 is opened, a voltage will be recorded at 5. If, in the preliminary adjustments this voltage is too high to be conveniently recorded, the recorder may be zeroed by adjusting the variac. This should then be followed by zeroing galvanometer 4 by changing position of slider 3. At this point, both the recorder and the galvanometer would be zeroed. Continuing operations will reveal a systematic shift of capacitor mid-point as shown by te record of voltage.

Page 92

52. Excitation by Impact of Highly-Charged Particles.

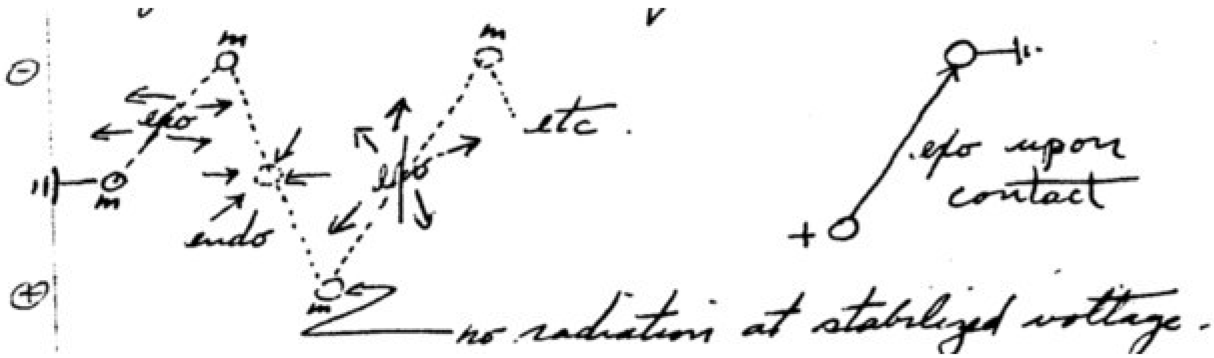
Nov 16, 1957

In Sec. 15, it was suggested that beneficiation might be achieved through ion separation. A development of this idea is as follows:

When the charge of a mass (according to electrogravitic theory) is made more negative, the mass becomes exogravitic during the interval of change. The exogravitic rate is a function of the rate of change of the electric charge.

Similarly, when the charge changes in he positive direction, the mass becomes endogravitic during the change.

Representation is as follows:

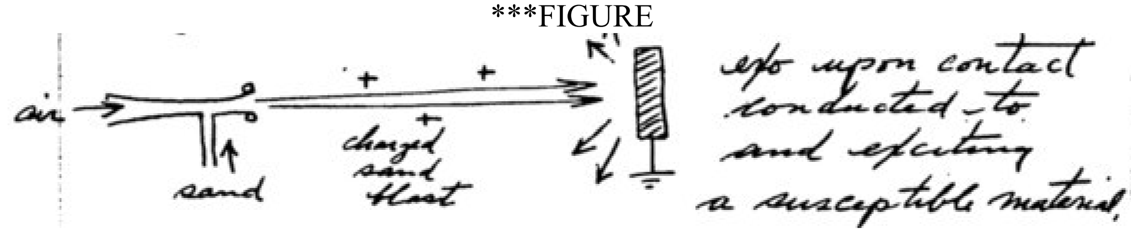


Hence, if a body is positively charged and loses that charge while in contact with a grounded (or negatively charged) mass, it is possible that the sudden and intense exogravitic radiation will be transmitted to and absorbed by the grounded mass.

Page 93

This suggests the use of an electrified sand blast.

***FIGURE



Since the positively charged sand is forcibly thrown against the susceptible material and loses its charge while in contact with it, the exogravitic radiation level is picked up by the material and diffuses through it in much of the same manner as heat. The susceptible material becomes progressively warmer (in terms of gravitational potential) until it potential balances the incoming potential (expressed in millighos). The electrogravitic capacity or retentiveness then determines the persistence of the effect.

During excitation, the higher millighos value should accompany the loss of weight. The interesting feature seems to be that the excited state acts like a heated state thermally and that it may represent another kind of "heat", engaging in conduction, radiation, and temperature equilibrium.

Conductivity of gravitic excitation through a material may differ markedly from one material to another. It is suggested that certain basalts, lavas and clays, perhaps also gravitic materials, silicas and some of the rare earth metals and tantalum may be found susceptible and useful in this connection.

High voltages (discharges in air) may produce the effect, especially where the voltages and momentary currents are very high as in a lightning bolt. A solid or gas which is near ground potential is suddenly struck by positive ions and rapidly moving dust particles. The result could be gravitic excitation of the solid or gas. It is conceivable that atmospheric nitrogen should be so excited --- producing the so-called ball-of-fire which has been observed to glow and to drift around like a toy balloon. See Sec. 4, Test No.2.

It is interesting to speculate also that the ""Brown Mountain Lights" may be caused by intense atmospheric electric gradients, with the ground negatively charged.

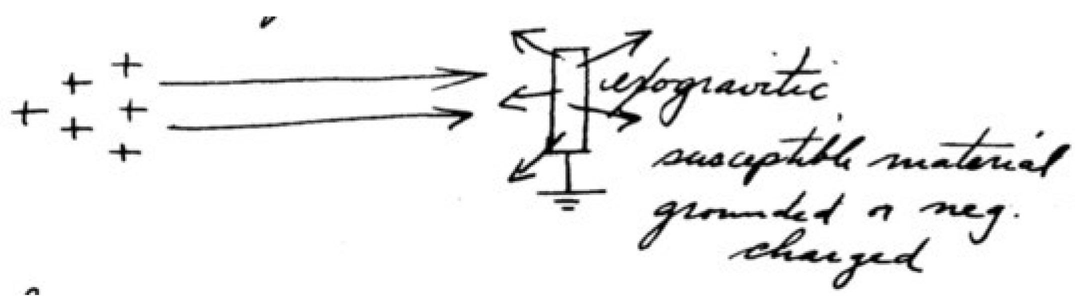
The light of the aurora may, in part at least, be due to the bombardment of crystal nitrogen by positive particles from the sun. An investigation of the luminosity of crystal nitrogen under positive rays may be in order.

Page 95

53. Dipole Motion Due to Excitation from Positive Rays.

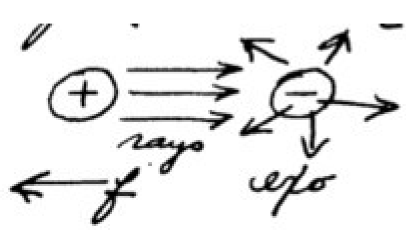
Nov 16, 1957.

In Sec. 52, the idea that gravitic potential could be affected by the impact (stoppage) of positive rays was developed.



Such a material would lose weight in direct relation to the gravitic potential, that is, the mass would tend to become an antimass. Potential as expressed in millighos would increase until a balance is reached between the potential of the target and the potential of the individual positive rays upon contact with the target. The target, upon being excited, would be exogravitic, that is, it would have a higher gravitic potential than the ambient. The "g" gradient would be outward.

A dipole would look like:

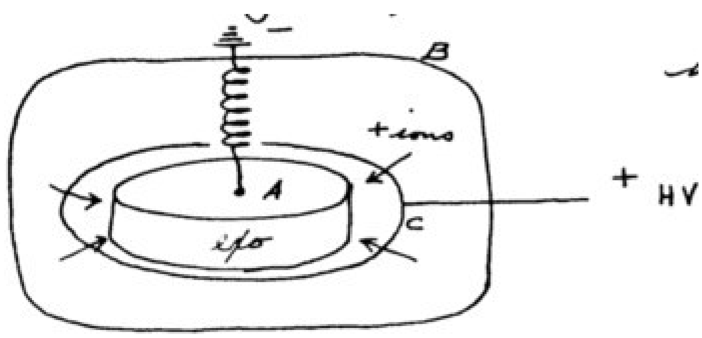


with a g-force pushing the popsitive pole away.

Page 96

54. Static Counterbalance Produced by Positive Ray Excitation.

Nov 17, 1957.



Mass A suspended by a spring for observation of weight. Placed in vacuum chamber B, evacuated to 2.5 x 10^{-5} mm Hg, ionizing wire C serving as a source of canal rays which strike mass A at high velocity.

Upon stoppage of the canal rays, the high excitation potential is conducted to Mass A and distributes through it (in much the same effect as heating. Mass A gains gravitic potential to a value equaling the potential of the canal rays (during discharge).

Mass A then loses weight as it gains excitation potential, and rises within the vacuum chamber as the spring becomes less extended.

Page 97

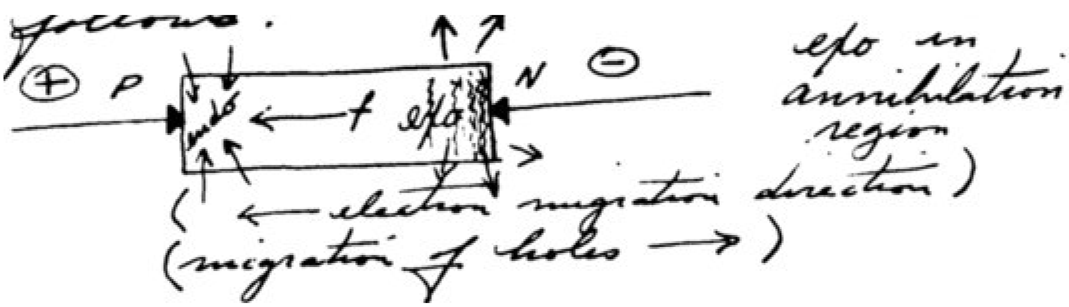
55. Excitation by Annihilation of Positive Holes.

Nov. 18, 1957

In the foregoing sections, reference has been made to the possible excitation effects brought on by contact with charged masses or ions which initially possess a positive charge and are subsequently grounded, that is, grounded during contact with material susceptible to excitation.

Reference is to matter or ions. In the present section, it is suggested that so-called (valence) holes --- (See Sec. 9) might, upon annihilation, represent the source of a strong exogravitic radiation. Such radiation could be picked up by a susceptible electrode material which, in turn, would become excited --- gaining in potential Pg.

Ordinary transistor materials and methods may be employed, essential as follows:



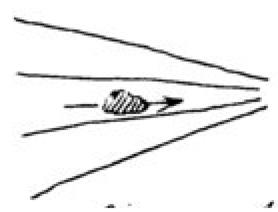
Page 98

56. On the Meaning of "Field Shaping".

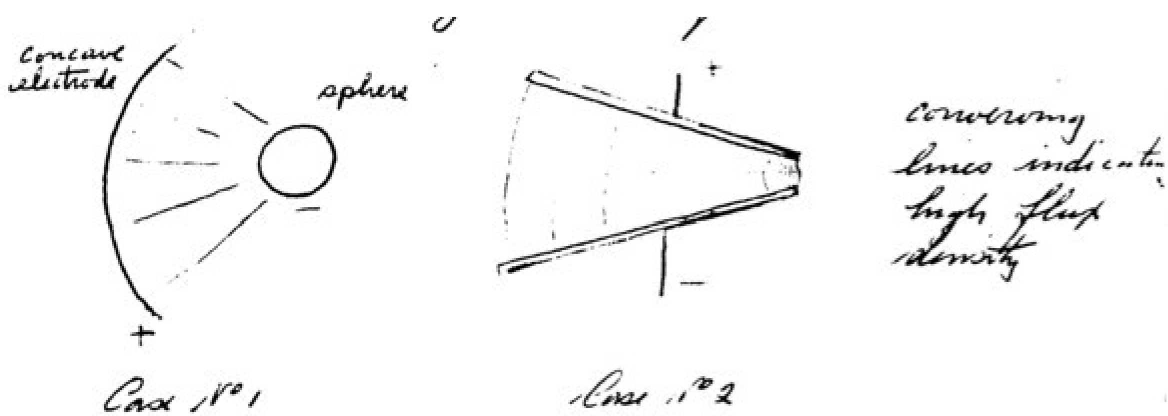
Dec. 27, 1957.

In nearly every experiment involving dielectrics and high voltage gradients, the shape of the field is a factor which must be considered.

A classical example is the force exhibited by a dielectric mass tending to draw it into a field (electric) if greater flux density. The force so developed is a function of the dielectric constant of the material. As:

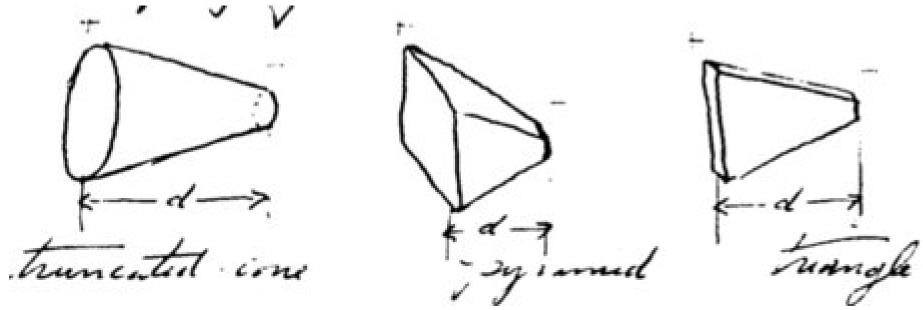


Such a condition is present where electrodes are arranged as follows:

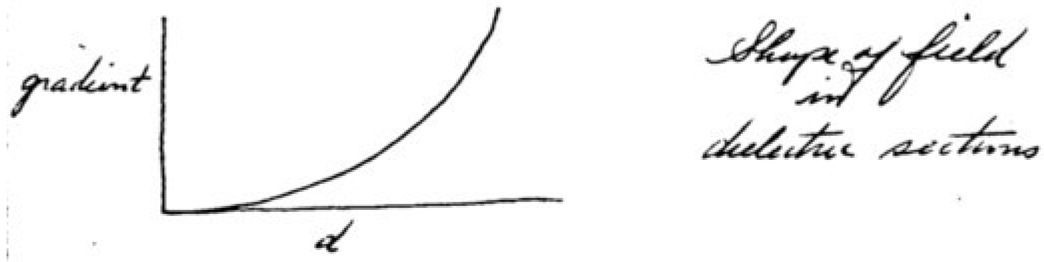


Page 99

Such a condition may be brought about by the shaping of a dielectric section as:



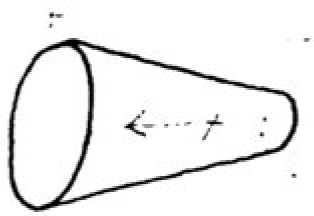
In these cases, the voltage gradients (both capacitance and resistance) are non-linear and look something like this:



Shape of field in dielectric sections.

The curve of potential is practically the same. Hence, in the small end, the flux density is greatest due to the requirements of capacitance distribution (upon charging), and then changes somewhat to meet the resistance distribution as steady-state current conditions take over.

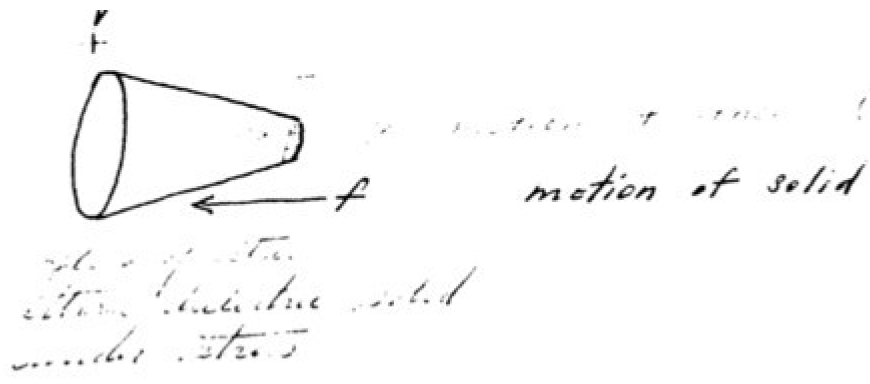
The experiments to date have indicated that dielectric sections so shaped appear to move or possess a force (as a whole) as follows:



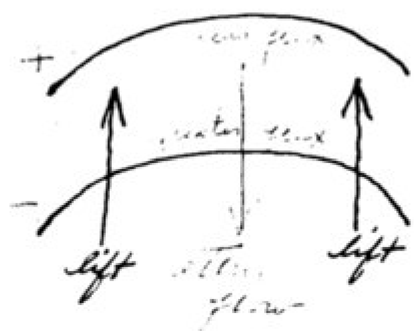
Motion of dielectric section away from end containing greatest electric flux density.

Page 100

This suggests that, if a dielectric fluid is present (perhaps ether), it is moved in the opposite direction thru the solid dielectric material. Perhaps a kind of "ether pump", as:



In the case of experiments on dynamic counterbary, the forces are similar probably.



Upper dome electrode (usually +; lower dome electrode (usually -)

Or:

In the case of units in multiple, where polarity is reversed in alternative units, field shaping may prevail over the usual neg-to-pos polarity arrangement, as dynamic counterbary sections in multiple connection:

Dynamic counterbary sections in multiple connection.

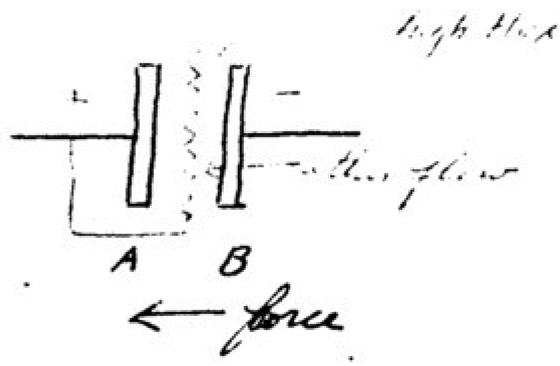
In the foregoing, it would appear that ether, as a fluid dielectric with a K of unity, permeating the solid dielectric which is shaping the field, will move in the direction of the greater flux density as required by the classical experiment (p. 98).

The solid or physical elements of the system (which so shape the field) are moved in the opposite direction. These reactive forces and the motion resulting therefrom may be up or down (or in any direction) and conceivably can be used for propulsion.

In general, it appears that field shaping is of utmost importance in placing a region of high flux near an electrode or mass offering high reluctance to the flow of ether induced by the creation of the high flux.

The high flux creates a center of attraction for the ether which continues to flow so long as the flux exists. At the starting and stopping of the flow, inertial effects may conceivably be noted which are related to K and mu.

In the gyron in vacuum, the following arrangement is proposed:



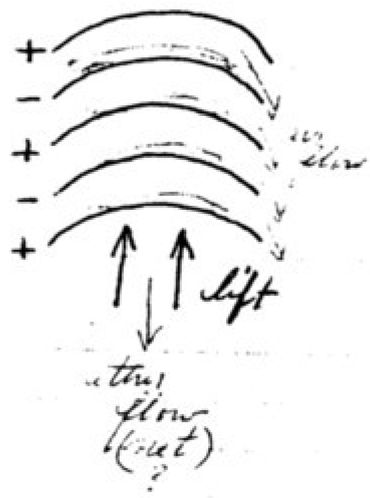
If plate B is less permeable to ether than the grid or plate A, the flow being thru B into the high flux may cause the observed motion.

Page 102

57. Units in Multiple for Dynamic Counterbary.

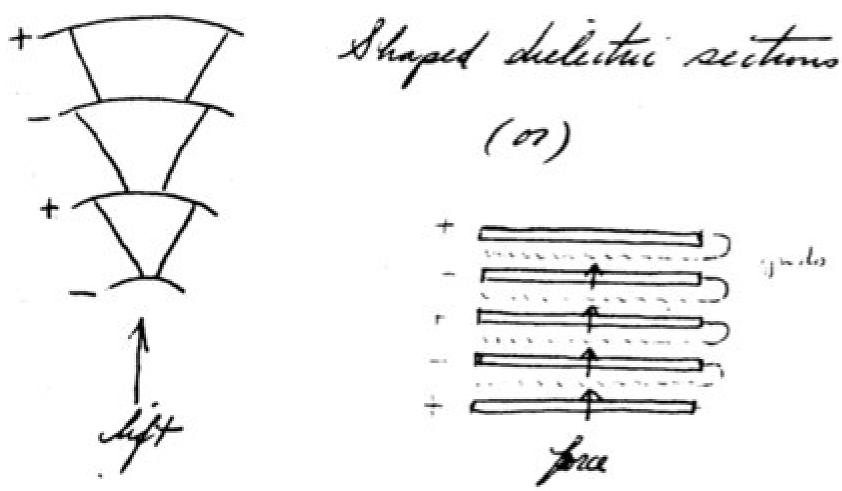
Winston-Salem, NC,; Jan 1, 1958.

In the foregoing section, the use of field shaping was considered in multiple arrangement. The advantage of multiple connections is, of course, that lower voltages may be employed as the answer to larger sizes. Dynamic counterbary units then begin to look like this:



Regions of high flux density immediately about electrodes cause electrodes to be lifted. Airflow (plus ether flow?) may be in the opposite direction.

Shaped dielectric sections:

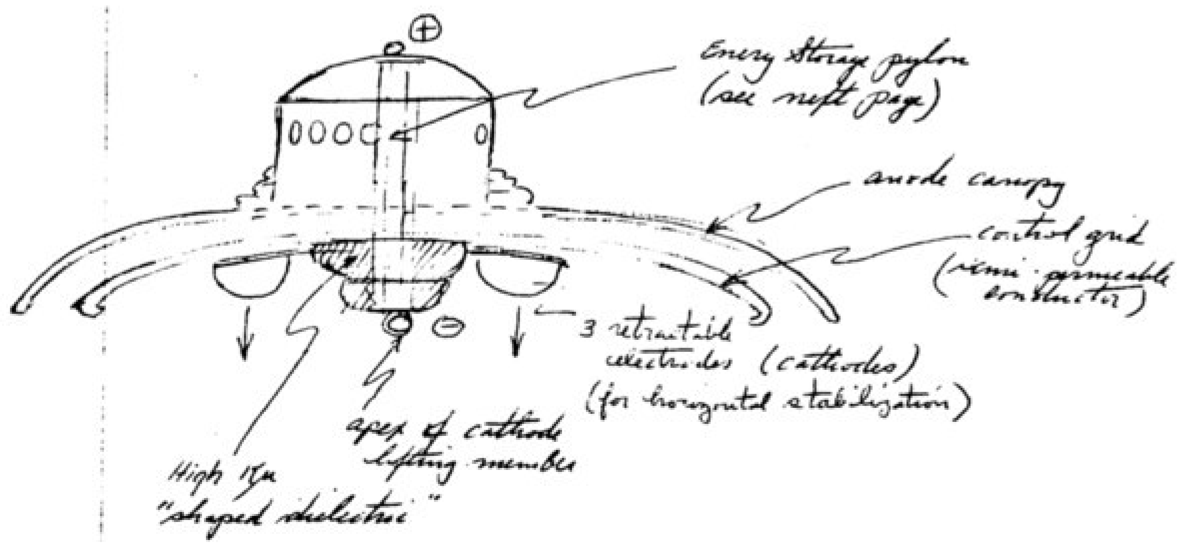


Page 103.

58. An Analysis of the Adamski Photograph in the Light of Recent Laboratory Findings.

Winston-Salem, NC; Jan 5, 1958.

This may be a bit of fantasy or it could be significant. It is a fact, nevertheless, that the behavior of laboratory models is quite similar to that alleged for the "Venusian" scout ship, and, what is even more provocative, the construction appears similar in many of the more important details. On examination of the photograph (reconstructed photographs and orthographic projections) is in order.

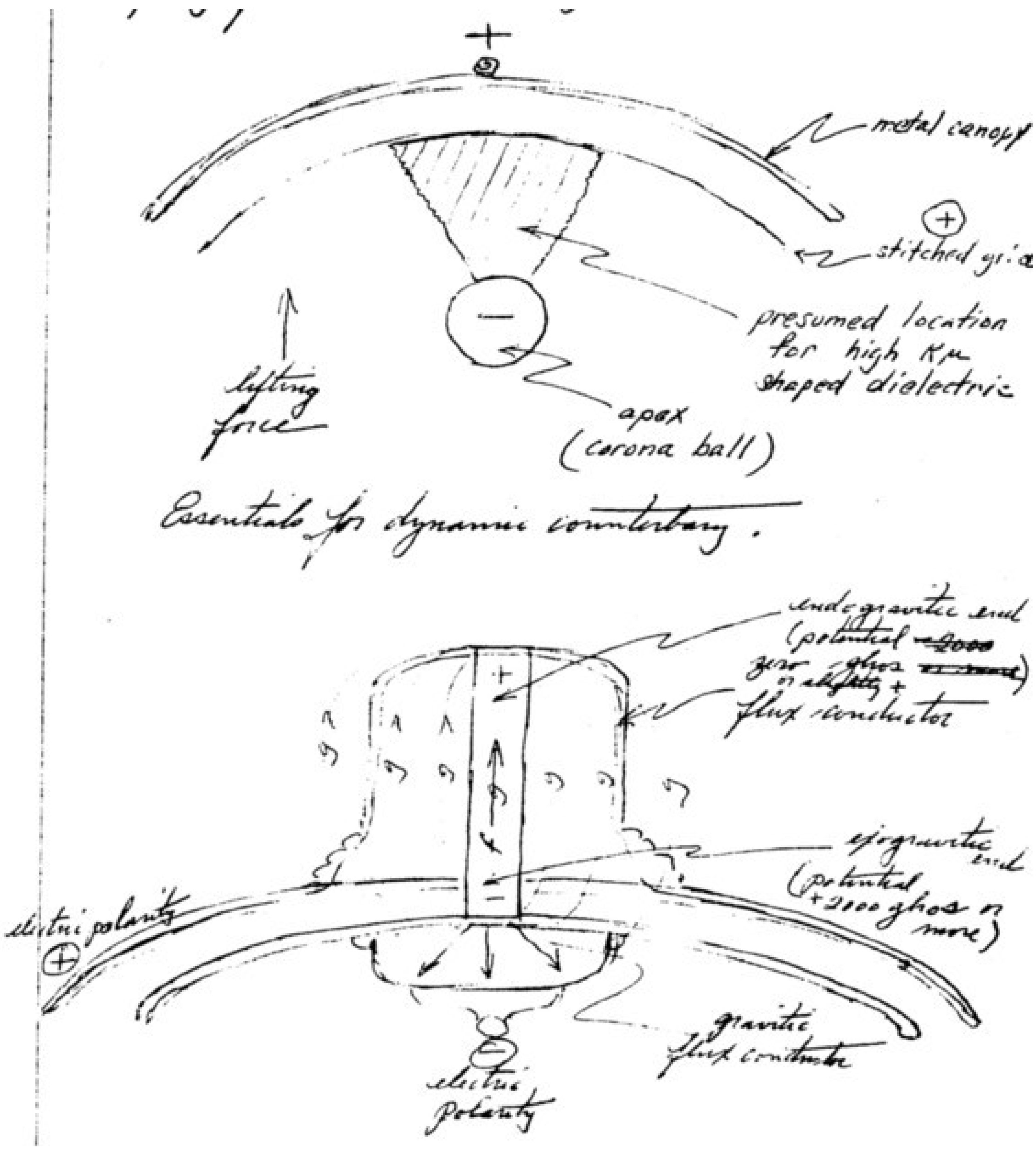


Note: Apex of cathode (shaped high flux) may be the focus of the parabolic anode (canopy), if indeed it proves to be parabolic. It could be te focus of a hyperbolic shape.

* Inside the Space Ships --- Adamski --- p. 128a(1).

Page 104

In the laboratory, the following shape gives a lifting force when charged as indicated:



In this diagram, the central (power storage) pylon is conceived as a gravitic dipole --- charged ends at a high potential (gravitic excitation) differential. Electric differential, it would appear, may accompany the gravitic differential.

Page 105

59. The Concept of the Gravitic Dipole as an Energy Storage Means.

Winston-Salem, NC; Jan. 5, 1958.

In the foregoing study of the Adamski Venusian scout ship and in the descriptive material pertaining to it found in the Adamski publication, the central pylon is referred to as place where

energy is stored for the propulsion of the ship. It is stated that this central column must be recharged (by the mother ship), presumably as a storage battery is recharged.

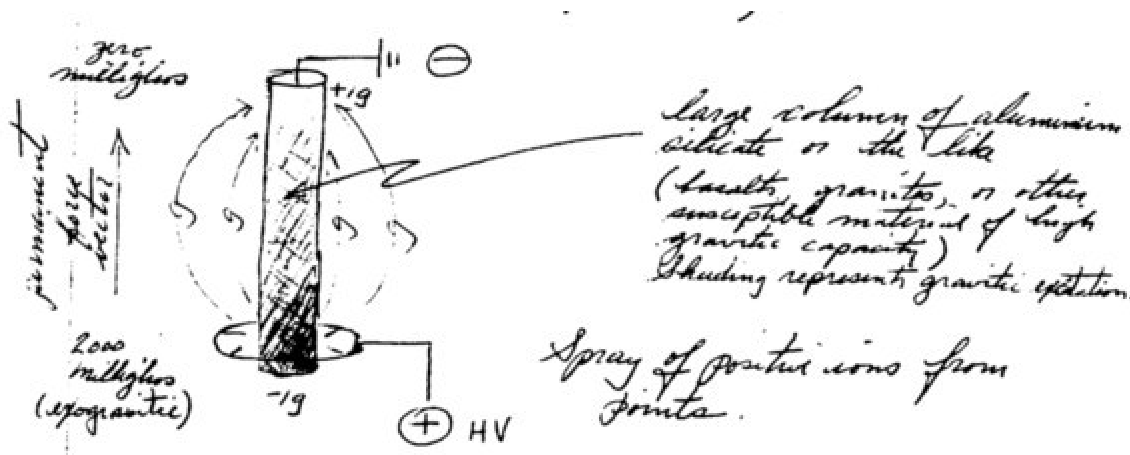
The implication is that te central pylon is a kind of storage capacitor for electrostatic energy or perhaps even a pile of high capacity electret wafers serving the same purpose --- the stored energy being in the electric form (simple electrostatic nature).

To retain sufficient energy, if such a storage column is simply electrical, very high K materials and very high voltages would be required. Such high electrical fields would be difficult to contain without adequate insulation, especially thru the cabin compartment. Even with the very highest K materials available now (say 10,000 to 30,000 K), it is unbelievable that enough electrical energy would be stored to provide the propulsion and dynamic counterbary required.

It appears necessary therefore, to look further into the nature of the energy storage means. The following system appears worthy of study:

Page 106

If a column 16’ long by 2’ diameter, made of a suitably susceptible, highly retentive. High capacity material for gravitic excitation were used, the energy-storage requirements might easily be met. The column would constitute a gravitic dipole. It could be initially energized by a method such as described in Secs. 52-55 (electro-excitation), as:



Spraying continued until P_g of the lower end of the column increases to described value (2000 millighos or more). This is equivalent to a lofting moment of 2 g’s. At this P_g, the electrical potential may be formed to remain at some high value positive as a permanent state --- at least until the gravitic dipole is discharged or decays to zero. In this respect, the column is an electric (as well as gravitic) dipole when it is charged and the energy resides both as electric storage and gravitic excitation. Most of the energy in storage, however, would be represented as the gravitic excitation of the lower end. The electric field would merely accompany the gravitic difference of potential.

Page 107

60. Luminescence from highly-excited Materials; Gravito-Luminescence.

Winston-Salem, NC; Jan 5, 1958.

In connection with the gravitic excitation of materials, luminescence of the material itself as well as the surrounding materials (or gases) seems reasonable indeed. This is the type of thing one would expect if he were to attempt to account for the glow around soaucers hovering or in flight, as reported by so many observers.

Nothing, of course, of this nature has as yet been observed in the laboratory, and it is pure speculation as to its color and general behavior or even its existence. However, one may be able to foretell some of the properties.

In general, the radiation may be similar to tribo-luminescence, may actually be associated with tribo-luminescence, since friction also produces counterbary. Where gravitic excitation is carried to higher values, say 1 gho or above, considerable energy is in storage. Such energy undoubtedly would be found to have some have some radiant manifestation, since there would exist a steep gradient in the surrounding field. This gradient would dominate with the square of the distance. It would be greatest, therefore, immediately adjacent to the excited body, and especially around sharp points or edges where the field is steep. The effect may be similar, therefore, to electrical discharge (corona), may be present along with electrical corona and may, in some respects, be indistinguishable form it. Hence, saucers may glow from gravitic corona or electric corona or both.

Page 108.

In atmospheric air, electric corona is of purple color. A breakdown spark is blue. These spectral characteristics have been studied in great detail in the laboratory, along with the spectra of other gases (and solids) under electric bombardment or excitation.

Gravitic luminescence may come directly from the emitting surface or from the surrounding gas as gravitic corona. The spectra may be entirely different from electric corona, and more than likely it is quite different.

For example, on the basis of electric corona, it is difficult to account for the oft-reported flame-red color noted in saucers in flight. It is equally difficult to explain the shift in color from blue-white to flame-red, as the saucer maneuvers. These colors are not found in simple electric corona in air, and a change in voltage would not cause a change in color.

The flame-red color, therefore, is a stranger insofar as electric corona discharge is concerned. It is possible that this color is typical of gravitic corona

Page 109

In atmospheric air, at higher gravitic excitations or field strengths, the red color may become orange, orange-white, white or blue. This suggests the possibility of a continuous spectrum type of radiation similar to heat (thermo-luminescence).

This would mean, then, that the lower end of the dipole (column) shown on Page 106 would glow visibly when sufficiently excited by the spray of positive ions. Starting from a dull red, the luminescence might increase both in intensity and frequency (from red to blue) as the gravitic excitation continues. In this way, the nature (intensity and color) of the luminescence might be a convenient indicator of the degree of gravitic excitation. In other words, the color would reveal the amount of static counterbary as well as the gravitic excitation or total stored energy.

A gravitic dipole (as shown in p. 106) would appear luminous at the lower end but not a the upper end. At max. excitation, the color gradation would range from blue (at the lower end) thru white, orange-violet, orange, red and dull red to black (no radiation at the top).

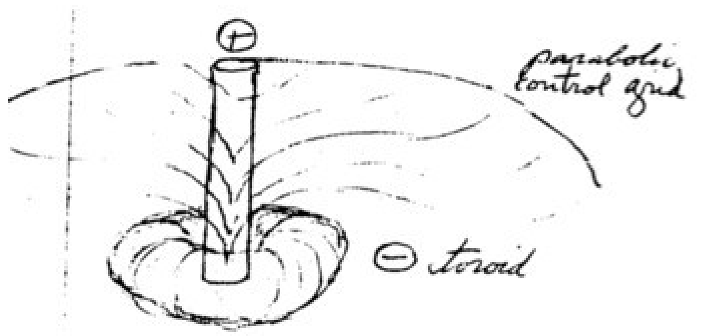
The flame-red radiation would not necessarily be hot (thermally) in itself or represent a thermally hot surface. It would, however, represent a source of high energy or the storage of that energy (as gravitic potential) in matter.

Page 110.

61. The Use of the Toroid in Field Shaping

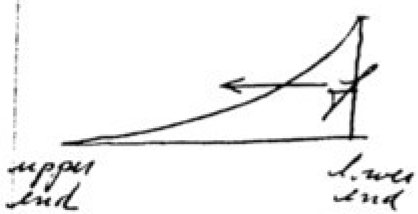
Winston-Salem, NC; Jan 12, 1958.

It is a basic requirement in shaping the electric field (p. 98) that the electric lines converge upon the cathode (as in Case No. 1). This normally requires a small cathode for high flux fields. Where a central pylon is used (as in p. 104 and 106), the high flux must be concentrated at the lower (cathode) end. A type of electrode is therefore suggested which accomplishes such field shaping. It is the toroid.



Showing general shape of electric field.

Fig. 1.



Curve of flux density. (electric)

Such a curve of flux density fulfills the requirement described on p. 99. The center of the toroid could then be the focus of the parabola. The center hole would be just large enough to receive the dielectric pylon, with lower electrode at that center.

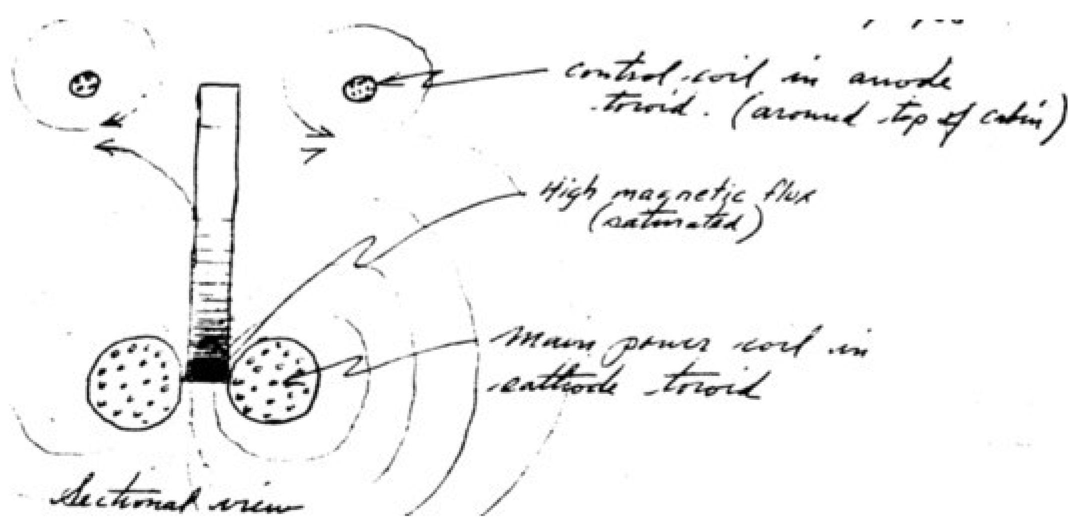
Page 111

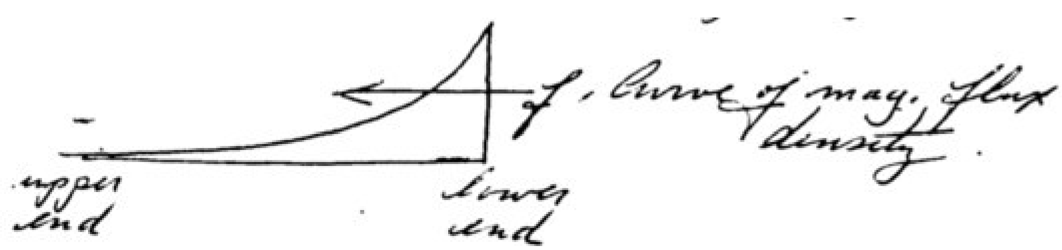
62. Possible Magnetic Components in the Venusian Scout Ship --- Continued from Par. 3, Sec. 58

1-12-58

The main power coil, focused inside the cathode toroid, creates a field which saturates the lower (cathode) end of the pylon. The upper coil may be used to completely degauss the upper end o the pylon, or, working in conjunction with the lower coil, to distribute the field more evenly thru the pylon. Between these extremes, it could easily serve as as a central device for dynamic counterbary.

By adding the magnetic component, total counterbary may be greatly increased.





This effect would add to the force obtained electrically.

Page 112

63. Rotation of the Cathode-Toroid vs the Control Grid, as a Gyro-Stabilizer.

Winston-Salem, NC; Jan 12, 1958

It is apparent that some form of gyro-stabilization would assist the Venusian scout ship in maintaining course, and preventing wobble, both while hovering and while in flight. Such stabilization may be accomplished by rotating the cathode-toroid in one direction and the control grid in the opposite direction. The main body of the ship would then not be subject to rotational forces.

It is assumed that the 3-ball system for horizontal stability control (canting) would not rotate and would be used to set the basic direction of flight and counter any precession caused by the rotating system.

Rotation of the toroid (containing the power coil) and the control grid can be achieved by the electromagnetic coupling between the magnetic and electric fields. Forces applied and hence the angular moments would be equal and opposite between the two oppositely rotating members. Speed of rotation would be a function of the current and the magnetic field. If the current for the

dynamic counterbary passes also through the toroidal coil. The rotation would be controlled entirely by the current, as created by the voltage on the control grid.

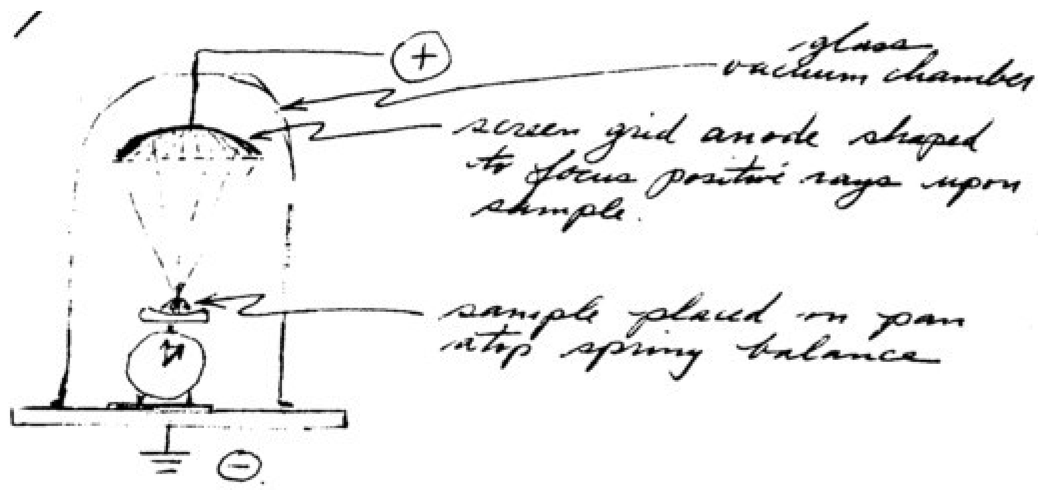
Page 113

64. Field Shaping in Positive Ray Excitation.

Winston-Salem, NC; Jan 13, 1958.

In Sec. 54, the use of positive rays for purposes of excitation in static counterbary was discussed. This represented what seemed to be a development of the ideas set forth in Sec. 52 wherein excitation was produced by the impact of highly-charged (material) particles.

The present section is concerned with the excitation possibilities of focused positive rays from a spherically-shaped anode of wire grid construction. Such a device would be especially useful in preliminary tests of susceptible materials in small quantities. Such tests would be conducted in vacuum and could be carried on with the material placed upon a small dish or pan atop a spring balance, capable of indicating the loss of weight as excitation proceeds. The arrangement would be as follows:



Sample would be in full view during excitation for studying color changes in gravito-luminescence.

Page 114

65. High Gravitic Potential Difference and the Phenomenon of Dielectricity.

Winston-Salem, NC; Jan. 13, 198.

There appears to be good reason to speculate at this time upon the effects attending high differences of gravitational (gravitic) potential If the potential gradient is exceedingly high (high flux density), the large energy difference would, it seems, attempt to energize itself. Thus, a kind

of energy flow would be created from the high potential region o the low potential region. If the distance were small, this flow would be intense and undoubtedly would manifest itself in many curious ways.

Such a flow of energy we shall hereafter call "dielectricity".

Dielectricity would, therefore, be present more or less in every situation where there is a gravitational gradient. Its vector of flow would always be from the higher to the lower gravitational potential.

The situation is analogous to the flow of electricity (in the classical sense) from the positive to the negative potential or from the higher to the lower electrical potential.

Undoubtedly, such a flow of dielectricity would possess many interesting parallels to a flow of electricity. Both would represent a flow of energy from a higher to a lower potential.

Page 115

It is interesting to speculate upon the nature of the materials capable of conducting dielectricity and what materials might serve as insulators. One finds not only an analogy to electricity but also to heat, but the analogy with heat may be close in some respects (as in the conductivity or temperature distribution along a wire) and not in other respects as in phenomena arising from resistance to the flow. Resistance to the passage of current (flow) in electricity transforms the potential difference into heat. What happens when there is resistance to he flow of dielectricity, we can only guess.

Suppose, after we find a material capable of conducting dielectricity, we form it into a coil. What do we have generated in the place of a magnetic field? --- or is it a magnetic field?

What takes place when two plates of high gravitational potential are close together? Is there repulsion, as in static electricity?

And what if the plates have a high difference in gravitational (gravitic) potential? Is there attraction? And is there, in this case, a high flux density and a storage of energy in the space between the plates, acting like a capacitor? Is the energy stored in such a capacitor, and resident in the space between the plates, gravitational or something one step further.

Page 116

One may define a gravitational potential as a "pressure". The gradient between a high potential (high pressure) region in space and a low potential (low pressure) region is manifested as a gravity field (or just "g"). The vectors of this g-field are identical to the dielectric field vectors and both represent forces.

Hence, one would be led to believe that a flow of dielectricity, if resisted, would cause a force upon the body of the conductor --- much like the resistance to the flow of water against the walls of a tube through which it is flowing.

In the case of a gravitic (or dielectric) conductor, the factor creating resistance is gravitational reluctance (opposite to gravitational permeance or permeability). Such gravitational reluctance in the conductor of dielectricity would cause a force in the direction of the flow. In space, this force is simply gravity. Hence, it would appear that gravitational reluctance is created by (or equivalent to) gravitational mass M_g (as distinguished from inertial mass M_i.

The quality of conductivity of dielectricity is the opposite of gravitational reluctance, hence it is lack of Mg. Theoretically, a vacuum (complete absence of ponderable mater) is the best conductor.

Page 117

Conversely, ponderable matter of highest Mg represents a conductor of the greatest gravitational reluctance (resistance) and is therefore the best insulator of dielectricity.

This is virtually the opposite of the situation regarding the conductor of electricity --- hence the designation, "di-electricity".

Summarizing then:

Electricity --- conducted by metals, insulated by vacuum
Dielectricity --- conducted by vacuum, insulated by metals.

Curiously, and this does indeed seem strange, the best insulator for the prevention of flow (loss in the central pylon (p. 106) is its weight (Mg). As a gravitic dipole with high potential at its lower end (cathode), the highest resistance would be provided by large values of Mg; this resistance causing an upward or lifting force in the transformation of the stored energy to motion and finally to heat resulting from resistance to that motion.

Such a pylon may be provided with lead (wafer) insulators dividing the pylon into sections of increasing gravitic potential in the direction of the lower or cathode end.

* any material of high Mg.

Page 118

66. The Push-Pull Effect of the Control Grid.

Winston-Salem, NC; Jan. 19, 1958.

In Sec. 56, the effects of high and low flux density were discussed, particularly as an explanation for the observed force or motion imparted to arcuate electrodes. The effect is determined by the direction of the flux gradient.

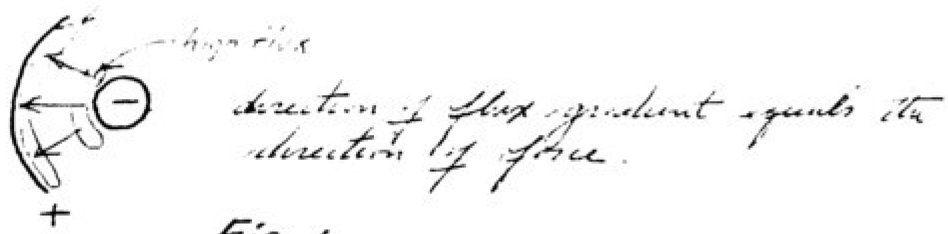


Fig. 1.

If, in the above figure, the anode is a grid of fine wires and the cathode is a ball, the force (as indicated) is especially pronounced. Reversal of polarity does not reverse the direction of the force. Due to increased current flow resulting from emission of neg ions and/or electrons from the grid, the reversed polarity does not appear to be efficient.

If the wind (specifically positive) is placed between two cathodes, as indicated in Figure 2,

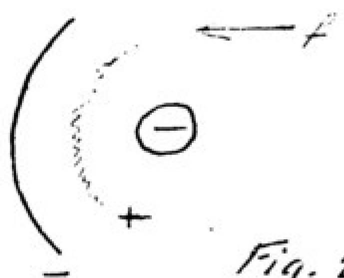


Fig. 2

Page 119

The force (as indicated) is virtually doubled.

It appears that the screen grid anode then attracts the ball cathode and repels the canopy cathode, so that the entire assembly moves in response to the force as shown (f). Thus we have named the push-pull effect.

This effect may be obtained in units such as Figure 3:

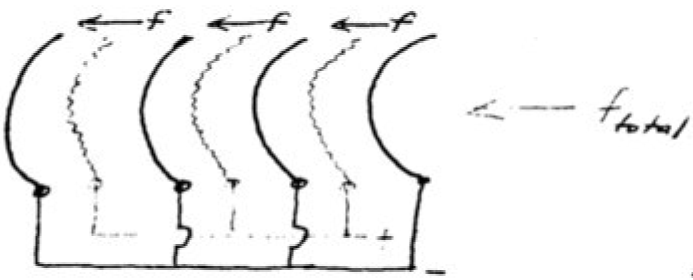
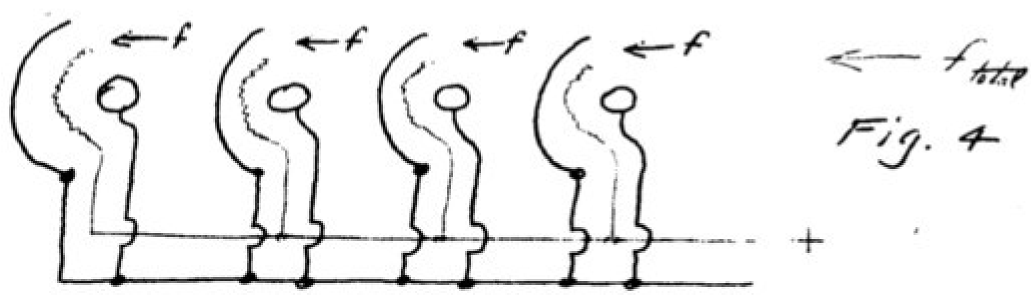


Fig. 3.

where the direction of the arculate surfaces create flux gradients to produce the force as indicated, or (Figure 4),



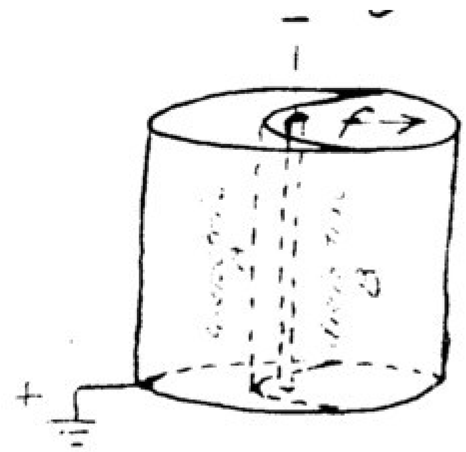
as a succession of units in parallel where the elements of each unit are concentrically arranged with the ball cathodes at the centers. The force of each (and every) unit is additive and directed as indicated.

Page 120

67. The Cylindrical Design of a Unit to Produce the Push-Pull Effect.

Winston-Salem, NC; Jan. 19, 1958

In the Vega Aircraft notebook, beginning Dec. 1, 1942 and ending sometime after May 2, 1944, and specifically described on Feb 4, 1943, a cylindrical system employing a shaped dielectric is described. Such a system is as follows (Figure 1):



Dielectric B has greater K and mass than dielectric sector A. Direction of force is as indicated.

This arrangement is the equivalent of that shown in the preceding Sec. 66 (Fig. 1), with the addition of 2 dielectroics, it being understood that Fig. 1 (p. 118) could represent the sectional view of a sphere or a cylinder. In either case, the requirement of field shaping and the resultant field gradient would be met. The force would be (as indicated) in the direction of flux gradient. In Fig. 1 (p. 120) the greater force is in the direction of the dielectric having the greater K or m (or both).

The use of the wire grid augments this effect so as to add the push-pull feature.

Page 121.

Such an arrangement then looks like (Figure 2):

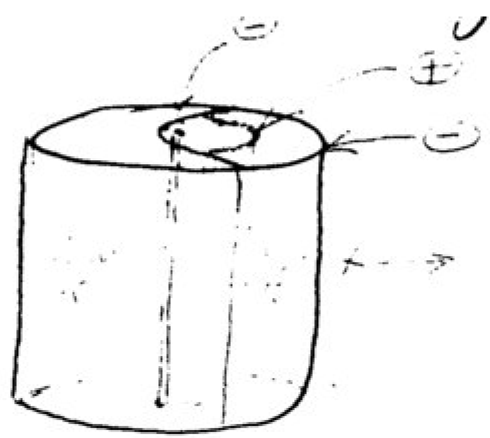
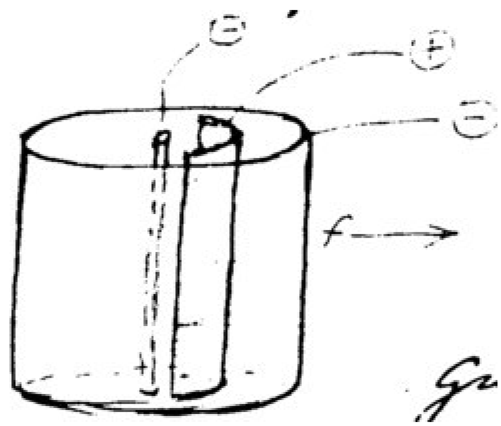


Fig 2.

Or, without the K_m differential, simply as follows (Fig. 3):



May be filled with fluid or solid dielectric material, or separated in vacuum. Grid occupies about 120 degree sector.

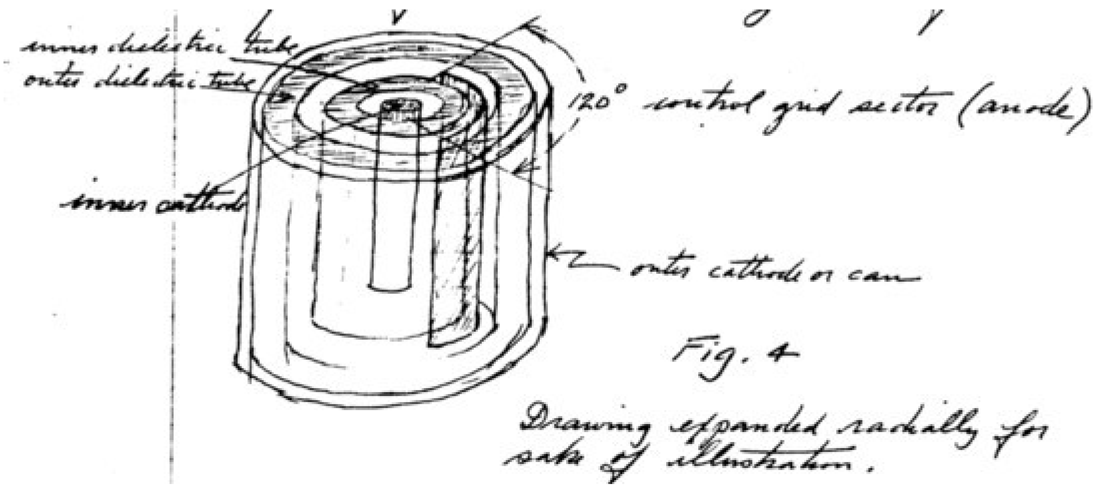
In Fig 3, the location of the grid will determine the direction of the force, rather, the position of the dielectrics. Rotation of the grid 180 degrees will reverse the direction of he resulting force acting upon the unit as a whole.

High K, high *m* dielectric material, either as a fluid filling all of the inside of the can or as a solid encapsulating material will, it appears, increase the force. That material which is not in the active sector comprising approx 120 degrees where the grid is located will not add to the force, nor will it detract.

Page 122

The force for a given voltage should be a function of both K and *m*. In vacuum, with a K of unity and *m* = 0, the force should be minimum. It should increase with the use of a fluid dielectric such as oil, pyranol or carbon tetrachloride and even further with solid dielectrics which, at the same time, may serve to encapsulate the elements in the can.

In this connection, it may be pointed out that the solid dielectrics may take the form of tubes arranged as follows (Fig 4):



Drawing expanded radially for sake of illustration.

Force is always in the direction from the center (inner) cathode toward the center of the control grid. The control grid may be turned into other quadrants or the entire unit (encapsulated) may be turned in order to change direction of the force.

Page 123

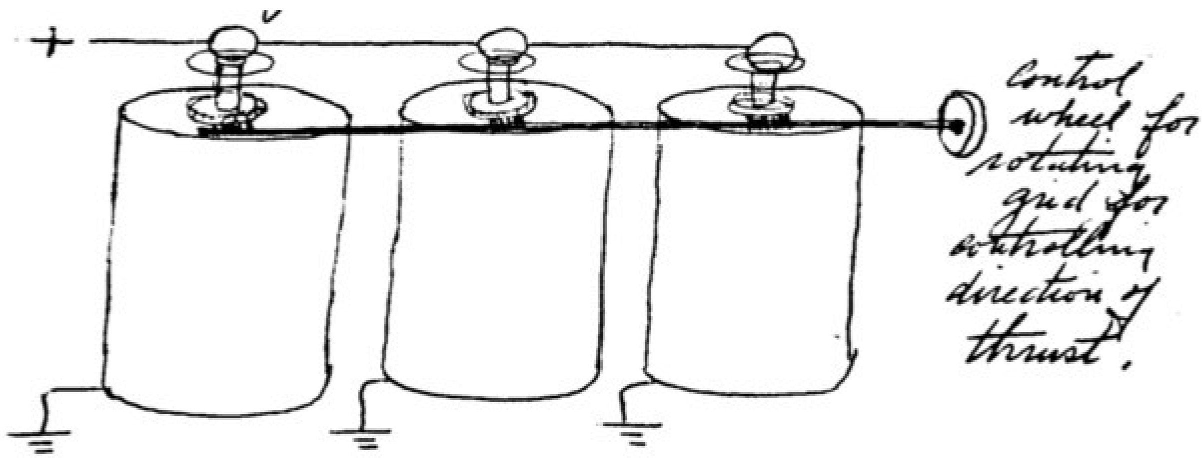
68. Cylindrical Units in Parallel

Winston-Salem, NC; an 19, 1958.

It is readily apparent that the units described in Sec. 67 may be of commercial value in propulsion of ships, railroad or other land vehicles. In such practical application, units would be arranged in multiple.

Control of the direction of force would be accomplished merely by rotating the entire can if the elements are rigidly encapsulated ore by rotating the control grid with respect to the can if the elements are oil (or heavy fluid) insulated.

Units in parallel would look like:



In the above illustration, the cans are stationary and the grid is movable about the control axis.

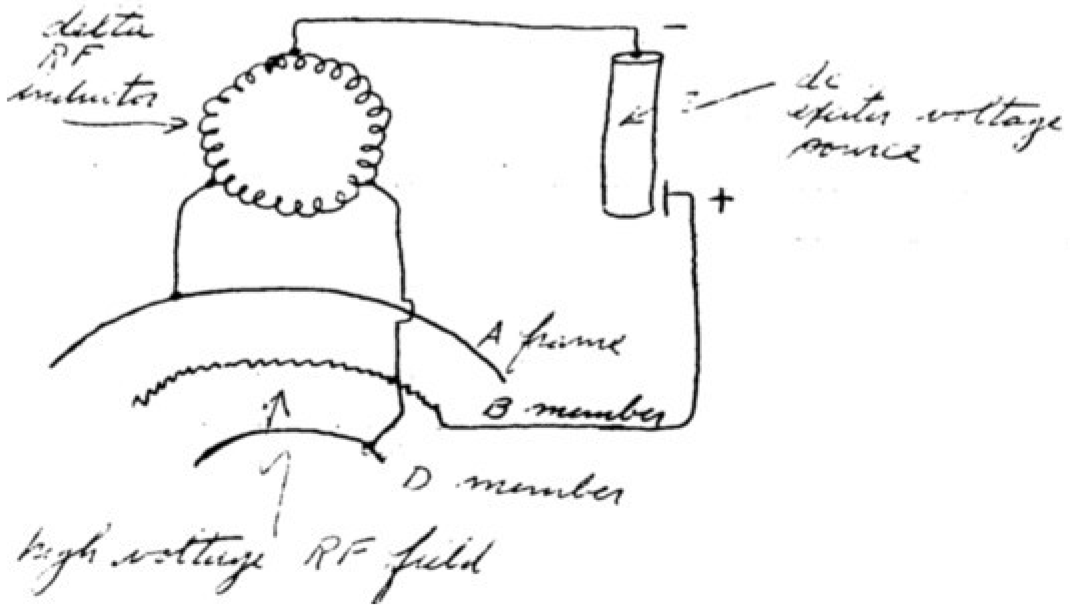
Thrust is determined by the voltage applied (the current being determined by the resistance of the dielectric and the transformation requirements to kinetic energy).

Page 124

69. Self-Adjusting (Ionic) Oscillator and the Use of High Voltage RF in the Propulsion of Space Craft.

Winston-Salem, NC; Mar. 25, 1958.

Using the push-pull system of three electrodes (p. 118), it is possible that a resonant circuit can be established when the voltage between the outer two electrodes (and presumably also the lift) could be enormously increased. Such a system could use the three electrodes as a self-adjusting (ionic)oscillator.



In the above system, the DC exciter voltage need only be sufficient to establish oscillation in the resonant circuit. The high voltage for the principal lift would come from the delta (or equivalent) inductor.

Page 125.

70. Dielectromotance (The Generation of Dielectricity)

Winston-Salem, NC; march 31, 1958.

In Sec 65, I speculated upon the existence of high-gravitic potential differences and upon a flow resulting from such potential differences. In many respects such a flow would be analogous to the flow of electricity (or current). The flow arising from a difference in gravitic potential might be termed "dielectric current", in that it would presumably be conducted by dielectrics.

If one subscribed to the idea of an ether, such a flow could be viewed as a movement of the ether. The flow, of necessity, would be circulatory, creating one or more vortices.

It was pointed out that materials may offer varying amounts of resistance to such a flow, thus giving rise to a force of ponderomotive nature acting upon the interposed material. Such a force may conceivably be similar to, or perhaps indistinguishable from, the force of gravity.

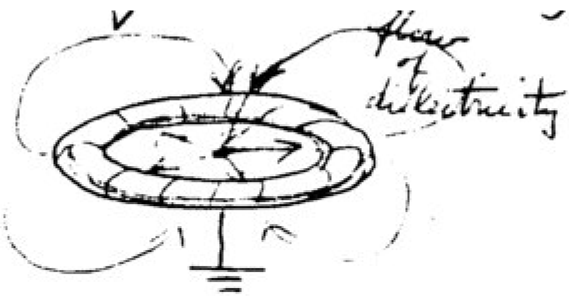
The flow of dielectricity, whether or not it is responsible for gravity, results from a field in which there is a difference in potential --- not electric, but attending and usually created by an electric field.

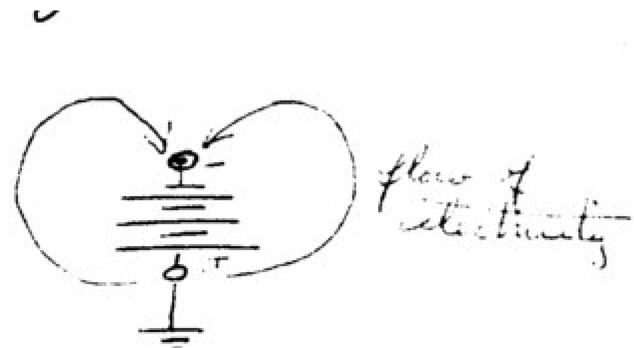
Page 127

In Fig 2, the flow again is from the region of highest to lowest flux density, hence from the point electrode in the center to the toroidal electrode around it, and returning axially, as indicated.

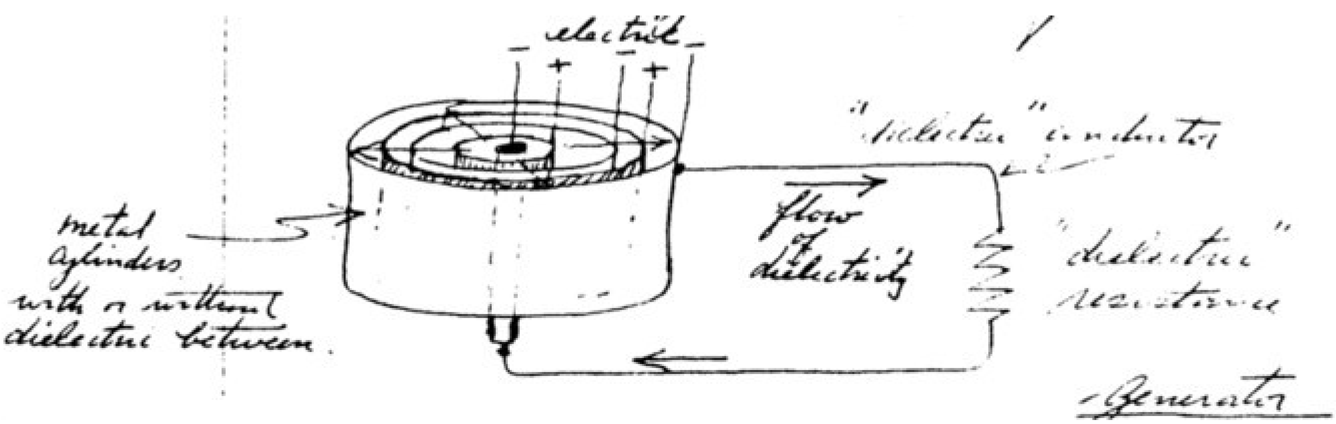
Assuming the arcuate surface (in Fig 1) or the toroidal surface (in Fig 2) to have a gravitic (or dielectric) potential at or near the ambient, I is the center electrode which has the high gravitic potential --- at least, insofar as the generation of dielectricity is concerned.

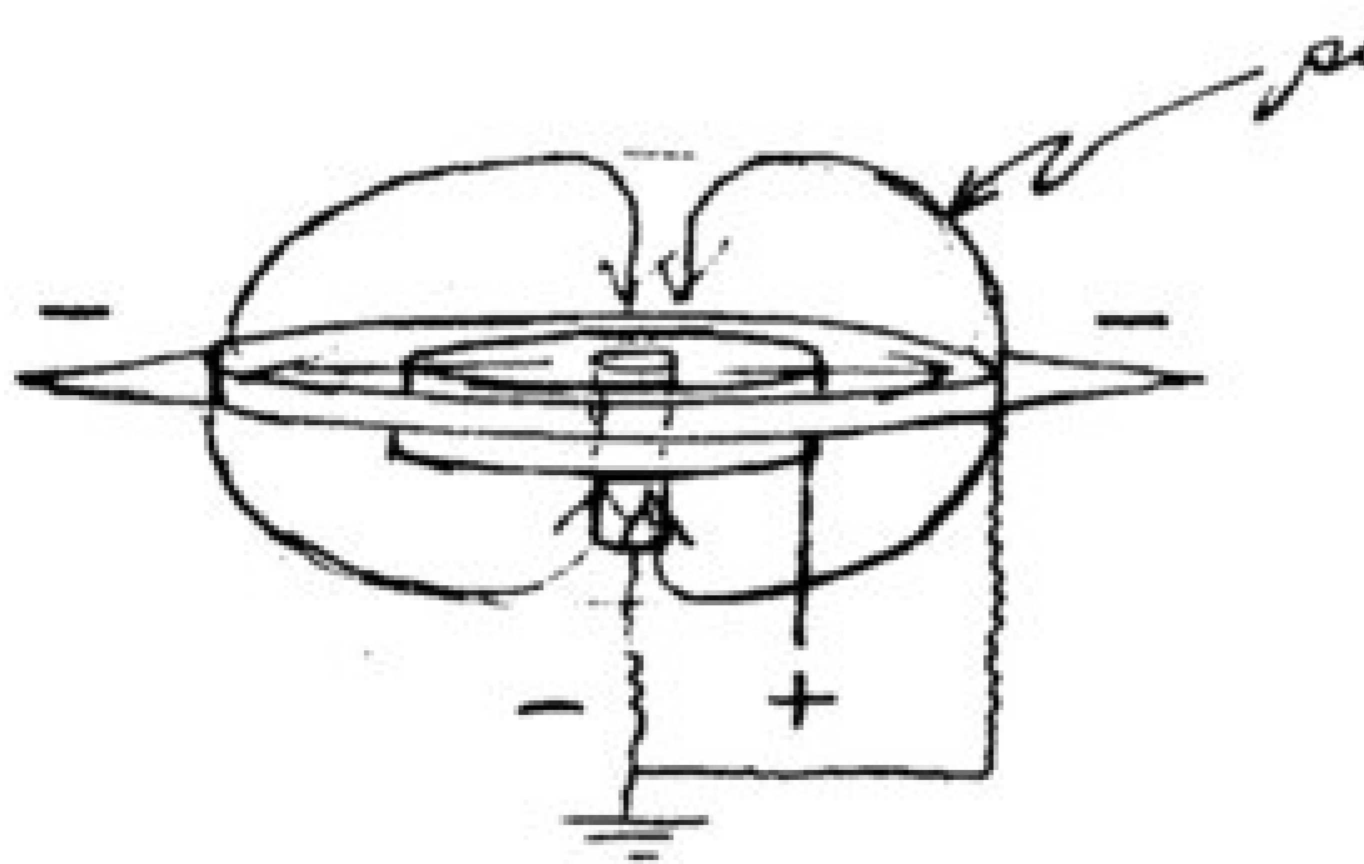
The situation is similar to that of a battery and closed loop of an electric circuit, where the one side of the battery is grounded, as:





Another method of generating dielectricity (in greater volume) is the series or cascade arrangement, as follows:





Generator of dielectricity as a 3-element dielectric ring with highly charged electrode (+) midwday between the center electrode (-) and the outer ring electrode (-_showing radial flow in the ring or disc from the center outward and returning through the environment (outer field) to the axis.

It is understood that while, in this drawing, the electric field is (-) to (+) to (-), the generator is equally operative in the (+) to (-) to (+) polarity. Reversal of polarity does not affect the direction of flow of the generated dielectricity.

Hence, it is readily understood that such a device will operate on AC, and at any frequency, always causing a flow of dielectricity from the center outward to the ring, thence returning through the exterior field to the axis.

The flow pattern is essentially two toroids with one side joined --- hence, interlocked and inseparable.

Sectional view of interlocked toroidal vortices.

Page 129

71. The Flow of Dielectricity

Walkertown, NC; April 7, 1958.

In the foregoing section, the generator of so-called dielectricity was discussed. It was pointed out that a flow could be created by a non-linear electric gradient and that the direction of that flow would be from the region of highest electric flux density to the region of lowest flux density.

In other words, a difference of potential is created which is not expressible in terms of electricity but which flows if a return circuit is provided. The flow does not necessarily follow a path o electrical conductivity (such as a wire) but arches through the environment in the manner of a magnetic field.

Preliminary experiments have indicated that the flow prefers glass or plastics as a path, hence, exhibits the characteristics of a flow capable of conduction. Since the materials revealing such conductivity are generally dielectrics, the entity comprising the flow has been named "dielectricity".

In summary, therefore, "dielectricity" may be defined as "an entity capable of flowing" which is "placed in motion" by a non-linear electric gradient and which flows from the region of high electric flux density (by the shortest route) to the region of lowest flux density, thence returning by an exterior circuit formed by materials which do not necessarily conduct electricity.

Page 130

If the behavior of such a flow is similar to that of magnetism or electricity, it is to be expected that an increase in conductivity of the circuit elements (or conversely, a decrease in resistance) will result in an increase in the flow itself. For example, in a magnetic circuit the more of the circuit which contains iron, the greater is the magnetic flux density. This is usually expressed as a decrease in the air gap. The factor introduced is the integrated mu for all sections of the magnetic circuit.

In the present instance, where we may be talking about a dielectric phenomenon and a flow of dielectricity, the integrated K may be the factor which is significant. On the other hand, if the characteristics of the flow of dielecticity or the results of a difference in potential of dielectricity

are gravitational, then the significant factor may be m_g or the gravitational mass of the circuit sections. If both are involved, as perhaps an electromagnetic phenomenon, then both K and Mg are important factors in the circuit. The final answer to this question cannot be given until precise tests of various materials can be completed.

Page 131

One characteristic of the flow of dieletricity appears to be its ability to create a force on the material through which it is slowing. It may be said that it was largely through the indications of its forceful effects that its presence was initially detected. In practically every experiment where a flow of dielectricity is established, an air flow results in the direction of the flux. In the beginning, the air flow was so pronounced that it was difficult to purify the results so as to eliminate what appeared to be the effects of an "electric wind".

It is to be noted that the classical concept of electric wind is perhaps inseparably confused and inter-related to the effects of a flow of dielectricity. Any electrified point, according to classical concepts, produces ions of the same sign as the point and hence are repelled by the point, producing a motion of the medium when their momentum is transferred to that medium. It is assumed that the reaction, resulting from the repulsion of the ions from the point, will drive the point in the opposite direction and that this reaction will be exactly equal and opposite to the forward momentum of the wind.

Page 132.

A simple experiment will reveal that this is not necessarily true:

Net force on system of two electrodes is as shown. Measured only on the two electrodes.

In the above experiment, only by considering the forces acting on the medium to the side of the alignment of electrodes (which are in a direction from right-to-left) will the net force (as indicated) be eliminated.

It is obvious that the classical concept of the electric wind does not explain a movement of the medium from right to left (in the above explanation).

On the other hand, the classical concept explains the left-to-right momentum but cannot explain the lack of balance which causes the net force as indicated.

In Sec 70. it was shown that a flow of dielectricity probably results from any situation in which there is a no-linear electric flux density.

In the illustration on the previous page, there is a strong non-linear gradient on the electric field between the sharp point and the large arcuate electrode. The greatest density exists around the end of the point and falls of to a minimum at the arcuate electrode.

Hence, according to the principles set forth in Sec. 70, a flow of dielectricity is created by such a configuration as follows:

Flow of dielectricity causes movement of dielectric fluid.

Such a diagram, however, neglects the flow of dielectricity which is conducted through the leads of the power supply, as:

Flow of dielectricity through electric source in same direction as classical electric current.

In general, however, where the wiring of the electrical supply is long and/or involved, a consideration of dielectric flow parallel with the electric flow is unnecessary. Even so, it may be completely and finally eliminated by the following system:

Three-element System:

Where high impedance elements are placed in feed lines, flow of dielectricity assumes a shorter closed circuit path through the immediate environment.

Now, excluding the electrical feed lines, the path becomes simply a closed toroidal vortex, as:

If the above vortex is acting within a dielectric fluid (such as oil or air) the fluid assumes a toroidal vortex as the structure (geometry) of the electrodes permits. The resistance of the fluid to the flow of dielectricity results in a movement of the fluid. That part of the flow which impinges upon the electrodes tends to move the electrode system. Hence, the electrodes (in the illustration) tend to move upward while fluid, particularly near the periphery of the electrodes, tends to move downward.

Page 135

If such a system is placed in a metal (almost infinitely high K) enclosure, the following field distribution takes place:

The conductivity is so great that virtually no flow appears externally.

Due to the partial closing of the air gap by high conducting material, the flux density is greatly increased. This increase in flow of dielectricity will cause an increase in the lift of the electrode system within the enclosure. The downward flow through the walls of the enclosure will, however, be sufficient to virtually balance the lift if the electrode system is mechanically attached to the metal enclosure.

In other words, placing the electrode system within the can greatly increases the lift of the electrode system by itself. But, a force virtually of the same magnitude and opposite in sense is created within the walls of the can, by reason of the resistance to the flow offered by these surfaces or (perhaps more correctly) these volumes of upper high-K materials.

Page 136

No secondary flow patterns are established outside of the can due to the ability of the metal walls to conduct all of the flow of electricity.

The effect is similar to the ability of iron cores (of high magnetic permeability) to convey all the magnetic flux, allowing the establishment of no flux outside. This will, of course, be true up to the point of saturation, where a further increase in flux cannot be carried and leaks out into the surrounding space.

When saturation to the flow of dielectricity has been reached, the flux which leaks out causes secondary flows or "reversed" vortices, as:

3-Element dielectricity generator in thin Saran bag

Page 137

The friction of the moving air both inside and outside the container (upon the walls of the container) then causes the can to move downward, while the air farther away moves up.

In this way, an electrode system encased in an enclosure where the flux density is beyond saturation (as with a Saran sheet enclosure), the force acting upon the system appears to be reversed.

Increasing the thickness of the Saran or by using dielectrics of greater conductivity of dielectricity, this effect of reversal may be reduced or eliminated entirely.

Penetration of a saturated sheet of thin Saran.

Using Saran as an example of material which may be saturated when in thin sections, the following experiment is suggested:

Showing balance or possible null between primary and secondary flow.

Page 138

In the foregoing experiment, the electrode system is suspended for lift measurement within a Saran bag. Complete reversal of force, due to saturation, is observed, and the entire rig possesses a force downward.

If then, the rig is placed in a metal can, a complete reversal to lift may be observed for small diameter metal cans. The force downward will persist in larger diameter metal cans. A size of metal can, between these two extremes, may be found where no force exists. This null will represent the balance between the primary flow which penetrates the Saran bag and the secondary flow created by the saturated bag.

Another experiment which is suggested to test the saturation theory is the use of multiple layers of Saran, each layer contributing to the flux conductivity, whereby the addition of each layer reduces the reversed force a given amount, finally increasing the conductivity to the point below saturation (for that particular voltage) where the force is zero. At that voltage, the flux (being fully conducted) produces no force. At a slightly higher voltage, the flux being greater, is not

fully conducted by the now saturated Saran sheets, and hence gives rise to a reversed force due to the secondary or exterior vortex.

Page 139

72. Generation of Dielectricity by the Use of Alternating Current.

Walkertown, NC; APR. 7, 1958.

In Sec 69, the use of high voltage RF for the generation of dielectricity was proposed. The circuitry included a self-regulating oscillator fed by a DC exciter.

It must be borne in mind that the generation of dielectricity is a kind of rectification process, producing unidirectional flow of dielectricity from either electrical polarity. Hence, AC at any frequency will generate dielectricity.

Where the dielectricity generator possesses a natural capacitance, the circuitry may include an inductance for operation as a tank circuit at any desired frequency.

Such a circuit is as follows:

Concentric type dielectricity generator using AC.

The flow connectors must (electrically) connect every other ring as indicated. The flow of dielectricity is outward from the center.

Page 140

73. The Coiled Strip Capacitor as a Generator of Dielectricity.

Walkertown, NC; April 8, 1958.

It is proposed that the spiral or coiled-strip capacitor may make a very convenient and cheaply constructed generator of high potential dielectricity.

Page 141

Using the spiral generator in the propulsion of a space craft, the following may be suggested:

The advantages are that the electrical circuits be limited to the spiral and the inductor. The dielectric circuits would include the A frame and the rubber (as the center of the spiral). Hence, there would be no electrically charged elements under the craft. The voltage used in the RF drive for the spiral capacitor would be relatively low.

No electric potential would exist between the high potential dielectricity terminals, nor in the external circuit. All luminous phenomena would arise from the high potentials of dielectricity present in the force field.

Page 142.

74. High Flux, Closed Circuit Transducer for Dielectricty

Walkertown, NC; April 29, 1958.

In the foregoing sections, the pattern of circulation of dielectricity was indicated in a number of instances. The flow invariably is from a region of high electric gradient to low electric gradient, such as:

(1) Outward from a highly charged point into the environment

(2) Outward from an inner electrode to an outer electrode. May be arcuate and may be concentric.

(3) From the small end toward the large end of a dielectric under electric strain --- may be wedge-shaped or cone or pyramid frustrums.

(4) From the high-gradient end to the low-gradient end where the non-linear electric gradient is established through external circuit resistance such as leakage.

Page 143.

(5) From the low density end (or low K or mu) toward the high density end (or high K or mu) where an electric field exists in a non-homogeneous dielectric.

In (3), the flow of dielectricity is created initially by the wedge-shaped or truncated cone shaped dielectric. Such a member is a "dielectromotance". The return circuit for the dielectric flux is through the medium immediately surrounding the member, as:

Where two members are related in series, the flux density is increased and the air gap (free path through the medium) is shortened, as:

Circulation pattern of dielectric flux between two dielectromotances in series.

In the above circuit, the (total) dielectromotance is doubled and the flux density greatly increased by reducing the air gap.

Page 144.

74. (Continued)

In the transducer, which is the subject o this section, the arrangement is as follows:

These forces may be of a high magnitude when high K material is used in the conical (armature and stator) sections. Rubber or plastic diaphragms may be used to hold the armature in position yet permit limited vertical (axial) movement. The device may be studied at high voltages either in vacuum or under oil.

Such a device is a transducer, between electrical and mechanical energy.

Page 145.

74. (Continued).

When electrical energy is supplied to either or both members, motion results.

If one or the other member is energized, and mechanical motion is supplied, an electric current in the second member will be generated. Such current will vary in accordance with the motion. Hence, the device will operate as a vibration pickup or microphone as well as an oscillating force generator or loudspeaker element.

Also, where all electrical conditions are rigorously constant, the force will vary according to the flux density. If such flux density within a closed system such as this varies with a linear, solar or sidereal diurnal pattern, such pattern will show upon a suitable force recorder operating for time-series observation.

As an actuating mechanism for such a recording device, the apparatus appears to have great promise.

Page 146.

75. Motion of Dielectric Media Produced by Dielectric Flux. Dielectric Wind.

Winston-Salem, NC; May 1, 1958.

In all of the experimental work to date, the results which have led to the concept of dielectricity and dielectric flux have carried one characteristic in common --- i.e, force or motion exerted upon dielectric solids or fluids.

In general, the source of the dielectricity or dielectromotance possesses a force in one direction whereas the balance of the circuit exhibits a force in the opposite direction, as:

If the return circuit is in air, oil or other dielectric fluid, the force results in movement of the fluid. In many cases where the electrodes are charged with respect to the medium, the flow may be mistaken for electric wind. It is usually quite difficult to separate these effects.

Any highly electrified point produces ions which are repelled from the point, giving rise to a motion in the medium known as electric wind.

In the same structure, the non-linear electric gradient outward from the point constitutes a dielectromotance and gives rise to a flow of the medium outward from the point ad in the direction of the decreasing flux density. Hence, the so-called electric wind may in fact be a total of the two effects. See p. 142 (1).

Page 147

Only by creating a dielectric potential difference where there is no electric potential difference, can the pure dielectric wind be separated from the electric wind. This is possible, it would appear, in the following structure:

In these circuits, two dielectromoances are connected in series, and the dielectric potential difference is doubled. The flow is in the closed circuit as indicated.

Page 148.

Another way for detecting the force acting upon dielectric media is the hydrostatic pressure developed by oil within an insulating tube.

(1) Increase in height of oil column due to pressure as indicated.

(2) Same as above but with three turns of tubing, increasing the pressure 3 times.

(3) Using a series of arcuate or conic field-shaping devices

(4) Motion of dielectric rod.

Page 149

If dielectric flux creates a potential difference which is additive with each turn, such as the hydrostatic pressure would be in Fig 2, then the following may produce interesting results:

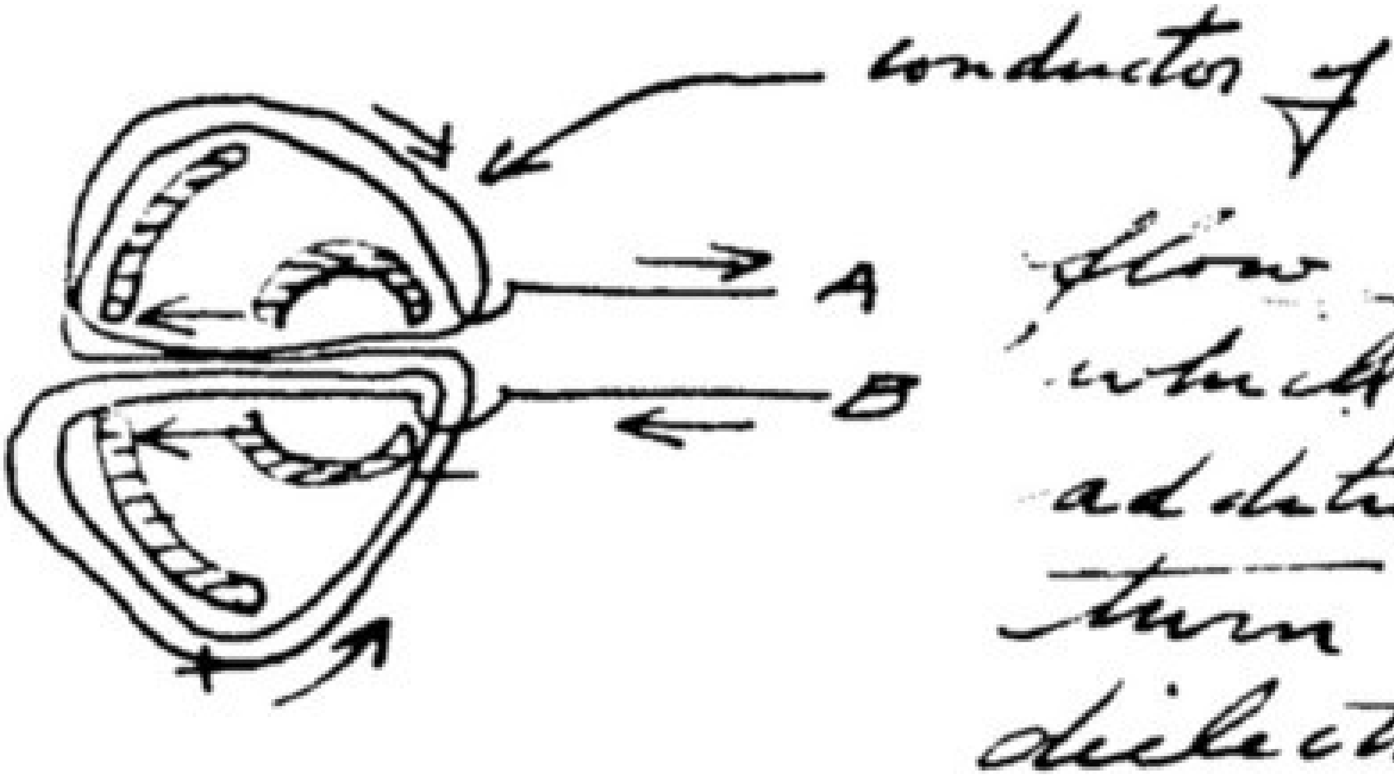


Fig. 5.

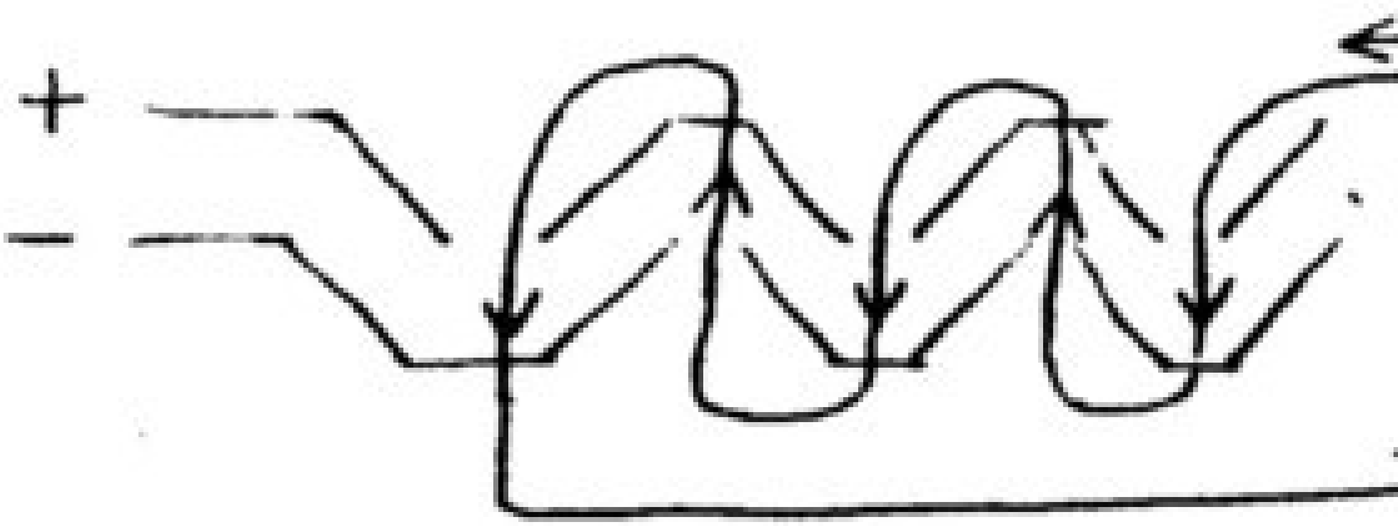
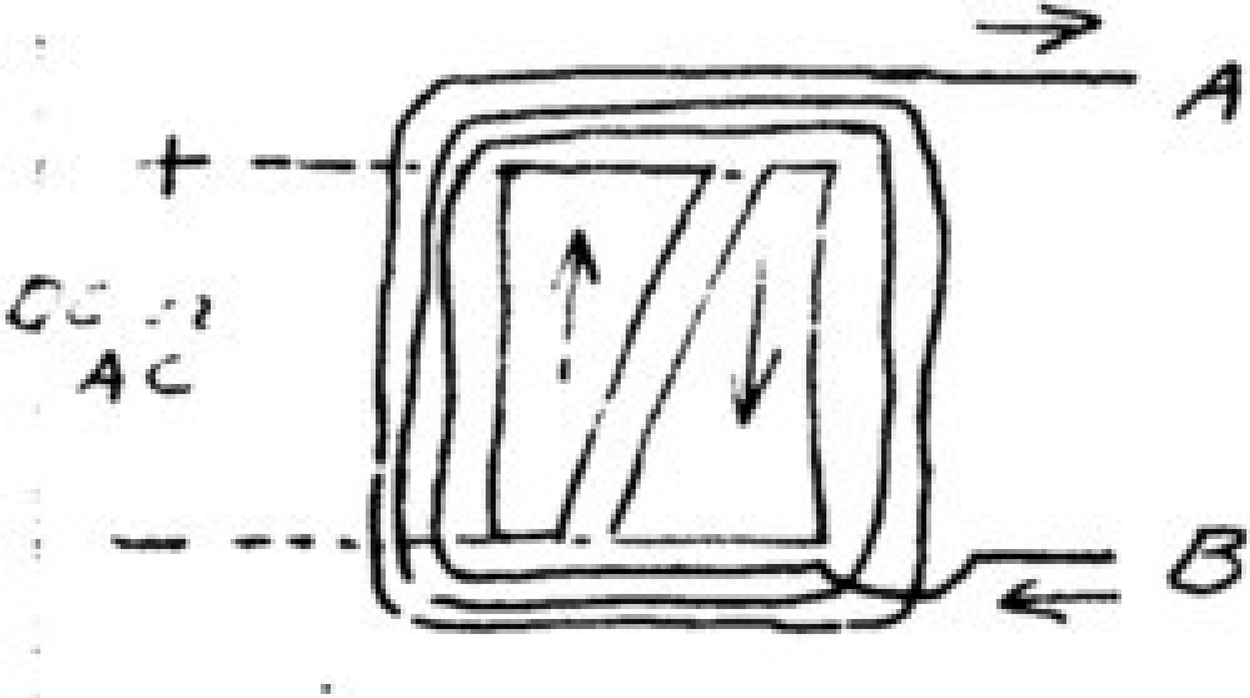


Fig. 6.

If the flow if dielectricity is conceived to be from a higher to a lower potential, then the end of the conductor at point A will have the higher potential. The flow will be toward B in the external circuit.



If AC is used, frequency of the dielectricity is double the frequency of the supply electricity.

Page 150

Inductive force effects created by a coil carrying dielectricity.

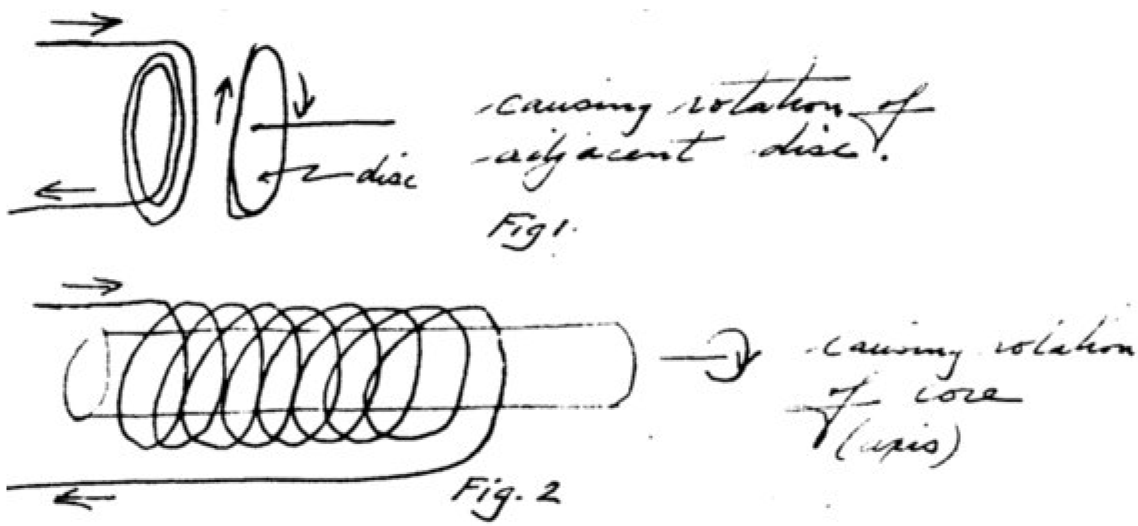
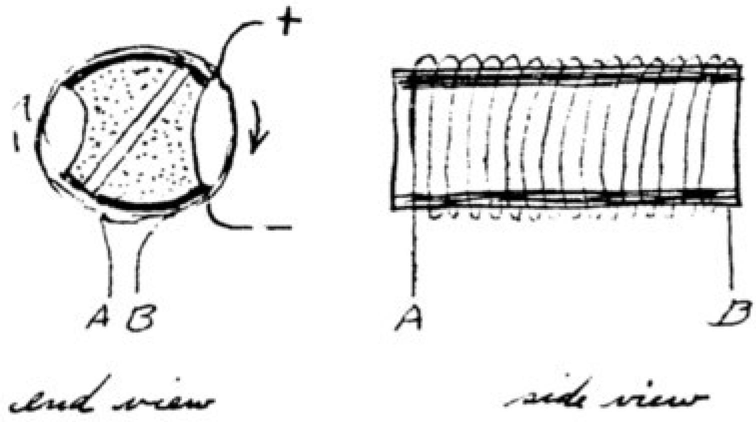


Figure 1. Causing rotation of adjacent disc.
Figure 2. Causing rotation of core (axis)

High potential dielectromotance with a large number of turns of dielectric conductor. Shown in Fig 7. p. 147.



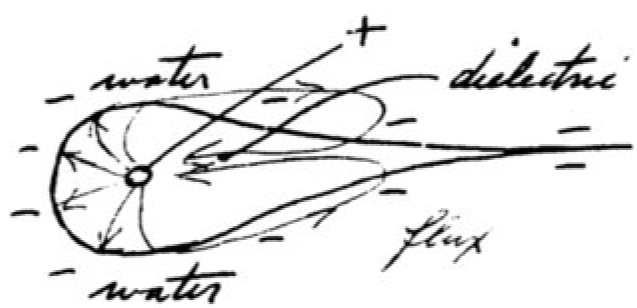
Page 151

76. A Method of Ship Propulsion using Dielectric Flux.

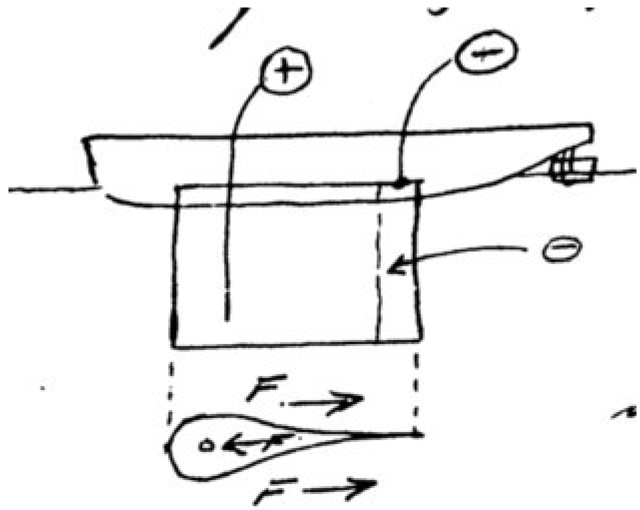
Walkertown, NC; July 7, 1958.

If the dielectric return circuit passes thru the water surrounding a ship, it would seem entirely possible that the ship would be propelled.

Such a requirement would be satisfied by the following scheme:



Applied to a ship, the design might take the following shape:



Entire water body is the cathode envelope and is driven astern. Ship (dielectric) is driven forward.

The Scientific Notebooks of Thomas Townsend Brown

Volume 2

[Volume 1] // [Volume 4]

Please visit these T.T. Brown Websites: www.ttbrown.com // www.soteria.com

Commentary from ttbrown.com :

"Back in the 1970s and 1980s a researcher and author named Willam Moore --- best known as the co-author of such folk-lore as "The Roswell Incident" and "The Philadelphia Experiment" (there, I said it...), wrote a couple of articles about Townsend Brown. Moore was also the last journalist to interview and photograph Brown shortly before his death in 1985.

"Somehow, during that period, Moore obtained access to Brown's personal laboratory notebooks, and, presumably, obtained permission to "publish" three volumes of those journals. Photo-copies of those journals have been in circulation ever since."

Contents:

Page 1

77. Hydrostatic Pressure resulting from Shaped Electric Fields

Walkertown, NC; Aug 23, 1958

Referring to Jean's *Mathematical Theory of Electricity and Magnetism*, p. 177, an electric field consists of the following stresses in the dielectric medium:

(1) a tension $KR^2 / 8\pi$ per unit area in the direction of the lines of force;

(2) a pressure $KR^2 / 8\pi$ per nit area perpendicular to the lines of force;

(3) a hydrostatic pressure $-\frac{R^2}{8\pi}\tau\frac{\partial K}{\partial \tau}$ in all directions

If $\frac{\partial K}{\partial \tau}$ is negative, an expansion of the dielectric will both increase the volume occupied by the dielectric and will also increase the value of K inside the dielectric. The hydrostatic pressure will be outward.

If $\frac{\partial K}{\partial \tau}$

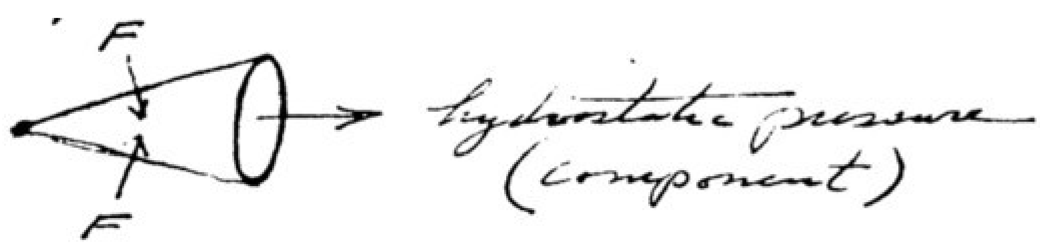
Page 2 [blank]

Page 3

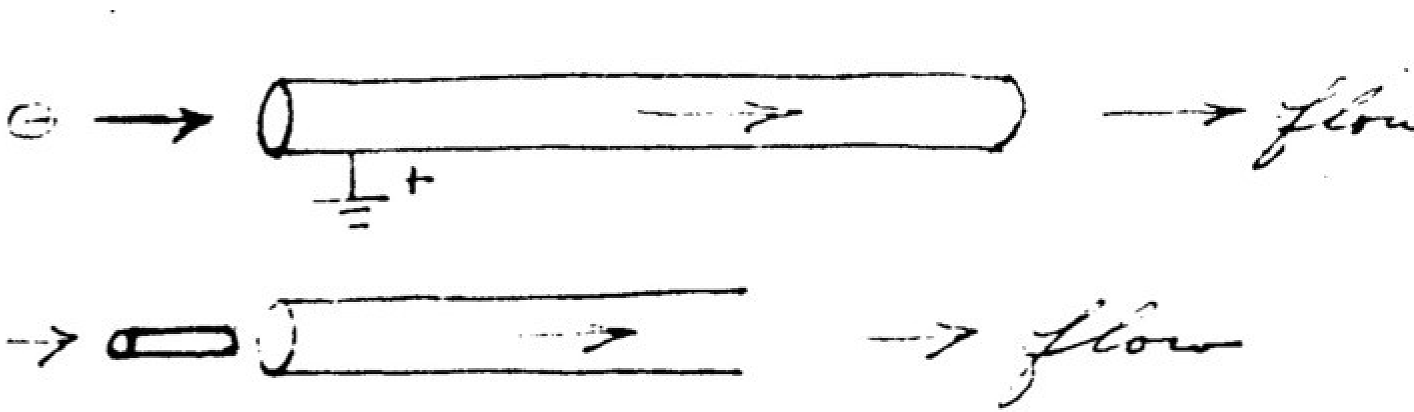
78. Some Specific Structures for the Development of Hydrostatic Pressure.

Walkertown, NC; Aug. 30, 1958

A general theorem for the development of hydrostatic pressure from electric fields requires the use of electrodes which provide a conical tube of force. The direction of the force is outward from the apex of the cone.

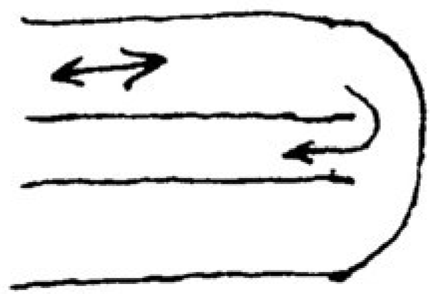


(i) Point and cylinder.



(ii) Cylinders of different diameter

(iii)



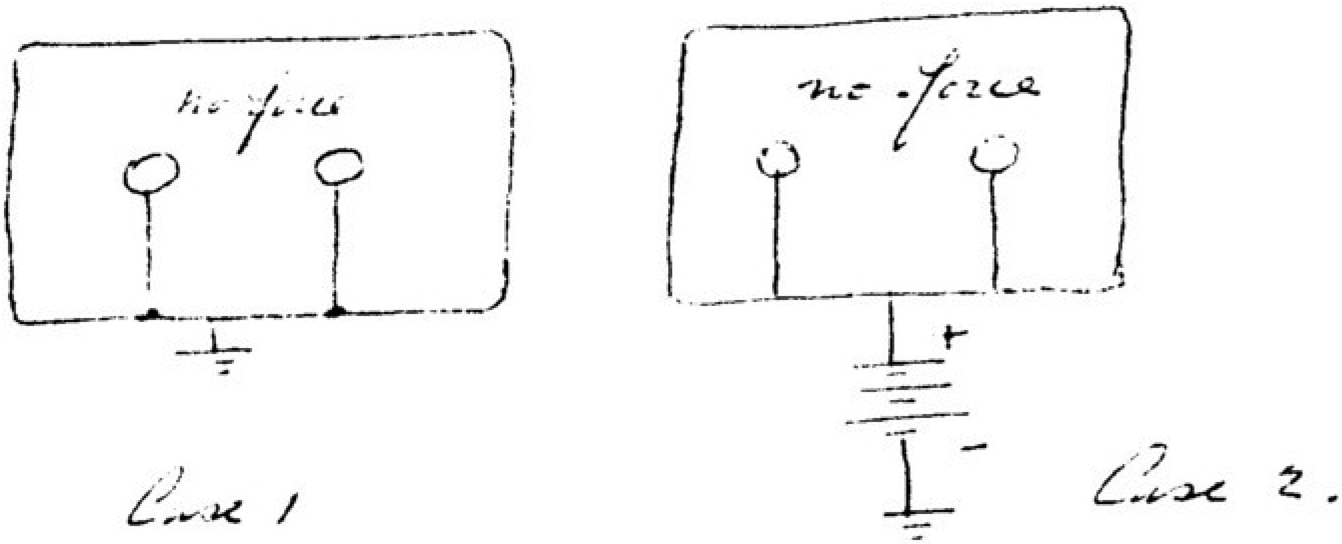
Page 4 [Blank]

Page 5

79. A Specific Design of Electric Flying Saucer Utilizing Transverse Propulsion and Positive Ion Field.

Walkertown, NC; Sept 17, 1958

It is not generally recognized that repulsion of like electric charges cannot take place unless these charges are within or near a different charge. For example:

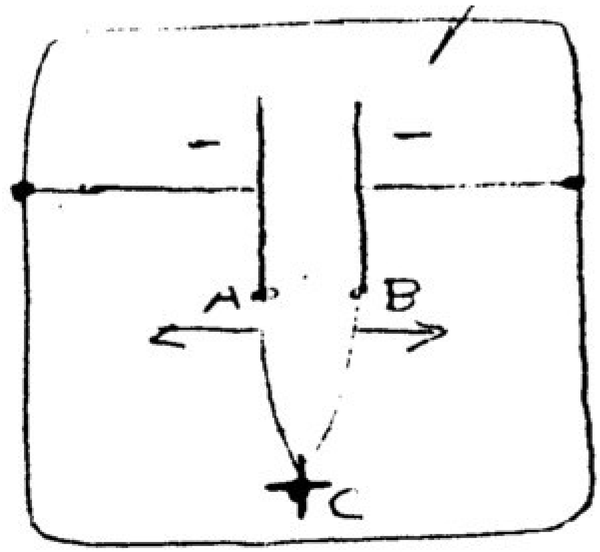


In case 1, the charges are both grounded and both are within a grounded container. The entire system, however, is at the potentiality of the Earth. In case 2, the charges are alike and within a container, all of which is elevated in potential above that of the Earth. Still there is no repulsion.

92

For better configuration, it may be drawn as follows:

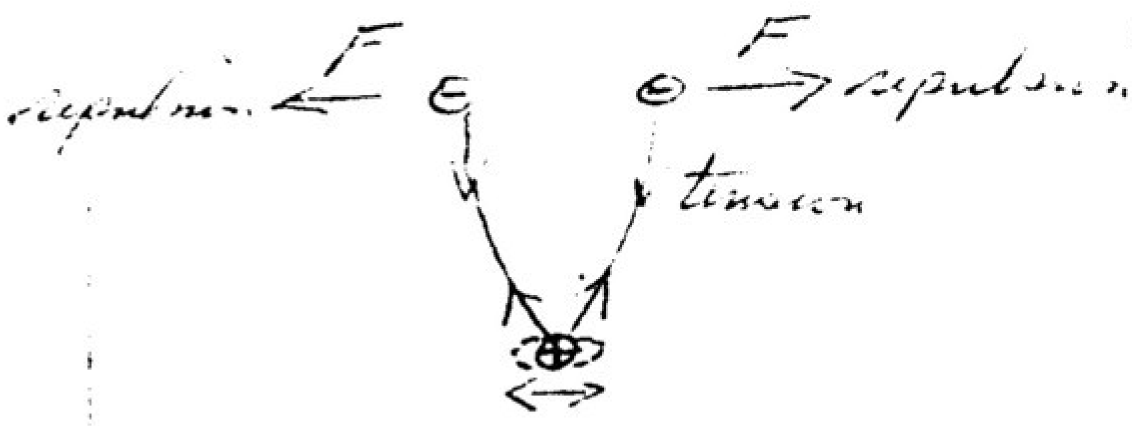
Page 6



Here two bodies are negatively charged within a container of like sign. A positive charge is within the container also. Lines of force connecting the positive charge to the two negatives are roughly parallel. Hence a repulsion exists between these lines. The points of anchorage A and B are forced apart, thus transmitting the repulsion to the two negatively charged bodies.

It is the repulsion of the lines of force anchored to the bodies --- not the repulsion of the bodies themselves.

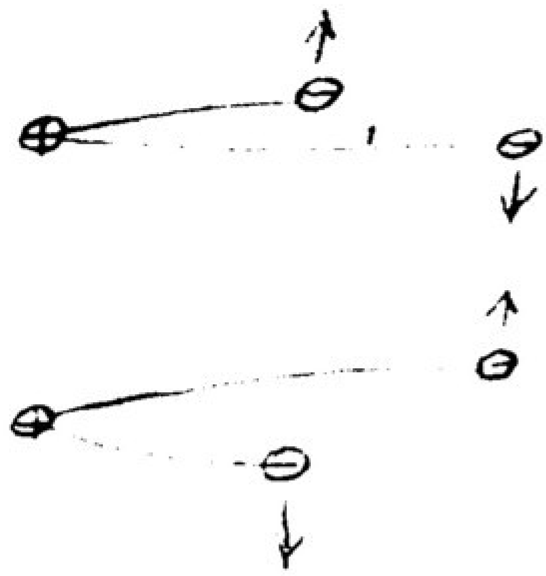
Briefly, the action is as follows:



There is also a force tending to elongate the positive charge.

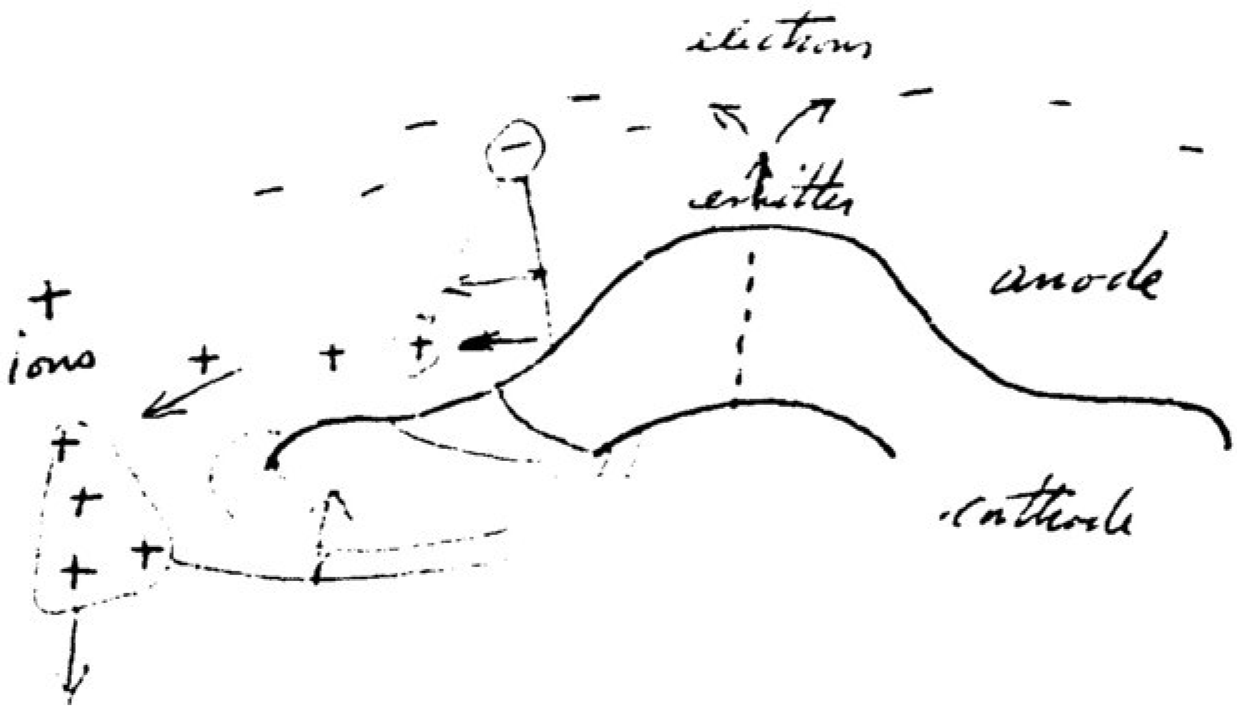
Page 7

Other representations of this action are as follows:



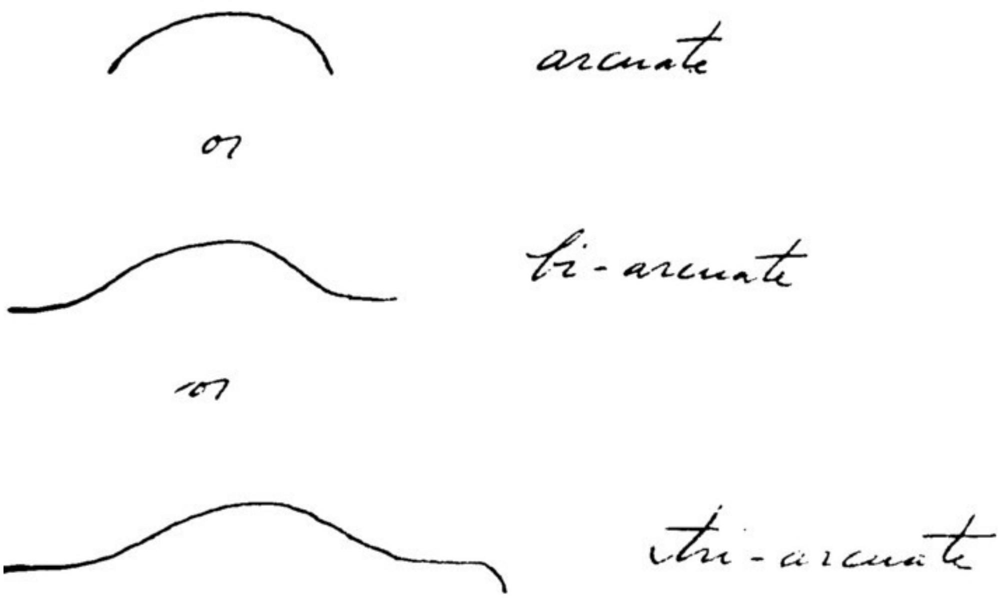
With the positive charge as a fixed anchor, the negative charges are forced as shown, with the longer arm "throwing" the charge at a proportionately greater velocity but less force.

It is this principle which is suggested as supplying in the case of the "flying saucer" to be described.

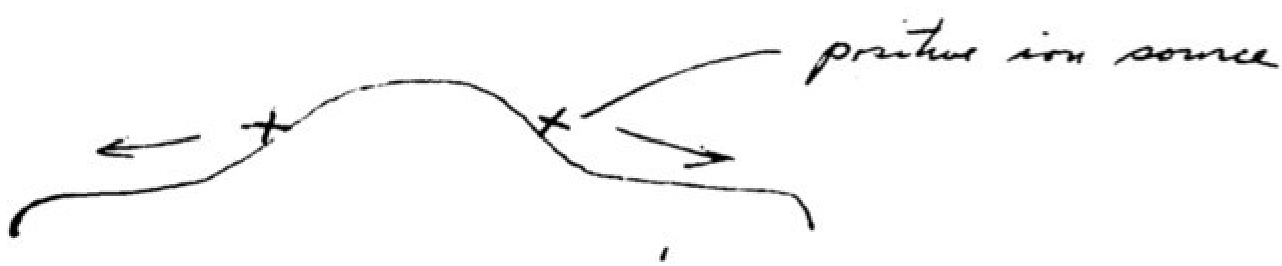


Page 8

The anode: "A-frame" --- must be shaped to satisfy the field-shaping requirement and provide maximum backing for the repulsion field.

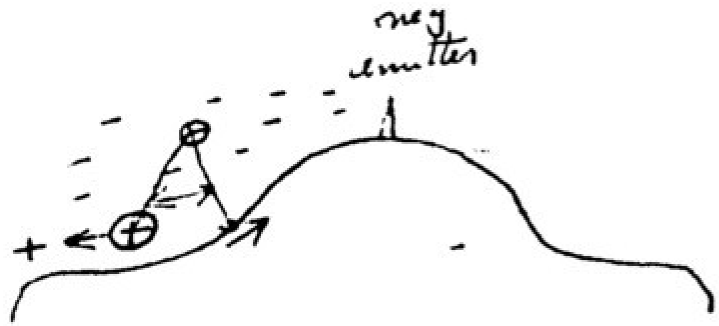


Hydrostatic pressure profiles have revealed the tri-arcuate form as best for most purposes --- stability, control and horizontal thrust, especially when a positive ion source is provided at the side of the dome.

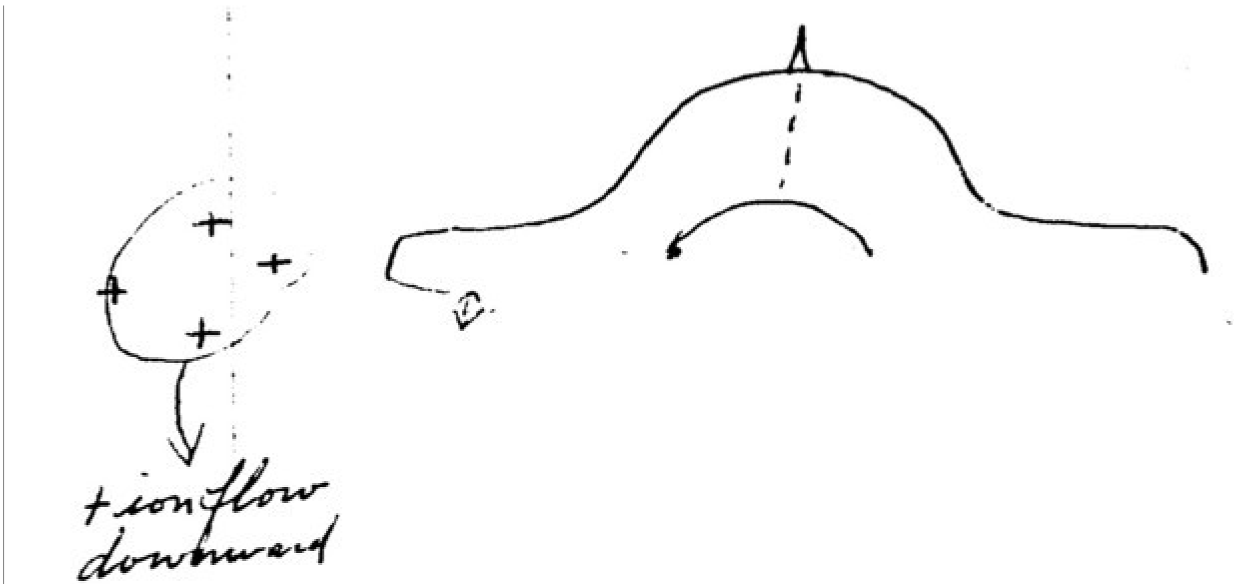


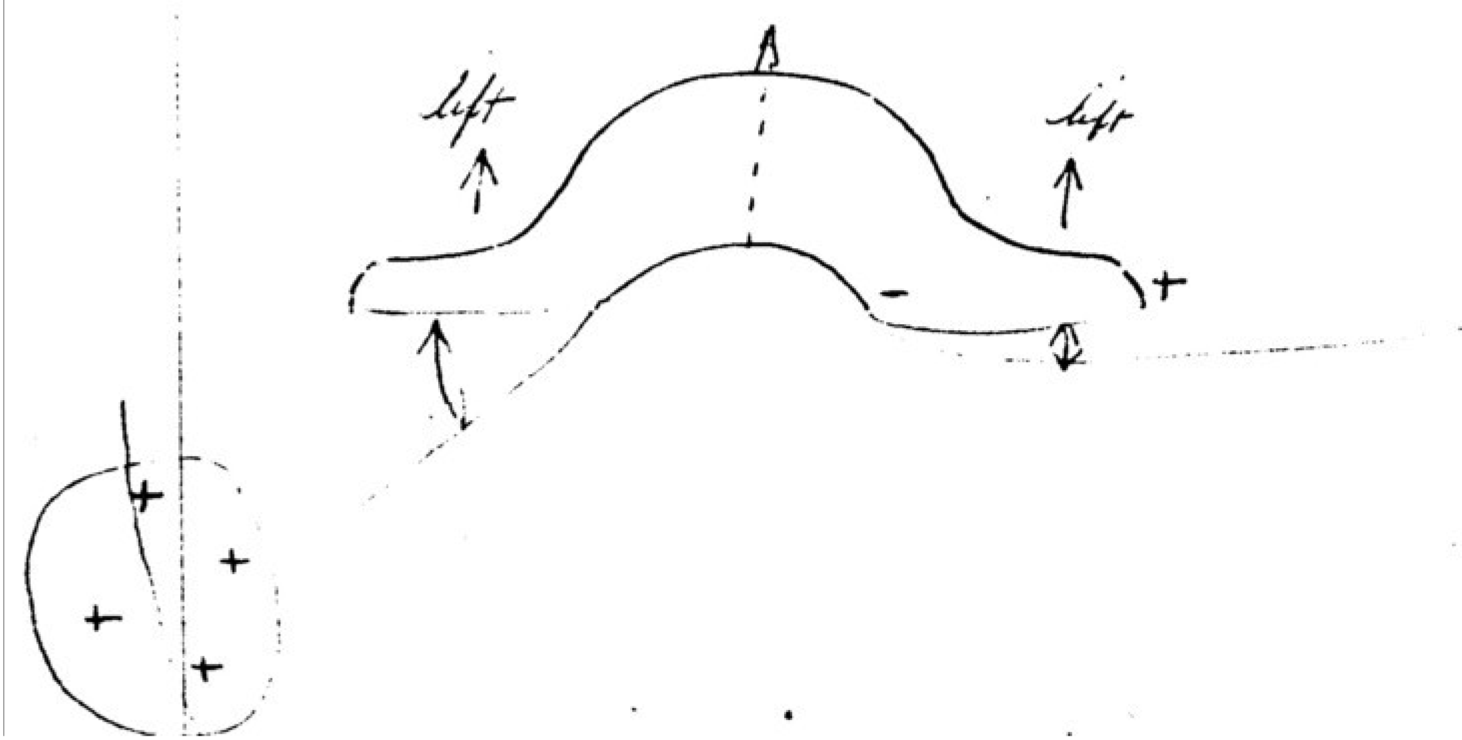
Ions generated and released at this point are repelled downward and outward by the electrons and negative ions released near the crest of the dome.

Page 9

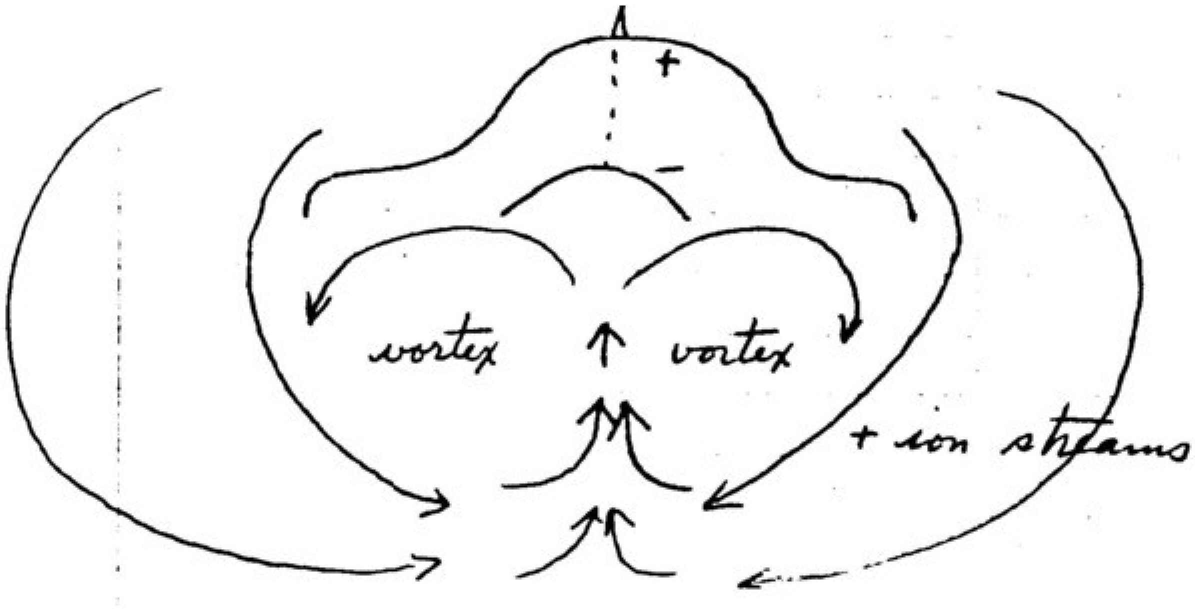


The positive ions then stream outward until caught by the lines of force from the cathode.



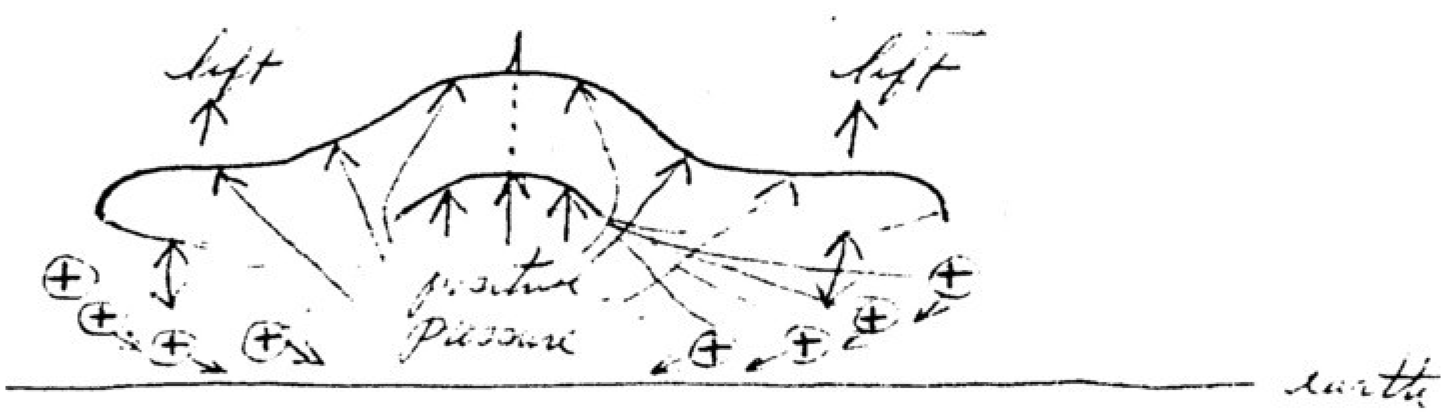


Page 10



Upward air stream in center assists lift when ship is operating in atmosphere

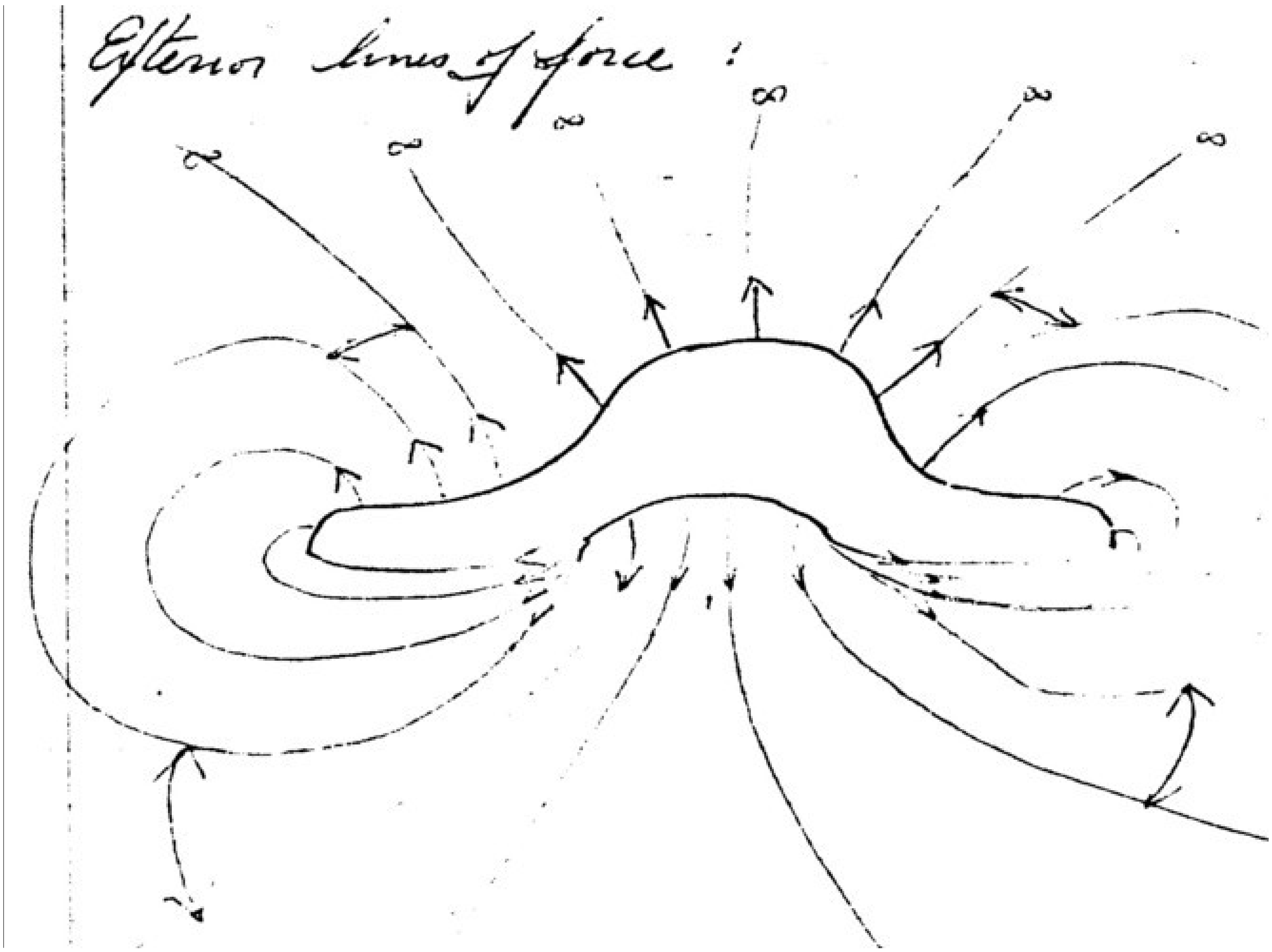
Or when approaching the earth, there is increased hydrostatic pressure under the ship.



Confinement and increase of positive pressure as ship approaches a landing.

Page 11

Exterior lines of force:

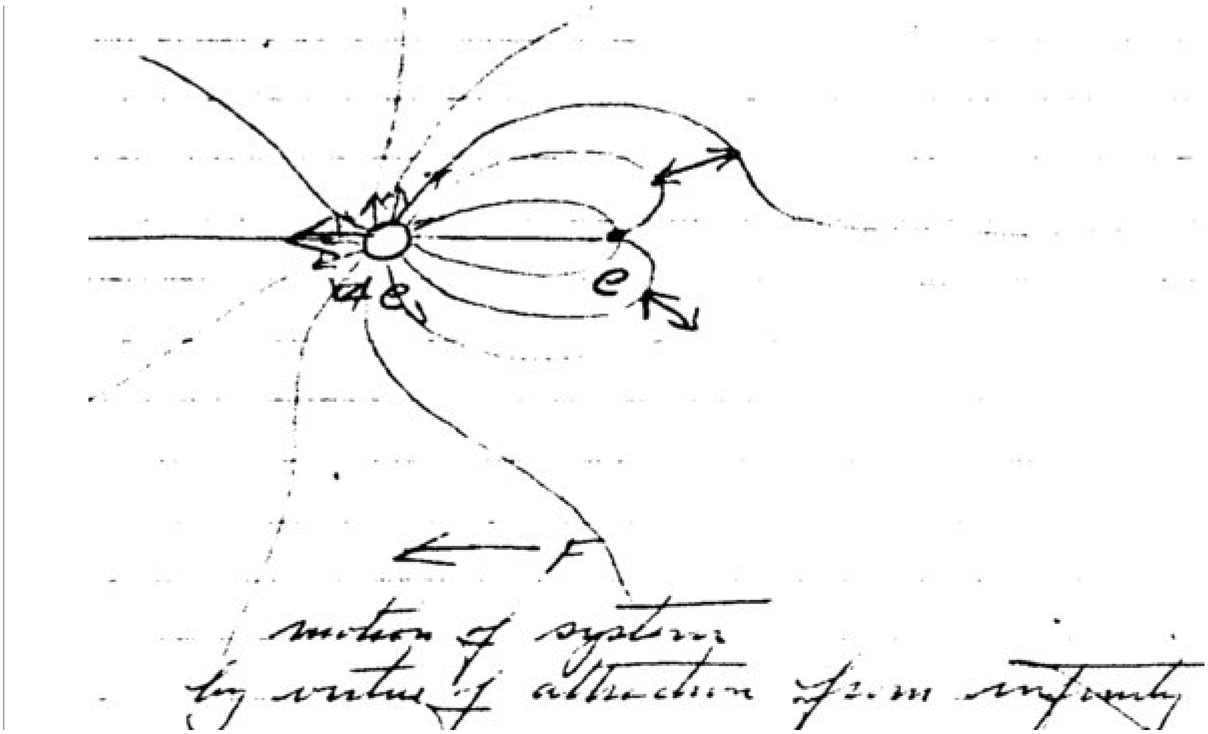


Electrostatic lifting forces all over the top of the anode. The lower side of the cathode has a few lines which pull downward by mainly are horizontal with a slight downward component.

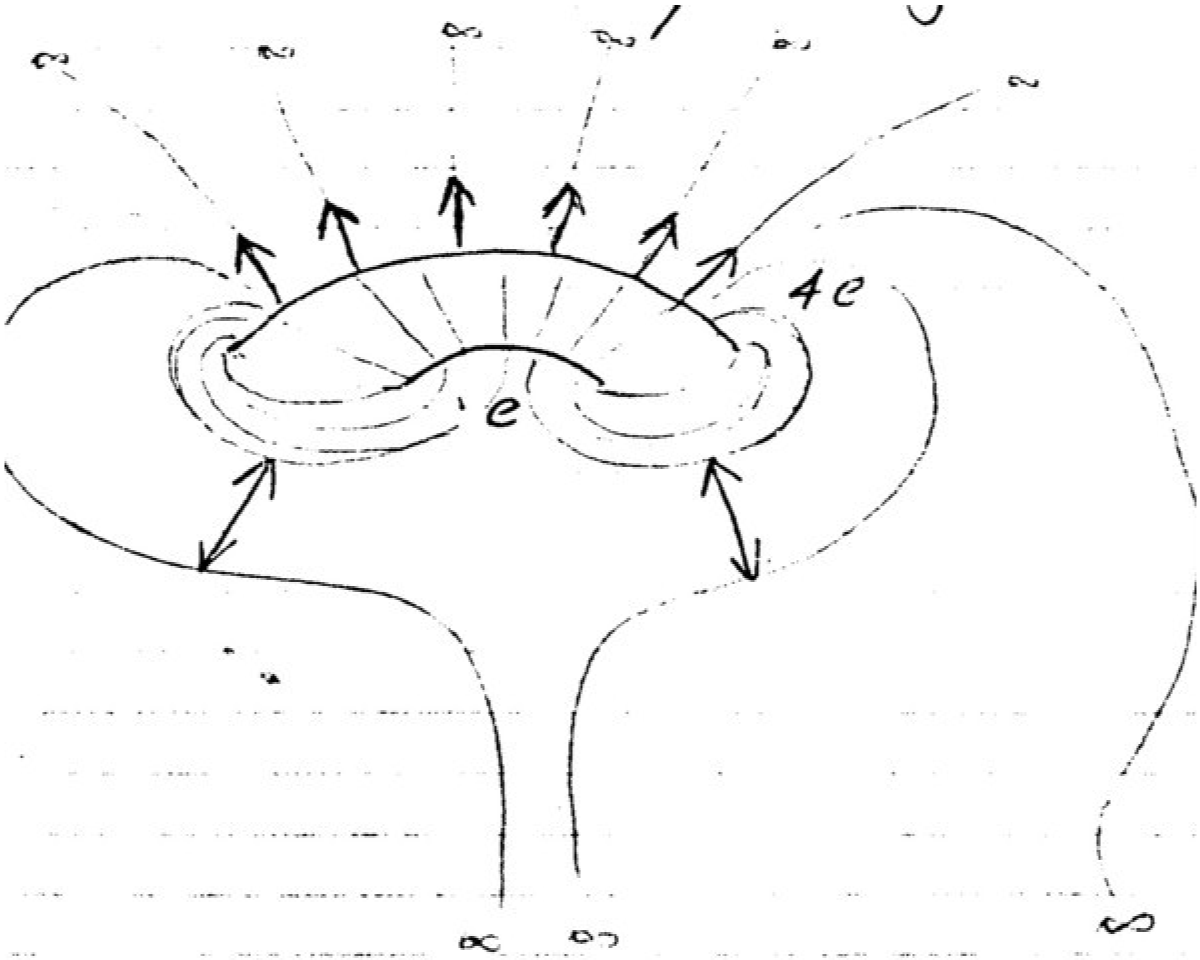
Repulsion exists between the two systems as shown.

Page 12

An interesting situation exists when one charge is greater than the other

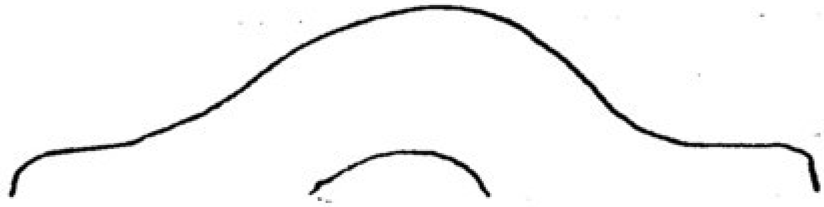


This is similar to the following:

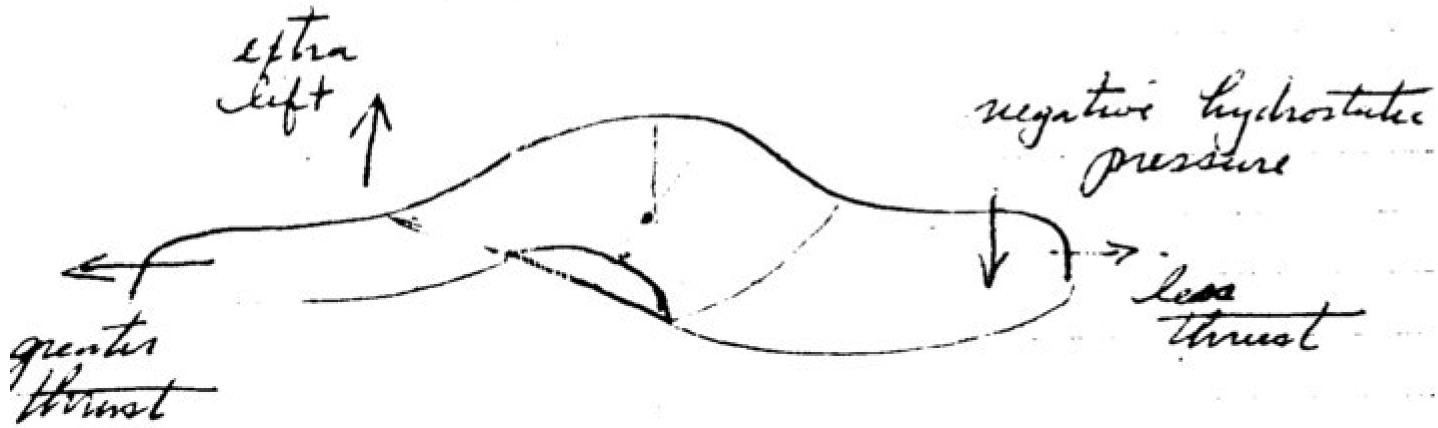


Page 13

Canting of the cathode to provide horizontal thrust and/or stability control:

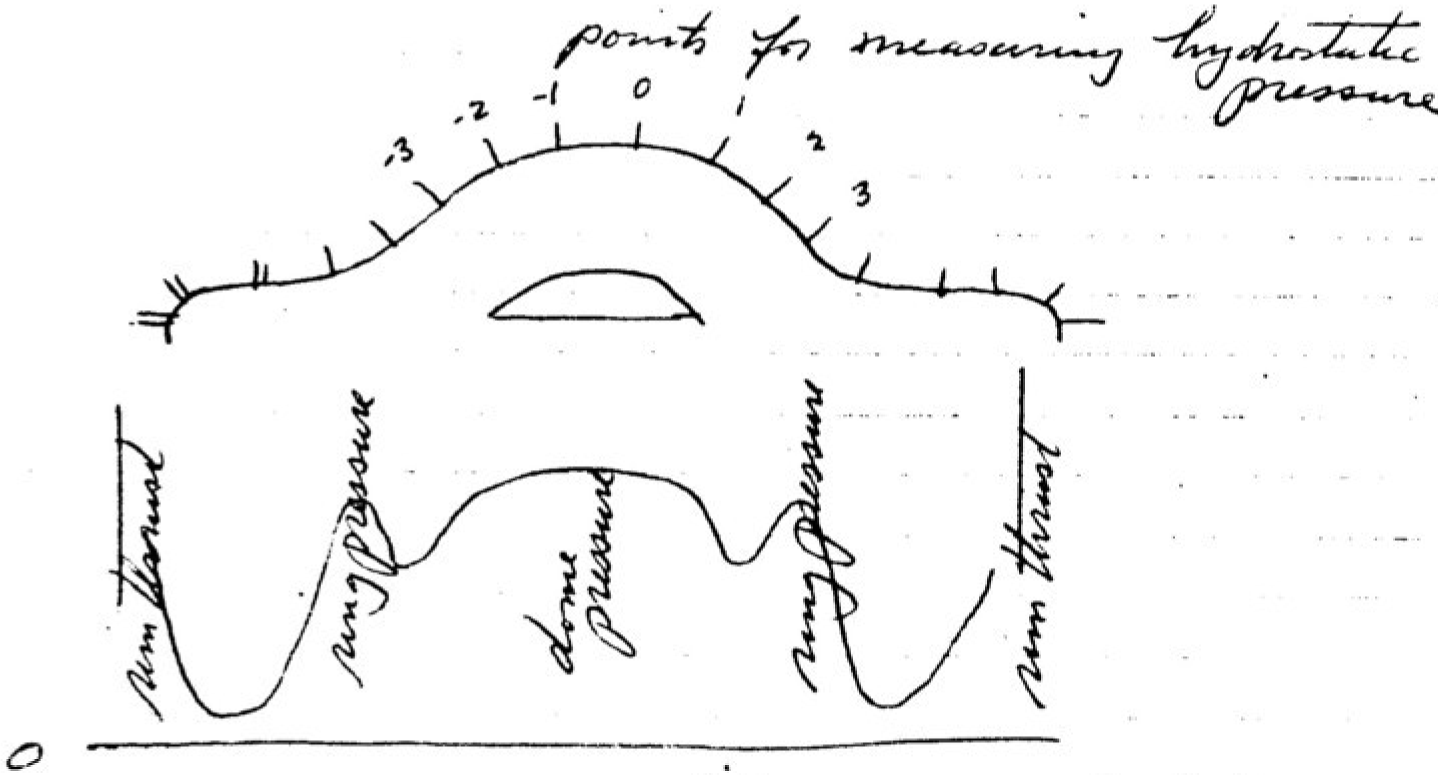


for straight lift

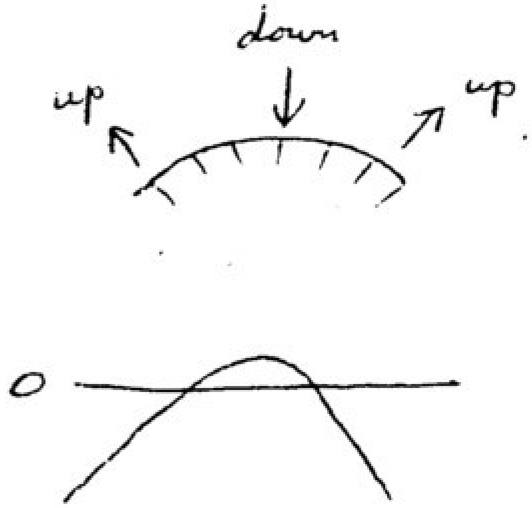


Anode angle follows cathode angle acting as a mechanical amplifier.

Page 14



pressure profile



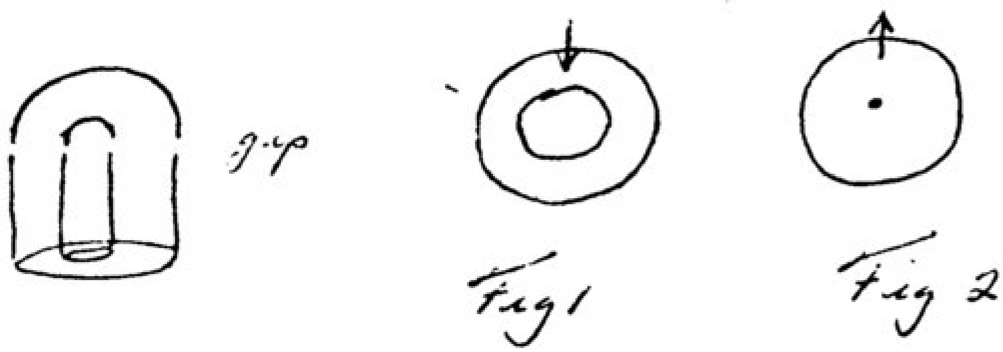
cathode pressure profile

Long cathodes may eliminate downward force by cutting out the center.

Page 15

80. Possibility of a Critical Radius in the Witmer-Jeans Expression of the Attraction of Hemispheres with Guard Rings.

Walkertown, NC; Sept 25, 1958



In Fig 1, the radius of the center sphere is super-critical, that is, it is above the value required to produce an inward force on the outer sphere, i.e., a contraction.

In Fig 2, the radius of the point charge is sub-critical, i.e., it produces an outward force on the outer sphere or an expansion.

If this is true, the force on the outer sphere inwardly is not strictly related to the inverse square of the radius. Conceivably there would be a critical value at which there would be no force present. This probably will be at some ratio of the two radii.

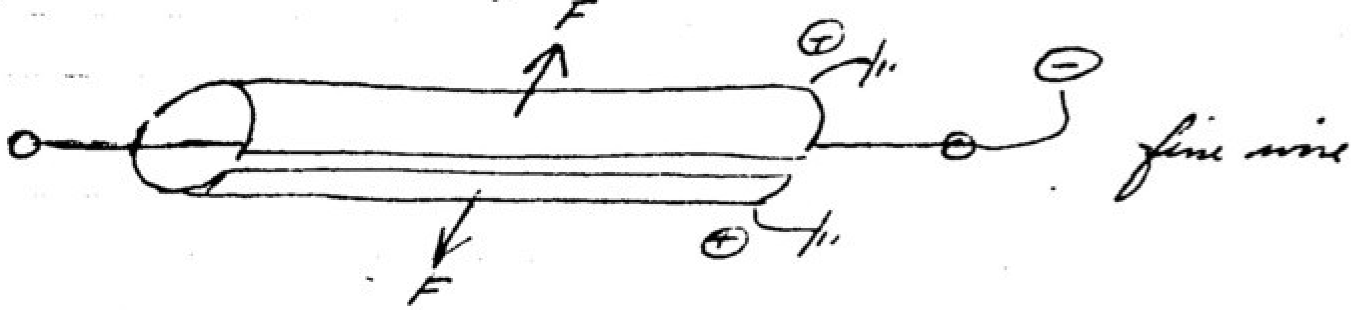
If the outer radius is constant, the force of the outer sphere acting inwardly would diminish as the radius of the inner sphere is reduced and would reach zero at the critical ratio of radii or at a certain radius of the inner sphere or both. Further reduction of the radius of the inner sphere would cause a reversal of the force acting on the outer sphere thus producing expansion or outward force notwithstanding the existence of tension lines radially disposed.

Page 16

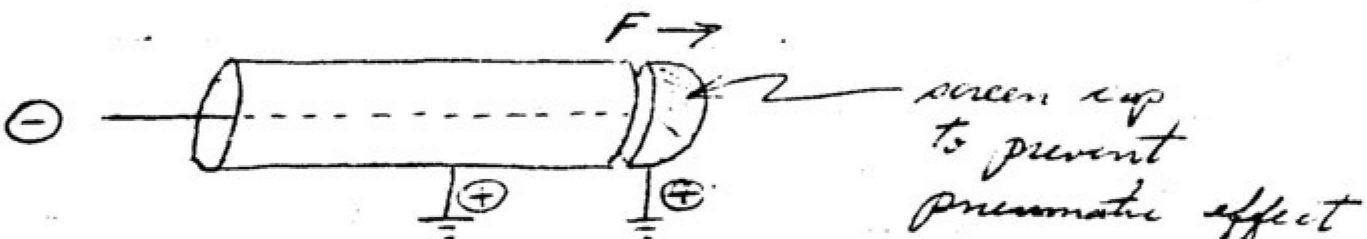
Experiments are suggested to test his hypothesis:

Exp. No. 1. Split tube:

Exp. No 1. Split tube.

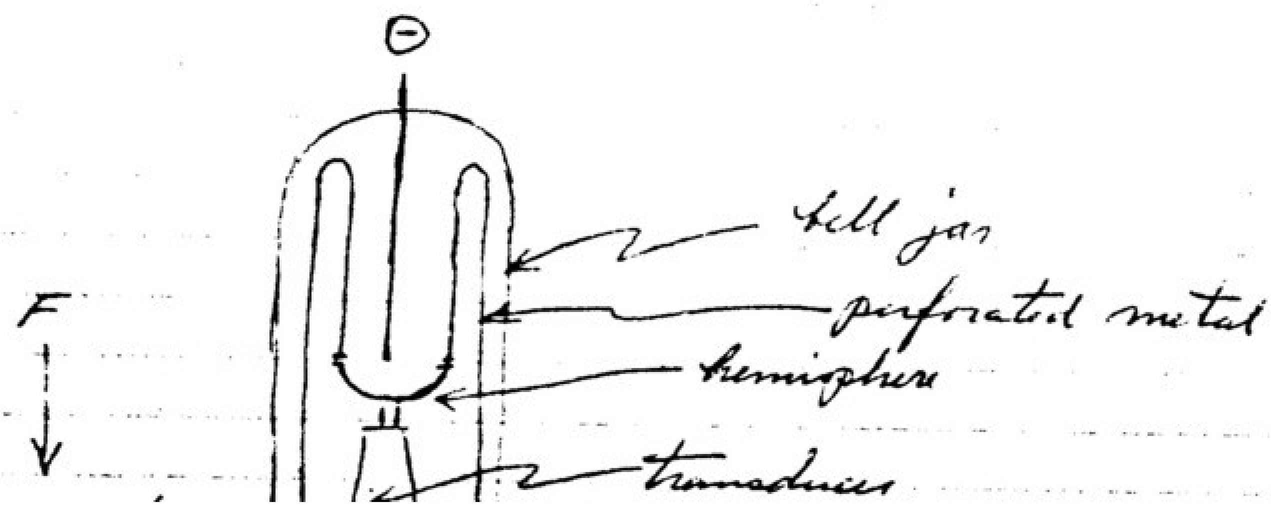


Exp No 2. Tube with cap.



Tube fixed   Cap is repelled

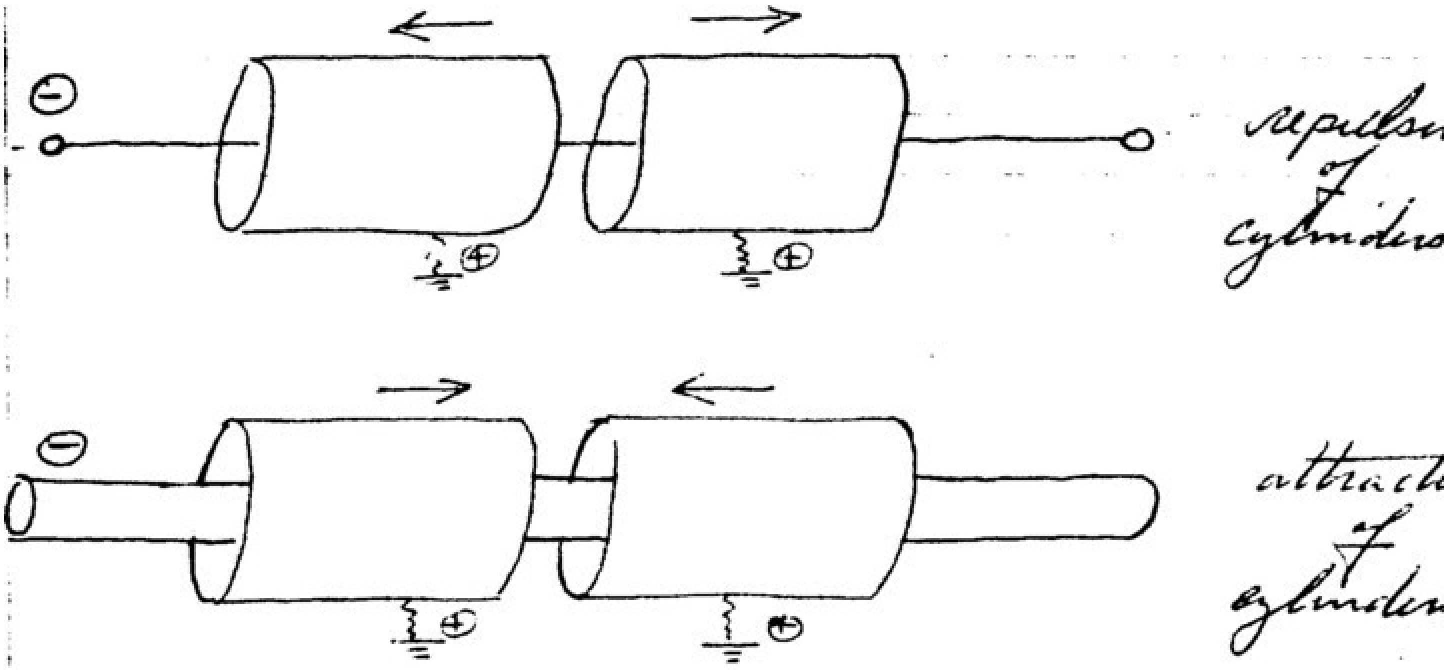
Exp No 3. In vacuum.



Exp. No. 2. Tube with cap. Tube fixed. Cap is repelled.
Exp. No. 3. In vacuum

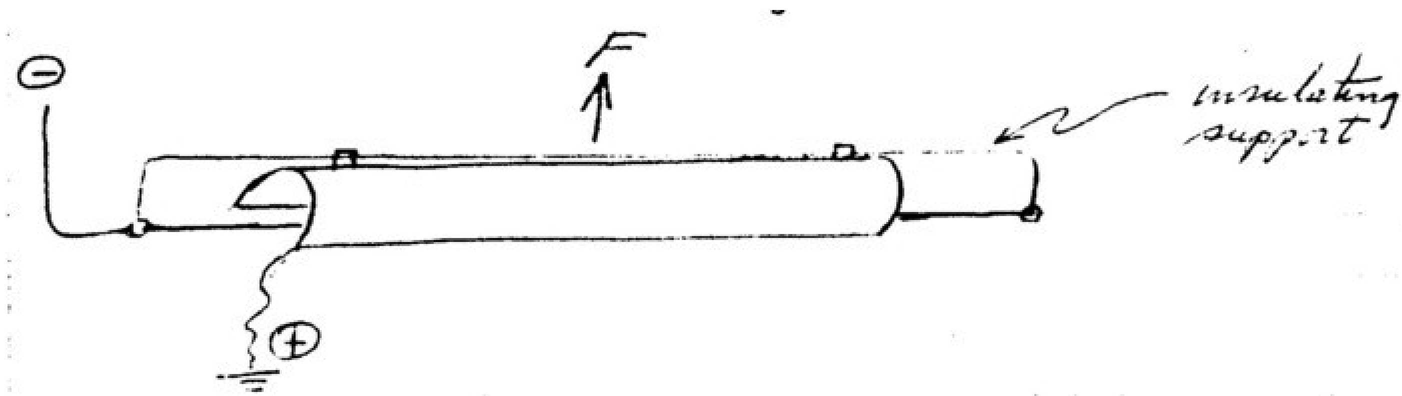
Page 17

Two related experiments may be as follows:



Further development may take the form useful in circular airforms:

Or in the so-called cigar shape:

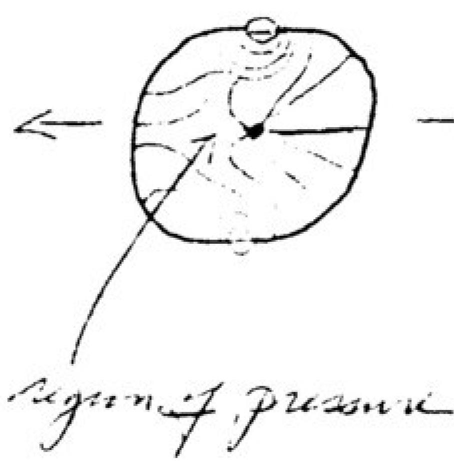


81. Theory of Pressure Confinement.

Walkertown, NC; Sept 29, 1958.

In plotting the lines of force in various electrode configurations, it becomes apparent that some rather surprising results could be produced which, at first glance, would seem to be in direct violation of the basic electrostatic laws. For example:

When outer electrode is uncharged, the two oppositely charged electrodes are attracted. When it is charged as shown, repulsion results.

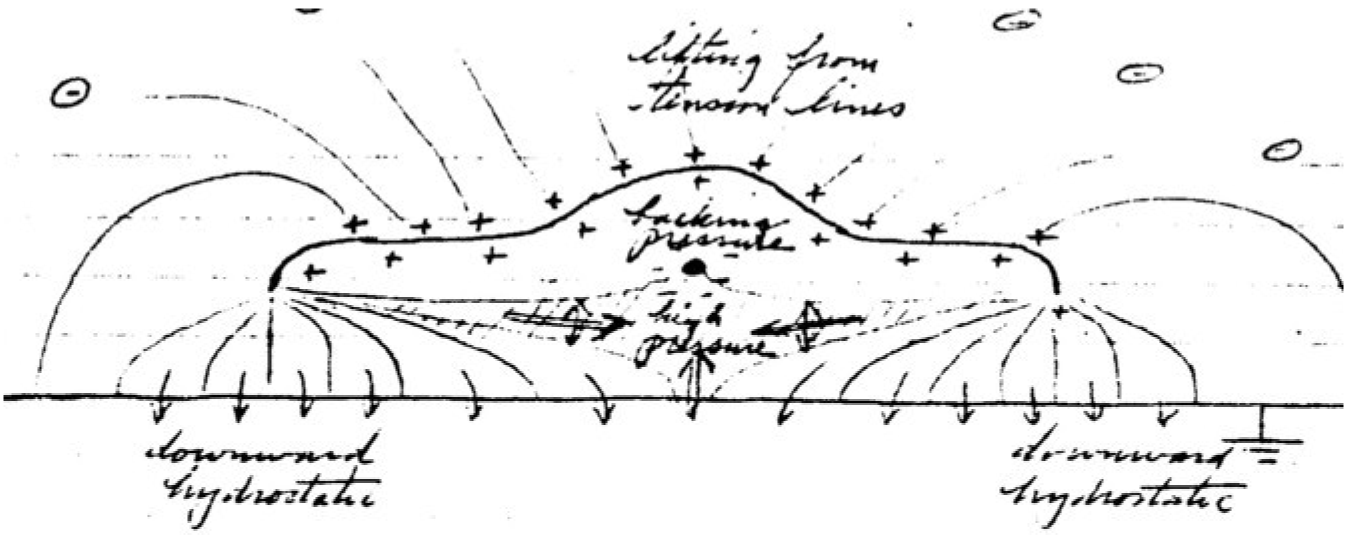


Repulsion of oppositely charged hemispheres.

In the case of a simple saucer, it is advantageous to ground the cathode, allowing the anode canopy to carry a high charge relative to ground.

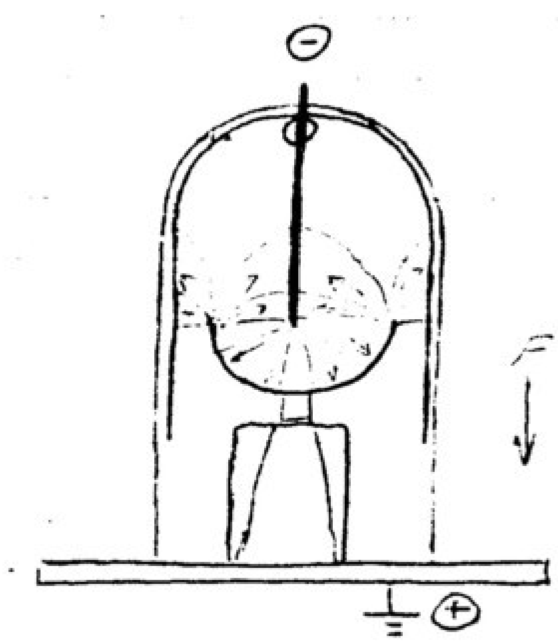
The situation would then be as follows:

Page 19



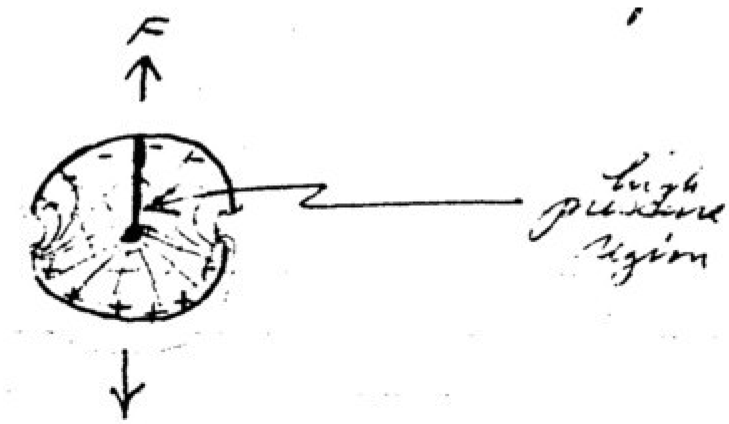
Pressure system around saucer.

And in vacuum, the following structure is suggested:



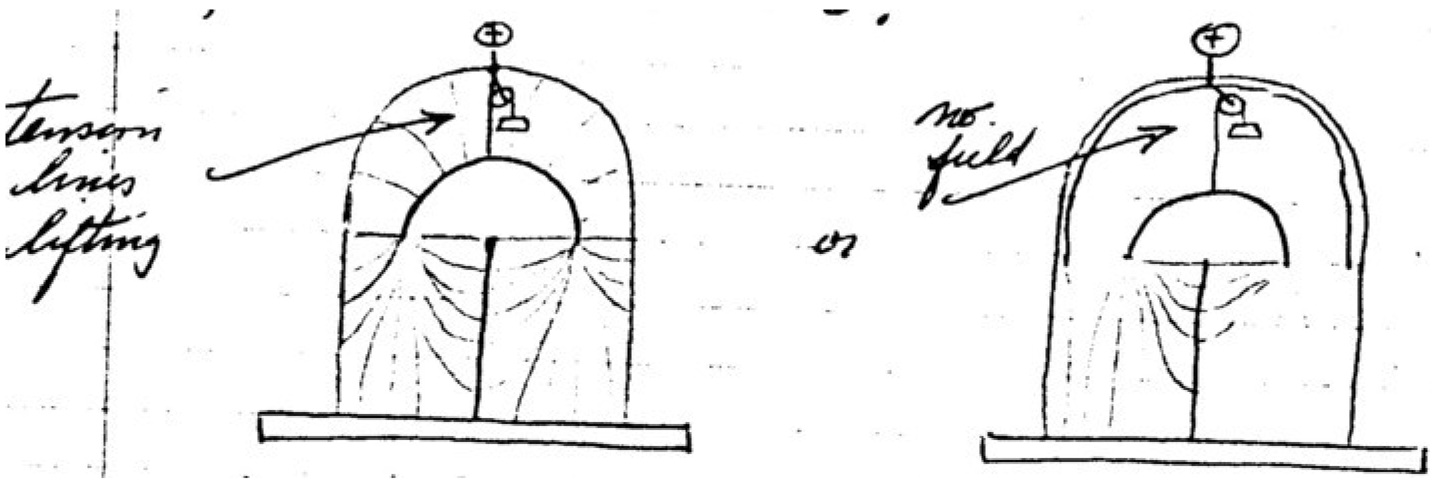
Downward force on transducer

This is based on the following effect:



Page 20

Or, similar to case 6:



All tension lines would ac to pull canopy downward. However, pressure confinement under canopy would tend to lift it.

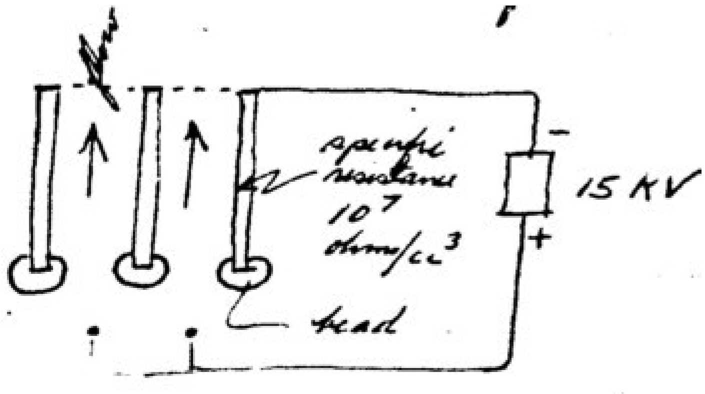
Page 21

During the period from October 1958 to October 1967 (9 years) no notes were made.

Page 22

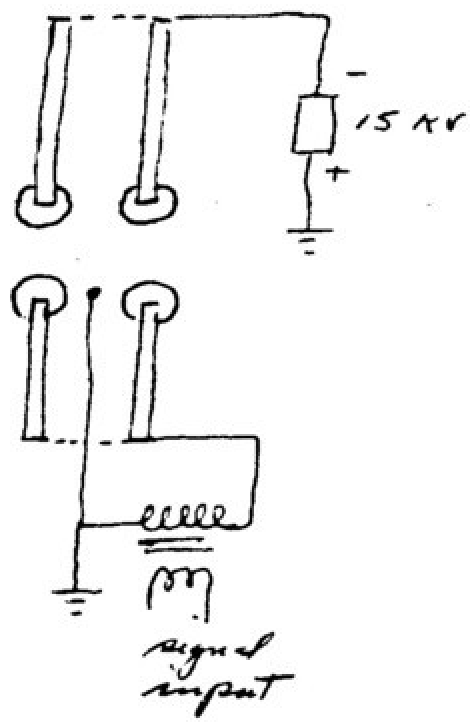
82. The Use of High-Resistance Electrodes in Electro-Aerodynamic Devices

Santa Monica, CA; Oct 23, 1967.



Strips of partially conducting material, forming electrodes for fan or loudspeaker.

83. The Asymmetrical "H" Electrode Arrangement.

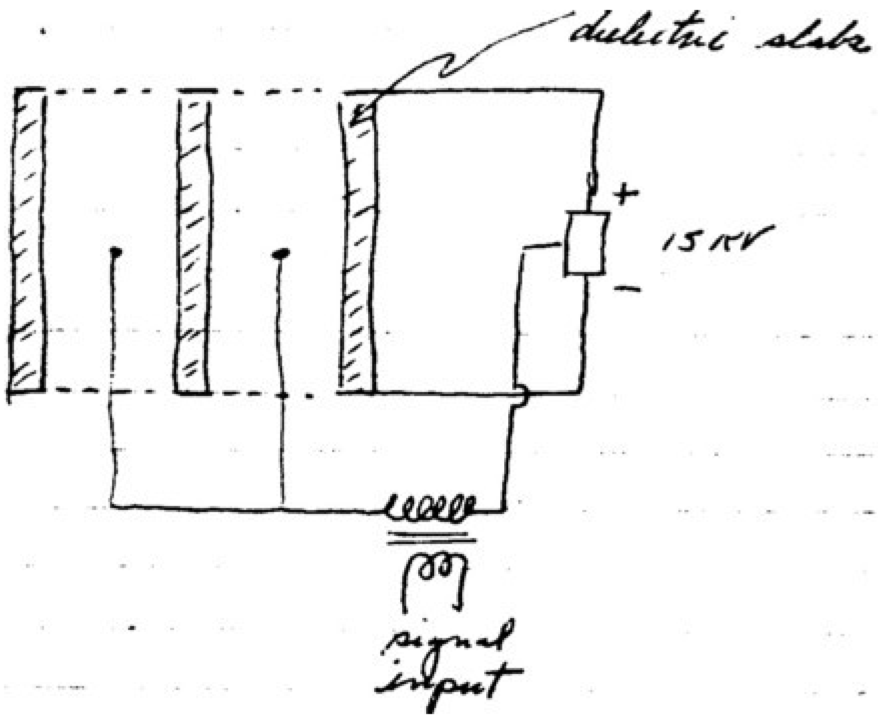


Useful for eliminating current thru modulation transformer and for increasing discharge.

Page 23

84. High-K Dielectric Slabs for Use in Loudspeaker Structures.

Santa Monica, CA; Oct 23, 1967.



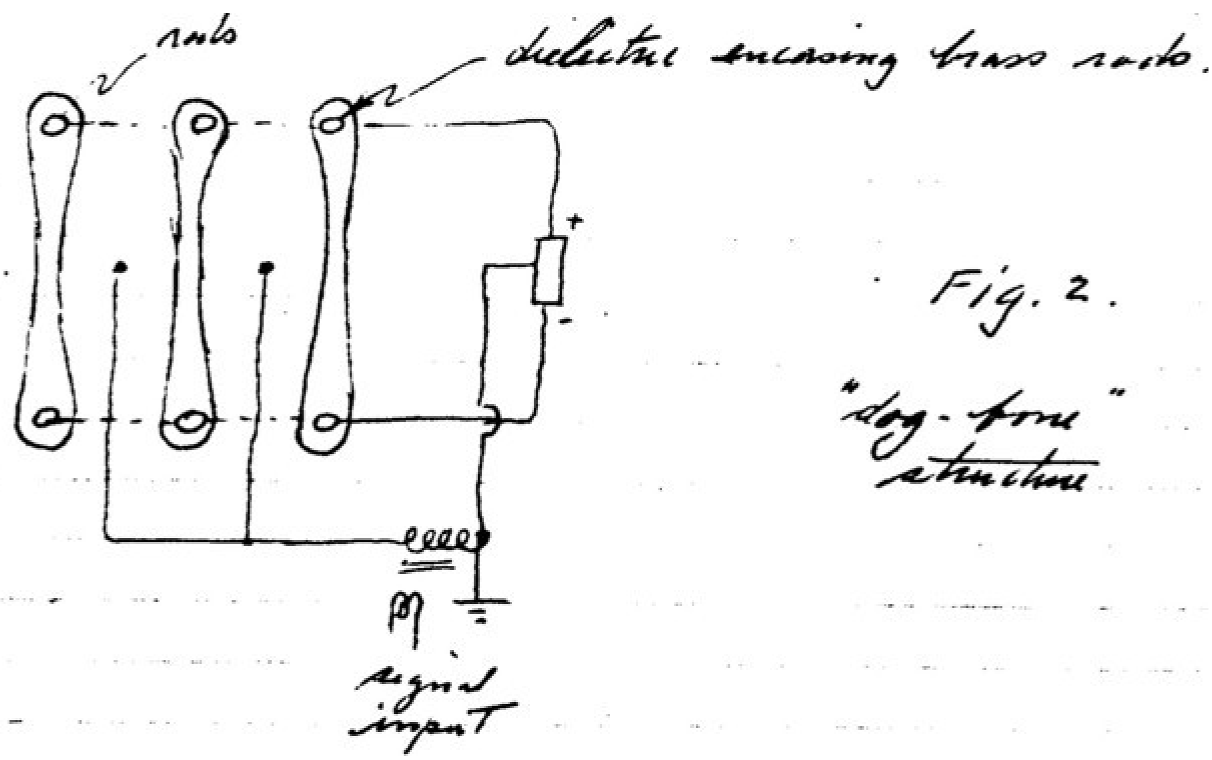


Fig. 2 has the advantage of increased electric gradient near the modulating electrode (fine wire) at the center.

85. Problem of Vibrating Wires in EK Devices

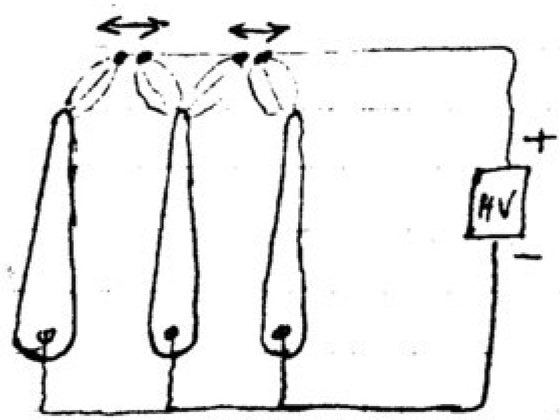
March 8, 1968

Where the fine wires are placed midway between plates, an oscillation (probably relaxation type) takes place and the wires have a tendency to vibrate sideways.

Solution 1: Place 2 wires 1/8" apart in line with the midpoint between the plates.

Solution 2: Same as above, but laterally.

It appears that the second solution is to be preferred.



Wires have tendency to spread apart.
Discharge pattern goes to the leading edge of each plate independently.

86. Ferex 7 Treated with an Ion-Conducting Salt

3-8-68

Plate material of Ferex 7 is highly sensitive to humidity changes --- ranging in resistivity form 10^7 to 10^9 ohms/cc^3.It is suggested that a hygroscopic agent such as lithium chloride, calcium chloride or sodium silicate in dilute solution might serve to increase and, at the same time, smooth out the effects of humidity.

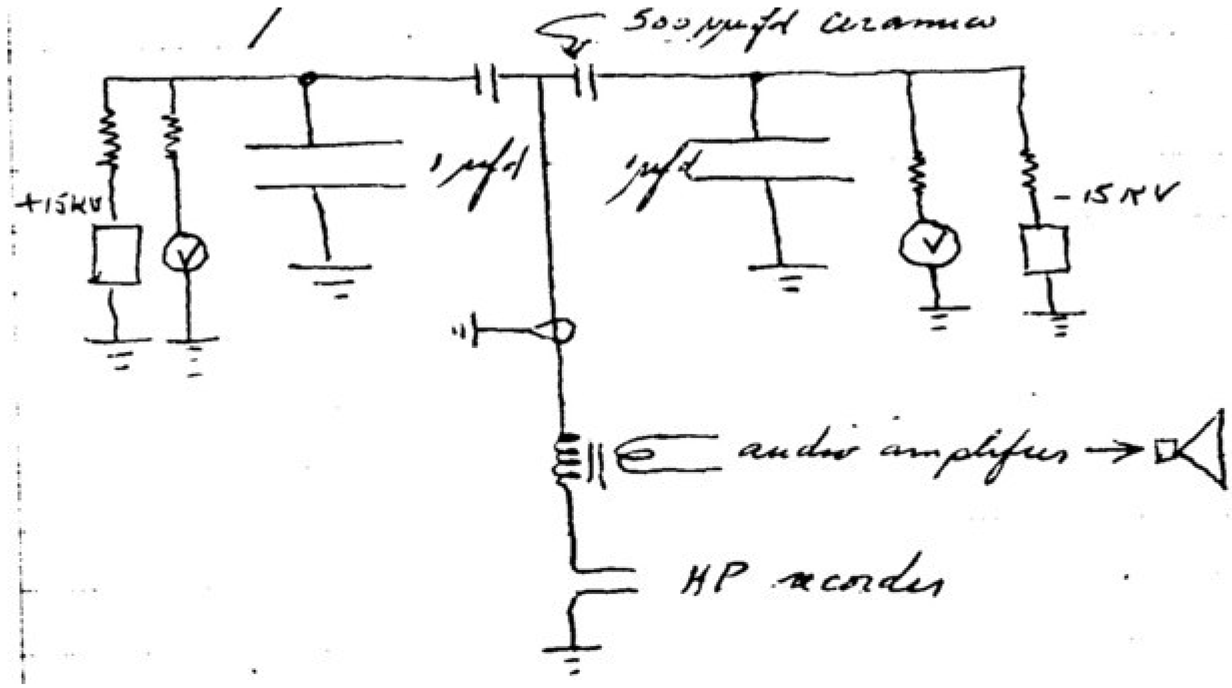
Page 25

87. The Use of Capacitors for the Detection of Gravitational Waves.

Stanford Univ. Hospital, Palo Alto, CA; May 31, 1970.

During April of this year, four 1 ufd 25 KV capacitors were installed in the small test lab in Atherton, CA and connected in a bridge circuit with 2 power supplies (15 KV each) and indicating a recording equipment.

The circuit for each of the two systems is as follows.

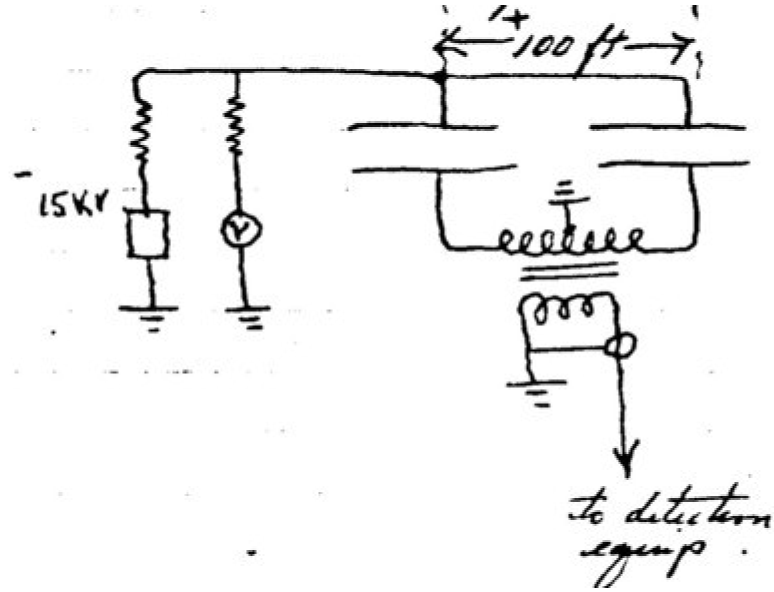


Operated at full voltage --- approx 17 KV (+) and (-).

Results: Loud pops in the loud speakers, seem to have origin in the 500 uuf ceramic capacitor. Several times, a slightly variable (approx 10 Kc) whistle was heard which lasted sometimes several minutes, ending abruptly.

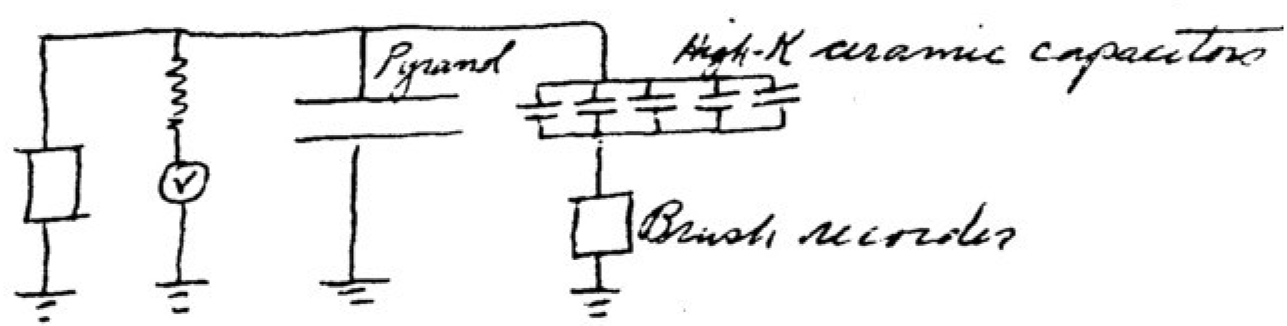
Page 26.

88. Consideration is now being given to rewiring the systems as follows:



The above system may be useful, especially when the capacitors are widely separated ---say above 100 ft --- vertically or horizontally, to indicate the direction of the incoming gravitational waves.

An alternate scheme might be:



Or an audio transformer, together with amplifiers and loudspeaker may be substituted for the Brush recorder if audio frequencies are present.

Page 27

89. A Tribo-Electric High Voltage Generator.

Catalina Island, CA; March 26, 1973.

If it is true that tribo-electric generation results from contact potential differences in dielectrics of differing dielectric constant and if it is true that the sliding motion or friction merely extends the effective surface of the dielectrics in contact and if it is true that the dielectric with greater K is

always positive and the potential difference is related to the difference in dielectric constant, then it follows that a new type of generator is feasible.

Using barium titanate (> 10,000 K) rubbing a dielectric in the range less than 10, at high speed, would give the $BaTiO_3$ a positive charge relative to the other dielectric with which it is in sliding (frictional) contact.

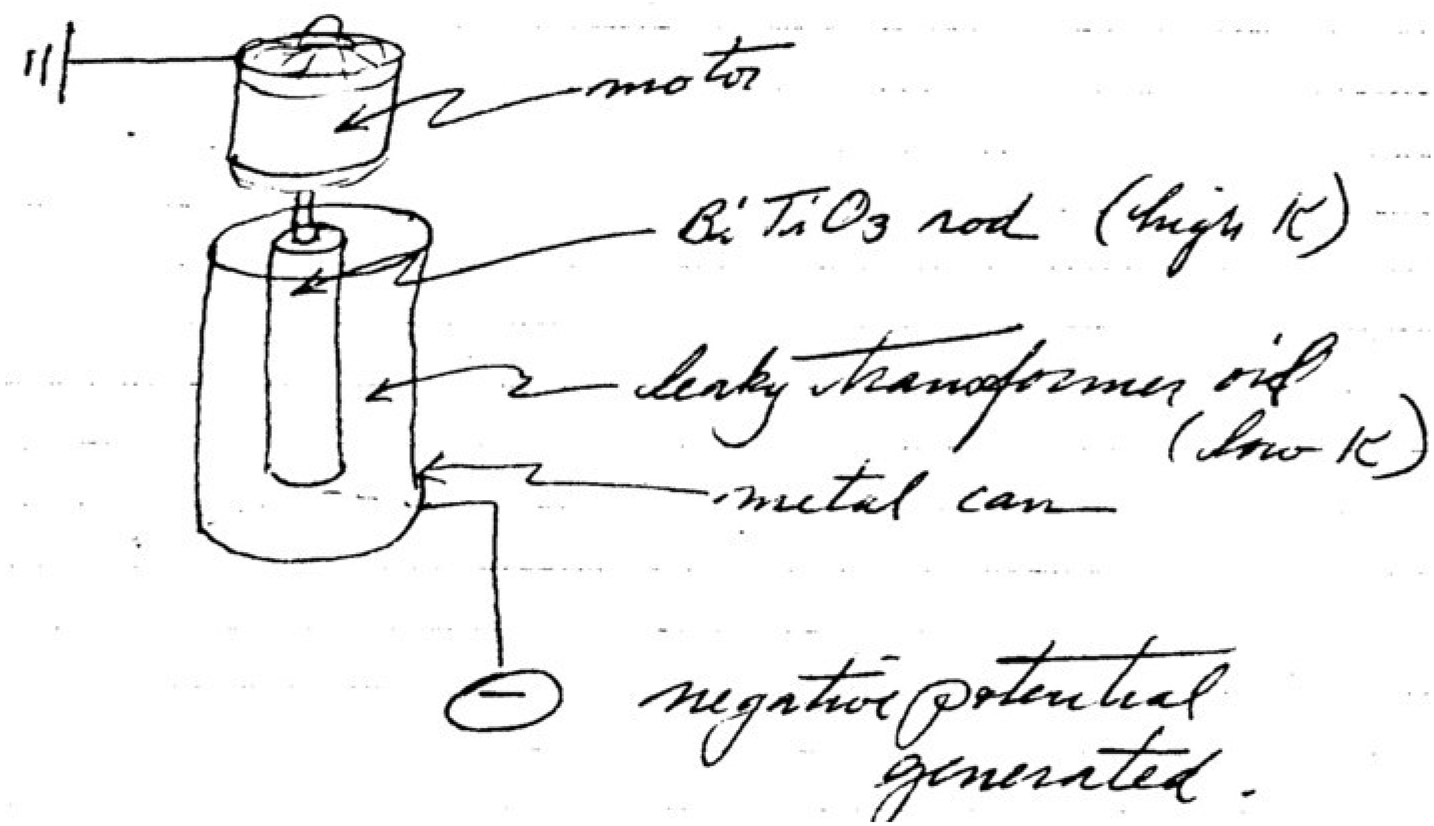
The possibility of using liquid or gaseous (negative) dielectric should be considered. Such as CCl_4, benzene, toluene or transformer oil. A liquid with low elec. resistivity should be considered in order not to limit the current output of the generator.

Both the $BaTiO_3$ and the liquid should have as high electrical conductivity as possible in order to conduct away the charges developed.

Page 28.

Rotating discs or rods of barium titanate in electrically leaky oil might be a starting place.

The setup would be as follows:



The action is simply oscillating the barium titanate rod at high speed under oil. The rod should become positively charged and the oil negative.

If the electrical conductivity of the rod and the oil is high enough, useful current may be generated.

This form of electric generator may be especially useful in directly generating high voltages. Where discs are employed in place of rods, the units may be stacked in series for high voltage generation.

Page 29

Basic patent claims would read:

(1) Method of generating electricity consisting of rapidly moving a high-K dielectric solid with respect to a low-K dielectric fluid (including gases), utilizing the difference in electrical potential between said solid and said fluid and conducting said potentials away.

(2) A frictional electric generator comprising one or more rotating high-K electrodes immersed in a low-K fluid.

T.T. Brown (3-26-73)
Witnessed: J. Patrick Quillin (3-26-73)

Page 30

90. Tribo-Excitation of Sands and Clays

In reviewing Record Book No. 1, I am impressed with the amount of thought I gave during the years 1955 and 1956 to the hypothesis of gravitationally anomalous materials and the methods by which these materials were (in nature) produced. Considerable thought was given to methods for artificially producing lighter-than-normal materials.

In those days, such thoughts were rank heresy in respectable scientific circles and this is still the case today, although there are some researchers who tend to question some of the long-established postulates. One of these, of course, is the postulate of equivalence, accepted by Einstein and other leading theorists. Now there seems to be some question. The original Oetvos experiments equating gravitational mass to inertial mass have been repeated by Dicke to an accuracy of 1×10^{-11}, seeming to confirm the equivalence.

I firmly believe, however, that equivalence exists only when weak fields are present or utilized in the experiment. Strong fields would, I believe, show non-equivalence. Hence, the experiment described on page 40 of Record Book No. 1, entitled Centrifugal Differential Hydrometry might produce materials whose gravitational mass differed greatly from their inertial mass.

This experiment certainly should be performed without further delay (it has already been 17 years! --- Inexcusable neglect)

Page 31

But what is of immediate concern --- to get the ball rolling again --- is the creation of gravitationally light materials by friction (Coulomb friction). This may be termed Triboexcitation.

On page 80 of Record Book No. 1, (Aug 26, 1956), the matter of triboexcitation s set forth. It merely calls for the use of a susceptible material such as aluminum silicate (clay) or some of the rare earth sands such as monazite. This material is placed in a glass (or quartz) container and shaken vigorously for a length of time.

In short, the method merely calls for vibrating, in a paint shaker or the like, a glass bottle of certain clays or sands.

This experiment, in crudest form, was performed today. A pint Mason jar partly filled with Sorrento (red) sand-clay from Sorrento, FL was weighed at the Avalon Post Office --- 1 lb-14-1/2 oz. It was then vibrated for 20 minutes at Chet's Hardware store on a paint shaker, then weighed (immediately) again. This time the scales did not balance in the same position but definitely balanced at 1 lb-14-1/4 oz; apparently a loss of 1/4 oz.

Of course, the scales could be in error or there was a human error in weighing. These possibilities I certainly recognize. But further tests will tell us.

Page 32

If the 1/4 oz loss of weight was real, this experiment may be history-making. It may have represented a loss in weight of 1 part in 122 or 0.819%. This would mean an excitation of 8.19 millghos (see p. 79, Record Book No. 1)

If excited to this amount, the *g* of this material (immediately after shaking) would be approx 972 cm/sec^2 rather than 980 cm/sec^2!

I intend to repeat this experiment, using the paint shaker, on the Sorrento sand and a more accurate balance than that at the Post Office. I have also ordered today, 1 lb samples of various monazite sands to be tested in a similar way, possibly also increasing the shaking time to 30 minutes or perhaps 1 hour.

Later, if these effects persist, more refined, highly accurate quantitative tests are envisioned, possibly at USC or Stanford Research Institute.

T.T. Brown (3-28-73)
Witnessed: J. Patrick Quillin (3-28-73)

Page 33

91. Triboexcitation of Sorrento (FL) Red Sand.

Catalina Island; March 30, 1973.

Test No. 90 has been repeated today, making sure that the weighing was accurately done at the Avalon Post Office (It is now confirmed by the Postmaster, Pete G. Salamunovich).

The sample of red sand which was tested was contained (as in Sec. 90) in a glass Mason jar. In two day since the last excitation test on March 28, the weight had returned to normal; i.e., 1 lb-14-1/2 oz. It was then shaken for 30 minutes and then immediately (within 3 minutes) weighed. It then weighed less than 1 lb-4-1/4 oz, having lost at least 1/2 oz, possibly 0.3 oz.

This loss of weight (if 0.3 oz is considered) represents a greater degree of excitation than that recorded in Test 90. This may have been expected, as the duration of shaking was increased 10 minutes. This represents a loss of weight of 1 part in 101.6 or 0.984%. This represents an excitation of 9.84 millighos or a value of g approx 970.6 cm/sec^2 !

This apparent confirmation is intriguing, to say the least!

T.T. Brown (3-30-73)
Witnessed: J.P. Quillin (3-30-73)

Page 34

92. The Plan for Further Testing of Triboexcitation of Various Materials

Catalina Island, CA; March 30, 1973

Orders were placed on March 28 for 4 1-lb samples of Monazite sand from various places --- Australia, Florida, etc.) with Ward's Natural Science Establishment (recommended by USC) and also 1 lb of loess (from Kansas). This material should be received within the next two weeks.

An order was placed today with Fisher Scientific Co. for a balance which should be received within the next two weeks.

This should permit, even crudely, the extension of this research. If continuing positive results are obtained, it is planned to take the project to Stanford Research Lab at Menlo Park or at Pasadena for further confirmation, using more refined methods and equipment.

T.T. Brown (3-30-73)
Witnessed: J.P. Quillin (3-30-73)

Page 35

93. Beneficiation of Super-Light Hydrogen by Positive Ray Excitation in the Electrolysis of Water.

Catalina Island, CA; March 31, 1973.

On page 8 of Record Book No. 1, it is noted that C.F. Brush once performed some experiments producing what he termed super-light hydrogen. It was stated that this was done by some sort of preferential selection of ions in or during the electrolysis of water. No details are available at this writing.

The question is asked --- what sort of preferential selection of ions. How can ions differ?

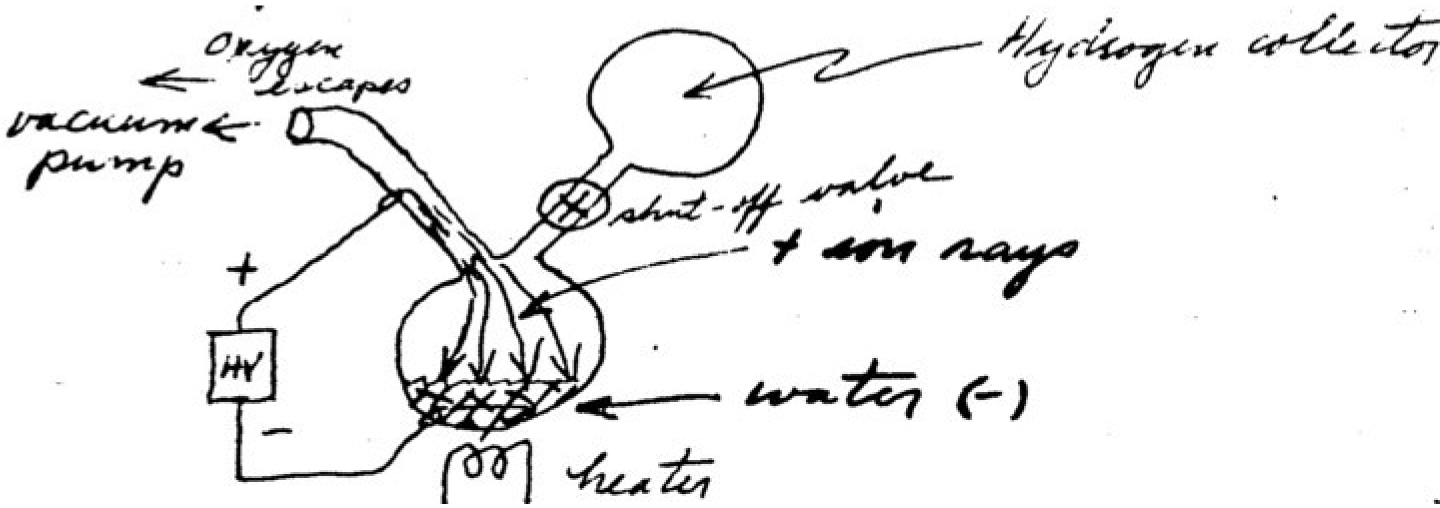
Electrolysis of water to produce H_2 and O, normally is carried on within and under the body of water. The positive (H) ions and negative (O) ions migrate to the negative and positive electrodes respectively, and (following electrical neutralization) rise to the surface as atoms of gas. The ions are the ions of the respective elements H and O.

Where can there be preferential selection of ions?

Let us change to a situation where electrolysis takes place at the surface of the water, rather than underneath. Then by using positive rays impinging on the water surface, induce electrolysis.

Page 36

The apparatus may be something like the following:



The thinking behind this experiment is that the high velocity positive rays (possibly H ions) generated in the vicinity of the positive electrode strike the surface of the water with considerable additional energy gained from the high voltage electrical field. Dissociation taking place at the surface, together with possible gravitic excitation may produce super-light hydrogen.

It is not known whether Dr Brush used high-energy ion rays in his electrolysis, but it appears in any event, to have attractive possibilities.

This method might be used to produce other gravitationally-anomalous gases as well.

T.T. Brown (3-31-73)
Witnessed: J.P. Quillin (3-31-73)

Page 37

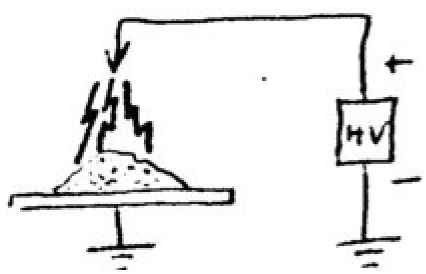
94. Excitation by Sparking

Catalina, CA; April 24, 1973.

When a high voltage DC spark, traverses a space (let us say) of an inch or more the velocity of the component ions is considerable. Negative ions and electrons leave the cathode and accelerate toward the anode --- ionizing the gas molecules and atoms en route --- a conducting path is created by this "leader" permitting a high current positive ion cascade from the anode toward the cathode (usually the earth). The impact of these charges on the cathodic target could excite the material of the target gravitically.

It is possible that lightning striking sand and/or clay could excite this material. This was proposed in Record Book No. 1, page 14. A development of this thought is recorded in pp. 92-96 also.

Material susceptible to gravitic excitation, when struck by high velocity positive ions (or particles) could become excited so as to lose weight. Hence, exitation may be accomplished by sparking.



Page 38

In the literature relating to the germination of seeds, it is recorded that germination of certain seeds has been speeded up by sparking. One wonders if then the seeds were gravitically excited and if gravitic excitation might affect life processes!

Another natural phenomenon, which appears during lightning strokes, in the so-called "ball of fire". It is recorded that balls of fire, ranging in size from that of a golf ball to that of a basket ball, have been observed to come down chimneys, float around the room (like a toy balloon) and vanish. It has been considered by some scientists that the energy of the lightning stroke could have created (or released) antimatter, and that a timy nucleus of antimatter was being annihilated --- forming a reddish ball of luminescence. I am wondering, actually if the ball of fire could be gravitically excited nitrogen or oxygen caused by positive changes which were present in the

lightning stroke. The visible (red) radiation from the ball of fire could be the energy being released by gravitic decay.

In any event, the whole area of gravitic excitation by positive bombardment is intriguing.

Page 39

95. Antigravitational Materials in Nature.

Catalina Island; April 24, 1973.

There are several synonyms for antigravitational materials, such as contra-terrene materials (CTM), antigravitic matter or antimatter. All are supposed to act oppositely in the (normal) gravity field.

All such materials in the pure state are believed to loft in the Earth's field, being repelled by the Earth and, if free, will accelerate (fall) into space and be lost.

Hence, it would appear to be unlikely that antigravitic materials would ever be formed on Earth unless they were rigidly associated with and weighted down by terne materials.

Such antigravitic matter in the presence of ordinary matter would likewise tend to decay. Even anti-matter, in the present accepted hypotheses, would react (violently) with matter, undergoing complete annihilation, accompanied by tremendous release of energy. It is presently believed that a matter-antimatter reaction would release far more energy than nuclear fusion..

Page 40.

It is conceivable, however, that matter and antimatter would "live together" if suitably insulated from one another. The "Liedenfrost" theory may provide such an answer. But even this requires the gradual radiation of energy. Hence, if antimatter were ever found trapped in ordinary matter, it would be revealed by its thermoactivity, being constantly warmer than the environment.

The decay of excited terrestrial materials emitting heat, is similar (possibly related) to antimatter in the presence of matter.

In searching for anti-gravitational material in nature, one would look for two things:

(1) The spontaneous evolution of heat, and
(2) Retardation in gravitational acceleration (value of g).

Charles Thomas Brush, in various articles in the Physical Review, found such materials in the complex silicates, lavas and clays. His experiments, performed at the Case Institute of Technology indicated retardation of g. Confirming tests performed at the National Bureau of Standards revealed a real and readily measurable evolution of heat.

The scientific community has never recognized Dr Brush's important discoveries in this field. No adequate theory to explain his results has ever been worked out.

Page 41.

Nevertheless, Dr Brush led the way, and someday his work will be recognized.

There are several interesting materials which apparently are faintly antigravitic in nature. These are:

(1) Sandusky clay (near Sandusky, Ohio)
(2) Loess
(3) Monazite (rare earth elements)
(4) Certain lavas, and volcanic glases.

Either these materials an infinitesimal fraction of antimatter (insulated by Leidenfrost effect) or they are excited terrestrial material --- excited by cosmic radiation, sunlight or nuclear radiation or by a prehistoric event such as meteoric impact.

One would look. For example, to the ejecta from meteorite craters, such as the Barringer Crater in Arizona, for residual or vestigial material, excited by the impact (white sand, south rim).

Or, in lava flows, were material has emerged from deep within the possibly radioactive interior of the Earth.

Or, in loess from deserts such as Sahara or Gobi, where susceptible excitation has lofted, decayed and returned to Earth.

Page 42.

The rare earth elements --- most of the lanthanides are interesting possibilities. In the gravitational periodic table (prepared by the Townsend Brown Foundation) the rare earth elements have strangely low specific gravities, indicating gravitic excitation. These materials should be studied intensively for retardation of g and spontaneous evolution of heat.

It is interesting to point out in this connection that the lanthanide series of elements is homologous with the actinide series of radioactive elements.

Is it possible that the actinides are "radioactive" and (similarly) the lanthanides are "thermoactive", (?) both giving off energy!

The element tantalum (atomic No. 73) is also anomalously light (sp gr 16.6) and may likewise be interesting to investigate. It is 15% lighter than (I believe) it should be.

Aluminum is 30% lighter and silicon is 31% lighter. The compounds such as aluminum silicate (clay) and silicon dioxide (sand) are the materials Brush studied.

Phosphorus is 21% lighter, Sulfur 14% lighter, and Chlorine 13%.

Ytterbium has the greatest anomaly of all, 59% lighter than normal, according to the table.

Page 42.

If, in the course of biological evolution, the Creator has utilized anomalously light materials to advantage --- such as in the flight of birds or insects --- should we no look in this direction for clues?

Suppose we consider the chemical composition of bird bones or that of the bodies of insects. Or certain air-borne pollens and spores.

Calcium, however, is only 5% lighter than normal, according to the table. However, calcium may be combined with other elements (in the case of bird bones). Strontium, the homologue of calcium is 16% light. Maybe bird bones have more strontium?

Monazite sand is interesting, consisting of small rounded grains, vari-colored, it has many of the rare earth elements. Centrifugal hydrometry could beneficiate this kind of material easily. (See p. 40, Record Bk 2).

Tektites, believed to be of extraterrestrial origin (possibly from the moon) may be strewn on the Earth from lunar impact craters could be highly susceptible material (to gravitic excitation). Although extremely rare and expensive, tektites should be studied for information on gravitic excitation.

Page 44.

96. Gravitic Excitation by Positive Ion Bombardment.

Catalina Island, July 13, 1973.

It is proposed that rather simple experiments might be helpful in proving or disproving the idea that a loss of weight might accompany positive ray bombardment.

A laboratory setup could take two forms, as follows:

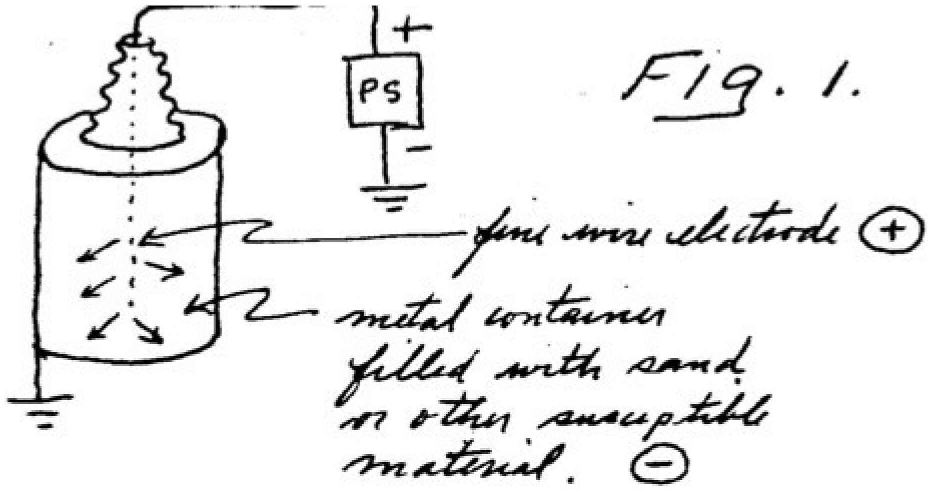


Fig. 1.

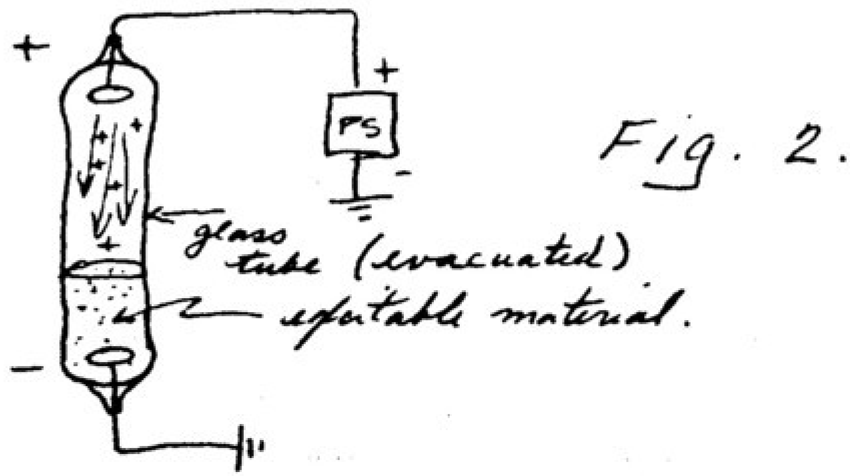
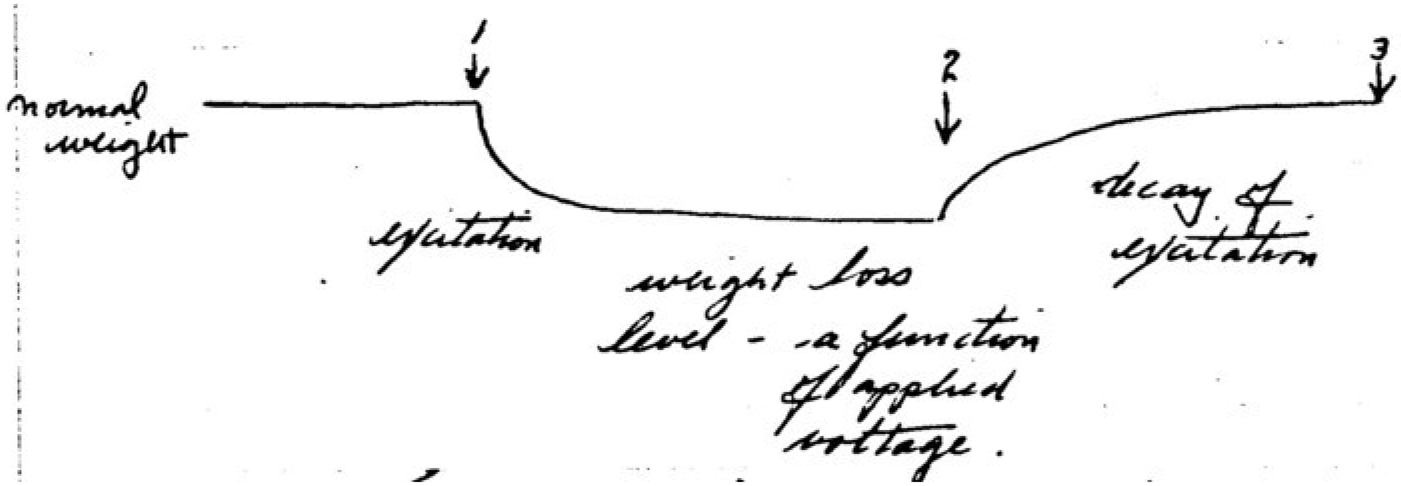


Fig. 2.

Page 45.

Excitation cells are weighed before, during and following the application of high voltage. Results would be considered positive if the weight followed this type of curve:



In Fig. 1, excitation may take place at atmospheric pressure. The positive corona around the fine wire in the interstices between sand grains may excite the grains immediately adjacent. That excitation may then spread by gravitic conduction from grain to grain, hence to the entire volume eventually.

In Fig. 2, the susceptible material is placed in a partially evacuated glass tube and bombarded by positive ions. Loss of weight may follow.

T.T. Brown (July 13, 1973
Witnessed: Linda Ann Leach (7-13-73)

Page 46.

97. Lunar Type Sidereal Electrometer

Catalina Island; July 13, 1973.

Except for very first experiments performed at Janesville, Ohio during the period from 1923 to 1930, all experiments wherein force is developed by massive high-K dielectrics the rotary form has been used. The sidereal radiation electrometer used in 1937 and 1939, and all years since, was a rotor of differential high K_m sectors.

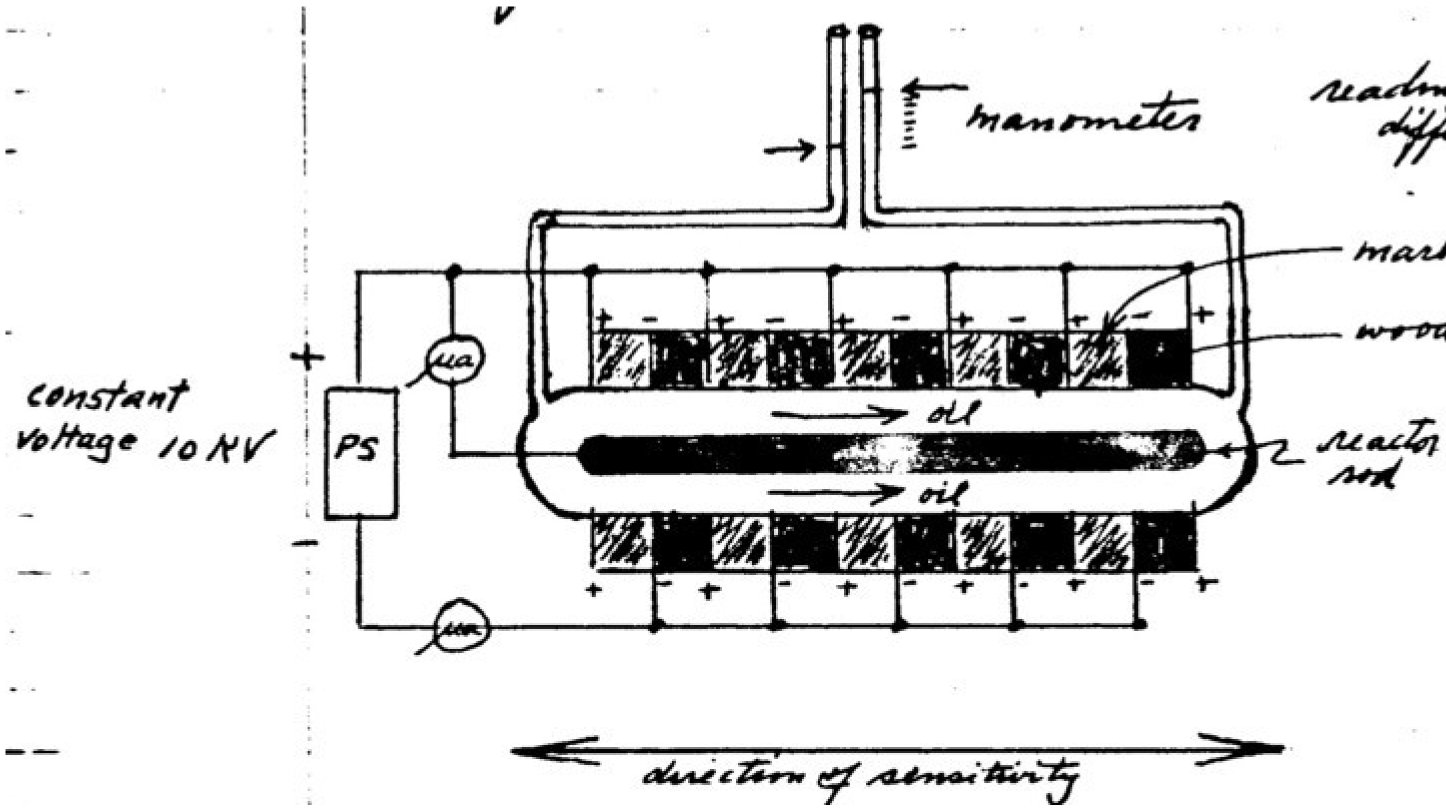
For some time, it has seemed possible to make a linear unit, one which may have surprising directional characteristics.

The directional ability of the rotary electrometer (if any) is limited undoubtedly to the plane of the rotor. A linear electrometer should have a pronounced maximum in its longitudinal direction, and this would be a great assistance in determining the direction of origin of the (cosmic) radiation.

In essence, the differential dielectrics and reactor elements would simply be straightened out into a line --- so that linear thrust would occur rather than torque.

On the following page, such a linear electrometer is illustrated. In this particular form, the force causes the insulating fluid (transformer oil) to flow, and sensing depends upon the pressure differential of the oil at the two ends of the electrometer.

Page 47.



Alternate Sensor (electrical) may be possible with the above design, instead of the manometer.

(1) Measure current to reactor rod and/or
(2) " " " dielectric sections

A recording galvanometer would be required since current is in the low microampere range.

T.T. Brown (July 13, 1973)
Witnessed: Linda Leach (7-13-73)

Page 48.

Miscellaneous Data:

Earth's orbital velocity: 30 km/sec
Earth's axial velocity: 0.4 km/sec

Toward 16h R.A.: 19 km/sec (by observation of star field)
Toward 5h R.A., 70 degrees S. Dec.: 208 km/sec (Miller ether drift computations)
Star field toward 70 degrees S., 5h RA: 227/km sec (toward Great Magellanic Cloud).

According to Maris, *Physical Review* 54(6): 478, Sept 15, 1938, atmospheric (barometric) pressure is:
highest at 17h ST at 80 N
highest at 5h ST at 50 S
lowest at 17h ST at 50 S…
appears to indicate an incoming thrust on the barosphere --- possibly the entire earth --- from a direction in space 5h RA in the southern hemisphere.

Gravitational waves that bathe the Earth (Press, p. 344) ---

ELF (Extremely Low Freq.): 10^7 to 10^4 sec --- ~ 0.1 pc to 20 AU wavelength
VLF (Very Low Freq.): 10^4 to 10 sec --- 20 AU to 3 x 10^6 km
LF (Low Freq.): 0.10 Hz to 100 Hz --- 3 x 10^6 km to 3000 km
MF (Medium Freq.): 100 Hz to 100 KHz --- 3000 km to 3 km
HF (High Freq.): 100 KHz to 100 MHz --- 3 km to 3 m
VHF (Very High Freq.): 100 MHz to 100 GHz --- 3 m to 3 mm

Page 49

Miscellaneous Data:

Beneficiation of gravitationally anomalous fractions by centrifugal (differential) hydrometry.

Heavy solutions: Thallium formate, Acetylene tetrabromide, Sodium malonate.

Page 50.

98. Explanation for the Thrust of the Sidereal Radiation Electrometer

Catalina Island; Aug 19, 1973.

Reasons for the thrust and for the variation in thrust are the two dominant questions. One cannot be fully answered without the other.

In computing and analyzing the sidereal radiation records, it must be borne in mind that the instrument scale (with 50 as center) is inverted, so far as torque or thrust is concerned.

For example, in the 1937 and 1939 records, a reading of 40 represents twice the thrust (or torque) as 20. In future instruments the method of reading should be revised. This would mean, then, that the 16h ST peak would actually be a thrust minimum. In the case of lunar hour angle --- the passage of the meridian (transit) of the moon actually causes a lessening of thrust.

In this connection, it is interesting to note that the Dayton C. Miller observations with the interferometer, both in Cleveland and on Mt Wilson, show minima at 16h ST. And this brings to my mind the statement made by Dr Miller in Cleveland, when he looked at our electrometer records, that they are "inverted".

Page 51.

The physical connection between our "thrust" and the presence of the moon is certainly far from being readily explained. The first thought, naturally enough, was that it was tidal and related to the gravitational field or gravitational potential. This still may, or may not, be the case.

The relation between our thrust and Miler's residual "ether drift" is even more difficult to explain. I have no doubt that Miller's very laborious electrometer readings are accurate and scientifically valid --- whether there is an ether or not. Miller's work is monumental, certainly one of the classics of physics. His determination that the Earth (and the entire solar system) is moving away from the galactic center toward 5h RA 70 S decl. at 227 km/sec is worthy of more consideration from scientists today than it is receiving.

I have taken the time recently to study carefully Miler's Report and have come to the conclusion that the interferometer arms change in length as the system is rotated with respect to the Earth's movement thru space. Miler believed that the velocity (total time) of light was changing. He did acknowledge the possibility of the Lorentz-Fitzgerald contraction, and I believe Miller came to the conclusion that his observations showed only a fraction of the expected fringe-shift because of the almost complete cancellation resulting from the Lorentz contraction. The operation of this contraction was not (as stated) 100% but left a residual of 5% which appears to be what Miller observed.

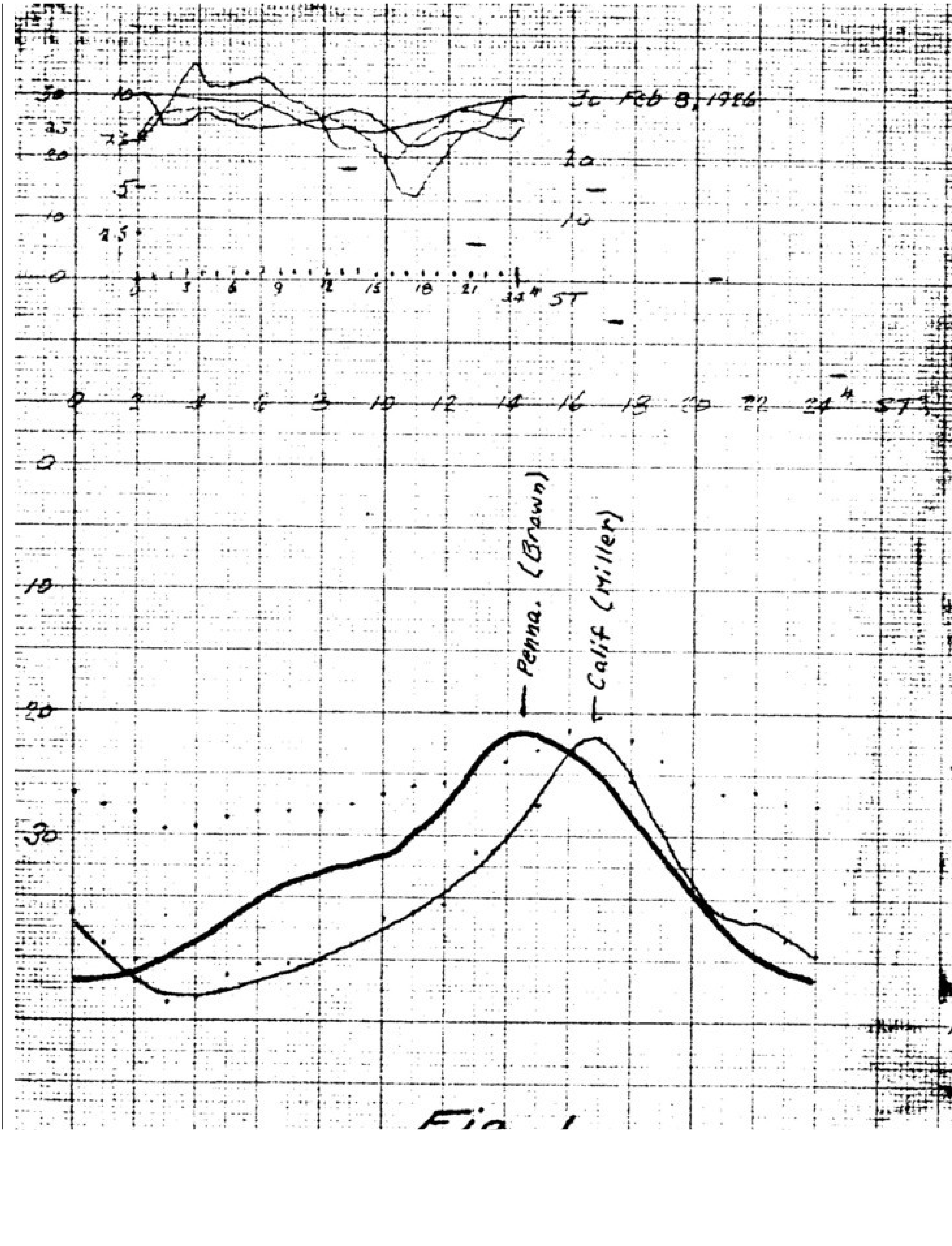
Page 52

Whether an ether does or does not exist is hardly the important point. What is important is that Miller observed something. The result was not entirely negative, as contemporary relativists would have us believe.

My interest is --- what relation exists between Miller's interferometer and our electrometer. One relates to the transmission of light and/or physical dimensions. The other relates to electric fields or electrical conductivity.

It is possibly true that there are other related parameters such as gravitational potential, electrostatic potential of the Earth (as an "isolated" sphere in space), the dielectric constant and/or magnetic susceptibility of ambient space (k-mu density) and these possibilities may eventually come into this complex picture. Random or cyclic disturbances from gravitational waves could further add to the confusion.

It appears certain that the Miller interferometer is related to the Brown electrometer. See chart (Fig 1):


3c Feb 8, 1986
24^h ST
Penna. (Brown)
Calif (Miller)
Fig. 1

Comparison of sidereal curves ---
--- Miller's interferometer on Mt Wilson (1926)
--- Brown's electrometer at Philadelphia (1939)

Page 54

If there is truly a physical relation between the two phenomena, what is it?

Hypothesis:

(1) The interferometer arms could be changing length. The cohesive forces in matter (steel in this case) are largely electric. Electrostatic attraction (valence bonds and interatomic cohesiveness) could be affected by:

(a) Dielectric permeability of medium
(b) Magnetic " " "
(c) Velocity (contraction)
(d) Gravitational flux density
(e) Unknown factors

(2) The electrometer thrust could be affected by:

(a) Conductivity differential (resistance)
(b) Dielectric permeability (susceptibility
(c) Unknown factors

(3) The relationship must be (it would seem) due to the electrical factors the two instrumentalities have in common.

Let us look at the structure of the electrometer in detail. Realizing that the thrust requires electrical energy, current is the dominant factor. Variations in thrust must be accompanied by (or result from) changes in current.

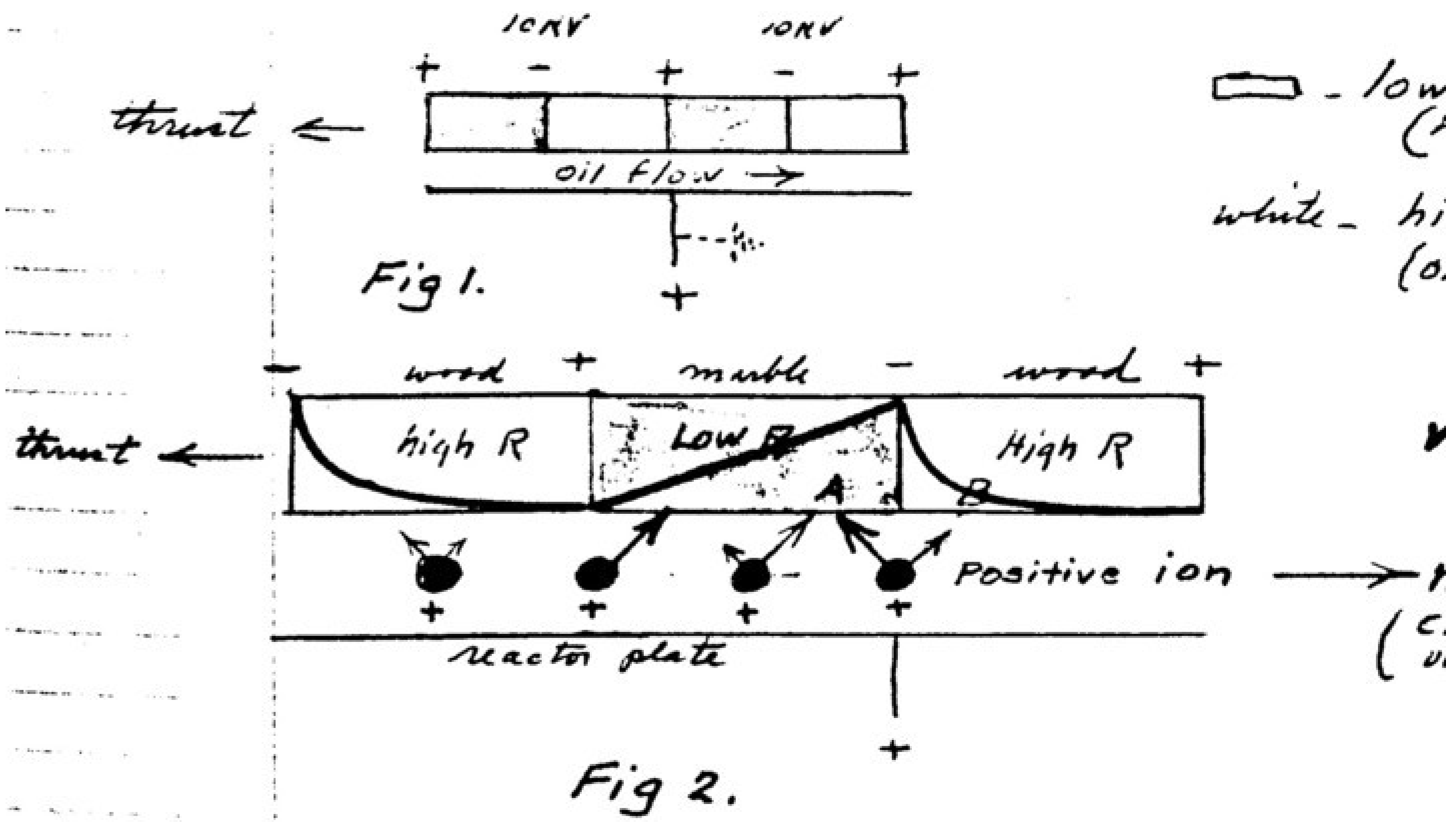
Page 55.

As a causative factor, electrical conductivity would be a likely candidate. It could be affected by:

(a) ionization from penetrating radiation
(b) electron migration
(c) temperature
(d) physical contraction (velocity)
(e) " " (gravitational waves)
(f) gravitational potential
(g) electrostatic
(h) unknown factors

Electrical resistance is not a simple thing. As a reciprocal of conductivity, resistance of ordinary substances, metal wire, etc., is not just a function of temperature but a host of other factors as outlined above.

Let us look now at the structure of the electrometer with this much in view.



Page 56

It will be seen from Figs 1 and 2 that the voltage profiles of dielectric blocks of different resistivity act upon ambient regions of charged oil (ions) to move the body of oil with respect to the dielectric blocks.

Hence, the thrust upon the dielectric blocks, and the oil in the opposite direction, arises from the electrostatic migration of positively-charged oil regions (we may even refer to them as ions).

The magnitude of the thrust (torque of the rotor) depends upon the:

(1) resistance difference between high and low conductivity blocks
(2) ion density (conductivity) of the leaky transformer oil.

Summary:

In the foregoing, the torque of the electrometer is a direct function of the total current., There is no other energy source. High voltage is used to provide the electrostatic attraction for ion migration and ion-momentum transfer to the ambient body of transformer oil. The oil must be slightly conductive (leaky) to provide ions.

The oil moves in one direction, the dielectric blocks in the opposite direction.

Page 57.

The question which now comes to mind is why does the thrust change. Why does the differential resistance change with extra-terrestrial factors?

There could be a resistance change in any one, two, or all three of the resistance bodies:

(a) Low resistance block (marble)
(b) High " " (oiled pine wood)
(c) Transformer oil

Only further critical testing will reveal the answer.

All could be affected by penetrating radiation, nuclear or cosmic rays. Magnetic fields would not. I mean, of course, such magnetic fields as normally surround the instrument (terrestrial magnetism).

A test performed in 1939 by Pomerantz (Bartol Res. Fdn.) indicated no observable change in torque resulting from placing a piece of radioactive copper (isotope) on the lid of the electrometer. This test was performed while the instrument was in its constant temperature vault in the basement of the Randal Morgan Lab of Physics, Univ. of Penn., Phila. No other test with radioactive material has been made.

In any event, the sidereal and lunar characteristics of the torque are not correlated with penetrating radiation of any known type.

Page 58.

Other non-ionizing radiation such as neutrino flux (from the sun) and gravitons from space can certainly penetrate the electrometer shielding but it is difficult to see how they could influence torque.

One factor may be of immediate interest, and that is the electrostatic potential of the Earth (as an invisible, insulated sphere in space). All planets obviously receive charged particles from the sun. The solar wind consists of highly charged particles and presumably also electrons. The Earth intercepts and captures particles in constantly varying amounts. Hence, the net charge could be varying greatly, possibly to the extent of several million volts.

The moon likewise may be charged, probably differently from the Earth. An electrostatic field could exist between the two. This could explain the effects of the moon upon the electrometer. Inductive effects of the Moon upon the Earth could readily alter the electrostatic charge on the Earth side facing the Moon.

Instrument records indicate substantial changes with lunar phases and lesser changes with lunar right ascension, declination and lunar distance (apogee and perigee).

Only two explanations come to my mind: (1) electrostatic potential and (2) gravitational potential.

Page 59.

To my knowledge, there is no accepted method for measuring the electrostatic potential of the Earth. There is no reference potential. It would be like a mono-polar voltmeter.

In the literature, the work of Prof. Fernando Sanford (Prof. Emeritus of Physics, Stanford Univ.) comes to mind. Shortly after 1900, Prof Sanford published "Terrestrial Electricity" (*Univ. Series Math. And Astron*., Vol. II, No. 1, L.C. QC 806.S3 AS 36L56, Vol. 2, No. 1).

In this volume, as I remember, Prof Sanford conducted investigations with a quadrant electrometer and obtained some striking evidence of lunar electrostatic effects. I am trying to locate this reference at the present time. Sanford reports that it is out of print. L.A. Public Library has misplaced its copy.

My program for the immediate future is to concentrate on the possibility that the electrometer is indicating resistance changes. I will be looking for other research and other evidence that include resistance changes which are not accounted for.

This is especially important if these changes accompany any of the lunar cycles or are correlated with sidereal time.

Page 60.

99. Torque and Resistance Change in the Brown Sidereal Radiation Recorder.

Catalina Island; Aug 19, 1973.

Since the instrument scale is inverted, and since an increase in torque requires an increase in total current, it necessarily follows that an increase in instrument reading (instrument units) means an increase in resistance.

Considering the 1937 (Ganesville) records:

(1) Resistance is maximum 2 hr after moon crosses upper meridian
(2) Resistance is minimum at noon, Solar time.

(3) Resistance is maximum at 16 h ST
(4) In all annual charts, "instrument units" parallel "resistance" in direct relationship.

If the resistance if a conductor is related to absolute electrical potential and if the potential of the Earth changes, then…

Page 61

100. Resistance of a Copper Wire

Catalina Island; Aug 19, 1973.

In 1892, Prof Sanford prepared a report of experiments performed at Leland Stanford Univ. on the resistance of a section of copper wire 1 mm diameter, 120 cm long. The report subtitled "Some Observations upon the Conductivity of a Copper Wire", published by the University. LA Public Library R 537.22.4

His copper wire, reported at 1 mm, therefore was 0.039" diameter or No. 18. According to resistance tables of pure copper (99.5%), the resistance of No. 18 is approx. 0.00635 ohms/ft. Sanford reports approx. 0.03400 ohms at 22° C for the length of 120 cm.
Sanford: 0.0280 ohms/cm; Tables: 0.02508 ohms/cm.

In the Sanford experiments, the resistance changed with temperature according to the equation:

$R_{temp} = 11\ T + 3159$

Sanford attempted to observe any (theoretically possible) increase in resistance due to the immersion of the conductor in liquids and/or gases of high specific inductive capacity (K).

His results, while indicating to him at least, a systematic positive result was s irregular and confusing, that he concluded hoping "to pursue these investigations much farther during the coming year (1893), and to accumulate data from which it may be legitimate to make comparisons".

Page 62.

101. Theory of a Resistance Cross for Extraterrestrial Factors. Theory and Development.

Catalina Island; August 19, 1973

In the preceding section, reference was made to the work of Fernando Sanford. A copper wire 1 mm diameter, 120 cm long was tested repeatedly and an anomalous change in resistance was noted.

Statistics from the Sanford data indicate that Sanford was confused by the irregularity. On page 10 of his report, he states, "The cause of this irregularity is unknown to me".

In working over his statistics, correcting his results for temperature variations, I have come to the conclusion that the resistance changed radically from day to day and even from hour to hour. Such a change in secular or cyclic fashion, Sanford apparently did not recognize. There is no report in the literature to my knowledge at this time that Sanford continued these observations in subsequent years (as he wrote he intended to do).

Resistance anomalies, computed from Sanford data (corrected for temperature variations) show both secular and cyclic changes. These are 3 peaks which are evident between Feb 22 and May 19, 1892, on March 7, April 6 and May 5 which appear to be related to the position of the moon.

Page 63

1892. Daily Average Resistance of Cu Wire (1 mm diam/120 cm long) in air and Various Dielectrics. Peaks at March 7, April 6, and May 5. 29 day period.

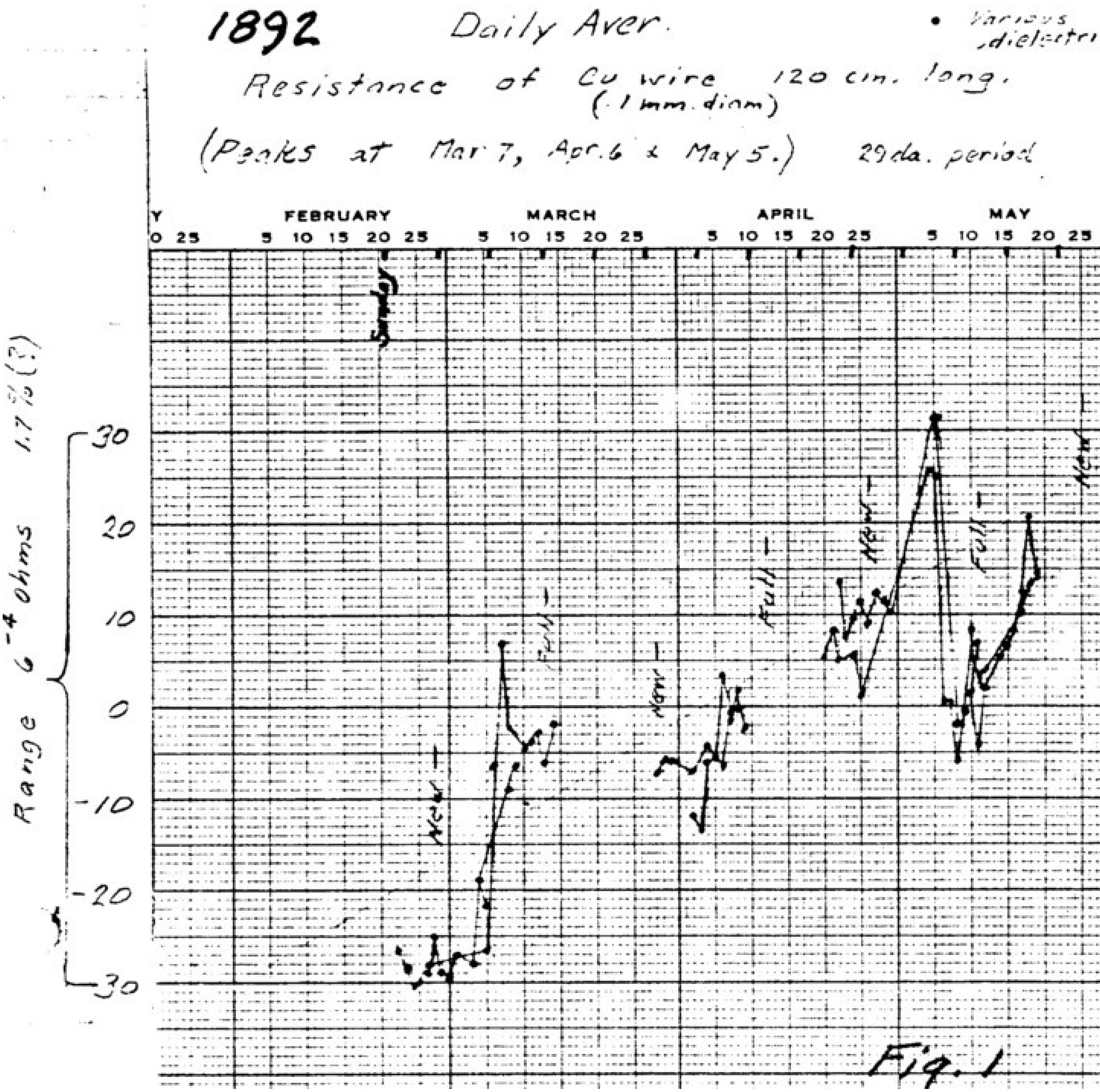
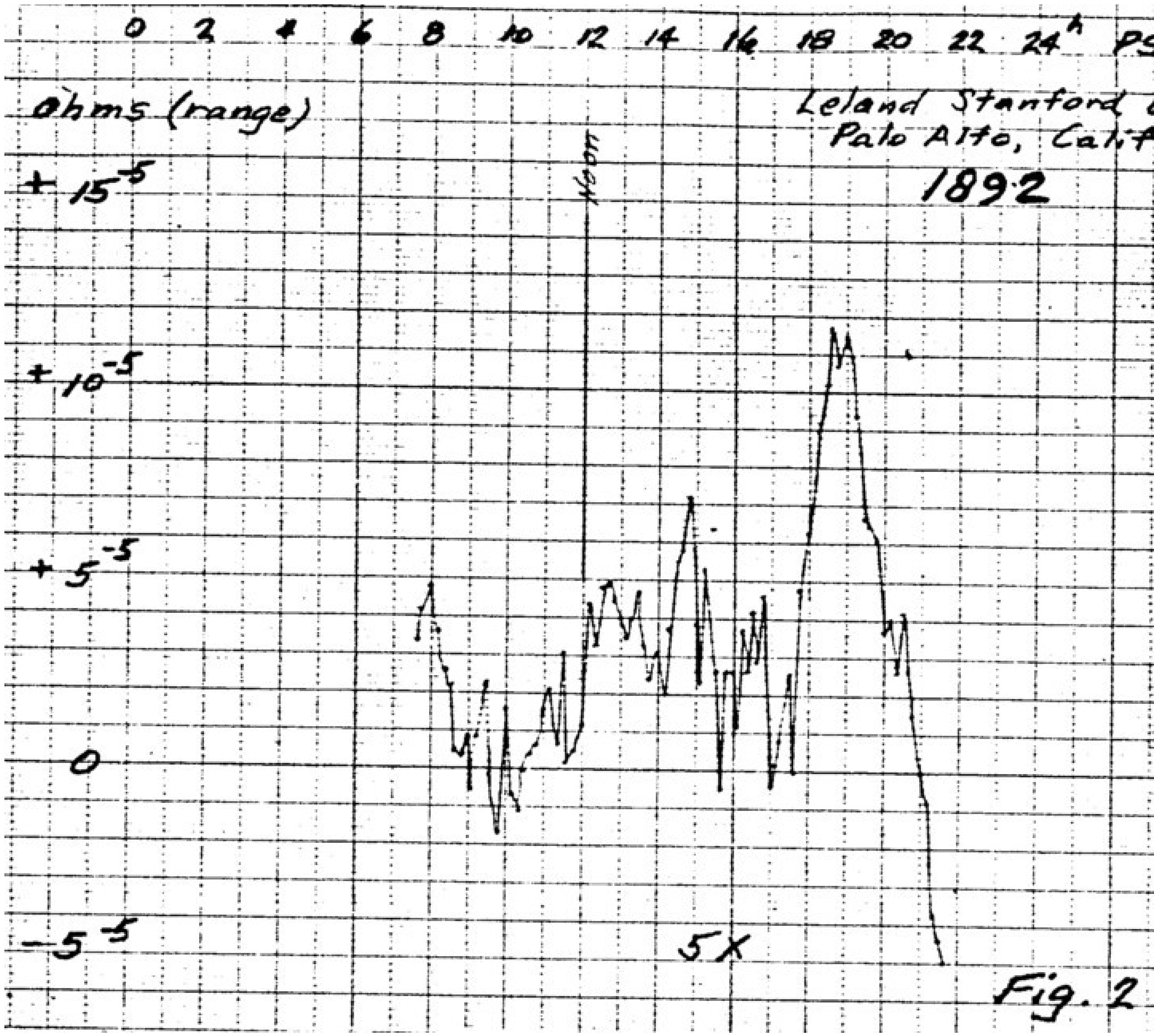


Fig. 1

Phoned Mt Wilson Observatory to get Ephemeris for 1892. Mrs Henderson reported on 8-21-73 the lunar phases as indicated above. The peaks occur 6 days before full moon in each case. These peaks seem to coincide with instrument minima. In this case, then, the instrument increases torque as resistance (of copper) increases. This is exactly opposite to what might be expected if torque is a function of current.

Page 64.


0 2 4 6 8 10 12 14 16 18 20 22 24h PS
ohms (range)
Leland Stanford
Palo Alto, Calif
1892
Noon
+ 15-5
+ 10-5
+ 5-5
0
-5-5
5X
Fig. 2

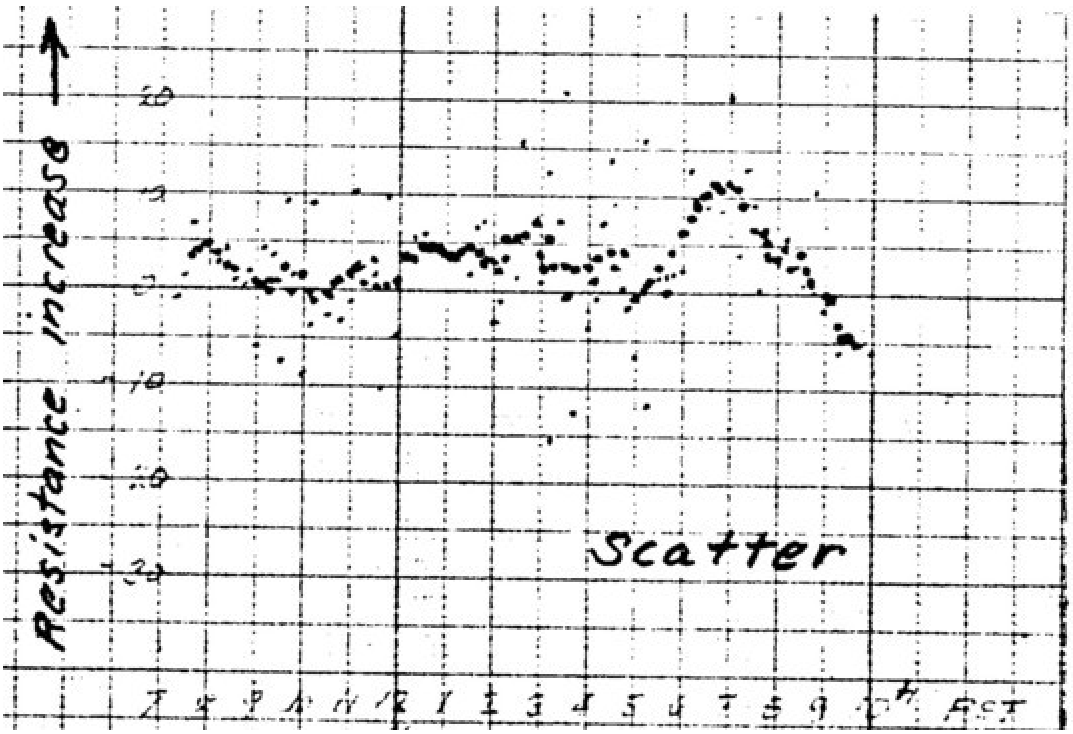
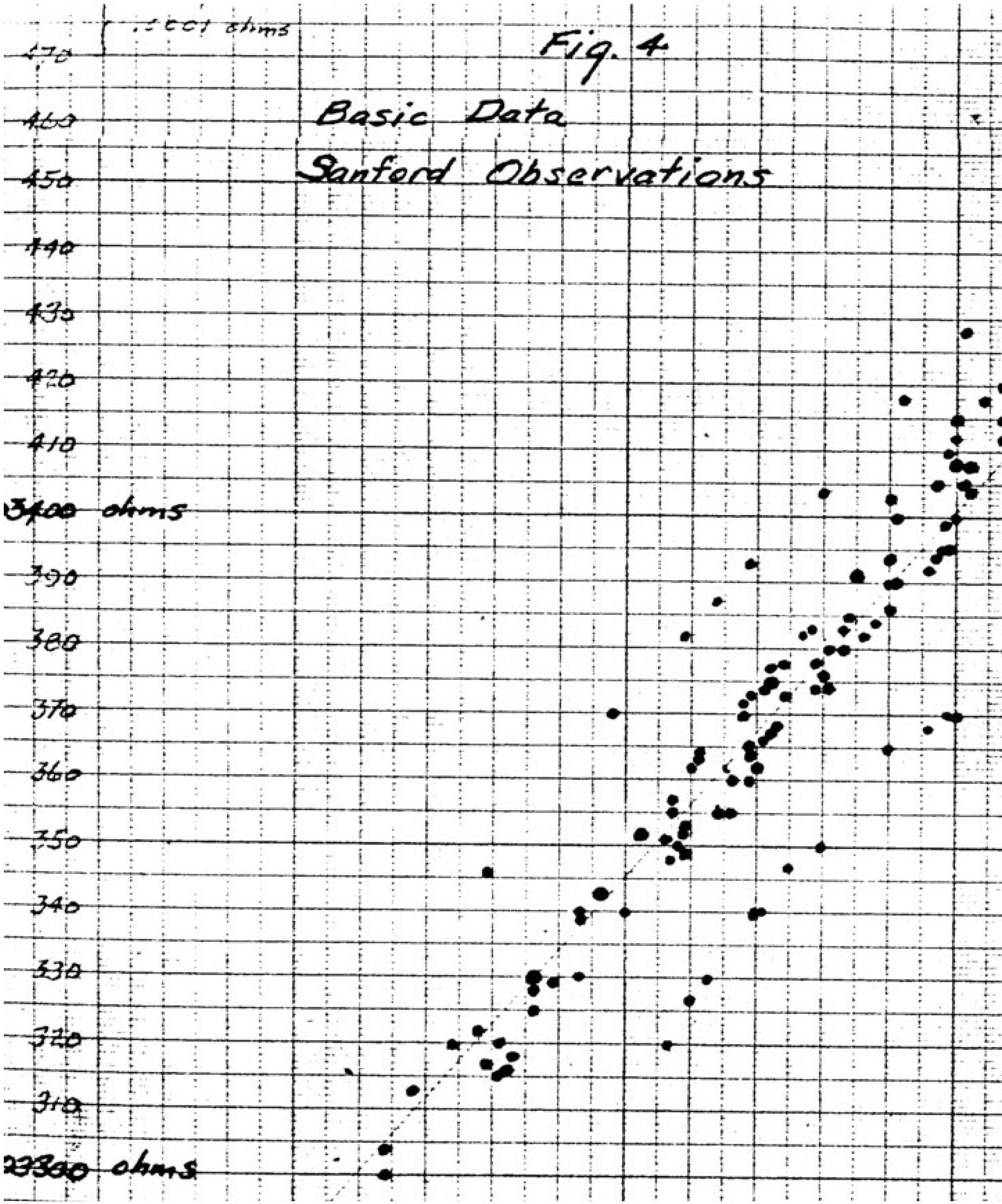


Fig. 3.

[Page 65.]



.0001 ohms
Fig. 4
Basic Data
Sanford Observations
470
460
450
440
430
420
410
3400 ohms
390
380
370
360
350
340
330
320
310
23300 ohms

Page 66.

A critical examination of the variations in resistance observed in the Sanford data brings one squarely face to face with the possibility that electrical resistance of copper, and possibly all substances, does vary in a secular and possibly cyclic manner.

To my knowledge this phenomenon has never been observed before. If it has, it may have been attributed to experimental error or below the limits of reliable observation. If found to be verified by repeated experiment it could represent one of the most significant discoveries in physics.

Any possible correlation with extra-terrestrial causative factors could be equally significant.

In view of Weber's experiments, supposedly involving the effect of gravitational waves upon large metal cylinders and the like, one naturally wants to consider the possibility that such cylinders undergo electrical resistance changes longitudinally and transversely. What effect, if any, could resistance changes have upon the physical dimensions or shape of such cylinders?

Going back to the change in resistance of the Sanford 120 cm copper wire, could the resistance change cause a corresponding change in length? Or, did a change in length cause the resistance change? Could Weber have observed changes in the lengthwise/crosswise shape of his detectors by simple resistance measurement of the metal itself?

Page 67

Two possibilities become apparent:

(1) If extraterrestrial factors cause a change in resistance directly, then does a change in dimension follow? If so, the physical movement follows the resistivity "signal". There would be a lag or so-called inertial distortion. Further, resistance changes would not be limited by or reflect the mechanical "follow-up". If the metal "detector" is resonant (as any metal object is), the driving signal may be independent and non-resonant. Hence, by observing resistance changes in gravitational wave receivers one may avoid the serious limitation of resonance or "ringing" of the metal mass.

(2) If the extraterrestrial factors cause a change in dimension (as gravitational waves are alleged to do) then the change in resistance follows the change in dimension. If, in Weber's detectors, the resistance "rings" also, then it is pretty clear proof that the resistivity of the metal follows the change in dimension.

The following experimental set-up is suggested as a means by which this mater may be resolved. It is essentially a sensitive resistance bridge with long East-West/North-South arms. It will be referred to as a Resistance Cross.

Page 68.

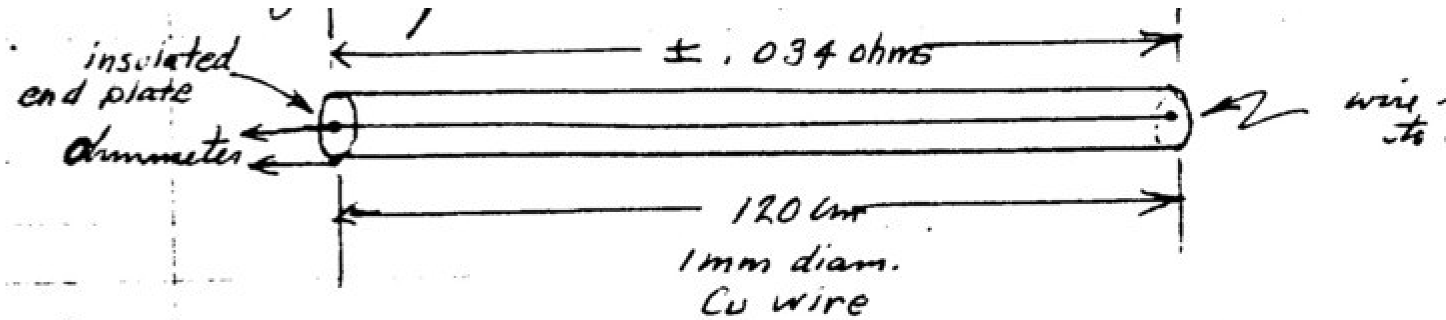
102. Set-up of Resistance Cross.

Catalina Island; August 20, 1973.

It is proposed that a "resistive cross" be defined as a resistance bridge with extended linear arms. The cross may be fixed in the N-S/E-W direction or it may be made to rotate like a turnstile.

Coiled resistors are not used, only linear lengths of wire.

In terms of the Sanford experiment, one arm may be similar to the single length of wire coaxial within a copper tube.



This is the experimental setup Sanford used. Resistance varied over a range of 6^{-4} ohms 1.76% (temp. compensated) during the period from Feb 17-May 19, 1892.

A basic resistance cross would consist of four such arms in a bridge circuit with null voltage output when balanced. Any imbalance would cause a voltage.

Several sizes of resistance cross may be foreseen; the smaller ones may be rotatable, whereas the larger ones may be fixed --- say in the N-S/E-W direction.

Page 69

The rotatable cross:

The rotatable cross may b as large, let us say, as the interferometer used by Miller on Mt Wilson in 1926. Its use may be similar in many respects and so may the results. After all, if Miller's interferometer arms were contracting (in the alignment of the earths motion through space), then too, the resistance arms of the cross would contract for the same reason. The resistance would change in concert with the change in length.

One would expect to obtain in the resistance data possible the same results as Miller obtained in his fringe shifts. It is intriguing to believe the observations of electrical resistance might provide information as to the velocity and direction of the earth's movement thru space.

The field cross:

The largest fixed cross may have arms several thousand feet in length. Preferably, these arms would be in shielded conduit at least 2 ft under the surface of earth for reasons of temperature stability. The same bridge circuit would be used.

Such a cross would rotate because of the Earth's rotation and this arrangement might be comparable to Weber's large cylinder. Again, the resistance data may indicate a sidereal effect just as Weber's is doing --- toward the center of the galaxy!

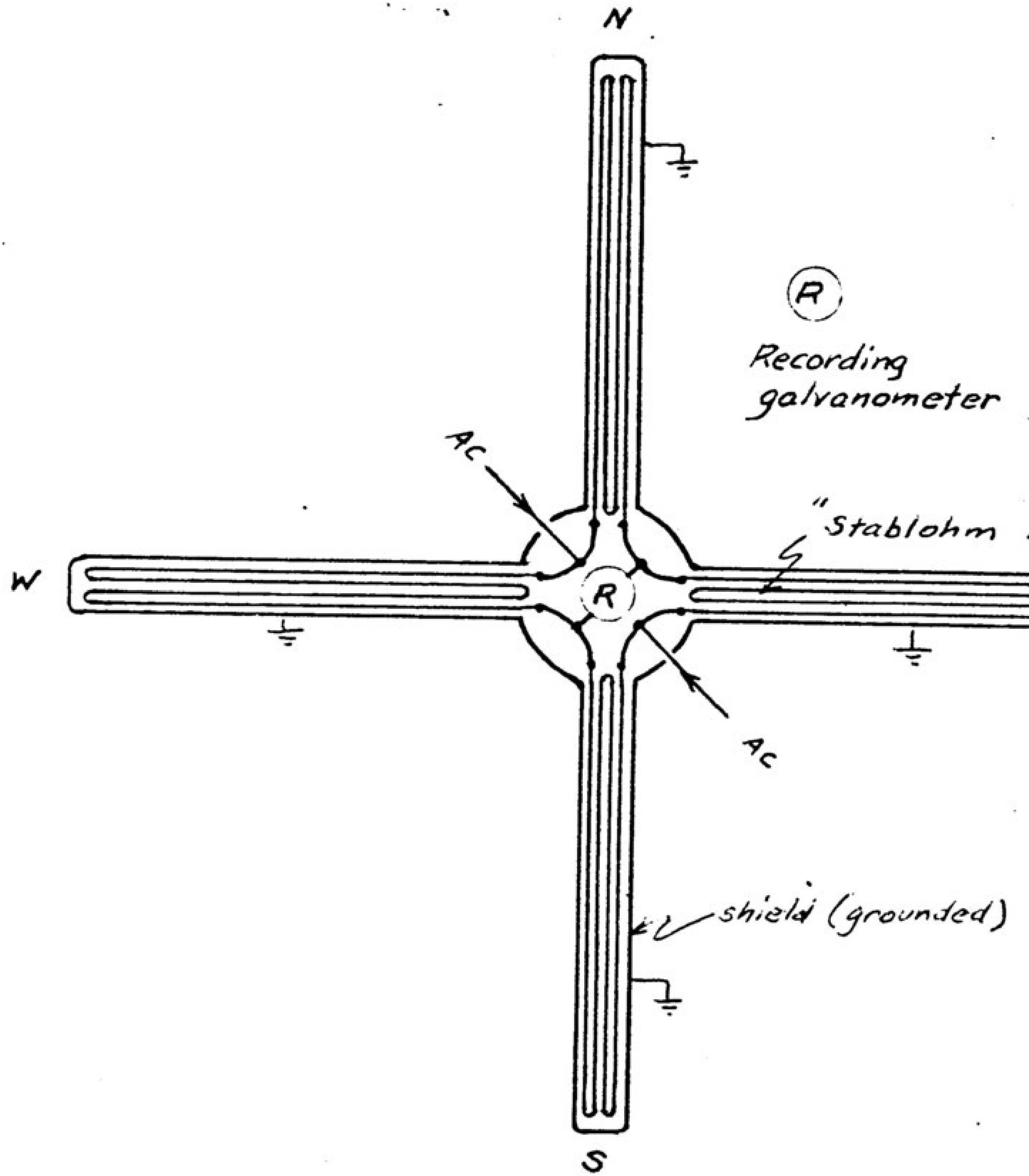
In this connection, Weber's results may be related to Miller's results may be related to Miller's results, both see maxima at 16h ST. So, too, the electrometer records of 1937 and 1939 show maxima at 16h ST. I am sure there must be a common denominator somewhere that would tie all these phenomena together.

Going further into the construction of a large fixed resistance cross, the following suggestions may be made:

(1) Multiple linear conductors in each arm.
(2) Use of wire with low temperature coefficient of resistance, such as Stableohm 1040 (+/- 5 ppm).
(3) Use wires in pairs only, both Stableohm going and coming.
(4) AC excitation to avoid earth current effects.
(5) Use a rapid response recording galvanometer arranged for AC input.
(6) Constant voltage AC supply.

Page 71.

Resistance Cross



N
R
Recording
galvanometer
AC
"Stablohm
W
R
AC
shield (grounded)
S

Page 72.

It is proposed that the fixed cross be constructed in several sizes, starting with the smallest, as a pair:

Step 1 --- Arms 10 ft long. No. 26 Stableohm 1040. 10 pairs (20 lengths) per arm. 200' per arm. R = [ ] per arm.

Step 2 --- Arms 2 ft long. No. 26 Stableohm 1040. 50 pairs (100 lengths) per arm. 200' per arm. R = [ ] per arm.

Using a 2-point recorder, compare the simultaneous readings of the above.

Purpose: To determine the effect of increasing the arm length. Resistance remaining constant.

If results are positive and funds become available arms lengths up to several thousand feet may be considered. In such cases an installation in the desert in long trenches 2 ft deep may be worthwhile. Conduits with adequate internal insulation would be required. In long arms, leakage may be a problem and these details would have to be carefully worked out.

Page 73.

In this connection, the thought has occurred to me that lead-covered multi-pair telephone cable might be used. This would offer adequate insulation and protection against moisture and could be buried in a trench. But the conductors are of copper and the temperature coefficient is 3900 ppm, whereas Stableohm 1040 is +/- 5 ppm.

Whether the temperature stability of the lead-covered cable in a trench 2 ft deep (or more if possible) would make the difference remains to be worked out.

The best possible combination, of course, would be to use Stableohm conductors in a lead-covered cable, also buried to a depth where the temperature is relatively constant.

Vertical arms: Another variation which should be considered is the use of a vertical arm in relation to a horizontal arm.

Then, of course, many different installations are foreseen, in many locations on the Earth's surface. Such installations should be telemetrically interconnected so that coincidences may be noted.

Page 74

103. Model A Differential Resistor.

Catalina Island Island; Aug 27, 1973.

The most satisfactory explanation of the torque of the electrometer, at least to me at this writing, is related to the difference in the resistivity of the marble and wood sectors of the rotor. The electrostatic field adjacent to the sectors (facing the reactor plate) is asymmetrical in its effect upon (+) charged oil domains (all these positively charged oil ions if you will), so that the ions are pulled (predominantly) in one direction by the sectors, and this causes a net torque on the rotor.

In other words, the oil moves around in one direction and the rotor turns in the opposite direction. Difference in torque with time of day, etc., is merely a reflection of the resistivity difference at that moment.

Although this arrangement, in the form of a torsion electrometer, is convenient and reliable in many respects, it is fundamentally indirect. A more direct approach would be to measure (and record) the resistance differential electrically and hence, not be subject to inertial lag such as that introduced by a rotor mechanically.

Several forms of differential resistor bridges are possible but all of them operate by reason of the same principle: i.e., that electrical conductivity of all materials is no a constant --- as has been supposed --- with time of day (lunar, solar and sidereal time) and perhaps even the motion of the Earth in space".

Fernando Sanford (p. 62) observed these variations during the period of his experiments in 1892 but obviously was confused by his own measurements and did not attribute the variations to cosmic factors.

The sidereal radiation electrometer as described on p. 50, has made possible at least 5 years of observations which show most convincingly these cosmic factors. It is quite logical then that these same factors could (and probably do) influence the electrical conductivity of (at least) marble and pine wood. Sanford's work shows that copper too is affected.

It follows that other materials, conductors and semi-conductors, must also be subject to the same phenomenon. It is the purpose of this investigation to examine this anomalous change in resistivity as it occurs in (1) metal wires, (2) semi-conductors, (3) insulating materials.

Page 76.

As stated on p. 68, one of the first experiments proposed is that of utilizing the resistance bridge with (1) arms of wire of different metals, or (2) arms of the same wire in different orientation, such as a cross.

A resistance cross utilizing Stableohm 1040 was diagrammed on p. 70. Such a detecting device may be vector sensing, and may provide some evidence of the direction in space from which this anomalous cosmic effect comes.

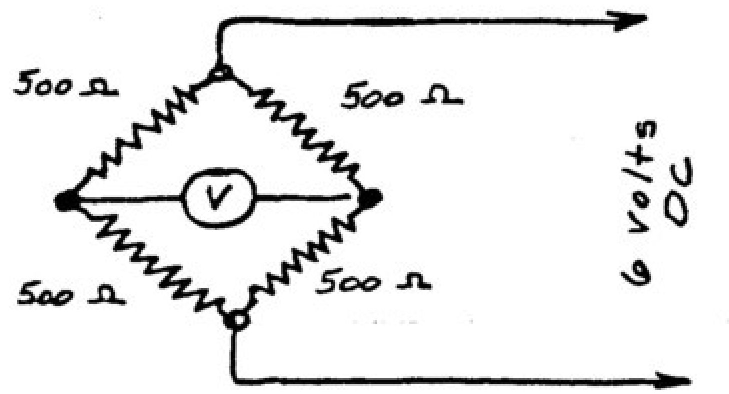
Another form of resistance bridge uses aluminum wire versus platinum wire. Platinum as a higher specific resistivity (10.6) than aluminum (2.65). But platinum has a density of 21.4 while

aluminum is 2.7, approx. 8 times heavier. If mass is a factor this difference should be significant, gravitationally speaking. If dielectric constant is a factor, assuming a relation to atomic number and/or mass, again a significant difference should be evident.

On the matter of dielectric constant, metals theoretically should possess extremely high dielectric constants (specific inductive capacity or electric permitivity), but the great electrical conductivity prevents its determination in the usual way.

Page 77.

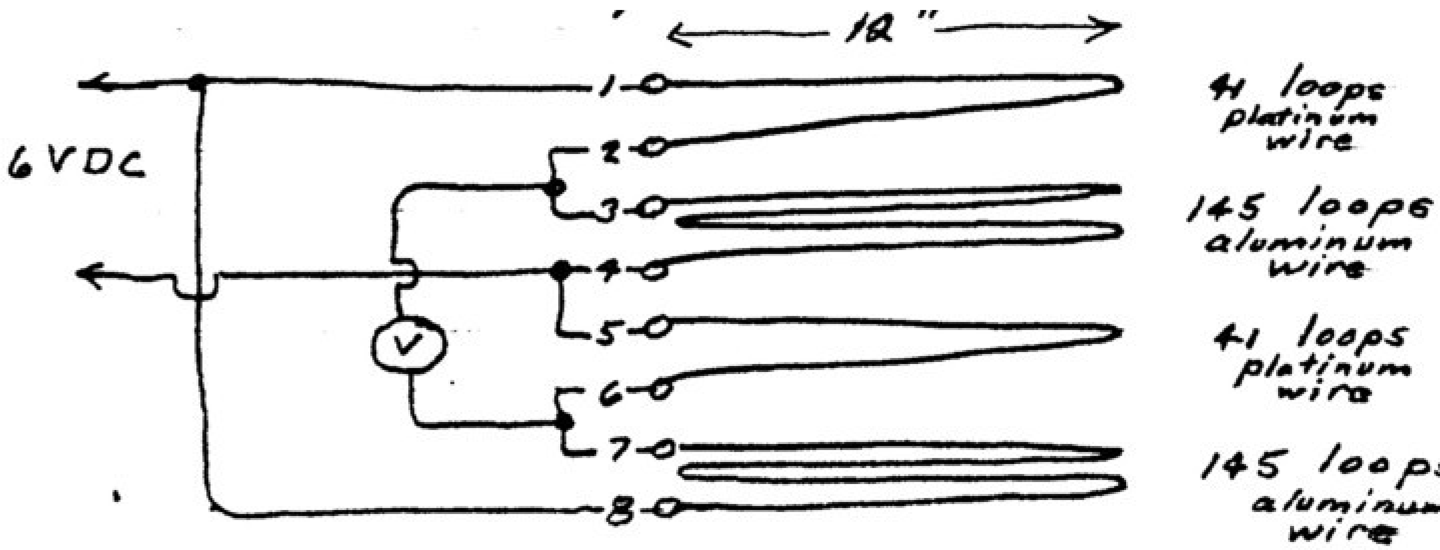
In any event, a bridge made of aluminum versus platinum wire is suggested. Such an experimental setup is as follows:



At 6 V DC --- steady current diam., 12 ma.
At 2 VDC --- " " ", 4 ma.

Measuring instrument may be a micrometer 100-0-100 ua, or preferably Brush galvanometer with amplifier for recording rapid fluctuations <100 cps.

For simplicity, the wire may be strung lengthwise between two supports 1 ft apart, then cabled within shrink tubing. There would be 8 terminals as follows:



Page 78.

The foregoing structure would be about 1/2 inch diameter, 1 ft long. A wood rod may form the center support for rigidity. Leads would be cabled and in identifying colors. Power may be supplied by a 6V storage battery or even a 2V dry cell.

Protection against temperature changes would have to be provided. First observations will reveal how serious this problem is.

It is entirely possible that this linear wire structure may be vector-sensing. If it is founded to be directional, alignment with the source of fluctuation may be possible. This is an intriguing thought.

Certainly, this structure is readily portable. The recording instruments may also be portable and battery-operated, so that installations in various geographic spots are possible.

Several units of this type must be ready and operating for the advent of the passage of the Earth through the tail residue of the Kohoutek comet. Mt Wilson should be one of these locations.

Page 79

104. Alternate Form of Model A Differential Resistor.

Catalina Island; Aug. 30, 1973.

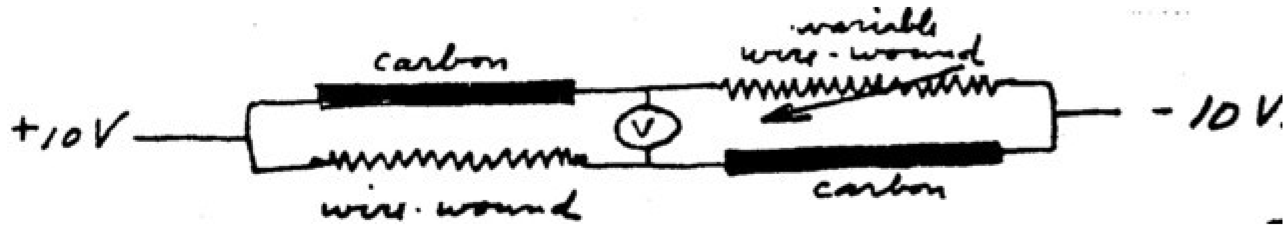
In reviewing the foregoing entry (p. 74), the thought occurs that the same results may be obtained by using readily available resistor components rather than to go to the trouble and expense of winding special forms.

The disadvantage would be that mass or density differential would not be as great. No commercial resistors, for example, are made with aluminum and tungsten (or platinum) wires.

However, a considerable mass differential may be obtained by using carbon and wire-wound resistors which are cheap and readily obtainable.

Non-inductive wire-wound resistors are suggested. Standard carbon resistors are probably adequate, at least to start with. Variable wire-wound resistors in the 10 kiloohm range may permit adjustment to zero null.

The bridge would simply be:



Each resistance = 10,000 ohms. Total current drain at 10 V = 1 ma.

Page 80.

Certainly, the foregoing setup is the easiest and cheapest to construct.

Positive results would be startling and very significant. I wonder if such a bridge has ever been constructed with the express purpose of attempting to detect secular or cyclic variations

105. Ion Momentum Transfer as an Explanation for the Cause of Thrust (Torque) of the Sidereal Radiation Electrometer.

Aug. 31, 1973.

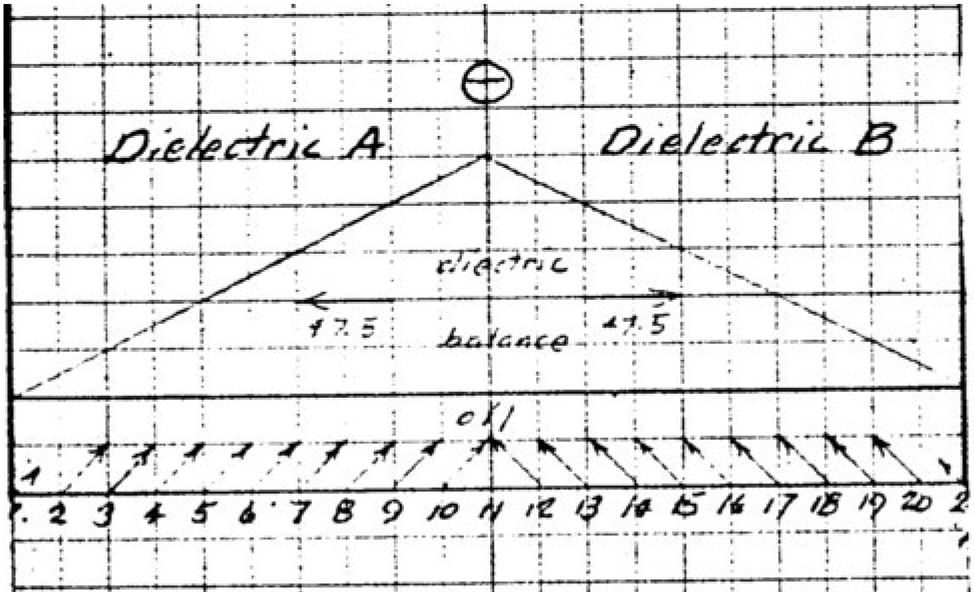


Fig. 1
equal resistance
(no leakage current)

Referring to p. 55 of this notebook, it is noted that the most immediate probable explanation for the torque of the electrometer lies in the movement of the charged domains (ions) in the oil bath.

It has long been observed that torque occurs only when the transformer oil is leaky, that is, slightly conductive as a result of a small moisture content. Perfectly dry transformer oil produces no torque.

Page 81.

Proof of this conductivity appears in the readings of the panel meters --- representing current to ground (+). This current depends upon the distance (inversely) between the rotor and the reactor plates. Normally it is 2 ua for the upper reactor and 7 ua for the lower reactor. The lower reactor was nearer the rotor and this would account for the higher current.

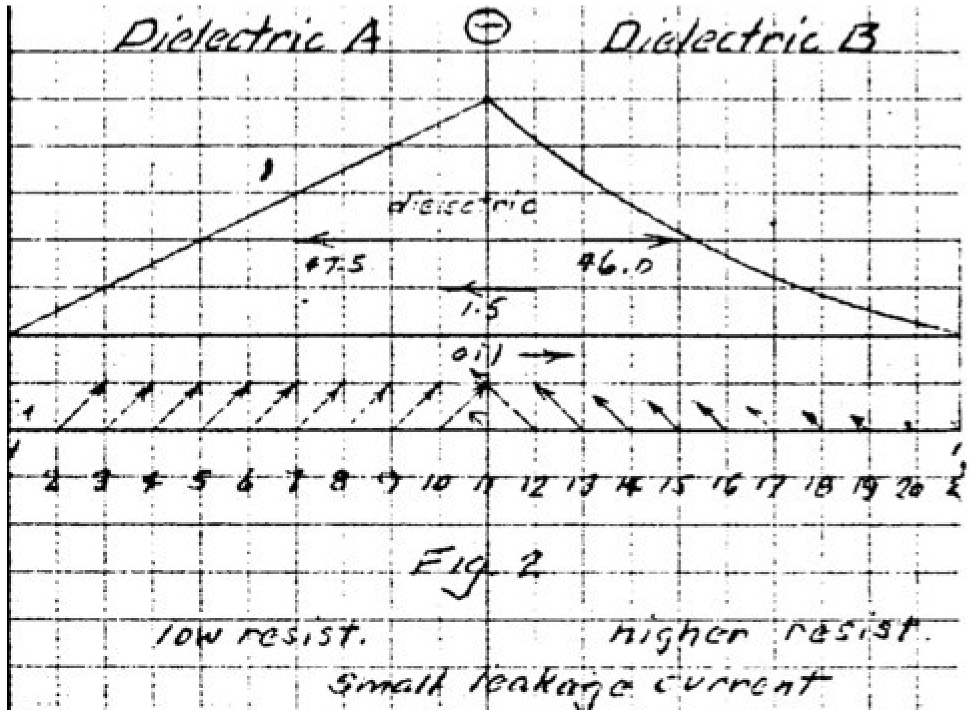


Fig. 2

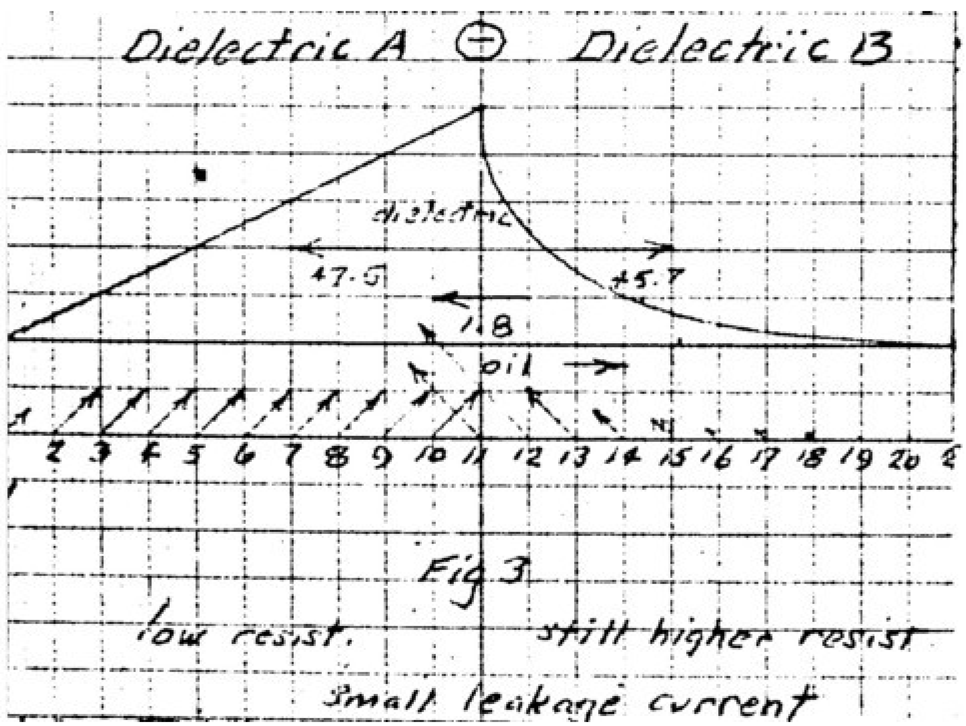


Fig. 3

Recognizing that this current represented ion flow, it is obvious that the ions would flow in the direction of the field gradient. The velocity or kinetic energy would depend also upon the intensity of the electric field at that point.

In general then, the net ion flow would depend upon the shape and intensity of the electric field at the sides of the dielectric sectors facing the reactor plates.

Three situations are illustrated in Figs. 1, 2, 3.

In Fig. 1, the adjacent sectors of the dielectric rotor have equal (high) conductivity so that the electric gradient between the electrodes is virtually linear.

In Fig. 1, the 2 adjacent sectors of the dielectric rotor have equal (high) conductivity so that the electric gradient between the electrodes is virtually linear.

Note: It must be remembered that where there is transverse leakage the electric gradient thru the dielectric can never be strictly linear. In Fig 1, for sake of explanation, this is overlooked.

Again, in Fig. 1, positive ions migrating from the region of the positive reactor move in the direction and extent indicated by the vectors. In this instance, the vectors balance and there is no net flow.

In Fig. 2, dielectric B has lower has lower conductivity (higher resistance) and the gradient is shifted downward because of the transverse current drain. The field is distorted as indicated by the vectors so that imbalance exists. This imbalance causes a net flow of oil (ion momentum transfer) in the direction indicated. Reaction to this force causes the dielectric pair to move in the opposite direction.

In Fig. 3, dielectric B has still higher resistance (with respect to A) and the thrust is increased.

Page 83.

The foregoing is probably an oversimplification of an exceedingly complex situation. Here we actually have to consider the resistivity of A and B but also that of the oil and the relative interaction of all three.

If varying resistance is the cause, the reasons for such varying resistance are still obscure. Ionizing radiation could affect the ion population in the oil. It could also conceivably affect the resistance of the dielectric sectors. But it seems inconceivable that the relatively small changes in, let us say, cosmic radiation could produce such relatively great changes in torque as have been observed since 1937.

And again, of course, the correlation with sidereal time and certain lunar factors seems to rule out ionization changes as a cause for the variations in torque. Some other as yet unidentified cosmic factor must be affecting "simple electrical resistance".

In terms of the "dogma" of electrical engineering, this thought is rank heresy. The resistance of conductors, of all materials actually, is not known to vary except with temperature. I am not forgetting the photoconductivity, ionizing radiation, ad other related phenomena, but these do not appear to be factors here.

Page 84.

In brief, what we seem to be observing is a basic change in resistivity of metals, and probably all other materials as well, which is related to extraterrestrial factors. It appears, further, that the change in resistivity is not the same for all metals (or all substances) but varies with some other factor such as mass (density) or dielectric constant.

To observe this phenomenon, we must use (preferably) a resistance bridge with arms of dissimilar metal. This means resistors of aluminum wire versus tungsten (which is less expensive) or even commercially available resistors such as carbon b\versus wire wound. This is based upon the assumption (for the time being at least) that a mass differential is the important factor.

The resistive bridge concept is a significant improvement over the complicated sidereal radiation electrometer, (1) because it is simple electrically, (2) because it is simple electrically, (3) no inertial lag, (4) more accurate and (5) far better frequency sensitivity especially in the higher range.

An in-line resistance bridge, also the resistance cross (p. 71) may also have the advantage of being directionally sensitive, so that it may actually "point" to the source in space.

Page 85.

106. A Combined Resistance-Dielectric Constant Bridge.

Catalina Island, Sept 2, 1973.

When the sidereal radiation electrometer was designed in 1931 at the Naval Research Lab, the prevailing thought which I expressed at that time to Drs Hulbert, Maris, Gunn and Dawson was that I was looking for a mass and dielectric constant effect. I referred to the adjacent sectors of the electrometer rotor as high K_m and low K_m, the former being marble and the latter pine wood.

In the analysis on p. 80 and 81, Dielectric A relates to marble and Dielectric B relates to pine wood. See also p. 55, also p. 46.

In the previous sections of this notebook, the emphasis has shifted from the original idea to a consideration of electrical resistance. To completely abandon the idea of dielectric constant (electrical susceptance) at this point may be a mistake. Mass differential has not been abandoned It appears in the considerations of the "mass" of the resistance wires in the vaporizing arms of the resistance bridge. (p. 79).

Page 86.

Now, it may be helpful to include high- and low-K capacitors with the high- and low-mass wires of the resistance bridge, as:

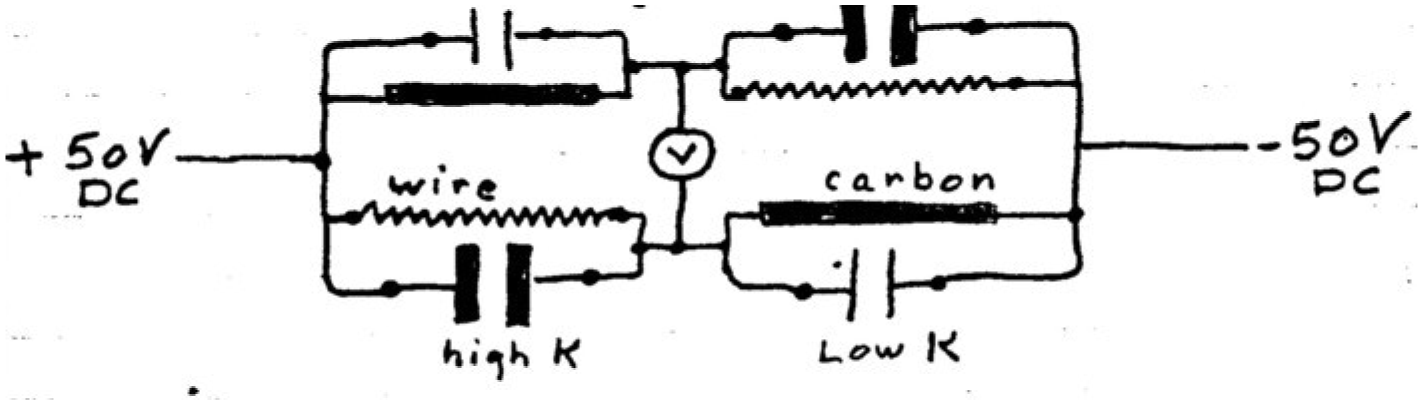


Fig. 1.

In the above figure, a wire-wound resistor with a high-K capacitor in parallel is balanced against a carbon resistor with a low-K capacitor in parallel.

Therefore, if the cosmic effect "gets in" through any one or two or all three, i.e., dielectric constant, (electric permitivity), electrical resistance or mass (density), it will show up in the balance.

In pursuit of this thought, Hi-Cap, ceramic capacitors (with value of K upward from 3000) are indicated. They may be balanced against low-K paper paper dielectric capacitors.

Page 87.

107. Change of Resistance with Electrostatic Potential (of the Earth as a whole).

Catalina Island; Sept 4, 1973.

The question arises, "why does (if it does) basic resistance of metal wires and other materials change with cosmic variables?"

One thought I have retained for a long time is that the electrical potential of the Earth (as an isolated sphere in space) may change to a surprisingly great extent, possibly millions of volts. Fernando Sanford believed this too and based many of the ideas presented in his book "Terrestrial Electricity" upon such a possibility. He believed that the Earth was negatively charged by electron emission from the Sun. He conceived of a solar wind but believed that the "wind" was composed largely of electron emitted by the "hot" sun. His thought was that the Earth could acquire a charge of "several million volts". So could the moon. And inductive effects could arise between the Moon and earth when the relative potentials varied. (See p. 58).

Sanford postulated that if the Moon, because of its rotation around the Earth, possessed a different and variable charge with respect to the earth, then the Moon-side of the earth would be inductively affected.

Page 88.

Certainly, the lunar effects such as hour angle, phase, etc., as indicated by the sidereal radiation electrometer could be caused by the electrostatic potential of the Earth in just this way.

In this respect, the electrometer could be operating as a monopolar voltmeter, a concept not easily today. It must be recalled, however, that Sanford's "Quadrant Electrometer" which he described in his "Terrestrial Electricity" did appear to be doing just that.

If electrical resistance does change with absolute electrostatic potential --- why does it? Is it a matter of electron density --- call it, carrier abundance? Does increased negativity cause increased conductivity? Or looking at it in terms of resistivity, is resistance a direct function of positivity?

The 1937 and 1939 readings of the electrometer reveal strong lunar and solar effects which could be attributed, in terms of the above, to resistance changes caused by earth potential changes.

A problem arises when one tries to explain the sidereal (16h) peak in this way. Is there an inductive effect toward the galactic center?

Page 89.

Or, is there hitherto unknown particulate radiation from the galactic center?

And also what was causing the (residual) fringe shifts in the Miller interferometer? Was this due to a change in the velocity of light or the length of the interferometer arms? I suspect it is the latter.

I suspect that electrostatic potential can change physical dimensions too, but I am puzzled as to why this effect is directional. If electrostatic potential is scalar, why did Miller's interferometer arms contract differentially? And how was it that he was able to deduce a net movement of the Earth thru space? Actually, his computations indicated movement opposite to that expected by astronomers, i.e., toward 5h RA at 208 k/sec rather than toward 16-17h RA at 19 m/sec.

Is there a relation between net charge and velocity? Is there a relation between net charge and the Lorentz-Fitzgerald contraction? Or, putting it another way, how does this relativistic contraction affect conductivity and/or electron density. Does "absolute motion" create a conductivity (or resistivity) vector? If electron density is altered in the direction of absolute motion and conductivity is affected, then I can see where the velocity vector enters the resistance picture.

Page 90.

This, then, in summarizing, may mean that resistance decreases in the alignment of absolute motion, and to an amount dependent upon the rate of motion.

This hypothesis provides a reason for the operativeness of the resistance cross (p. 71). The arms of the cross in the alignment of absolute motion would decrease in electrical resistance. The arms normal to that motion would not change in resistance.

One wonders now if Weber's results could be explained not on the basis of gravitational waves but upon the basis of resistivity changes. If the large aluminum cylinder suffers resistance changes, longitudinally versus transversely, and these changes affect its shape, strain gauges might pick it up. Velocity vectors would give it preference for alignment with the center of the galaxy and correlate with Miller's observations that the velocity is actually in the direction away from the galactic center (5h ST).

Weber concluded that gravitational waves are coming predominately from the galactic center. Resistance measurements may indicate instead merely absolute motion toward 4h RA (See *Science News*, Aug. 18 and 25, 1973, Vol. 104, No. 7 and 8, 97-128), p. 108.

Page 91.

In the above reference, it is also noted that the recessional velocity of galaxies, calculated from their red-shifts, is not isotropic. It is clumped and the clumping may indicate a velocity of the solar system in the direction of 5h RA. Again, this may confirm Miller's findings. See p. 114 of the foregoing *Science News* reference.

Now then, if these resistance changes do occur, there must be a reason for sudden changes such as might shock-excite Weber's cylinders. Gradual changes, such as the lunar effects, could not be picked up by Weber.

The electrometer reveals not only slow long-term cycles, sidereal and secular variations but also rapid changes which tax (and may largely escape) detection by the massive rotor's movement.

A resistance cross and bridge could easily pick up such rapid changes. For this reason it is recommended that a Brush recording galvanometer be used in connection. This will indicate changes up to 100 Hz. For higher frequencies it is recommended that the sensing system include sonic amplifiers and loud speakers.

I can well imagine that sounds will be heard and this is intriguing. Perhaps frequencies of 1580 Hz and 1661 Hz (Weber's resonant frequencies) will appear from time to time, such as may possibly be exciting his cylinders.

Page 92.

If electrostatic potential (of the Earth) causes these resistance changes exclusively, the capacitance of the Earth as a whole will probably limit the frequency --- let us say, the upper frequency. The capacitance of the Earth (as a conducting sphere in space) is said to approximately one Farad. This is an enormous capacitance and, unless the driving potential is of equal magnitude, could well smooth out most of the higher frequencies.

Another source of "apparent" resistance variations might be the voltage contributions from changing K of space --- so-called "K waves". Space may be defined as K-mu. The velocity of light is dependent upon both the electrical permitivity and magnetic permeability of the medium thru which it passes.

C = 1 / sq. root k mu

If k waves exist, they probably are not limited to the velocity of light (C) since K is more basic. K waves may be instantaneous (infinite velocity) and be truly "action at a distance" as envisioned by Newton.

Actually, magnetic permeability is the counterpart. Both K and mu, so far as space is concerned, go together. But for the present, let us consider only the effects that a variation in K can produce on the apparent resistance of a conductor.

Page 93.

For the sake of explanation, let us consider a simple charged condenser (capacitor). If the dielectric constant (wrongly named because it may not be constant) changes, the voltage changes inversely. In other words, the terminal voltage of any capacitor (for a given charge) is inversely proportional to its K (the dielectric constant of its dielectric).

Hence, a section of wire is also a capacitor. The dielectric constant of a metal is theoretically considered to be very high. Any change in its K will affect the terminal voltage of the section. But a current must be flowing for the capacitance effect to be present.

Resistance and capacitance are therefore related. A variation of K in a conductor can create an EMF which may add or subtract from the IR loss of the conductor, giving the appearance of a change in resistance.

K waves from space (if they exist) may cause apparent variations of resistance of a conductor, just as they would cause variations in the terminal voltage of any capacitor.

Page 94.

It follows then, that resistance of electrical conductors may be affected by:

(1) absolute electrostatic potential changes resulting from electron density and motion thru space;

(2) K waves.

Long range, comparatively slow variations may originate in (1) while rapid variations could only originate in (2).

Note: It must be borne in mind, in making the distinction above, that the capacitance of the Earth (p. 92) may also be subject to K waves, so as to change the absolute potential. Such an effect

may actually be present for the slow variations (long waves) but may average out the faster variations.

On p. 85, the effect of mass was discussed briefly as the combination Km. Mass (density) and K were grouped together. The function of mass in these considerations is not quite clear and will be taken up in later pages. In general, mass is so interlocked with dielectric constant in metals that these two factors are virtually inseparable. Wire with high mass, such as platinum or tungsten, is considered also to have high K, and it is chosen in the resistance bridges (herein discussed) for this reason.

Page 95.

Wires with low mass, such as aluminum, and also carbon resistors, are thought to have low K.

The differential resistance bridges set forth in the previous pages make use of high K_m and low K_m arms. In general, the high Km arms conduct more current/unit length and therefore must be longer to have equivalent resistance, although with certain metals this is not the case.

One wonders, quite naturally, why this resistance variation has not been observed --- considering to what great sophistication the electronic technology has reached in recent years. The thought is discouraging to say the least. I have no idea. Maybe it is simply that when variations were noticed, they were blamed on experimental error, temp. errors or random fluctuations in experimental equipment.

Maybe, the idea of combining heavy and light conductors as arms of a resistance bridge was never considered. Possibly there was no theory to predict any effect or to justify the experiment. Only time will tell. We shall see.

Page 96.

108. Another Form of Resistance Capacitance Bridge.

Catalina Island; Sept 6, 1973.

A bridge operating strictly on the basis of a capacitance change with DC feed will produce observable variations, if theory is correct, only during a change in the incoming factor (whatever that factor may be). In other words, it is strictly a "rate-of-change" function.

If an incoming K wave strikes a charged capacitor, the terminal voltage will change only while the K (potential) is changing. Steady K potential creates no voltage.

The same may be said of an inductance when a mu wave strikes it. Steady conditions produce no voltage.

Any steady potential can, it would seem, produce a mu wave strikes it. Steady conditions produces no voltage.

Any steady potential can, it would seem, produce an effect only thru, or by means of, resistance.

Most capacitors have internal resistance, being the resistance of the dielectric. This "leakage" current is inseparably linked with capacitance "emf" so that the total is either additive or substractive.

Page 97.

In this respect, the deliberate combining of capacitors with resistors is probably needless. The resistance of the capacitors should suffice to observe cosmic factors.

A satisfactory circuit may be as follows:

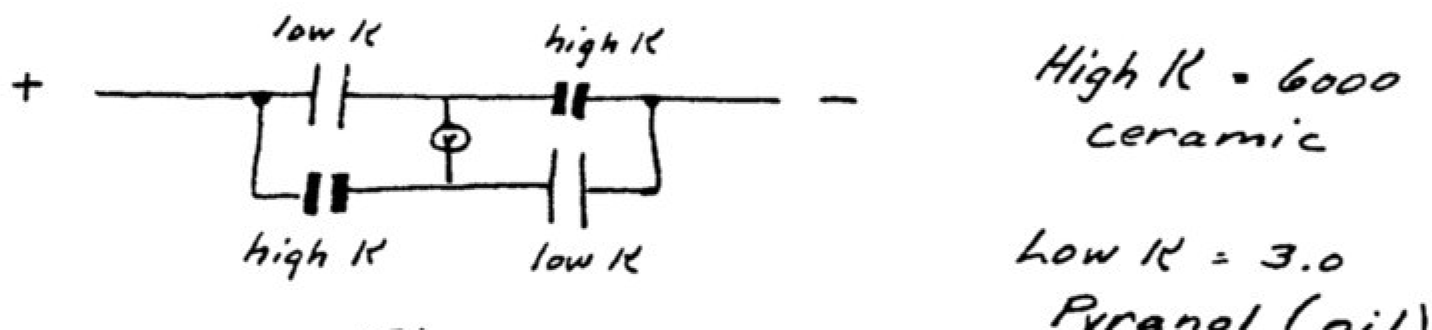


Fig. 1.

The bridge will balance in steady state when the resistances of the capacitors match. Any variation on the K ambient will immediately create an imbalance, with the capacitance providing the rate-of-change potential and the resistance providing steady-state effect.

Higher voltage should provide greater sensitivity. 25 KV capacitors are suggested, both oil-filled (Pyramid) and ceramic. But matching should be on the basis of resistance, not capacitance.

This circuit (Fig. 1) is a radical departure from that tested at Atherton, CA in 1970. See p. 25.

Page 98.

109. The Structure of Space and the Significance of K-mu Waves.

Catalina Island; Sept 7, 1973.

On p. 92, it was suggested that space, so-called empty space may actually have structure. It was inferred that because of this structure, manifested as the ability to store energy, that light was limited to a certain fixed velocity (c).

The principal factors of this structure are the twin energy-storage means K and mu, being the routes by which electric and magnetic energy can be stored as electric and magnetic fields

respectively. Probably, if it were not for the progressive storage of energy, light would have infinite velocity. As it is, the progressive delays causes by the creation of these "energy pockets", their momentary storage and their release from storage limits the speed of light. When these pockets increase their capacity, as when K-mu is greater, the speed of light is further reduced. This is readily seen when light passes thru transparent dielectrics of greater dielectric constant (K), such as water.

Hence, K represents the velocity control produced by the temporary storage of the electric (field) component of the moving light wave or quantum.

Page 99.

In the same way, mu represents the control produced by the temporary storage of the magnetic (field) component.

The region of space in this part of our galaxy appears to have an average fixed value for both K and mu. This value is referred to as "unity". The question arises, is there another region somewhere where the value of K and mu is more or less than unity? If so, light would have a correspondingly different velocity that it has here. It is precisely this velocity change that causes the refraction of light. The index of reflection is a measure of a differential in K.

The purpose of this discussion is to set forth the idea that K is not necessarily constant in space, nor is mu constant. The idea that regions of differing K and mu exist in so-called free space has not been accepted in today's technology.

Let us postulate the existence of such regions and that they may propagate thru space. What would be their velocity? And would the velocity necessarily be limited to the speed of light? I think not.

Page 100

K and mu cause light to be velocity. Limited thru the application of

C = sq root K mu, but K and mu are not limited. K and mu may, more accurately, be classified as actions at a distance, although wavelike characteristics may be present.

How could such waves be detected? K waves would affect a capacitor. Mu waves would affect an inductance. Both would generate a voltage change.

This, in short, is the purpose of performing the bridge experiment described in the foregoing sections. A capacitance bridge, with arms of differential K, and an inductance bridge, with arms of differential mu. Both can be combined in the form of a simple bridge, as:

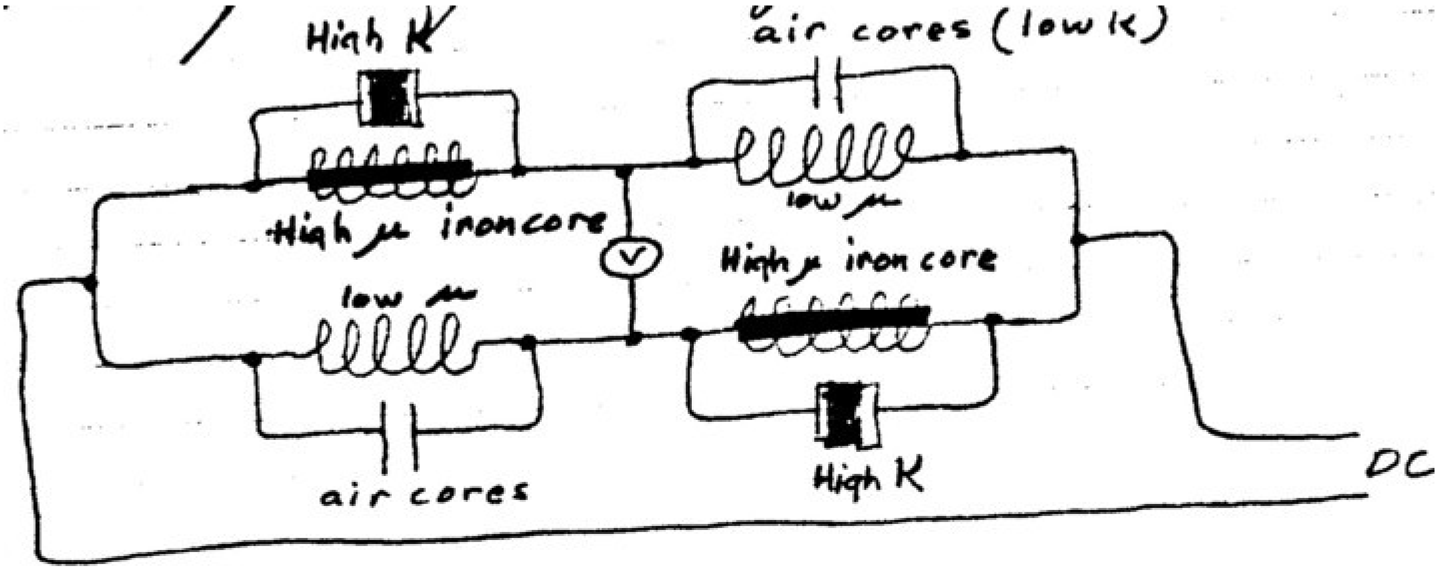


Fig. 1.

I doubt if a K wave can exist without its counterpart, the mu wave. Both are probably effective together. Both probably increase and decrease in phase. Otherwise, tank circuits would show frequency variations and this, to my knowledge, has never been noted. Space vehicles have traveled to Mars, sending back telemetric signals which are accurately monitored. No shift in frequency has ever been noted, at least to the extent I would expect if K and mu varied independently.

Page 101.

Certain theoretical physicists have considered mass (m) to be indicative of gravitation al permeability, just as K represents magnetic permeability. The respective fields act upon *m*, K and mu in much the same way. If *m* is to be considered in this light, then it should also appear in with the factors describing space. So that the speed of light in free space has yet another limiting factor, as:

$$C = \frac{1}{\sqrt[3]{K \mu m}}$$

Is it possible that the resistive bridge as described on p. 77 owes its operability upon a mass differential, just as that of Fig. 1 (previous page) depends upon K and mu differential (in two balanced arms of the resistance bridge) produces a consistent effect that is steady state, then it cannot be either K or mu. Mass may be the causative factor: K and mu could contribute only transient or rate-of-change effects. *M* may produce so-called steady state effects or long-term variations.

Gravitational waves, since they carry energy, probably are limited to the velocity of light thru the same mechanism of energy storage in space as that caused by K and mu.

It is difficult to imagine the connection between simple electrical resistance and gravitational permeability. It is not so difficult to see the connection between capacitance and magnetic permeability. Changes in the latter two are revealed (in the bridge) as an emf. Could the change in resistance actually be the result of a counter emf?

If a counter emf is generated in a wire, due to cosmic variables, it may be masquerading as a change in resistance. One would accompany or be indistinguishable from the other. A counter emf would impose an electrostatic field longitudinally in the wire, or conversely, a generated electrostatic field could cause a counter emf. Either way, the very presence of the fluid would cause physical (dimensional) distortion in the same amount and direction as the field.

Hence, I am wondering if Weber's cylinders may not contract/extend because of the electrostatic field which accompanies the cosmically-induced change of electrical resistance.

In this respect, the Weber cylinder may be functionally similar to the resistance cross (p. 71). Unlike the mass-differential resistance bridge (p. 77) the resistance cross has the same metal (same density) in both arms. The imbalance results from the azimuth 90 degrees difference in the direction of the arms. So it is with the Weber cylinder.

The resistance cross (if it proves out) should show a resistance imbalance between the N-S arm and the E-W arm. This may reveal solar, lunar and sidereal cycles, even secular changes which are long-term and comparatively slow-moving. Diurnal rhythms, due to the rotation of the Earth, may become recognizable.

Weber's cylinder, and associated circuitry, is not sufficiently sensitive to reveal these slow-moving rhythms. It can only indicate shock-induced effects (events) or response to frequencies with which the cylinder resonates mechanically.

The resistance cross, on the other hand, may be infinitely more useful because of its great sensitivity to both periodic and aperiodic excitation.

The resistance cross, if it made to be rotatable as a turnstile, may show effects similar to the interferometer of Miller. In the above discussion of the possibility of an electrostatic field accompanying the resistance (mechanically) shorten the arm in which the field is longitudinal. This may be the mechanism for the Lorentz-Fitzgerald (L-F) contraction. It is apparent that the L-F contraction theoretically is not adequate --- otherwise Miller would not have obtained consistent positive results. An electrostatically driven contraction may be adequate.

Considering further the possible explanation(s) for the change in resistance, the idea was explored earlier in this notebook that electron density might affect conductivity. Now, if contraction occurs due to a longitudinal field in a conductor, would not the conductivity

increase? It is the electrostatic field longitudinally in the conductor that causes the electrons to flow. An increase in that field would cause an increase in the flow --- hence the conductivity. Increasing the field would tend to shorten the wire also, hence the contraction longitudinally.

These are all so-called "steady-state" effects. Mass (m) rather than K or mu is the motivating factor.

At the moment, I am inclined to think of resistance change as primarily caused by an emf concurrently with an electrostatic field,

As a matter of fact, being a little more precise with the K and mu factors, it would be the electrostatic field which could cause the emf in both instances.

In summary then:

(1) K ambient change causes an electrostatic field in the dielectric which reveals itself as an emf. This is a rate-of-change function. Capacitance change.

(2) Mu ambient changes causes an electrostatic field in conductor or the inductor which reveals itself as an emf. This is an inductance change. Rate-of-change.

(3) M ambient change causes an electrostatic field within a mass which reveals itself as an emf across the mass which is indistinguishable in effect from a change in resistance. Steady state.

Absolute motion (thru space) causes a rod to contract in the alignment of the motion. It also causes an electrostatic field aligned in the same direction. The field may cause the contraction.

An emf is also generated by the field proportional to the rate of motion. If the rod is conducting a current, the emf will either aid or hinder such current, the emf will either aid or hinder such current. If it aids, the resistance will appear to decrease. If it hinders, the resistance will appear to increase.

Page 106

The electrical polarity of the m-induced field will depend upon the direction of absolute motion thru space. Subject to experimental confirmation, let us assume --- no, on second thought, I take this back. We will run into trouble. For the time being, we should assume only that contraction takes place, and that contraction causes an increase in conductivity or decrease in resistance.

In the case of the resistance cross, the arm in the alignment of motion will probably have lower resistance than the transverse arm.

In Fig. 1, p. 79, the alignment of the bridge with absolute motion would lower the resistance of the carbon arms with respect to the wire-wound arms.

This is based on the assumption that the low K, low mu, low mass arms are more susceptible to the effects of the respective ambients.

Page 107.

110. Model A Differential Resistor Bridge.

Catalina Island; Sept 8, 1973.

Today, at 2 pm, an experimental Model A was placed in operation.

The arms of the bridge are as shown in Fig. 1, p. 79. 2 Ohmite 10,000 ohm wire wound resistors, 1 fixed carbon 10,000 ohm and 1 variable carbon 10,000 ohm are used. The variable resistor proved helpful. The null was deliberately set to 14 ua (100 ua DC meter), 6 V.

The following observations were made:

Overnight observations were made. Resistance as indicated by the microameter did vary. Current reading increased during the afternoon from 14 ua to 14.35 ua then by 10 pm had dropped again to 14.00 ua. At first, this was thought to be related to a room temperature change from 73° F to 73.5° and then back to 72° at 10 pm.

The following morning the resistor system was deliberately heated to 90° F but the current reading did not change. It remained at 14.00 ua!

Voltage has now been increased to 19 V DC, 1.76 ma total current drain and a new set of observations started.

Page 108.

111. Model B Differential Resistor Bridge.

Catalina Island, Sept 9, 1973.

If the resistance effect is directional with respect to motion in space, and if the sensitivity is a function of resistance, then a slight change in the form of differential resistor appears to be warranted. We will call this Model B.

Each arm would have a very low resistance return circuit, such as a copper rod or tube.

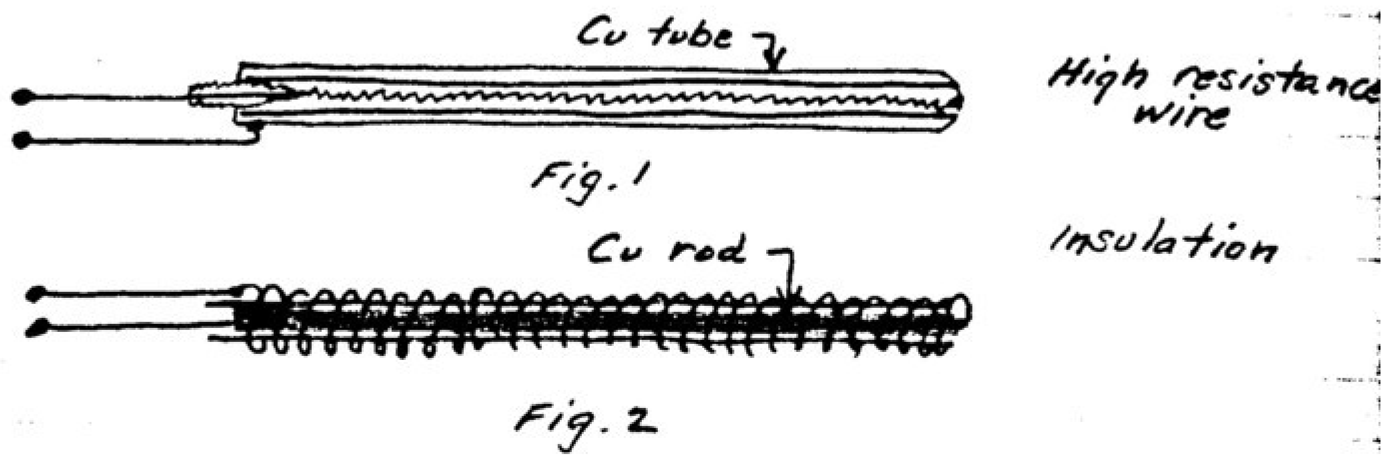


Fig. 1

Fig. 2

In Fig. 1, the return path is thru the copper tube. In Fig. 2, it is thru the rod.

This appears to be a better arrangement than that shown on p. 71 for directional ability.

This basic design will be investigated as a next step.

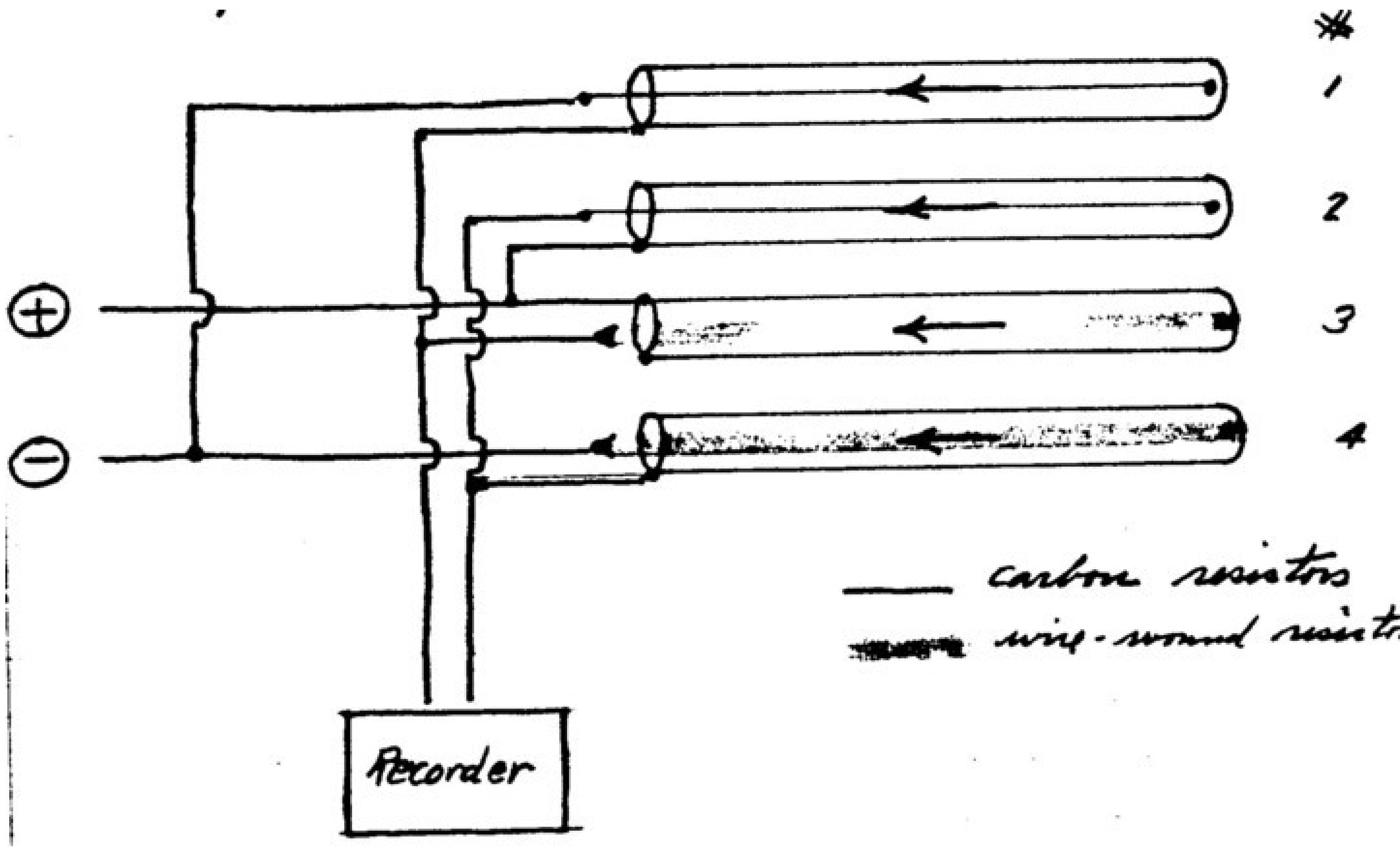
Page 109.

112. Circuit of Model B Differential Resistor Bridge.

Catalina Island, Sept. 9, 1973.

It seems important, in arranging the circuit of this bridge that the current flows unidirectionally thru the 4 arms of the bridge. It would be possible, then, for the electric fields within the conductors of all 4 arms to share the same alignment. This would seem to be necessary if the device is sensitive to the motion of the Earth thru space and/or the direction of the galactic center.

Therefore, the circuit is as follows:



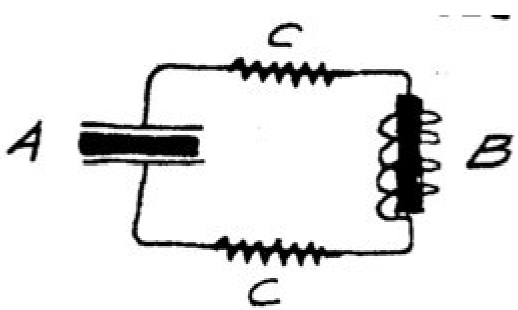
Page 110.

113. Some Thoughts about Gravitational Permeability (m).

Catalina Island; Sept 11, 1973.

When one considers that electric permitivity (or dielectric constant K) represents the storage of electric energy in space and mu (magnetic permeability) represents the storage of magnetic energy in space, then the question is: If m represents gravitational permeability, how can it also represent the storage of gravitational energy in space?

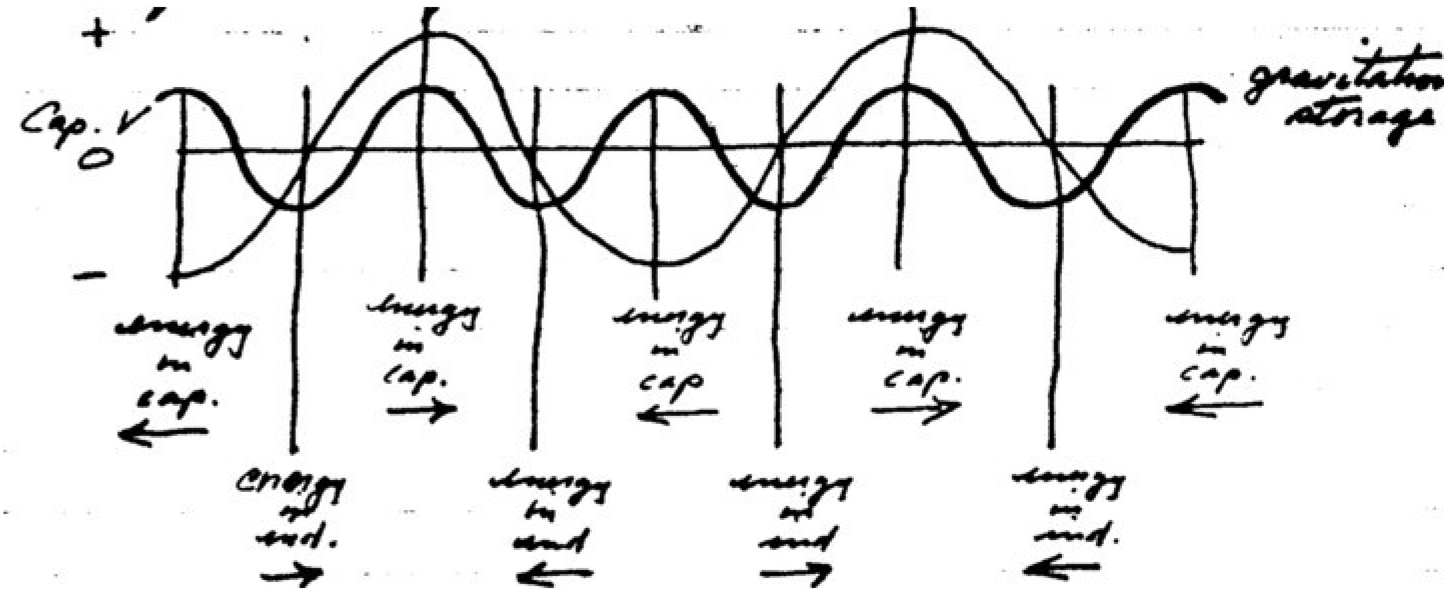
Let us consider a simple tank circuit, a so-called "ringing circuit", consisting of a capacitance, an inductance and, of course, an inevitable resistance.



Energy storage alternates between the region of A to that of B. In A, the storage is enhanced by K, the permitivity of the dielectric. In B, it is enhanced by mu, the permeability of the core (iron) or the region around B. Also in C, the resistance, it could be enhanced by mass m (of the conductor).

Page 111.

In other words, as viewed from the capacitor's voltage, the energy storage shifts as follows:



Every 90 degrees, the energy storage shifts from capacitor to inductance and return. Resistance enters the picture when current is flowing in the conductor (including the winding of the inductor). This current is in phase with the magnetic field, hence, gravitational storage coincides with magnetic storage.

Within the capacitor, the leakage current (thru the dielectric) is in phase with the voltage across the capacitor, hence, gravitational storage coincides with electric storage.

Therefore, since gravitational storage occurs with both electric and magnetic storage, the frequency of grav. storage is doubled over the voltage frequency of the tank circuit. However, since the electric (field) polarity is reversed with each successive grav. storage (both in the capacitor and the rest of the circuit), the gravitational vector reverses at the source frequency as the tank circuit.

Page 112.

The direction of the electric vector determines the direction of the gravitational vector, as:

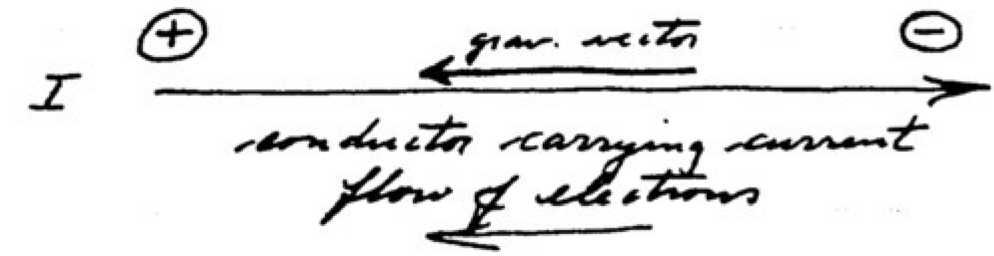


Fig. 1.

The gravity vector within the conductor is in the same alignment as the flow of electrons (opposite to the "flow" of the classical current).

The complete gravitational field, out into the ambient, may look like this:

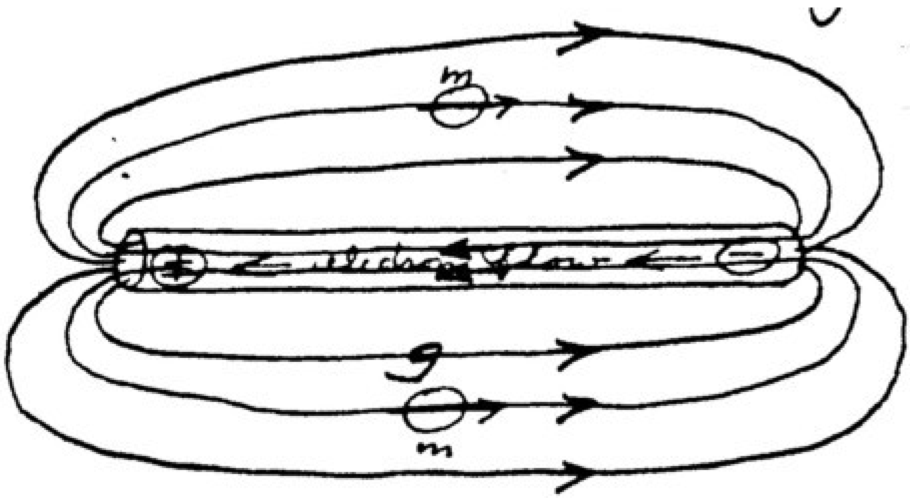


Fig. 2.

The gravity vector within the conductor acts upon the mass (m) of the conductor to move it (if free to move) from (-) to (+) as indicated above.

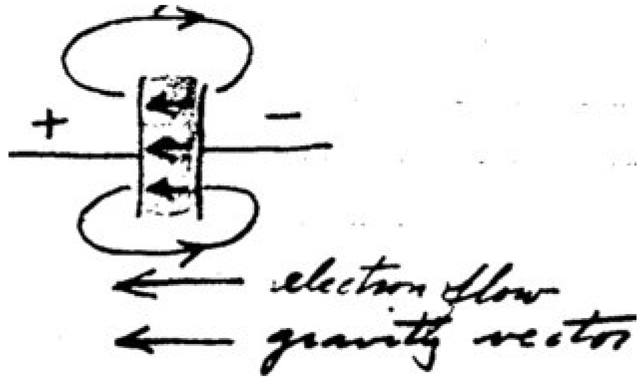
Page 113.

Masses in the ambient, solid, gaseous or liquid, would (if this is true) move in the opposite direction. Hence, action and reaction would be equal. However, in free space, where there would be no masses in the immediate ambient, the quantum arises --- would the conductor still possess a "gravitator" force One might answer the question in the affirmative by rationalizing that the so-called ambient actually extends to infinity so as to encompass all mass in the universe!

In a tank circuit there are three components, (1) the capacitor, (2) inductor, ad (3) the leads connecting same.

Gravitational storage would seem to exist in all three, but not necessarily in phase.

In the capacitor, max. grav. storage exists when the capacitor is fully charged. At this point in time, the leakage current is maximum across the dielectric.



Since the dielectric is also the conductor, the gravity gradient is from (-) to (+) (electric) and the mass of the dielectric is within this concentrated gravity gradient and hence processes a force in that direction. Calling such a structure a gravitator, (see lab notes of 1926-27-28-29).

Page 114.

This structure more in the neg to pos direction when charged. This is what happened, even in vacuum.

One of the basic problems in those years was to understand the energy relationships. It was not understood that leakage current in the dielectric was involved. No distinction was made between condensers for this reason. The force developed seemed to be a function only of voltage --- hence, wattless. There was no understandable channel for the conversion of electrical energy into kinetic energy. I was even believed that the kinetic energy was somehow derived from the gravitational field!

Now that we believe the conversion is directly from electrical to kinetic energy, the whole idea of the gravitator makes more sense.

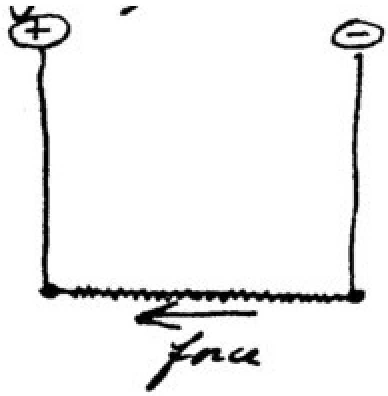
In those early experiments, it was known that the gravitator force was a function of mass. Lead monoxide loading was common practice. The conductivity of the mass was never investigated nor appreciated.

A simple experiment to test the present concept might take any of several forms:

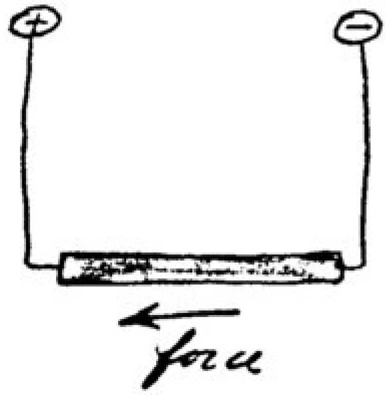
(1) bifilar suspension of a wire conductor;
(2) bifilar suspension of a massive dielectric rod;
(3) rotatable (torque) suspension of a coil of wire.

Page 115.

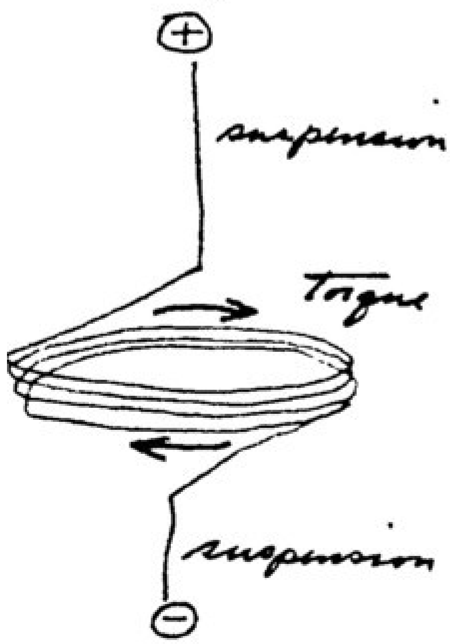
Describing (1, 2, 3):



Simple conductor (esp. high resistance)



Semi-conducting rod (such as litharge-glycerine)



Coil of high-resistance wire.

By placing any of the above in an insulating fluid such as oil or carbon tetrachloride (more dense), the force may be increased. Fluid would move in the opposite direction.

In the case of a rotor having sectors of different conductivity, a net circular current (as in [3], previous page), could produce torque on the rotor as a whole. The reaction on an ambient mass (such as oil) or on metallic reactor plates would be in the opposite direction.

This could represent an additional and quite independent explanation for the operation of the sidereal radiation electrometer other than that set forth on pages 55 and 80 of this notebook. It could be that both explanations apply, each one contributing to the torque.

Energy Relationships ~

At this point, it would appear that the IR loss in a conductor, when the conductor is free to move (and does move) is not 100% converted into heat. A portion (unknown at this time) is converted into kinetic energy. I am not talking about any electromagnetic effect but purely about the possible electrogravitic interaction.

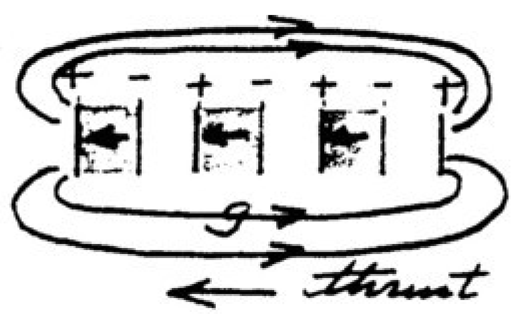
The electromagnetic effect would appear to be embodied in a semiconductor possessing an internal electric field thru which (as a consequence of such field) a current is passing. A gravity gradient appears in the alignment of the electron flow. Any mass within that gravity gradient tends to "fall" in the same direction (as the electron flow). At the positive (elec.) terminal of the semi-conductor, the gravity gradient fans out into the ambient space to the negative terminal, as show in Fig. 2, p. 112.

Page 117.

The gravity gradient(flux) is greatest within the body of the semiconductor. The intensity is a function of the potential difference and the current. F = || E / || watts.

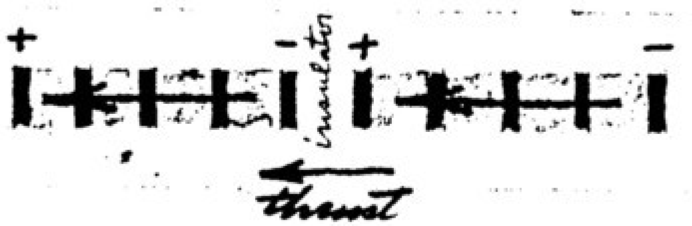
Thrust (electrogravitic) is a direct function of the mass of the semiconductor; being the effect of the gradient upon the body of the semiconductor. This thrust is truly a ponderomotive force.

Semiconductor sections may be placed interrelated with high insulation sections as:



All active gravitator sections could be placed in line and electrically connected in parallel.

Additional mass could be added (as lead plates) between gravitator sections as:



Page 118

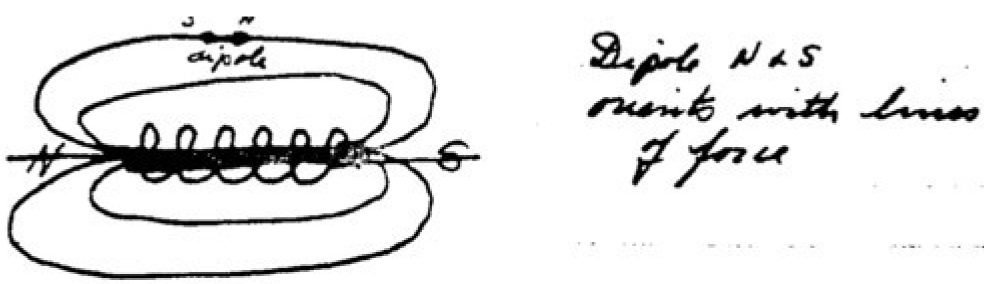
In developing the concept set forth on p. 110, gravitational storage represents the existence of closed flux-domains in space. Such domains represent energy. They are formed by electric fields and electric currents operating jointly. In semiconductors, an electric field (potential difference across said conductor) causes the electric current. Both field and current are necessary to create the gravity gradient and the flux domain. The domain persists so long as the field and current persist. When the field collapses, the domain collapses and the energy temporarily residing in the domain (if no thrust is utilized) returns to the electric field (and circuit). If motion is permitted, the energy resident in the domain is balanced between kinetic energy and electrical energy when the domain collapses.

Could it be that the motion of the Earth in space changes the ratio of electric field and/or conductivity of the semiconductor? Could it affect the resistivity of metals for the same reason? Could this explain the Miller interferometer fringe shift? It is all highly complex to say the least.

The flux domains resulting from electric magnetic and gravitic fields are remarkably similar in pattern and in the way they arch out into the ambient.

Page 119.

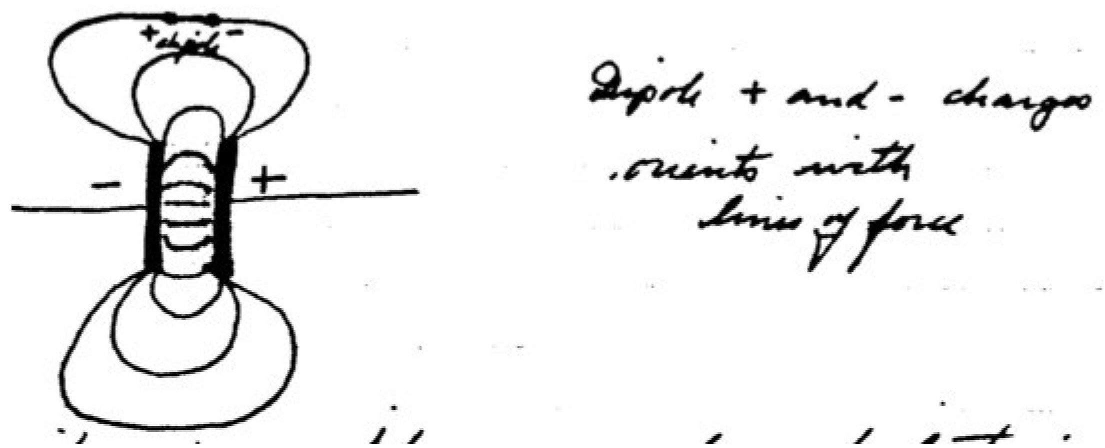
(1) The magnetic field from an inductor fans out into the ambient as:



Dipole N and S orients with lines of force.

Its intensity is influenced by an iron core (mu).

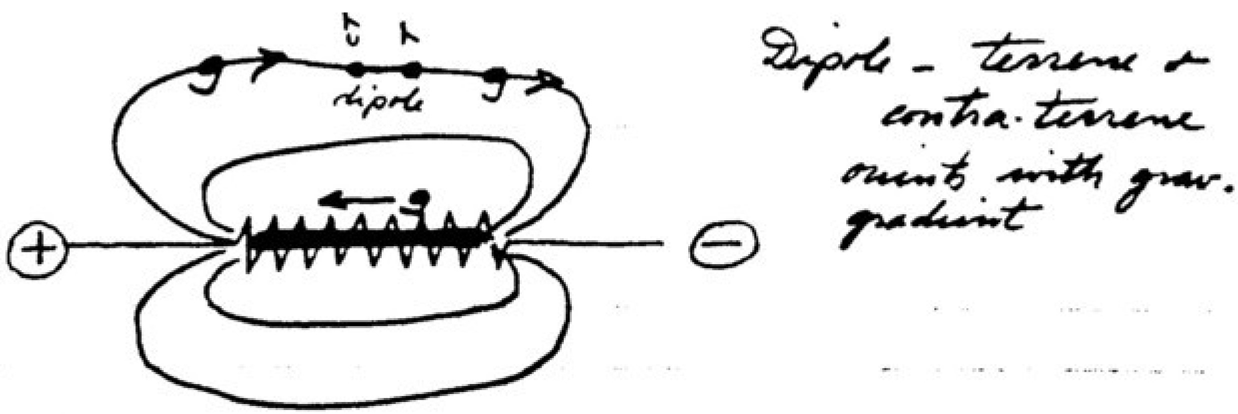
(2) The electric field from a capacitor fans out into the ambient as:



Dipole (+) and (-) charges. Orients with lines of force.

Its intensity is influenced by dielectric constant (K).

(3) The gravitic field from a resistor (semi-conductor) fans out into the ambient as:



Dipole --- terrene and contra-terrene orients with grav. gradient.

Its intensity is influenced by mass (m). The core mass in this instance could be the mass or density of the resistance material (usually wire). Tungsten better than aluminum or carbon.

Page 120.

Several thoughts occur at this point. First the gravitator experiments conducted in the 20's may no have been too far wrong. As stated on p. 114, the need for leakage current as a result of the applied high voltage was not understood nor appreciated as essential to the operation.

Lead monoxide was mixed with paraffin or beeswax to obtain a massive dielectric for use in the capacitors. The relation to gravitation was believed to be solely the function of a capacitor. Leakage meant simply a loss. Now, it seems that leakage current is as important as the high voltage field, maybe more so.

The high voltage field must be of such intensity as to drive the electrons thru the semi-conductor vigorously. Just what is required remains to be determined.

Both field and current are necessary to create a gravity vector within the semiconductor. As stated before, this vector is in the same direction s the electron flow, i.e., from negative to positive. This vector or gravity gradient passing thru the mass of the semiconductor causes the conductor to move (when free to move) in the same direction (passive grav. mass).

The gravity gradient then arches out with reduced flux density) into the surrounding space and then returns to the opposite (negative end) of the semiconductor. The pattern resembles the magnetic field around a bar magnet.

Page 121.

Any mass resident in the ambient part of the gravity field will obtain a ponderomotive thrust in the opposite direction. This was discussed on p. 112.

It is possible that such a gravitator may be sensitive to "absolute" velocity, the motion of the earth in space. It may operate very much like a DC motor, with its motion resulting in a generator action – producing a counter emf.

Such a counter emf would alter the input current, making itself evident as a change in input resistance.

The gravitational permeability of the ambient space would also alter the total flux density and it too would make itself evident as a change in input resistance.

At least two factors, therefore, may affect the wattage demand of the gravitator: (1) velocity thru space and (2) gravitational potential of that region.

Such a gravitator, fixed to the Earth, would operate, I believe, as a sensor for both the movement of the Earth and the gravitic potential of the region thru which the earth passes.

Two additional factors may influence such a sensor, (1) the electrostatic charge upon the Earth and (2) the transient pulsing or cyclic effect of gravitational waves (possibly from the center of our galaxy).

Page 122.

The electrostatic charge of the Earth would affect the conductivity of the semiconductor directly --- increasing negativity causing increased conductivity. Note: This could be easily checked by an experiment wherein the resistance (carbon-metal) bridge is placed upon an insulated island and the potential altered several hundred thousand volts.

The sensitivity to gravity waves is the same as the sensitivity to the ambient gravitational potential or flux density. Incoming gravity waves affect the gravitic permeability of the ambient

region, hence the flux density thru the semi-conductor, then the counter emf and back to the input resistance or wattage demand.

In 1946, the Giocobini Zinner comet caused rapid erratic fluctuations of the electrometer, while the Earth passed thru the residue of the comet's tail. No explanation has been advanced.

I suppose we could speculate that this strange effect was caused either by (1) rapid variations of gravitic potential or permeability of the ambient region, or (2) variations in the electrostatic charge of the Earth, both effects being caused by the impingement of particulate matter upon the Earth from the comet tail.

Page 123.

Next March (1974), the earth will pass thru the tail of the Kohoutek comet, and I hope to have several resistance bridge recorders running, in the hope of getting another look at this strange manifestation.

All of these efforts may help in tying together the theory covering the Miller observations, the Sanford experiments on resistance, the Weber gravity wave observations (or whatever the are) and my own observations for the last 50 years (which have never been formally published.

Today, we have ordered a 2-channel recording galvanometer (Brush) with adequate amplifiers to observe the resistance variations in several different bridges. Surely, something worthwhile will come of all this effort and expense.

We are also consulting with Dr Pres at Cal Tech and plan to have another meeting with him next week, at which time we will give him photostats of electrometer records (recently processed) covering readings for the ears 1937, 1939, 1946, 1947, 1948, and 1949.

Page 124.

114. A Semiconducting Rod as a Sensor for Earth Movement thru Space.

Sept 12, 1973.

On p. 121, it was proposed that the gravitator may be sensitive to the absolute motion of the Earth thru space --- inferring as to both the direction and extent of that motion.

The simplicity of this hypothesis is overwhelming and I am inclined to carry it further in an attempt to test it --- possibly "to absurdity".

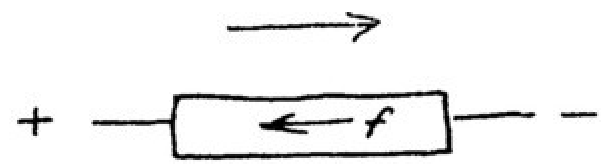
It was stated that, in effect a massive rod would have lower resistance, higher wattage demand when aligned with a motion vector opposite to its internal electric field (meaning in this case the direction of electron flow from neg to pos.). When aligned in the same direction as its electric field the resistance would increase, resulting in lower wattage demand. This then is equivalent to

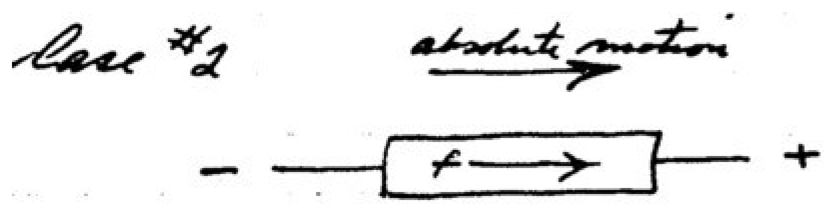
the motor/generator effect where, as velocity increases, a counter emf is generated which reduces (and even reverses) the wattage demand of the motor.

Hence, it would seem possible that by merely rotating the gravitator (altering its direction in any way) that a change in resistance would occur.

Page 125.

Case #1 --- High wattage demand (low resistance)





Case #2 --- Low wattage demand (high resistance)

In the above representation, (f) is the ponderomotive force resulting from the action of the internal (synthetic) gravitic field caused by the joint E1 (electrogravitic) effect. In Case 1, this force is opposed by the existing motion, so as to cause increased wattage demand (lower resistance), whereas in Case 2, the existing motion is assisting so as to cause lower wattage demand or higher resistance.

This "directional sensor" capability was referred to on p. 84 and may be tested shortly when suitable resistance units become available.

If this concept is valid, it may offer some explanation for the behavior of the Miller interferometer. Although the steel arms of the interferometer were not charged, nor were they given any electric gradient deliberately, the intermolecular structure of the steel may have developed such gradient by electrogravitic (more precisely gravito-electric) induction from its motion thru space. This may have caused inter-molecular contraction. Perhaps, this may turn out to be the mechanism of the L-F Contraction.

But why the Miller effect exceeded the theoretical L-F contraction or (more exactly) was only about 1/20 of the total expected shift, all of which should have been cancelled by the L-F contraction, remains unexplained. The relativists are simply ignoring it!

Then, of course, the systematic and cyclic change in resistance observed in 1892 by Sanford appears never to have been seriously considered. To my knowledge, few (if any) physicists today have ever heard of Sanford's results or, for that matter, would consider them valid if the subject were brought up. For such reasons, difficult to understand, the ideas presented in this book will undoubtedly be classed as rank heresy. But we hope this will not alter the truth, which will eventually emerge. Only time will tell.

Now comes the controversy regarding the validity of Weber's work allegedly purported to have observed gravity waves --- now, more particularly the effects correlated with sidereal time. Weber has stated he believes he has been receiving gravity radiation from the galactic center.

If our electrometer records for 1937 and 1939 are considered in the same light, we also might make the same claim that radiation was being received from the galactic center.

But the question I raise at this time is --- Does velocity (of the Earth) thru space contribute? Could the Earth be running thru regions of varying gravitational potential such as may result from clouds of dust, variations in the density of the solar wind, etc. If the gravito-electric concept is valid and electric fields are intimately tied in with gravitational potential, what of possible variations in the electrostatic charge of the Earth --- and/or the Earth-Moon system.

Why is it that the electrometer, consistently for 6 years, has shown an effect readily correlated with the phases of the Moon?

Weber's equipment records only "events", sudden shock stimuli which cause his cylinders to resonate mechanically. Of course, as Weber reasons, the stimuli could also be the arrival of a wave of that same frequency. Perhaps evidence, even, of a "whistler" train of waves of varying frequency which resonate (at one point) with the cylinder.

Could it be that Weber's cylinder, longitudinally and transversely, resembles Miller's interferometer arms? Did Miller's "arms" respond to gravity waves?

Page 128.

To my knowledge, Miller reported no sudden fringe shifts such as Weber might call an "event". If he had, he may have attributed it to an earthquake!

The interferometer has the advantage over the Weber cylinder, of providing "steady state" readings. The electrometer has the same advantage. The resistance bridge likewise has this advantage, and with a possible sensitivity many orders of magnitude greater.

I can see a similarity, both in structure and function, between the four instruments mentioned above. All appear to depend upon the same set of phenomena, the relationship between electric

and gravitational fields. Of the four, I like the resistance bridge (differential mass) the best and feel it has the most to offer in the future

I certainly hope we can proceed without delay to build and test various bridge and various resistive elements in the light of this new concept.

Possibly not only will the results add greatly to the fund of scientific knowledge but may provide new devices for astronomical measurements and new methods, such as the gravitator, for commercial utility.

Page 129

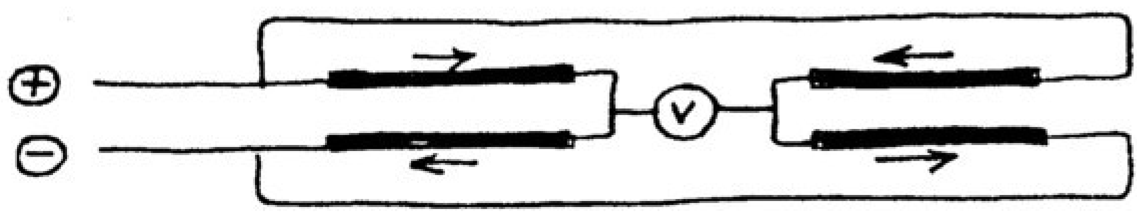
115. Velocity-Sensing Differential Resistance Bridge.

Sept 13, 1973.

On p. 125, the possibility that a resistor may be sensitive to absolute motion was considered. If the resistor were aligned with the motion, it is suggested that the resistance would change with polarity.

Two methods, therefore, come to mind which may make possible a continuous reading velocity sensor or speedometer to indicate the absolute motion of the Earth thru space. (This, of course, is impossible in the view of today's technology).

Nevertheless, method No. 1 may take the form of a resistive bridge where similar arms carry currents in opposite directions, as:



Here, the resistance balance is established between pairs of arms where current is flowing in opposite directions.

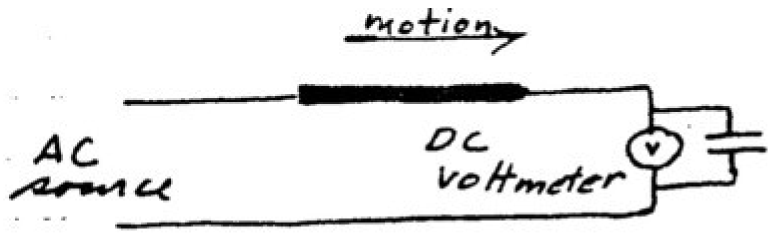
The receding would be maximum when the resistors were aligned with the movement and minimum when at right angles to the movement.

Page 130.

The practical value of such an instrument would be enormous, especially in this age of space travel. It would be, in effect, a compass for space, unaffected by the magnetic field of the Earth. Not only that, it would confirm (finally) the earth's movement away from the galactic center toward that point in space (as Miller believed) approx 5h RA –70 Decl. at about 208 km/sec.

Method No. 2.

If resistance changes with polarity, according to the original premise, the in-alignment resistor will act as a rectifier, as:



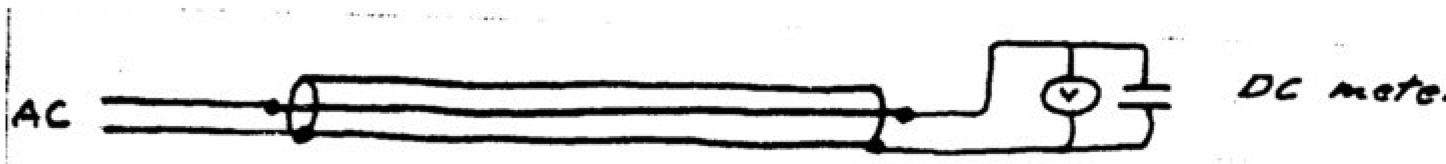
The greater the resistance differential the greater will be the indicated voltage DC. No motion, hence, no resistance differential would produce no DC voltage. While the circuit illustrate above contributes a half-wave rectifier, the same principles apply to a full wave rectifier (by using 4 – 2 pairs --- of resistors properly aligned). A capacitor is shown merely to smooth the DC output.

Page 131.

116. Improvement in Velocity Sensor

Sept 14, 1973.

A possible improvement over the circuit shown in Fig. 2 (previous page) is as follows:



In this circuit, the metal tube enclosing the resistance wire carries the return current making the sensor non-inductive.

117. Variations in Resistance Bridge Output.

Sept 16, 1973.

Containing the observations started Sept 8 (p. 107) two systems are now operating:

No. 1 --- 10,000 ohm --- 19 V, Output ~ 10 ua.
No. 2 --- 200,000 ohm --- 38 V, Output ~ 10 ua.

The former is connected to indicate conductivity while the latter indicates resistance of the wire-wound arms. Observations to date show a true reciprocal relationship. Continuous variations in readings are readily apparent, some rather rapid fluctuations are occasionally seen, but these are

of such small magnitude that exceedingly close observation of the 0-50 ua meter is necessary to detect them.

Page 132

Tomorrow, I understand, the 2-channel Brush recording galvanometer will be delivered and this instrument will have such amplification and sensitivity that these rapid fluctuations will be ready observed and recorded.

At 10:05 pm, I happened to be watching the meter with a magnifying glass and saw a sudden jump from 9.95 to 10.03 ua, fluctuating at the high level for about 30 sec then returning the former reading. There is no question that rapid fluctuations exist. The Brush will be able to record anything up to 100 Hz. If higher frequencies are present, it will require a scope. Also, if there are frequencies in the audible range, a suitable amplifier and loudspeaker may provide some fascinating information. Even the variations as I have just witnessed may be audible. The next two or three weeks (when we have the proper equipment) will certainly be interesting.

The microammeters used in this experiment (p. 107) are 1800 ohms. Maximum deflections so far has been 9.5 to 10.0 ua or 0.5 ua = 0.0009 V or approx 1 mV. The Brush recorder therefore should have ample sensitivity. Also an audio amplifier, using the crystal microphone pickup, should provide adequate amplification for ~ 1 mV.

Page 133.

117-1. A Velocity-Vector Sensor.

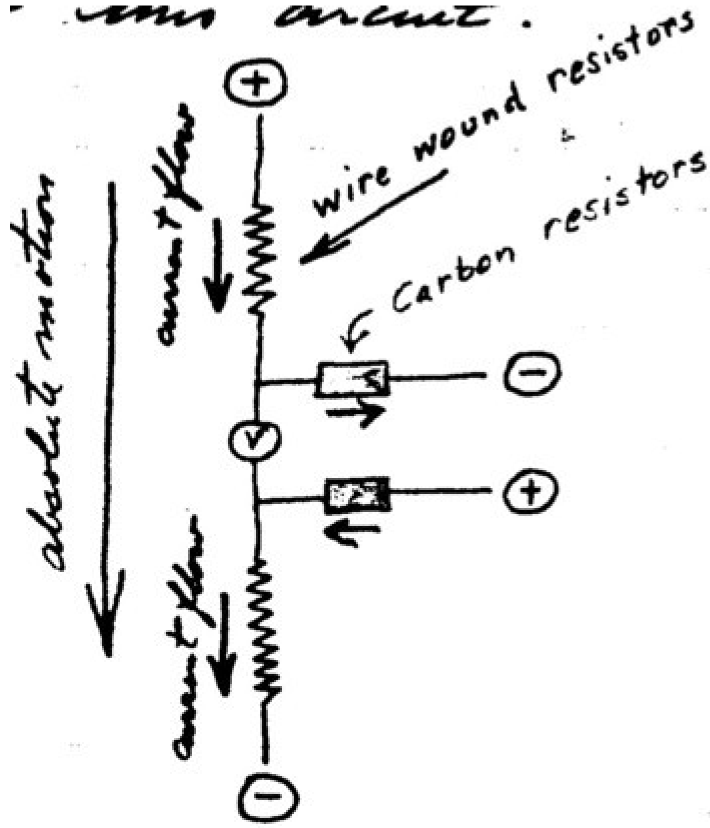
Sept 17, 1973.

On the premise that the variation in resistance is "felt" by the more massive conductor (wire-wound arms) primarily when the conductor is in the alignment of absolute motion, the following thoughts emerge:

(1) The flow of current (in the conductor) is in the alignment with the absolute motion.

(2) Current vector and velocity vector are unidirectional.

A velocity vector sensor may, therefore, have this circuit.



In the above circuit, current flow in the carbon resistors is in opposite directions (canceling) while that in the wire-wound resistors is unidirectional. It is the thought that the indicating meter will read maximum or minimum when the wire-wound arms of the bridge are aligned with the earth's movement, thru space, and only when so aligned.

As to whether it will be maximum or minimum, an analysis is as follows:

(1) Based on the counter emf theory (p. 124), when current flow (opposite to electron flow).

(2) The meter reading, therefore, would be maximum when the wire-wound arms and the current in those arms is in the same direction as the absolute motion.

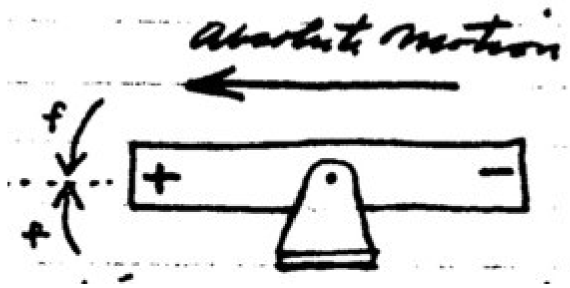
(3) Hence, such a bridge would "point" in the same direction that the Earth is moving. It would be a kind of "Space Compass". It is entirely possible that the current or energy asymmetry may introduce a torque on a carefully balanced system so that the system would actually align itself at a position of minimum current flow.

(4) In summary then, such a space compass would align itself so that the positive end "points" in the direction the Earth is moving in space.

I am wondering if this may not be as Miller predicts: 5h RA –70 Decl. (See p. 130).

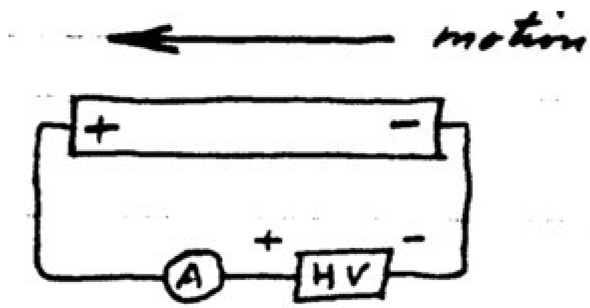
Page 135.

The basic diagram of such a system where current asymmetry provides mechanical torque so that the space compass actually aligns itself toward the point in space toward which the earth is moving is:



Mounting has 3 degrees of freedom.

This is predicted on the belief that a counter emf is generated in an y conductor or semiconductor, with polarity as indicated above, when it is moved longitudinally. If that conductor is carrying a current, the resistance will be increased and the current will drop to a minimum.



Simple circuit showing (in red) the polarity of emf created in a conductor by its motion thru space. This means that an electric field of the same polarity is impressed upon all matter by absolute motion. This electric field ma be the mechanism of the L-F contraction.

Page 136.

118. Results of Tests of Models A-14, 15 and 16.

Nov 9, 1973.

It is now quite apparent that the bridge structure outlined on p. 79 is operative. The results are quite surprising as to magnitude. The two arms of the bridge are of wire-wound and carbon composition resistors of approximately the same resistance. It is adjusted at the start to a null voltage which is fed to both strip-chart recorder and a visual digital readout.

Three models have been constructed. A-14 (45 V at 600 K), A-15 (300 V at 1.2 megs) and A-16 (6 V at 10 K). All units are running concurrently. Records for the past two weeks indicate a

consistent drift downward on all three units; i.e., toward the negative on the charts (which probably means that the Earth is becoming increasingly electropositive).

It has not yet been determined which arm of the bridge is changing the more, the wire-wound arm (sp. gr. 7.8), or carbon comp. (sp. gr.2.0). I suspect that it is the carbon side. And I am wondering why this variation has not been discovered before this or predicted in resistance theory.

Page 137.

While all three models indicate a common trend, there are individual consistent differences which were not foreseen. These differences must be explained. They obviously are not sporadic or random.

When one examines the basic differences in the construction of the three models, it appears that voltage (applied) and resistance are the only operating factors. Hence, one might classify the three models as follows:

Model --- V x R (voltohms)
A-16 --- 6 x 10^4
A-14 --- 3 x 10^7
A-15 --- 3.6 x 10^8

If voltage represents the "driving" field which acts upon the conducting electrons and R represents the "distance" or gradient thru which this force acts, then F_d = work or energy. Hence, it is possible these three models operate at three different energy levels, perhaps some kind of quantum relationship.

If this is found to be the case, we might actually have the evidence for many energy level, only three of which we may have identified.

Following this line of reasoning, there may be a series of so-called "spectral bands" in this newly-discovered phenomenon, expressed as follows:

Page 138

Spectral Bands (energy levels)
Exponent (V x R) --- Model
+10 --- A-17
+9 --- A-17
+8 --- A-15
+7 --- A-14
+6 --- A-14
+5 --- A-14
+4 --- A-16
+3 --- A-16

+2 --- A-16
+1 --- A-16
0 --- A-18
-1 --- A-18
-2 --- A-18
-3 --- A-19

Accordingly, it is now proposed that we construct Model A-17 with a total R = 10 megaohms and V = 1 KV.

Also Model A-18 --- R = 1 ohm, V = 1.5 (battery)

These models will be constructed in the Menlo Park shop (Polytec) during the week of Dec 3, 1973.

Additional recording and printout instruments are being installed and will be operational during the week of Nov 12 and thereafter.

More definitive information will become available.

119. Conductor Density and Resistance Variation

Nov 9, 1973.

Contrary to the opinion expressed on p. 136, a provisional examination of the circuit and performance of Model A-15 appears to indicate that the wire-wound resistors, rather than the carbon-comp. resistors, are responsible (largely) for the anomalous resistive variation which the bridge detects.

This would bear out the hypothesis that the bridge functions because of a mass differential of the two arms. Here, the density of the wire (arm) is 7.8 whereas that of the carbon (arm) is approx 2.0 --- a differential of 5.8. It is believed that the carbon (low mass) arm holds relatively steady while the iron (high mass) arm suffers a (larger) change, a spreading due mainly to the higher-density arm. This is certainly evidence of a gravitational relation.

In the Sanford experiments (p. 63), measurements were made of a copper wire vs (it is assumed) an iron-wire resistance decade box. Therefore, the copper (sp. gr. 9.0)is measured against iron (sp. gr. 7.8) --- differential 1.2. Both iron and copper would vary in resistance, but the variation in copper would be the greater.

An experiment is planned (p. 77) using platinum or tungsten wire-wound resistors. Here, the mass differential would be appreciable --- approx 16 gr/cm^3. It is supposed that the tungsten

would show the greater resistance variation. This combination would be superior to the iron-carbon combination by a factor of about 3.

In the use of tungsten wire in velocity sensors (p. 129) it is preferred for the same reason.

Aluminum wire, it seems, would be preferred over carbon-comp. because of its greater stability and freedom from resistor noise. However, since the drawing of aluminum into very fine wire is difficult (smallest size approx 0.001 inch) the higher resistance bobbins are quite large. Where size is no problem, aluminum wire resistors have a definite advantage. Therefore, the combination of tungsten with aluminum is preferred.

Assuming that tungsten (or the more massive wire) is primarily receptive to these strange newly-discovered resistance changes, one may draw certain conclusions regarding sensor performance which are based on observations over many years. Some of these conclusions are as follows:

(1) Resistance decreases as the original electrometer readings increase.
(2) Resistance decreases as Earth negative charge increases.
(3) Decreases as moon crosses upper meridian.
(4) Decreases at 16h ST (Ohio 1937)
(5) Decreases to minimum 4 days after full moon.
(6) Elevation ?

The above may be subject to correction or revision as further evidence comes from alternate records.

Summary:

Based on the above, but still subject to confirmation, the possibilities are as follows:

(1) There exists a basic change in electrical resistance to which all conductors are subject which has an extra-terrestrial origin.

(2) The magnitude of this change appears to be dependent only upon the mass or density of the conductor, the more dense or massive the greater the magnitude of the resistance change.

(3) Platinum has roughly 10 times the variation to which (porous) carbon is subject.

(4) Resistance bridges made of platinum vs carbon-composition resistor arms easily reveal this extra-terrestrial effect.

(5) Other optimum combinations are gold-aluminum or tungsten-aluminum.

(6) The electrostatic charge upon the conductor also influences its conductivity.

(7) Electro-negativity lowers resistance or increases conductivity.

(8) Electron density probably is responsible so that increase in (free) electron population increases conductivity.

(9) The Earth, being an insulated sphere in space, is free to accept, maintain and/or vary its electrostatic charge.

(10) Influenced to a great extent by solar wind, this charge may vary over wide limits. It appears probable that the earth is positively charged relative to the Sun (Sanford).

(11) This may be due in part to the gravito-electric equilibrium whereby the gravitational potential of the sun induces an (equivalent) negative electric potential on the Sun.

(12) If the Earth's orbital position (ambient) has (in my view) a higher gravitational potential, then the Earth would have a positive potential relative to the Sun.

(13) Earth's position relative to the Sun (perigee and apogee) would vary the electrical potential of the Earth because of the corresponding change in gravitational potential.

(14) At full moon, the moon would be more positive than the Earth for the same reason. At new moon more negative.

(15) The moon, therefore, undergoes a cyclic electrical potential change in concurrence with its phases, sweeping from maximum positive to max neg and return, with the potential of the Earth remaining near the mean.

(16) Actually, the above is an over-simplification. The earth-Moon system has a center of gravity (supposed to be approx 1000 miles beneath the surface of the Earth) about which both bodies rotate.

(17) The moon may induce an opposite charge on the surface of the earth closest to it. As the earth revolves this surface charge may travel from E to W, producing a diurnal change in surface potential at any one location.

(18) This diurnal pattern will change from day to day depending upon the phase of the moon.

(19) At or shortly after full moon the observed pattern (Ohio 1937) is an increase in (resistor) conductivity, hence electric negativity. The low appears about 4 days after new moon.

(20) This delay of approx 4 days in each instance may be caused by the capacitance lag of both the moon and the Earth.

(21) It must be borne in mind that the electrical capacitance of the Earth is enormous --- estimated at about 1 farad. Such capacitance undoubtedly has a tendency to smooth out all electrostatic variations, as well as to introduce a time lag.

(22) To date, the readings of all three resistance bridges in operation (Models A-14, 15 and 16) have shown a consistent drop. This means lowered negativity and lowered conductivity.

(23) If bio-electric relations exist, this probably means lowered mitotic rate possibly leading to lowered psychic and physical well-being in humans, and hence, a lowered stock market.

(24) Such a relation may indicate that the membranes between living cells, which act as electrical living cells, which act as electrical conductors between cells, perform their functions better when their electrical conductivity increases. A decrease in conductivity, on the other hand, would cause a loss of body energy. This would seem to be the logic of this "radiation" effect on human beings.

(25) As to the relation of human affairs to the moon, full moon again seems to have an effect on human activity. Chronic illnesses, hospital attendance, mental institutions, police activity, all have known correlations. Even the words "lunatic" or "looney" seem to show that this effect has been known and recognized for a long time.

(26) If resistor sensitivity to this phenomenal variation is, in fact, a function of the mass of the resistor material, there may be materials lighter than carbon in which the sensitivity may be minimum, possibly zero --- a material which is stable. However, such light materials (if metals) are chemically dangerous to handle, such as lithium, potassium, sodium or magnesium.

Page 145.

A better avenue of investigation would be electrolytes or liquids (semiconductors) of specific gravity les than one.

(27) Leaky oil (transformer oil containing moisture) would be a possibility. It will be recalled that leaky oil was used in the electrometer (1937) where this effect was first observed for a full year.

(28) Bridge arms of platinum vs leaky oil would appear to have maximum effect. Damp pine wood or balsa may be equally effective.

(29) And this brings to mind the possibilities of low-density solutions wherein the conductivity is the result of ion mobility.

(30) The question then is whether ion populated density also varies as free electron density is believed to vary. If it does not, then any ion-conductance arm (of a bridge) would be an excellent zero reference against which to measure the anomalous resistance change of all electron-conductance materials including all the metals.

(31) Another interesting avenue of investigation is the relation of this phenomenal variation of resistance to superconductors --- specifically, to the transition Temperature T_c. It as already been observed that different isotopes of the same superconductor showed that T_c is proportional to M^-

$^{1/2}$, where M is the isotopic mass! Could it be that T_c (of a given superconductor) varies with extra-terrestrial factors, possibly gravitational and/or electrostatic potential?

Page 146.

Are the investigators of superconductivity aware of an anomalous changes in T_c (cyclic or secular variations)? Surely, the resistance changes so apparent (in our results) at room temperature must extend into the low temperature region. One would naturally expect to find anomalous variations in the superconductivity transition temperature.

(32) In all of the observations of this anomalous variation of resistance made to date. DC has been used. The resistance bridges have all been battery-powered. It must be bore in mind that AC bridges are equally effective if this is truly a resistance effect. The variations from null are similar to the straight DC system.

(33) One important difference might be foreseen. If the incoming "cause" of the resistance change is alternating, rather than steady, the rectified null voltage as measured on our readouts would show it as DC. We would not be able to discern an AC "cause" of high frequency.

(34) The inductance of our wire-wound resistors, together with the inter-winding capacitance could be resonant, so that Model A-14, A-15 and A-16 may all have different resonant frequencies, hence, different spectral sensitivities.

(35) Evidence of differing readout characteristics has already been observed, especially between A-14 and A-15.

Page 147.

If all models (so far operated) were merely recording a scalar value such as a flux density, all would follow exactly the same pattern, This is not the case.

Disregarding a vector effect (alignment of the wire-wound resistors) or azimuth sensitivity, the readings of the three instruments are not strictly parallel. All, so far, have had a significant downward trend, which obviously is not localized within each instrument, but is shared by all.

Individual differences persist however. So that it has been convenient to assume that each is operating on a different "channel" or spectrum band, depending on some factor or combination of factors within each instrument.

The only factors which are different and distinguish one sensor from another are voltages and resistance. Both may be involved. Hence we have come to classify the sensors as follows:

Model A-14 --- 50 V x 600,000 ohms = 3×10^7.
Model A-15 --- 300 V x 1,200,000 ohms = 3.6×10^8.
Model A-16 --- 6 V x 10,000 ohms = 6×10^4.

But it is still quite puzzling why distinct channels exist. Is it a resonant effect somehow in tune with incoming natural frequencies? But frequencies in what?

Studies should be made, using signal generators both in the audio and RF bands, to determine if these models are resonant.

Page 148.

This determination, it seems to me, is vital to the future of the research in this field. We must find out why the several models, each one quite positive in is reading, are slightly different from one another.

One thought is that they each respond t a different energy level --- but again, energy level in what? If resonance is not involved, it is extremely difficult to understand how energy levels could be present. Obviously, the problem is not simple. We seem to have a "bear by the tail".

Assuming for the moment that resonance is involved, the following thought occur to me:

(1) Resonant frequency must depend upon voltage and/or resistance, as f || V ohm.

(2) Based upon the idea of resistor inductance and its relation to frequency, the higher the voltohms, the lower the frequency, A voltohm-to-frequency scale might be as follows:

LF: 10^{10} voltohms
10^{8}
10^{6}
10^{4}
HF: 10^{2}
0
10^{2}
VF: 10^{4}

With frequency increasing as VOhm drops.

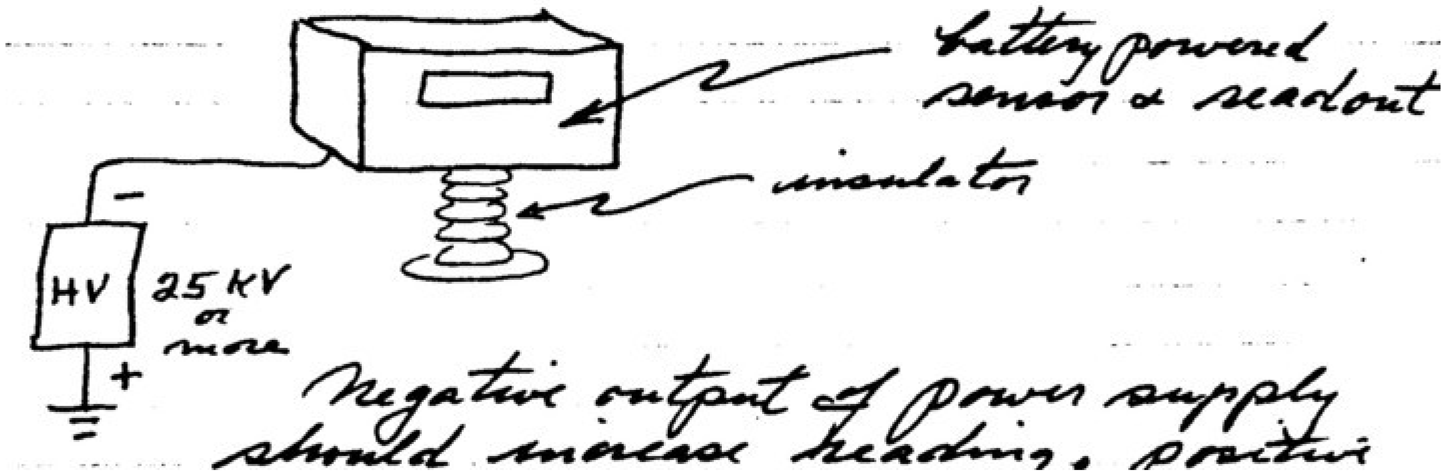
Page 149.

120. Affecting the Reading of Model A Sensors by Altering the Electrostatic Potential.

Nov 11, 1973.

In the previous sections, it was suggested that the reading of these sensors would be related to the electrostatic potential of the Earth. It is believed that the resistance of the more massive wire (arm of the bridge) decreases as the potential of the Earth increase. Or, in the other words, wire conductivity is directly related to electro-negativity. The reasoning behind this is that free-electron density increases conductivity.

A laboratory test of this premise is easily performed, as:



Negative output of power supply should increase reading, positive output decrease it.

This method may be used to calibrate all sensors.

Page 150.

121. Electron Mobility and the Role of Phonons.

Nov 13, 1973.

The thinking expressed in earlier sections of this record book that electrical conductivity is primarily a function of electron density is only partly true. Other factors affect the migration of electrons (electron mobility) beside density. One of the flow-controlling factors is the density and energy of the phonons which are present.

Phonons have distinct energy levels which are related to their momentum. Collision with electrons may transfer this momentum to the electron thereby increasing the electron's mobility, hence charge transfer. The energy of the phonon may be expressed as E = hw, a momentum *g* and velocity *V*.

The observed behavior, so far, of Model A-16 (6 V x 10,000 ohms) indicated a step phenomenon. The voltage balance of the bridge, near null, at approx 0.009 V goes by steps. The voltage value of these steps is yet to be determined. This could be evidence of a quantized behavior of the phonons.

Another interesting behavior pattern of A-16 is the jump --- and groups of jumps. Each jump approx 0.001 V. Groups of jumps occurred near noon Nov 14 and again in the early evening about sunset. The nature of these jumps indicates that they are not random electrostatic discharges near the equipment (frictional electricity from the wool carpet, etc.) but are definitely related to the quantum voltage levels in the resistor (sensor). The action looks like a charge-

transfer avalanche. Initiated by a factor, as yet unidentified, the conductivity suddenly jumps (increases) approx 1/10 of the full (recorder) scale, then decays back to its former level. No new jump occurs until the voltage returns to its previous starting level. A change in the starting level (or return level) sometimes precludes further jumps.

These jumps are sometimes quite rare, sometimes very frequent, sometimes singly and sometimes in a long series --- not necessarily at regular intervals.

We will watch the A-16 recorder for further characteristics. It is noted that A-14 also engages in jumping, sometimes randomly, sometimes in groups, but always quite irregular in timing. There is no (as yet) correlation between the jumps of A-14 and A-16. No concurrent jumps so far have been observed. This seems to eliminate the possibility of scales flux as a cause, seeming to point up the possibility of distinct spectral bands or channels. However, the underlying flux density does seem to affect all three sensors in the same way. All the sensors have shown a consistent drift downward (increasing conductivity) in the last three weeks.

Page 152.

122. Momentary Losses of Electrical Conductivity.

Nov 15, 1973.

The jumps of Model A-16 are not apparently caused by increases in conductivity (as at first believed --- p. 151) but are "jumps" in resistivity. Rather than being produced by a avalanche of charge carriers (electrons) they must be produced by a sudden lessening of charge carriers; that is, a sudden lessening of charge carriers; that is, a sudden increase in resistance.

A factor must come in from space which suddenly increases electrical resistance in a susceptible channel (in the observed case, it is spectral band +4, which is 6 V x 10,000 ohms --- Model A-16). The inhibiting factor must be of very short duration --- possibly a millisecond or less. The recording galvanometer presently in use (Monsanto Model 531-A) is much too slow to respond to the full magnitude of the resistance "glitch".

At first thought, it was believed these "glitches" might be ionization bursts from cosmic ray showers, but ionization bursts produce increased conductivity, not increased resistivity. We must look for extra-terrestrial factors of extremely short duration which temporarily "paralyzes" electrical transmission.

---

rexresearch.com

Thomas Townsend BROWN

Scientific Notebook, Vol. 4

[Volume 1] // [Volume 2]

Please visit these T.T. Brown Websites: www.soteria.com // www.ttbrown.com

Commentary from ttbrown.com :

"Back in the 1970s and 1980s a researcher and author named Willam Moore --- best known as the co-author of such folk-lore as "The Roswell Incident" and "The Philadelphia Experiment" (there, I said it...), wrote a couple of articles about Townsend Brown. Moore was also the last journalist to interview and photograph Brown shortly before his death in 1985.

"Somehow, during that period, Moore obtained access to Brown's personal laboratory notebooks, and, presumably, obtained permission to "publish" three volumes of those journals. Photo-copies of those journals have been in circulation ever since."

[Note: Volume 3 was not released]

Contents:

Page 1

179. Two Glitches of Extraordinary Magnitude.

Honolulu, HI; Jan 28, 1975.

During my absence from the Haleakala Observatory (trip to the mainland Dec 17 '74 to Jan 16 '75) the automatic computer was continued in operation.

Readouts showed a sudden and intense disturbance on all sensors beginning at (or shortly after 1 AM Honolulu 150 Degrees time on Dec 21, 1974, and lasting approx 3 hours. On certain sensors the effect lasted several days.

Another disturbance, also sudden and intense, occurred beginning at, or shortly after, 7 AM Honolulu time, on Jan 7, 1975. This disturbance, on certain sensors, also lasted several days.

Page 2.

180. Basic Circuits for Patent Application.

Honolulu, HI; Jan 28, 1975.

One cannot patent a rock, even if the rock generates electricity! But one can patent a circuit using a resistor, a method patent, if the results represent a new and useful application.

Hence, it is appropriate at this point to illustrate a series of basic circuits which might form the fundamentals leading to patent protection.

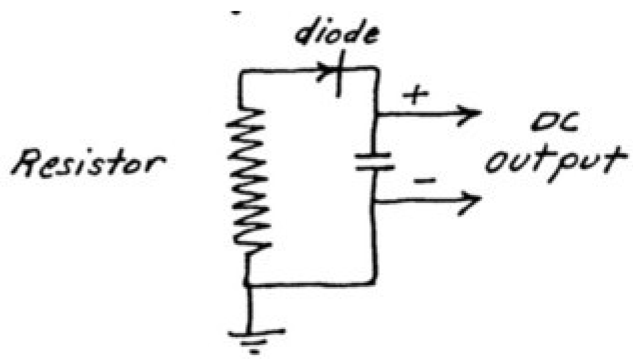


Fig. 1

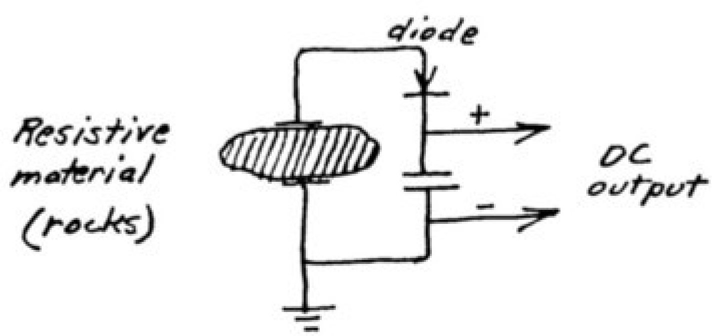
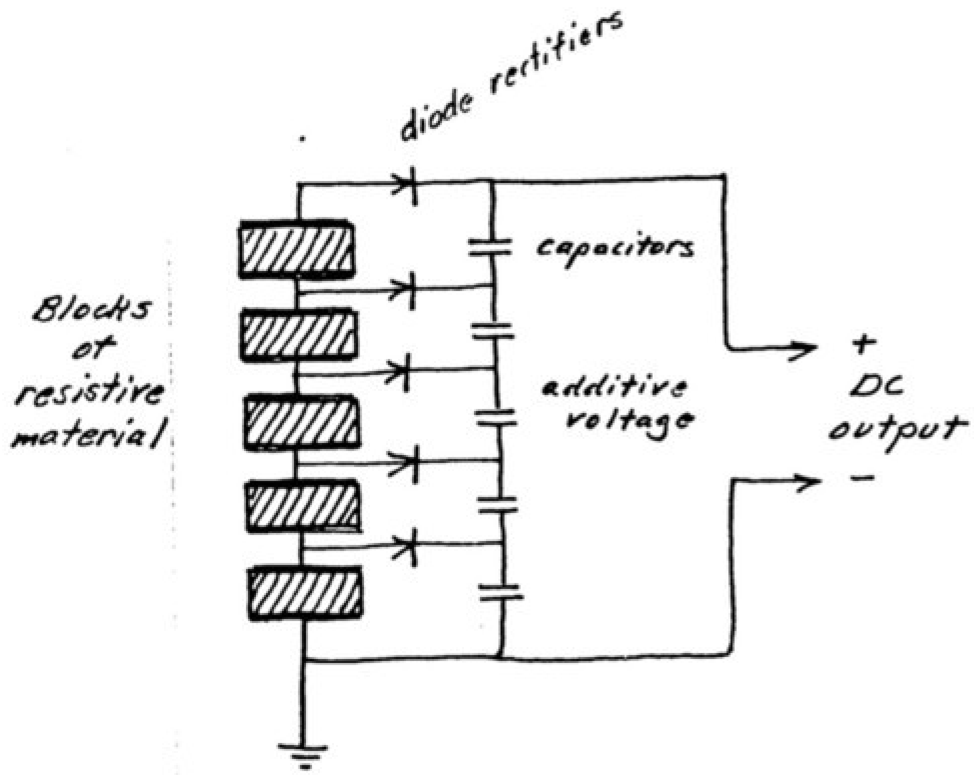


Fig. 2



In certain special cases where the resistive materials, like granitic rocks, are electrically polarized, the diode rectifiers need not be used, but their use does not detract in such cases.

Even with granitic rocks, which basically act as gravito-electric receptors, and are slightly polarized naturally, the use of the diode improves performance as an electrical energy source. The method therefore includes the 3 circuit elements, resistor, diode and (storage) capacitor.

Page 4

In describing the operation of this form of electric generator, it s believed that the resistor (any high resistance) intercepts radiation from the ambient (possibly gravitational radiation from space) and then coverts the incoming energy to RF (broad noise spectrum) intrinsically within the body of the resistive material. This RF noise appears at the terminals of the resistor or at the sides of the granite block (for example) to which electrodes have been attached.

This RF is then rectified by the diode and the DC is stored in the capacitor. The terminals of the storage capacitor provide the output leads of the "generator".

As mentioned earlier in these notes, certain granitic rocks appear to be electrically polarized and put out DC without the aid of an external diode. The rectifying action obviously takes place within the body of the rock. It is not conceivable that the DC output could in any way originate externally if one assume the source is gravitational (or other) high frequency radiation. No external DC source, such as atmospheric electric fields, appears to be operative.

A suggested method claim may be:

(1) Method for generating electricity, consisting in utilizing a circuit containing a resistor, diode and capacitor, connecting the same in series, and exposing said circuit to an ambient energy source.

Page 5.

(2) An electric generator comprising a circuit containing a high resistance, a diode rectifier and a storage capacitor whereby an electrical potential difference is created and stored for use.

(3) A generator according to claim 2 utilizing a body of resistive materials as the high resistance.

(4) A generator according to claim 2 utilizing granitic material as the high resistance.

(5) A generator according to claim 2 wherein the diode rectifier is an integral part of the polarized resistive material.

(6) A generator according to claim 2 wherein polarizable resistive material possesses capacitance.

See also Sec. 140 in Notebook No. 3, dated 1-23-74.

T. Townsend Brown (1-28-75)

Page 6.

181. Possibility of Augmenting Voltage Output by Passing Current through Resistors.

Honolulu, HI; 1-29-75.

In the foregoing section, the only current which passed thru the resistors was that which was self-polarized. Aside from the RF current itself, the only other current was DC from the diode action.

The thought occurs that if this phenomenon is rooted in resistor noise (from whatever source), it may be increased by increasing the (bias) current thru the resistor.

Hence, the following circuit should be considered:

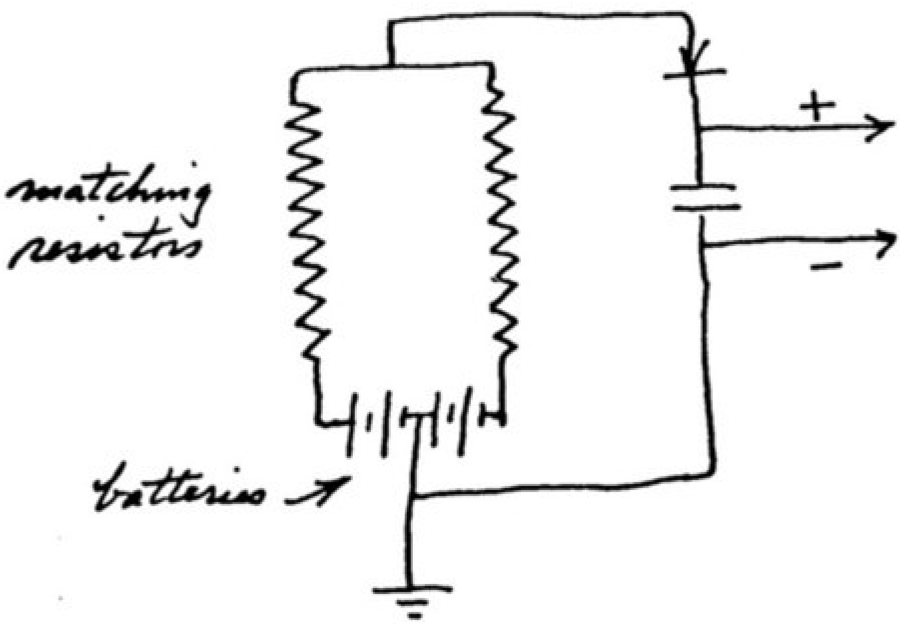


Fig. 1

Page 7.

182. The Effects of High Temperature.

Honolulu; 2-2-75.

All the sensors seem to have temperature effects, some rather unpredictable. This is the reason we have preferred to place the sensors in a temperature-controlled cabinet. Under constant temperature, the observed variation in voltage output were believed more clearly to reflect the variations in the ambient radiation, whether gravitational or otherwise.

In general, it appears to e noted that voltage output increases with temperature. If this were the result of thermal noise, the additional output may be directly traced to the incident (incoming) thermal energy.

If, however, the increase in temperature produces an increased susceptance to the incoming gravitational radiation, then higher temperature brings about increased gravito-electric conversion efficiency, and higher readings are the result.

No critical tests of this possibility have been made. The thought is being presented here merely in regard to increasing sensor (converter) output or efficiency.

Going further along this line, it is proposed that high temperature rock tests are in order. How high to go is a matter of speculation. Do red hot rocks produced high output voltages?

Page 8.

The answer is important in connection with "in-hole" generation of electricity from dry-rock geothermal reservoirs.

To date, all extraction of energy from geothermal sources comes about thru the emission and harnessing of steam or hot water. No method seems to be available for the direct conversion of in-hole heat to electricity. Ordinary thermoelectric generators require both hot and cold junctions. To my present knowledge, there is no (single) hot junction thermoelectric converter available. It is thought here that red hot rocks may do this kiNd of job.

Hence, could it be that hot rocks (with suitable electrodes attached) may generate RF which could be conducted away (by coaxial cable) and subsequently rectified? Not only would such a system completely revolutionize the concept of obtaining geothermal energy but it would have many other applications as well.

Commercial generating stations today use fuel (coal, gas, oil, etc.) to generate steam which then runs turbines and electric generators. Converting heat directly into electricity would eliminate the steam step and conceivably increase efficiency substantially.

Page 9.

Systems would be as follows:

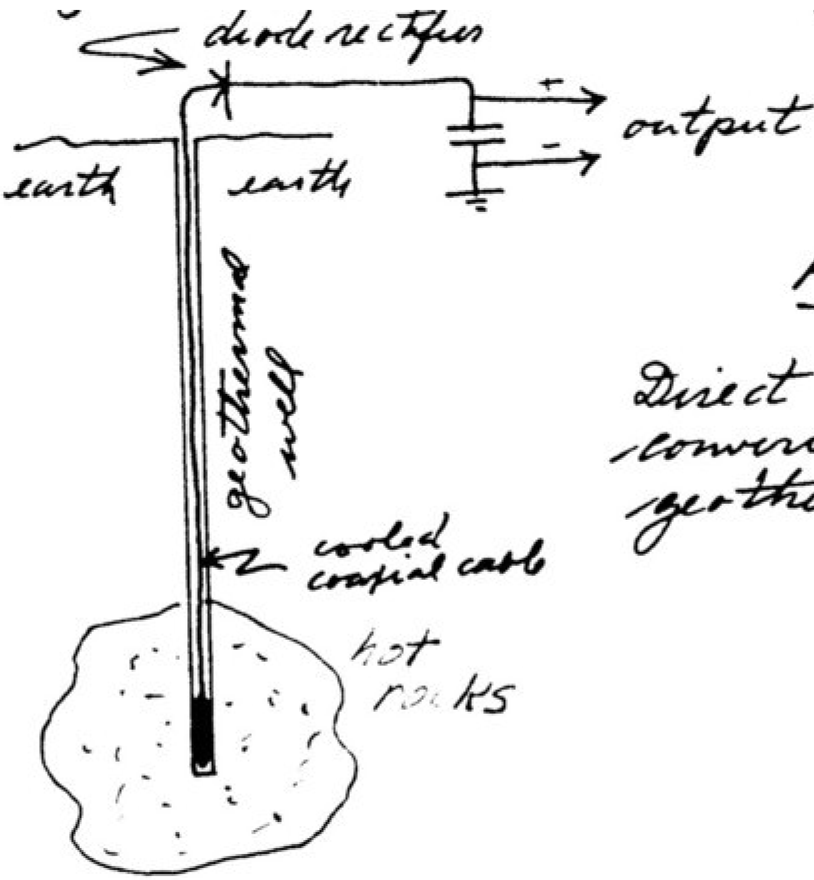


Fig. 1

Direct thermoelectric conversion in geothermal reservoirs.

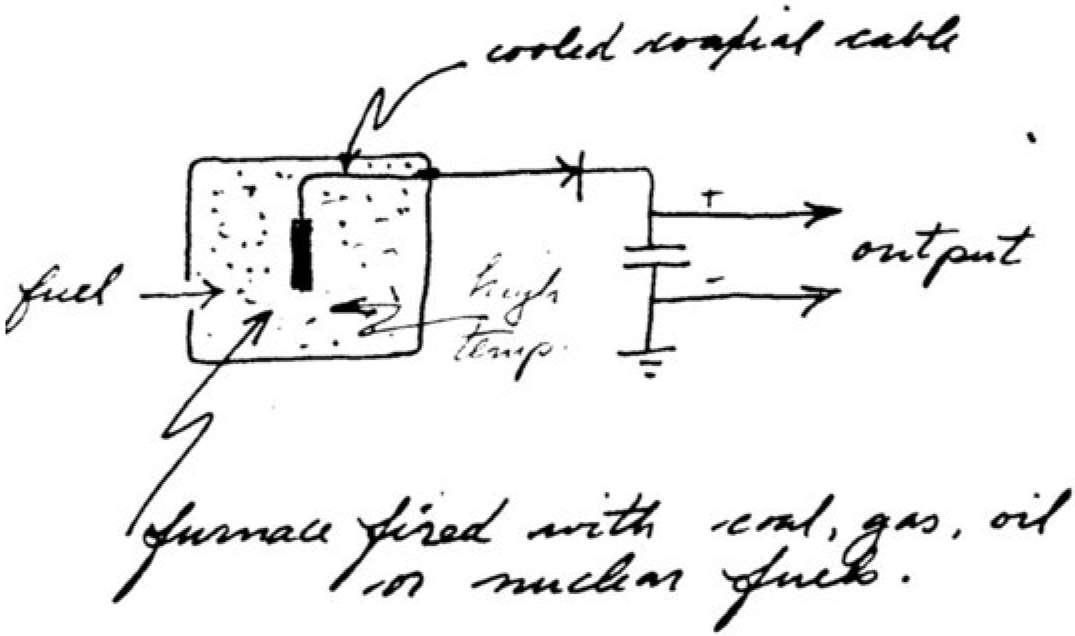


Fig. 2.

183. Re-Emission of Radiant Energy by Masses.

Honolulu, Feb 7, 1975.

In Sec 173 of Notebook #2, I discussed the possibility that various regions of the Earth's surface may be radiating energy. This radiation may be gravitational or it may be something else not yet identified or recognized.

This hypothesis has grown out of the strange behavior of the rock sensors in various location, or when moved from place to place.

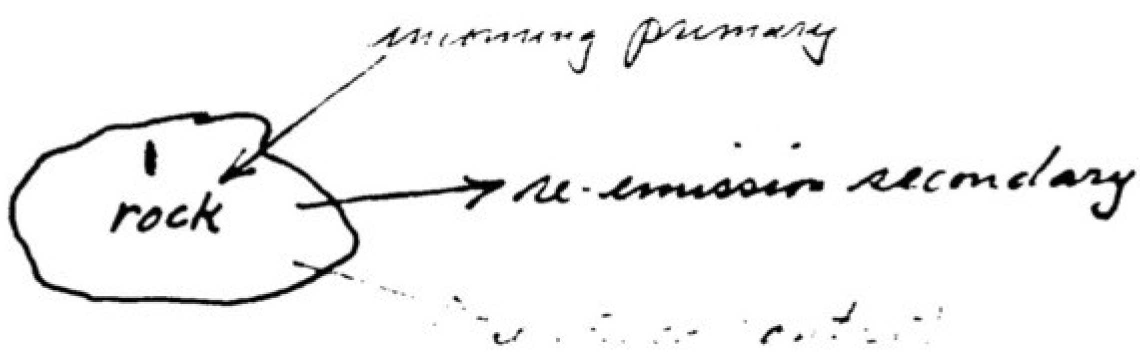
When one considers that a single rock generates an emf which is conducted away, it means that energy is being removed from the rock. If the rock is to remain stable as to its energy content, it must receive energy at the same rate it is losing energy. Hence, there must be incoming radiation. This, I believe, is basic.

Now, if the electrical current is opened, so that no electrical energy is conducted away from the rock, then the internal energy of the rock builds up to a saturation point. Either it must at this point, refuse or reject any further incoming energy or it must re-emit that energy as fast as it is received. Since there appears to be no mechanism to valve the incoming radiation I am inclined to the latter view that re-emission takes place, but this re-emission need not be (and probably is not) within the same spectral band as the incoming radiation.

Page 11

In this respect, the action is similar to fluorescence, were light is re-emitted, but at a different frequency.

There are other examples. RF radiation striking matter causes an increase in temperature so that as the temperature rises, infrared is emitted and this increases until a balance --- input vs output --- is reached. All phosphors, in general, do the same thing.



Assuming a constant primary, then

$E_{pri} = E_{sec} + E_{elec}$

If the electrical circuit is opened then

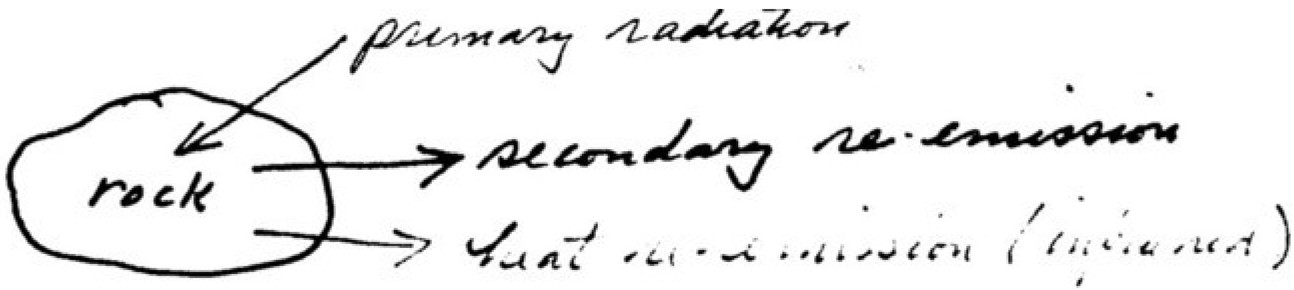
$E_{pri} = E_{sec}$

Now, it follows necessarily that all rocks must re-emit or re-radiate, especially if there is no conversion to electricity.

If there is conversion to electricity and that electrical output is converted by Joule heating within the rock, then the rock becomes warmer than the ambient. This may be the reason for the Brush "spontaneous generation of heat in certain complex silicates, lavas and clays".

Page 12.

This means that a rock may have a second re-emission spectral band as heat:



It would appear that the re-emission spectral band need not be the same as the primary --- depending upon the nature of the rock or the temperature of the rock.

In physics generally, except in the case of direct reflection, re-radiation, or fluorescence is seldom, if ever, of the same frequency as the incident primary radiation.

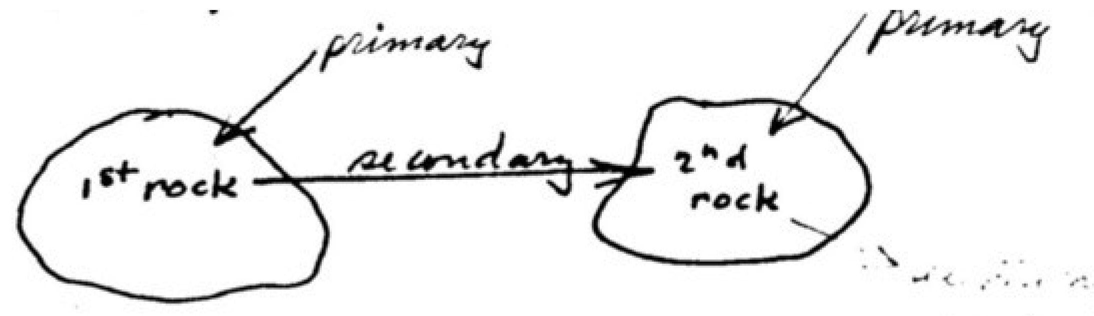
I cannot conceive that rocks merely reflect the primary, hence, I believe the secondary is of a different frequency and this varies from rock to rock depending upon internal composition.

Now the question of resonance comes up. Is there some internal characteristic of granitic rocks, perhaps a kind of resonance, which permits the rock to select its particular frequency from the broad band of incident primary frequencies? In other words, are rocks tuned like a radio receiver so that they respond only to a certain frequency?

Where conversion to electricity takes place, this would explain the difference in emf generated by different rocks at the same instant.

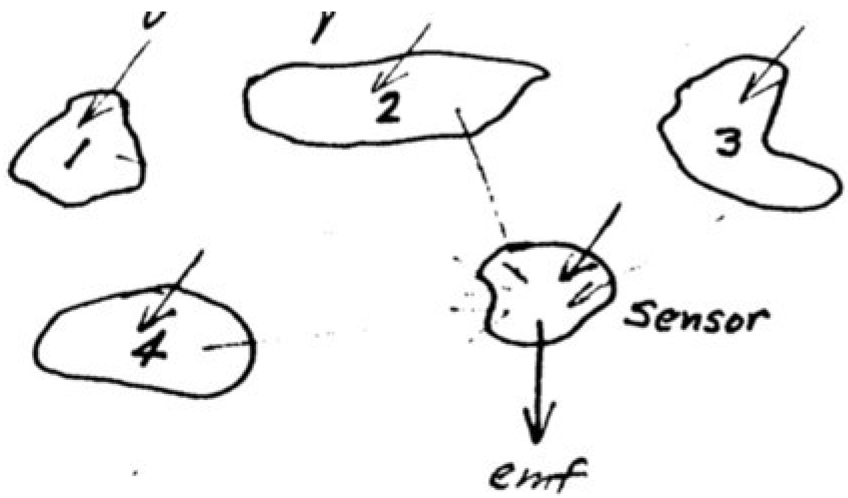
Page 13.

Assuming that the primary for a certain rock is composed of the secondaries of adjacent rocks, and assuming that the certain rock referred to is resonant, then it follows that the receptor rock may be directly influenced by the secondary of an adjacent rock with which it is resonant.



Therefore, the second rock, which is the sensor and is generating an emf, is subject not only to its own primary, but also t the secondary of an adjacent rock with which it resonates.

So, in a system of rocks, an extremely complex interrelationship may exist, with all neighboring rocks contributing to the emf output of the sensor rock.



Page 14.

In this case, the resonant sensor rock would respond to the total flux of the secondaries of all the adjacent rocks, but particularly that portion of the total flux with which it is resonant. It would also respond to that portion of its own primary with which it is resonant.

In the above examples, I have referred to adjacent rocks. How adjacent? Will a large mass like a granite mountain at a distance produce the same effect as a small granite rock close by?

And what about other materials than granite? What about lava, or clay or ocean water? This thing goes wild --- it gets more and more complicated.

Now, if the crust of the Earth generates secondary emissions and it comes from near and far and it comes from granite, marble, clay, ocean water, hot magma and possibly even the core of the Earth itself, it is no wonder that the spectrum is so broad. And it is no wonder that various

regions within that total spectrum continuously shift up and down according t the relative intensities of these various secondaries.

I begin to see where it is a most complex phenomenon.

Page 15.

Actually, one may say that the primary for any sensor is the complex blending of the secondaries of all masses of whatever nature anywhere within range.

In the macrocosmos, one could then believe (for the same reason) that the secondaries of the stars, every star in the galaxy, bathes the Earth. One could say that the primary striking the Earth comes from the secondaries of every other body (material body) in the Universe.

So far as the Earth is concerned, its primary is composed not only from the secondaries of the stars (near and far) but of all the planets, the moon and the sun! The Earth then, as its part, re-radiates so that its secondaries travel outward to the moon, the sun, all the planets and the stars.

All matter in the universe must therefore be tied together in a vast network of primaries and secondaries, of incoming and outgoing radiant energy.

What is the nature of this radiant energy? Is it gravitational? Does it produce te force of gravity? Or is it something new, something which may never have been discovered or even postulated? Is it limited to the speed of light or is it (as Newton postulated) "action at a distance" with infinite velocity?

Page 16.

184. A Communication System Using Secondary Radiation.

Honolulu, Feb 11, 1975.

In the previous section, p. 11, it was proposed that masses receive what is termed primary radiation from the ambient and, upon saturation, re-radiate secondary radiation. However, If electrical energy is generated in the process, and that energy is conducted away, the amount of re-radiation is reduced.

In other words, the incoming energy must always equal the total outgoing energy, i.e., the electrical plus the secondary.

$E_{pri} = E_{sec} + E_{elec}$.

It would appear, therefore, that if one varies the electrical output, the radiation (secondary) output would vary inversely.

If one modulated the electrical output, the secondary radiation (whatever it is), would be modulated with inverted phase.

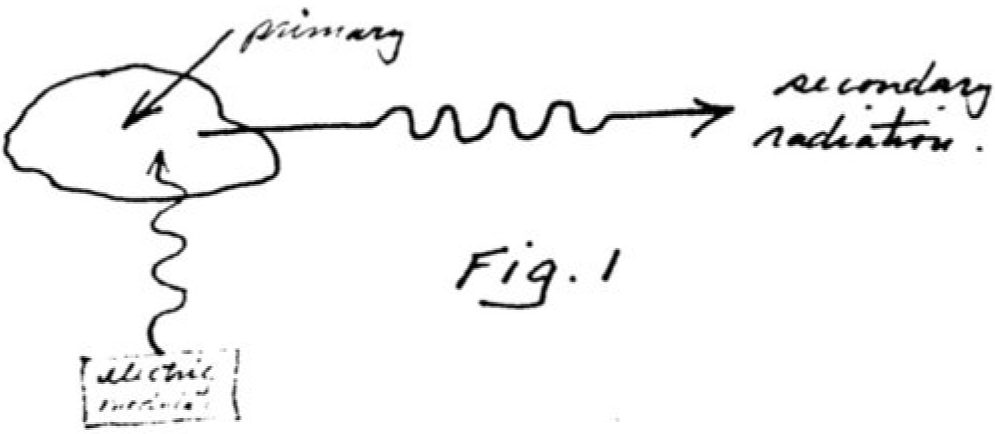


Fig. 1

Page 17.

If the secondary radiation of one mass, which is being modulated, becomes (in part) the primary of another mass, then it would seem that the electrical output of the second mass would be accordingly modulated. Hence:

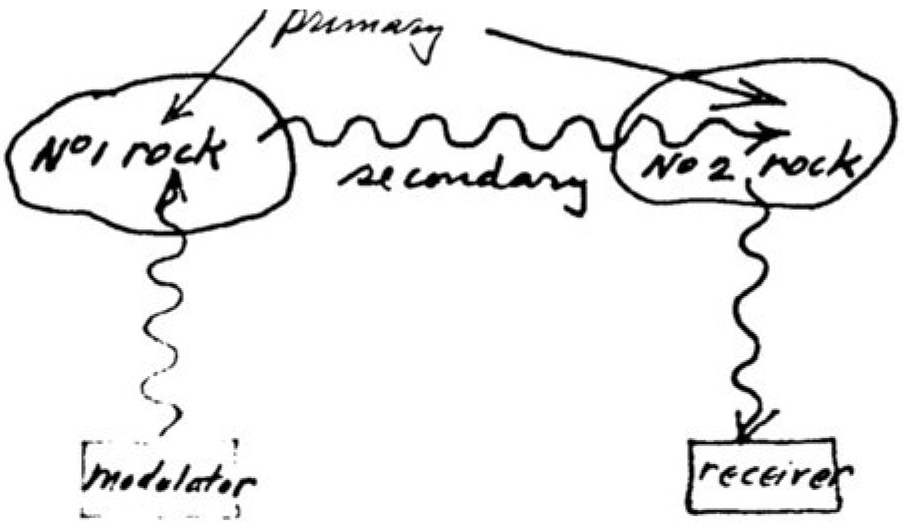


Fig. 2

Therefore, it would appear that a communication system is possible, using secondary radiation as the transmitting agent. If that secondary radiation is gravitational in nature, it would be very penetrating --- passing readily thru electromagnetic shields. This then would be a way to test the communication possibilities as well as providing some clue as to the nature of secondary radiation.

We might call this "rock communication" since rocks would constitute the antennae of both the transmitter and the receiver. If the emission frequency of the receiving rock and the receptive frequency of the receiving rock matched, the system would be tuned very much like a radio system.

Page 18.

185. Geophysical Regions as Active Emitters

Honolulu; Feb 15, 1975.

As we continue to get more data from the various sensors, it begins to appear that the variations which occur, and show up in the charts, would be due to variations in the secondary radiation from land mass domains.

The whole idea that regions of the Earth's crust emit some form of radiant energy is interesting, to say the least. This emission is not electromagnetic, so far as we know. Of course, there is heat radiation --- secondary radiation from the sun, then conceivably fluorescence (from certain minerals and rocks) as the secondary emission from sunlight.

The idea that there may be a type of re-emission or fluorescence from gravitational radiation from space is new. But I wonder if this may not be exactly what it is.

If this is true, then the primary radiation from space account for the energy of excitation. Various regions (granite, lava, clay, perhaps sea water) respond differently according to their resonance and each region emits its own characteristic spectrum. The intensity of each varies from time to time for reasons which may become clearer as the research continues.

Page 19.

The various sensors are resonant also and respond to the terrestrial region with which they are most closely tuned.

It has been suggested in one of the previous sections (Sec. 173, p. 140) that moving a sensor around in the automobile that various regions might be mapped, perhaps even an isometric chart prepared:

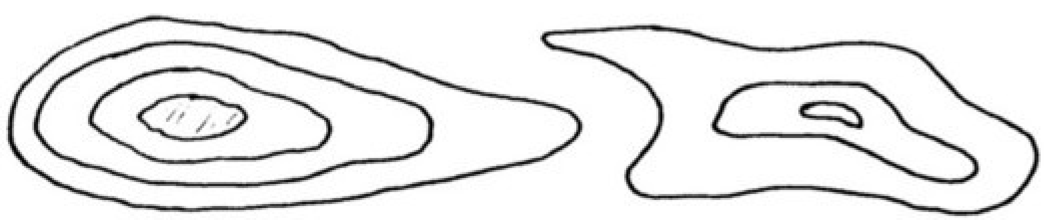


Fig. 1.

If this is possible, what does the chart represent? Obviously, regions of greater secondary emission. But what are some of the factors affecting the emission: moisture (the presence of water) or heat (possibly sub-surface temperature)?

Did the high readings over Kula represent high sub-surface temperature? If so, this may represent a valuable tool for locating geothermal reservoirs.

I shall conduct some surveys over the Koolau Dome area on Oahu.

Does this mean, if true, that the secondary emission of rock is a function of its temperature? Is this additional emission due to thermal energy conversion? Or does the heat act catalytically, making the rock (or region) more susceptible to the incoming primary, so as to derive more energy from it?

Either way, the additional secondary emission is indicative of heat.

Considering that virtually all our sensors here in Hawaii show a definite diurnal pattern --- low at 6-7 AM and high at 6-8 PM, could this be ground temperature? It is easily proved that it is not air temperature. How deep in the ground could such changes in temperature occur? The lag from air temperature is quite understandable. Could the secular change be due to the variations in temperature of individual geothermal regions?

What about rainfall? Does ground moisture play a part --- either as water content or by its cooling action? Obviously, deep layers of earth or rock do not change their moisture content rapidly. Something else must cause the sudden glitches. Could they be cosmic ray showers? Or some other unidentified energetic radiation?

In summary so far, it now appears highly probable that our sensors are responsive to the secondary emission of various regions of the ambient matter, rocks, sand, water, any dense mass.

Page 21.

186. Possibility of Indicating Geothermal Reservoir at Koolau Dome Site.

Honolulu; Feb 18, 1975.

If granitic rocks generate an emf depending upon temperature (either by direct thermoelectric conversion or by increased gravitoelectric susceptance) then what about lava rocks? Could the massive and dense (3.2 gr/cm^3) material making up the Koolau Plug radiate (increased) secondary radiation because of its possible high temperature? Or is there a kind of Curie Point, above which such secondary emission is precluded?

Assuming that the Plug is hot, as evidenced by its lack of magnetization, could there be an increased radiation coming from that region above the plug which is below the Curie Point? Only field tests will reveal the answer.

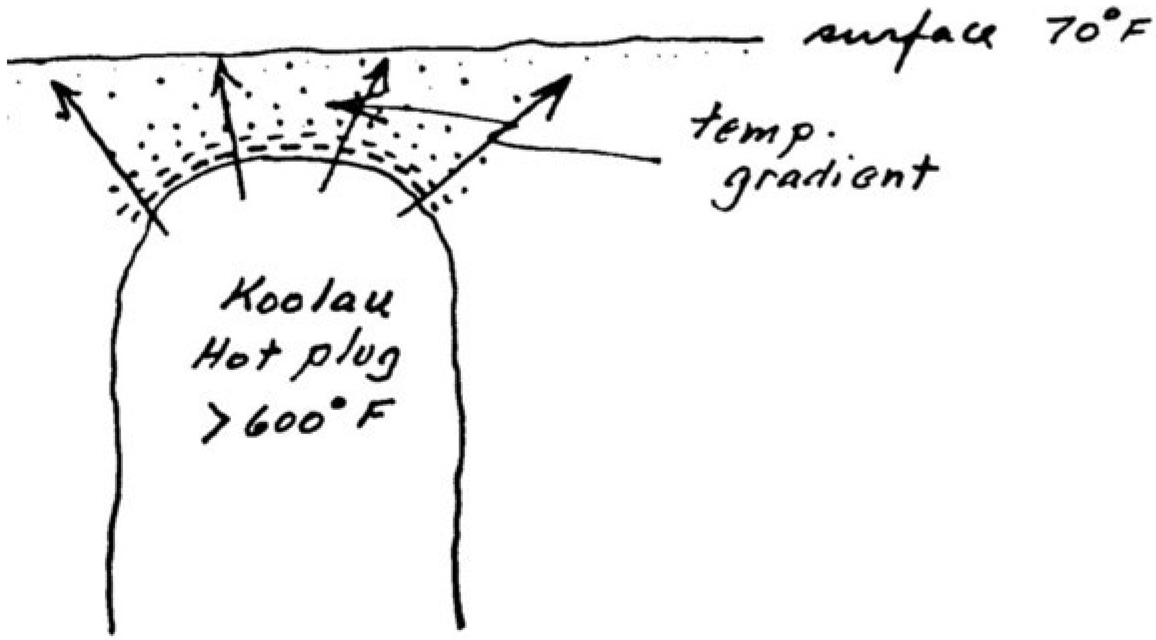


Fig. 1

Page 22

One could argue, based on the sensor evidence so far, that there must be a gravitic "Curie Point". In other words, there must be a temperature (depending upon the nature of the rock) above which secondary (gravitic) emission is not possible.

Otherwise the entire thickness of the Earth's crust would be radiating with such overall intensity that it would mask the individual surface domains which now appear so strongly. Even the deeper sections, even to the core, might be radiating unless precluded from doing so by some critical or cut-off temperature.

Returning to the consideration of the Koolau Plug, if the temperature of the plug itself (connected to the deep magma below) is above the gravitic cut-off, then no radiation would come from the plug. However, if the rock between the crest of the hot plug --- extending clear to the surface, is below the cut-off, then it surely would be radiating.

Hence, if all this is true, it represents a geophysical tool to explore warm spots too deep to be detected by infrared aerial surveys. By pinpointing the intermediate depth warm spots, one could predict regions of strong temperature gradients and, therefore, the existence of hot spots below.

Page 23.

Laboratory tests should be conducted of secondary emissivity with temperature. It isn’t enough to merely heat a rock sensor and to determine its emf output as a function of temperature. What we are talking about is gravitic emissivity from ambient rocks near te sensor rock.

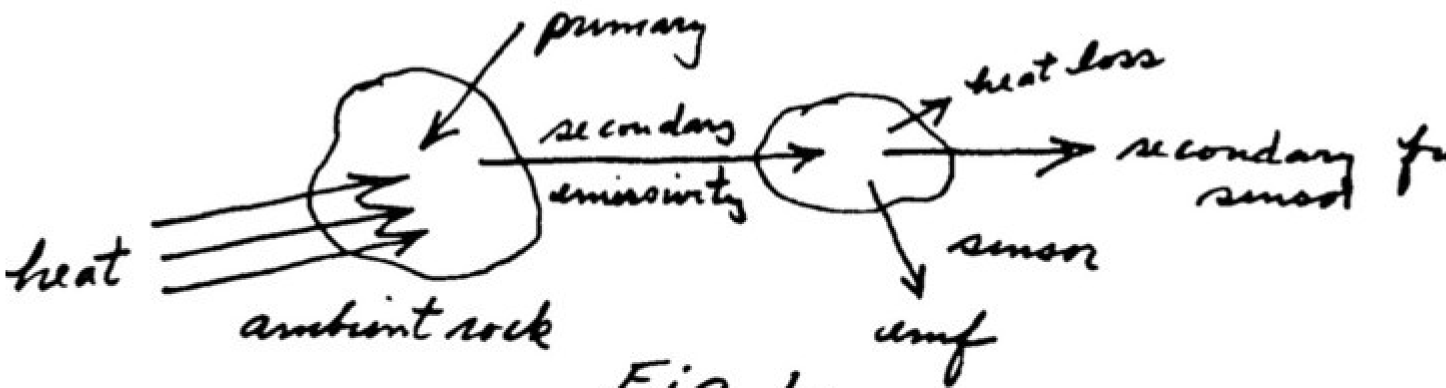


Fig 1.

In the above consideration, I have speculated upon the effect of temperature upon the secondary emission of ambient rocks or domains.

But domains (depending upon the type of material) --- granite, lava, clay, sand or possibly water --- differ in the characteristic spectrum of their secondary emission. It is possible that spectral signatures differ widely, so that one may eventually be able to identify the domain by its spectral signature.

But a change in temperature, or even moisture, could affect the signature, either to change the intensity or the spectrum, or both. No wonder the various sensors reveal a complex of independent variables, considering that each sensor responds to its tuned ambient domains near and far away.

Page 24.

These surely are not temperature related, but must come in to the various emitting domains from space as changes in the primary --- either as intensity changes or spectral shifts.

Some glitches affect all sensors simultaneously, or within a few minutes. It is possible that the ambient domains respond differently to the primary glitches from space, both as to resonant frequency shift and general intensity.

It would appear, therefore, that while the sensor itself may be responsive to these "space" glitches, it is more reasonable to believe that the sensor mainly picks up the response (as secondary emission) of the ambient domains to said "space" glitches. The effect, therefore, may be one step removed.

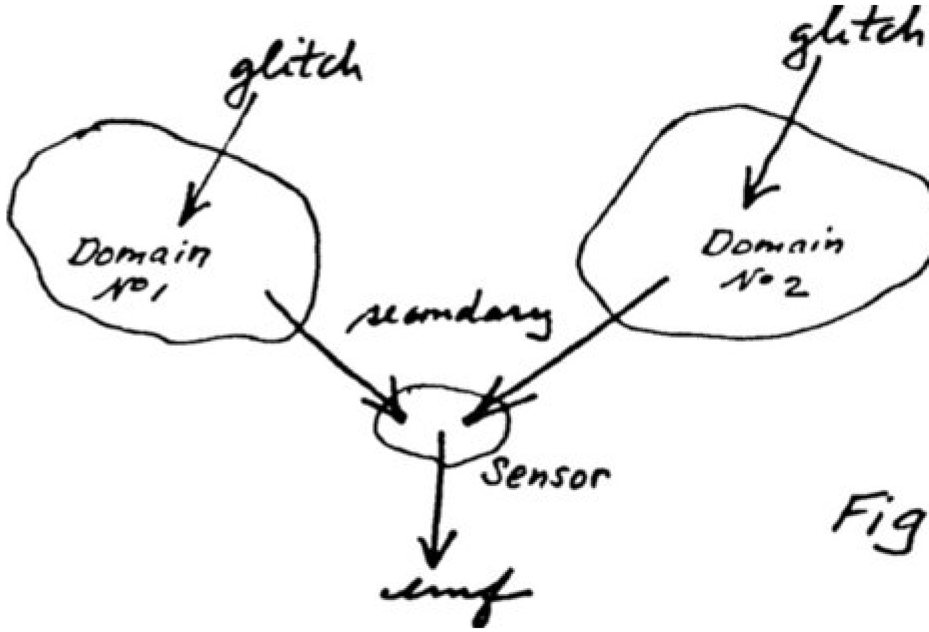


Fig. 1

The same indirect effect may apply to the secular variations which may also come in from space.

Page 25.

[Missing]

Page 26.

In summary, therefore, it may be said that ambient domains, emitting secondary radiation are tuned and have characteristic spectral signatures which are picked up by a sensor similarly tuned.

Any sensor may pick up the combined radiation from a vast mosaic of domains of similar spectral characteristics.

At this point, it is believed that the daily (solar-driven) variations in the domain temperature affect the sensor, not the temperature of the sensor itself.

The peaking temperature (phase) of the various masses comprising the domain are never precisely the same, but may vary over many hours --- hence, the difference in peaking time (or phase).

Proximity of the sensor to its (resonant) domain is important as the action is presumed to fall off as a function of distance.

In the case of the Koolau Plug, resonant in a certain spectral band, we may have to try different sensors in order to find one with the same (or close) spectral sensitivity. What would be different about the Koolau Plug, from the neighboring domains? Probably its density or its temperature.

Page 27.

187. Self-Potential Measurement in Relation to Potential Geothermal Reservoirs

Earth-currents have been observed and measured over vast regions of the earth's surface for many years. Much of this early work was performed by the Carnegie Inst. during and prior to 1930 by O. Gish. Diurnal variations were consistently observed which seemed to be related to the Earth's magnetic envelope. Observations also bore correlation with solar flares, magnetic storms and auroral displays. There is quite a literature on this subject.

Continuation of these earth current measurements in Hawaii showed the existence of self-potential domains, as:

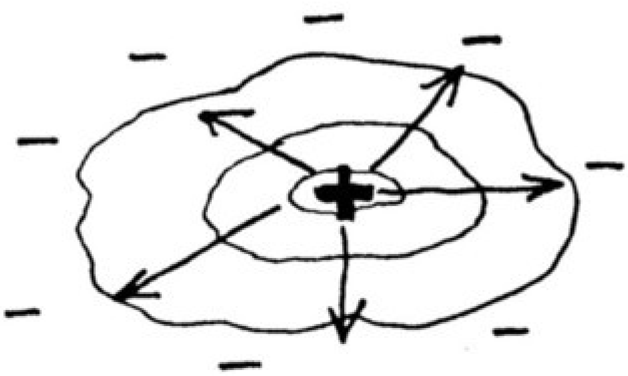


Fig. 1

These domains appeared to be related to (or caused by high subsurface temperatures, thus indicating the probable locations of geothermal reservoirs. No explanation, to my knowledge, has been advanced for the cause of this electrical potential. It has been thought to be caused by some (obscure) oxidation process. But one may ask: oxidation of what?

Page 28.

I am of the opinion, at this moment, that these self-potential domains are of the same origin as the domains as discussed in Dec. 185, p. 18.

Rocks within the domain must be generating higher emf than those in the surrounding area, hence an electrical gradient outward as shown in Fig. 1, p. 27. I understand that some of these self-potential gradients run as high as 900 mV. This is not incompatible with the emf produced by our individual rock sensors. It may simply mean that the rocks below the surface are hot and that their gravito-electric (if that is what it turns out to be) conversion of energy is greater.

I plan to take a portable EA recorder with a rock sensor in the automobile to the Koolau site this weekend, making continuous measurements in and about the area. It is entirely possible that a telluric domain can be pinpointed and profiled.

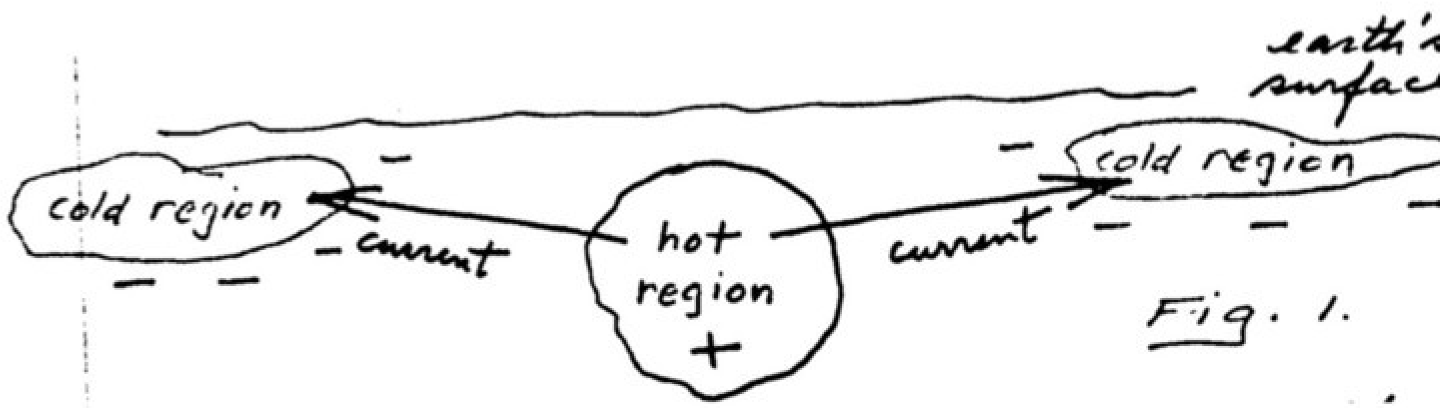
Page 29.

188. Self-Potential in Geothermal Plugs as a Source of Commercial Electricity.

Honolulu, Feb 22, 1975.

In the previous section, it was pointed out that telluric electricity, so-called self-potential, appears to be generated in hot geothermal domains. The electrical gradient is outward, and in the same direction as the thermal gradient.

Hence, it would seen that if we placed a large electrode in the center of the domain and other electrodes in the periphery, and substantial current might be observed, outward from the center. In other words, if we placed electrodes in regions of different temperature, currents would flow from the hot region to the cold region.



Which means that electrons must flow inward toward the hot region. But where is the return circuit? Let us worry about that later.

In the meantime, one might generalize that the hot magma is positive, while the upper crust of the earth is negative.

Page 30.

Or, that the top of a drill hole (into a geothermal reservoir) is negative, while the bottom is positive. If large enough electrodes were embedded at each place, a commercially useful current may be obtained.

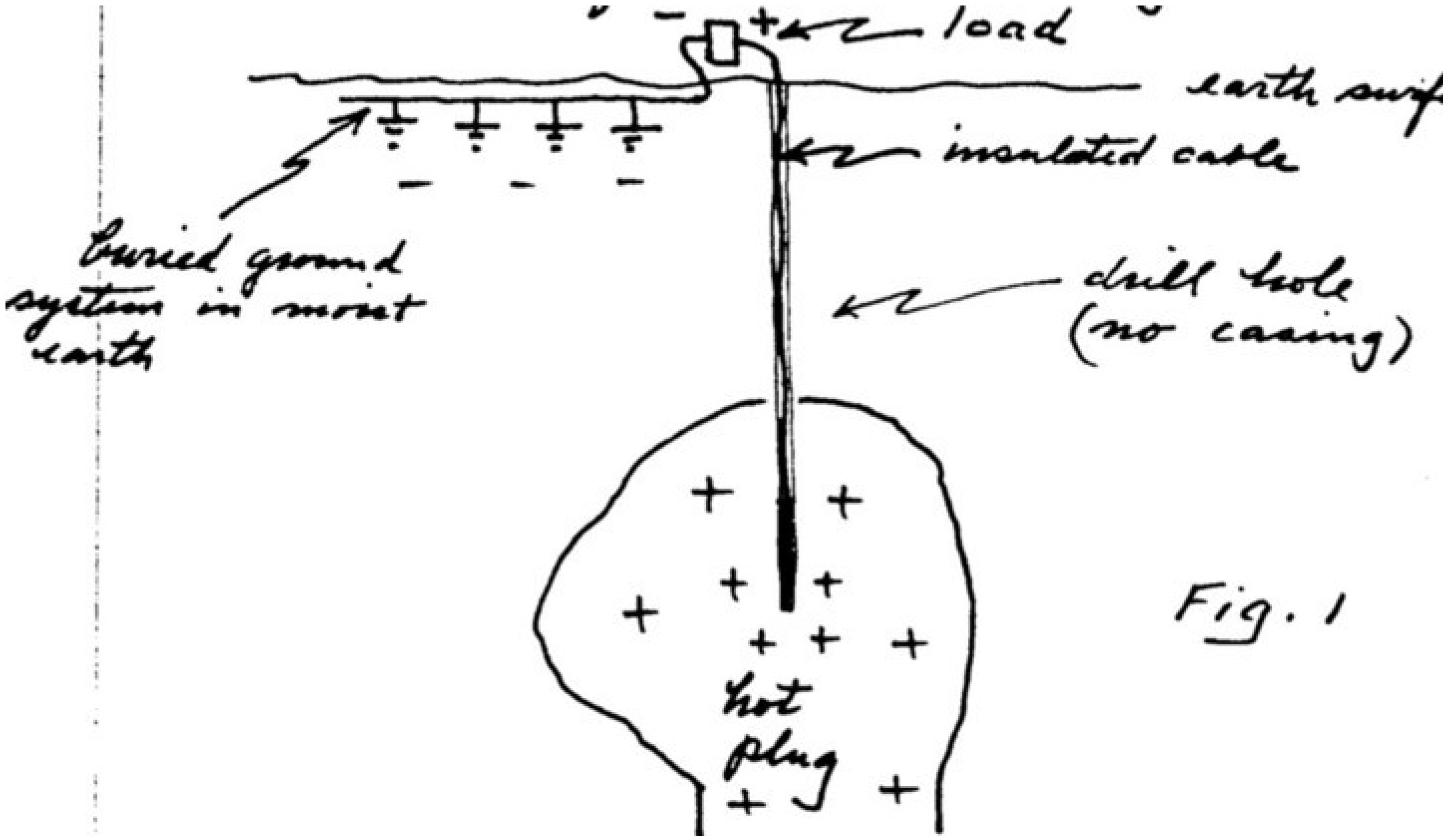


Fig. 1

It is interesting to consider at this point whether the electrical energy is entirely converted from thermal energy or whether gravito-electric conversion is partly responsible. As stated before, high temperature may increase the susceptance of rocks to gravitational radiation, so that more gravitic energy is captured.

A test might be to look for glitches or secular changes typical to primary space radiation. Purely thermal conversion would depend only on temperature differential and probably would be fairly constant.

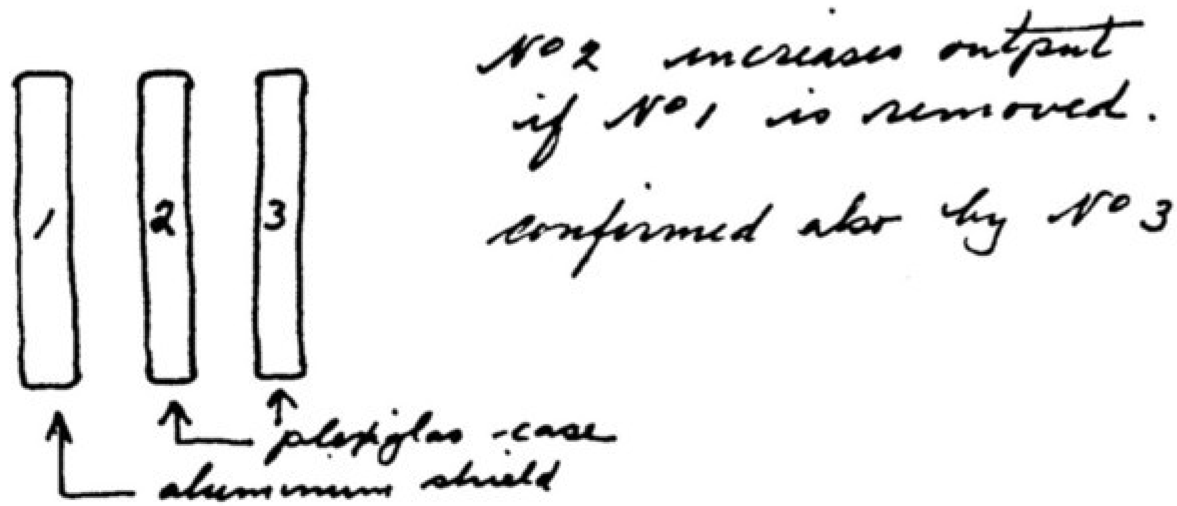
Page 31.

189. Effects of Sensor Shielding.

Honolulu, Mar. 3, 1975.

It has recently been noticed that when a shielded sensor (No. 16-GZZ-100) is removed from the vicinity (along side of) an unshielded (but Plexiglass encased) sensor No. 17-DZZ-100 and 18-DZZ-1000, the two unshielded sensors increase emf output substantially. Obviously, they sense the presence of the metallic (aluminum) shielded sensor alongside.

Two reasons or this: (1) a depressing effect resulting from interfering resonance, or (2) the effect of the adjacent metal case. I am inclined to favor the latter explanation, as:



This could, of course, be the result of partial electromagnetic shielding --- provided by No. 1, if em radiation is causing the emf in No. 2 and 3. But em radiation cannot explain the diurnal and other sensor characteristics. So let us consider something radically different and perhaps not considered in contemporary physics. That is a kind of "ether" flow.

Page 32.

If a critical flow of ether existed (in this instance), it may find greater conductivity (or permeability) in the metal. Hence, it would be diverted away from the Plexiglass encased sensors. When the metal is removed, the flux would then increase in the two other sensors.

This may throw an entirely new light on the entire phenomenon. Could it be related to ether or ether flow? And it presents a new possibility in the design of the resistor-type sensors, as follows:

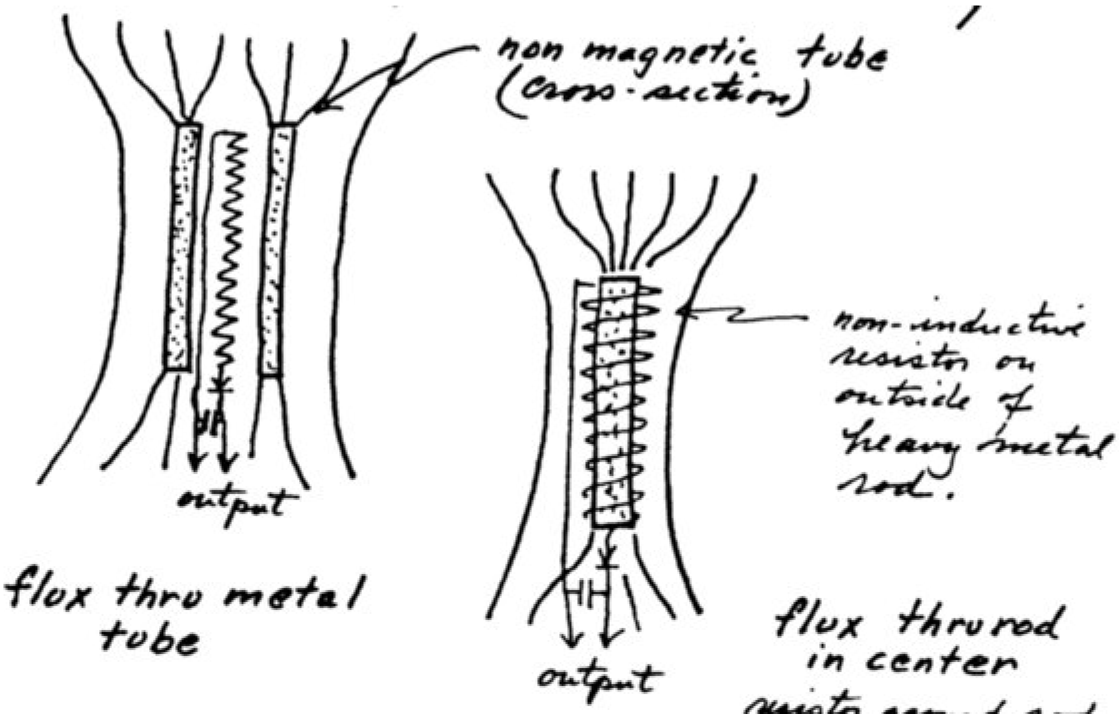


Fig 1

Fig. 2.

Page 33.

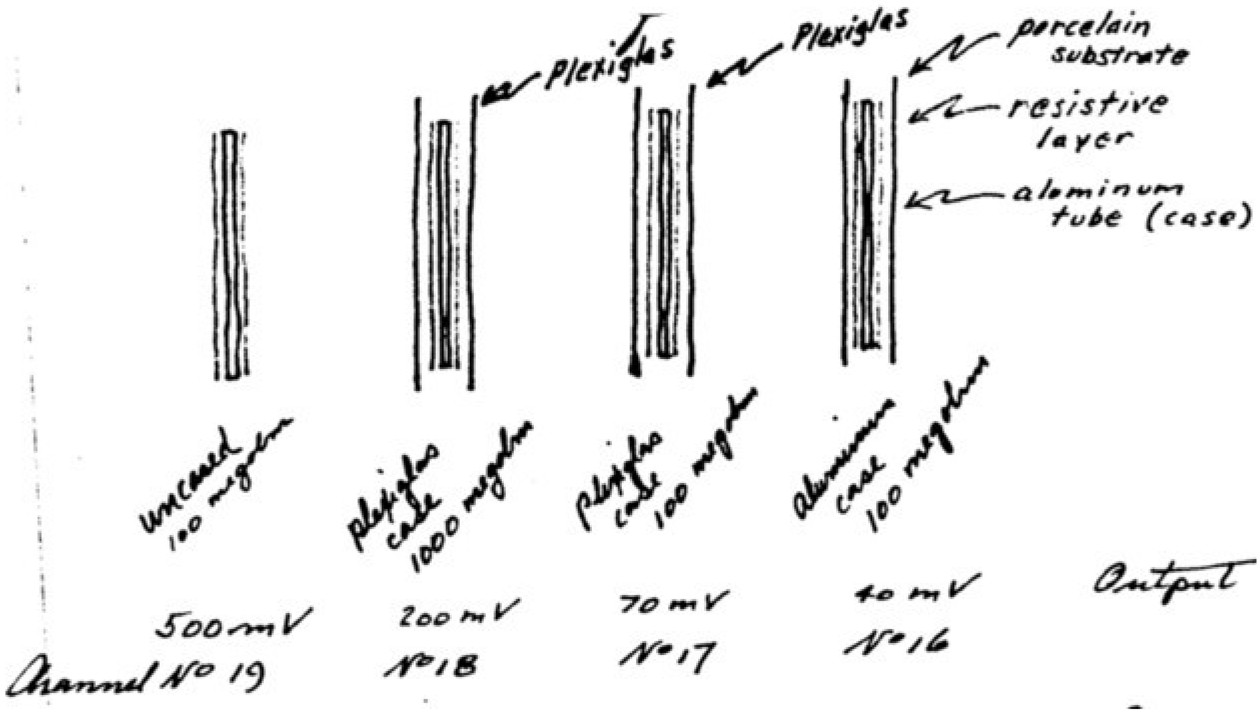
This hypothesis can be rather easily tested by inserting a large diameter rod in the center of the ceramic tube which forms the substrate for the large resistor, such as the GZZ or DZZ series.

Rods of both light and heavy metal should be tested, say aluminum and lead. If we are observing a kind of gravitational flux permeability, there should be a difference.

Just as magnetic flux follows an iron core, so possibly a gravitational flux follows a lead core. I wonder!

Magneto-electric/gravito-electric induction: Inductive windings generate an emf then the core is center. If a lead core is centered within a resistive winding, would it be a parallel situation? Would it represent gravito-electric induction?

In looking back over the sensor records, I find an interesting fact:

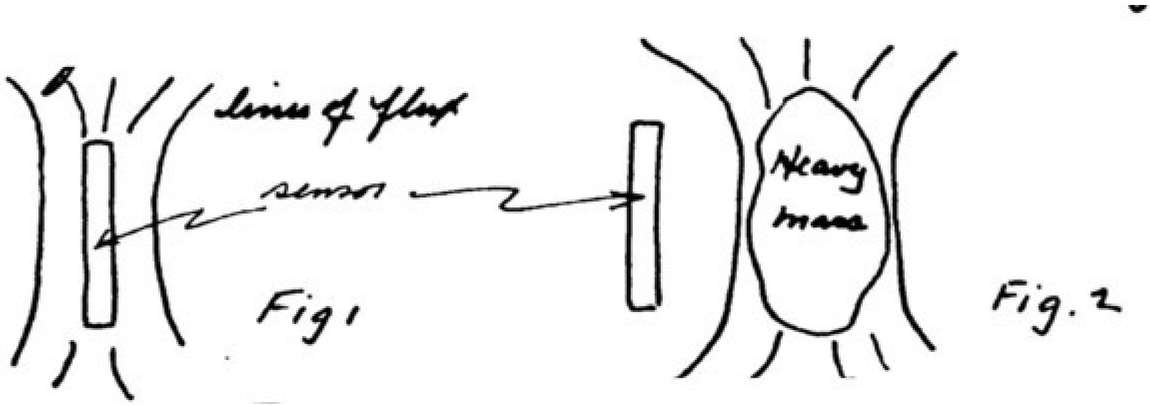


Page 34.

This seems to indicate that any kind of case (on the outside) reduces the emf output. The effect is the same as if it were only the result of electromagnetic induction --- from ambient em noise --- but this does not seem to be borne out. It is not incompatible with an inductive hypothesis of another sort, perhaps gravito-electric.

Another aspect of this finding and interpretation is that a sensor is influenced by the nature of its surroundings. In the apex, maximum readings may be expected. When surrounded by heavy walls or large metal objects, the readings would be less. I believe this was borne out at the Haleakala Observatory, where on one instance a sensor was attached to a steel column. Virtually no reading. Removed from the vicinity of the column, the reading became normal. Hence, one might say that steel framing (in a building) reduces the readings of the sensors.

Hence a sensor may serve as a detector of neighboring masses --- a proximity sensor if you will. The greater the density or mass the greater is the effect. But the mechanism of this effect is the action of the neighboring mass upon the ether flux (much as I hate to use that word --- nothing else quite fills the bill).



Page 35.

In Fig. 1, the flux lines are concentrated thru the sensor. In Fig. 2, the adjacent mass has "stolen" the field.

This brings up the possibility that certain "long form" sensors may be directional --- that is, respond when in the alignment of the flux. In the previous Figs 1 and 2 the flux was assumed to be vertical. But what of a transverse or horizontal flux? Does flux density shift from predominately vertical to strongly horizontal and back again? Is this the mechanism of the diurnal variation? Now, we must carry on some careful orientation tests.

Are we possibly talking about ether drift? I am no sure that there is no ether drift. Certainly, the long labors of Miller have never been contradicted by valid experiment.

Assuming for the moment that ether drift does exist and that the movement o the Earth around the Sun, coupled with the axial rotation of the Earth gives rise to the diurnal variations which we consistently observe, could we place a long sensor on an equatorial mounting and continuously observe the direction of motion? I am inclined to think we could.

Page 36.

190. Regular Pulsations in Rock EMF Output.

Honolulu, March 10, 1975.

It has long been observed, both in the emf output of rocks and resistor-diode combination hat continuous rapid variations exist. These variations have appeared to be mostly random, with a few instances where regular periods of several minutes to several hours have been observed.

A volcanic rock of about 10 cm diameter was picked up on the beach at Waikiki, oven-dried a 400 F, then after cooling, copper-print electrodes were painted on (in the usual manner). Output was about 60 mV. But when connected to the EA recorder immediately showed a rapid regular pulsation of approx 1 second frequency. See Chart at left (1 sec marks). Also another frequency appeared of about 1/3 second pulse duration. Phase shifting complicated the pattern.

This is the first time, to my knowledge, that rapid regular pulsations have been observed.

Now, the big question is, what is the source? Other rocks picked up the same day do not show this pattern. Hence, it is not in the recorder circuitry, but comes from the particular rock.

Page 37.

191. Augmentation of Output by Sand Cores.

Honolulu, March 16, 1975.

In Sec. 18, it was suggested that by using cores of heavy material, the output of resistive sensors could be increased. Lead and aluminum rods, as cores within DZZ resistors, were suggested. This might give some clue as to the so-called gravitational permeability, or (if you will) ether flux.

An experiment has (this day) been conducted which may relate to the above. One of the recently acquired resistors (DZW-100 megaohm) was filled with beach sand from Kuhio Beach.

Tested both before and after filling, revealed substantial gain in emf output with a sand core.

Could this mean increased grav. permeability or could it mean proximity to a re-emitting mass as discussed in Sec. 183?

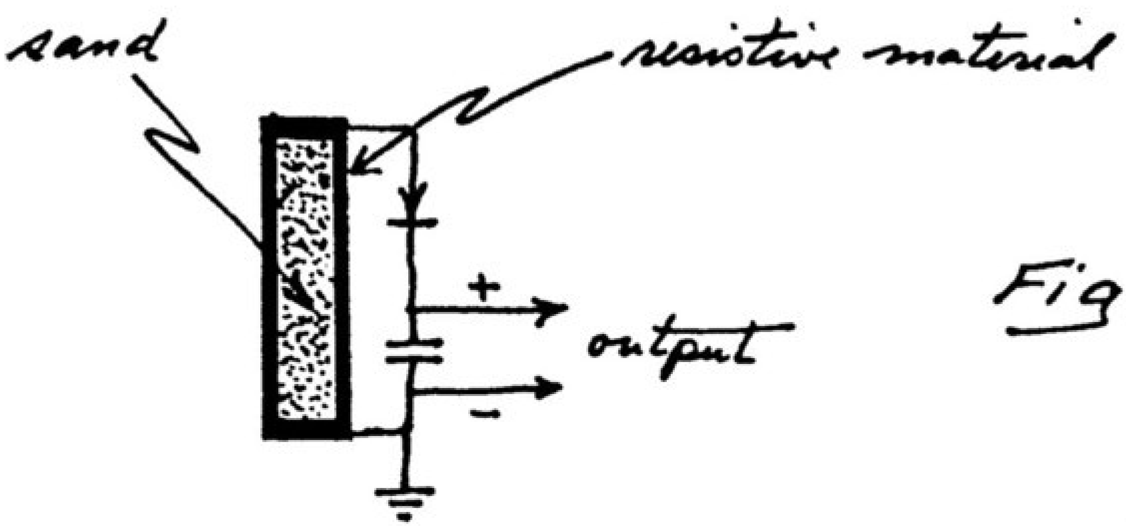


Fig. 1.

Page 38.

This experiment raises the question as to the effect of other core materials:

(1) Other beach sands. Black (lava) sands.
(2) Clay --- Bauxite --- Sandusky clay.
(3) Monazite sands (from various places.
(4) Lead monoxide (litharge).
(5) Lead monoxide and glycerine compound.
(6) White silica sand.
(7) Molding sand (with clay content)
(8) Carborundum or alundum.
(9) Powdered metals, lead, aluminum, etc.
(10) Iron filings.

Or various liquids:

(1) Water, sea water.
(2) Alcohols.
(3) Carbon tetrachloride --- heavy non-conducting liquids.
(4) Oils (mineral and vegetable).
(5) Waxes --- paraffin, carnauba, etc.

Or solid metal cores:

(1) Non-magnetic and magnetic.
(2) Ferrite.
(3) Rock cores, granite, lava, etc.

Page 39.

It appears to be quite definite, at least in the instance of the first test with Kuhio Beach sand) that the emf output increased from approx 63 mV to over 115 mV and still rising! There is no question that the sand core did increase the output of the sensor.

Now, the next question is: Is this due to re-emission (secondary radiation) from the sand? If it has a frequency spectrum, is it related to the spectrum of the entire Kuhio Beach area? What is the diurnal pattern? Could it be affected by the temperature changes of the Kuhio Beach area? These are interesting and perhaps very important questions.

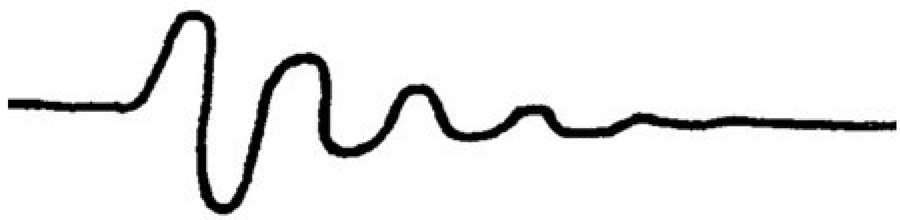
If the answer can be related to the area from which the ore material is obtained, we may have an important geophysical sensing tool. Of course, the porcelain tube (substrate) of the resistor may have its own contribution and this must be taken into account.

By this same reasoning, a rock sensor may be related to the area from which the rock came. Granite rocks from granite areas. Lava rocks from specific volcanic areas. One wonders about liquid cores. Could a salt water core be related to the body of ocean water?

Page 40.

192. Possible Cause of the Weber Events.

There is a growing belief that the so-called "events" observed by Joseph Weber in his gravitational radiation detectors are not due to oscillations of the large aluminum cylinders. The very nature of the electrical impulses from the strain gauges does not appear to resemble the kind of thing one would expect from a "ringing" cylinder. If shock excited, the cylinder would engage in decremental excitation, as:



at the resonant frequency --- 1661 Hz or 1580 Hz, as the case may be.

However, the events indicated by resistance changes in the strain gauges do not show this decremental pattern, but something quite different.

It leads one to believe that the events are not indicative of cylinder oscillations but of some effect arising within, or related to the electrical circuit.

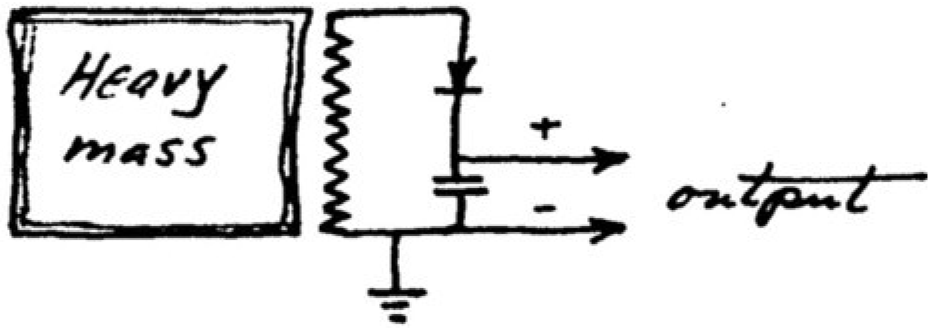
Hence, one must look to resistive changes or to voltage "bursts" in the resistive materials.

Page 41.

This brings to mind that the effects observed and reported in the previous section (191) and in 189 may be responsible for the Weber events.

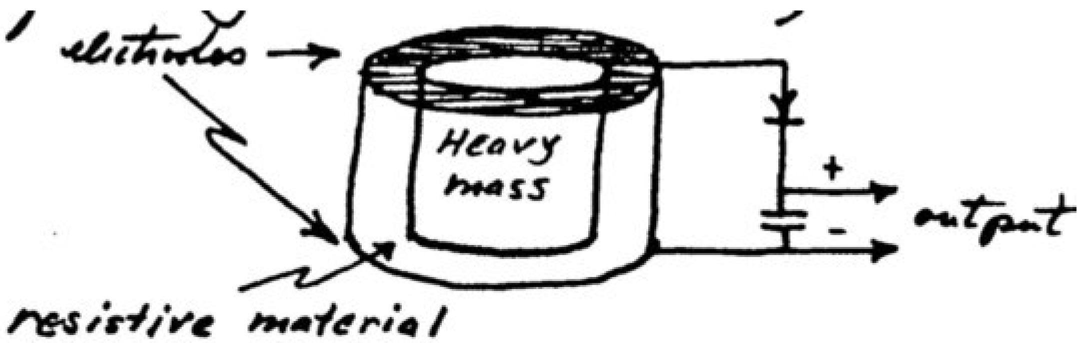
If resistive material lies adjacent to a large mass, is it possible that the secondary emission from the mass could affect the resistance?

In the case of the sand core experiment, it seemed clear that the presence of the sand affected the output of the sensor. If the sand were replaced with a mass of metal, such as aluminum, would there be similar, or even greater, augmentation?



This is precisely the arrangement in the Weber experiments.

A better arrangement might be to surround the mass with resistive material (preferably non-inductive).



Page 42.

Or, using Weber-type cylinders, simply attach sheets of resistive material, of 100 megaohm or more, to the sides of the cylinder, just as the strain gauges are attached.

The only difference would be that large high-resistance non-inductive sheets are used instead of the comparatively low-resistance strain gauges. Then using also diodes for rectification of the RF induced in the sheets.

Other large masses may be used even more effectively. It need not be an expensively machined cylinder. Any large hunk of material would serve as an emitter. Perhaps, even a mountain.

It is all based on the belief, at this point, that radiation from space (gravitational or something else) is the primary --- supplying energy, and that the mass engages in fluorescence, emitting a secondary which generates RF noise in neighboring resistive material. The spectral band of the secondary may be quite different from that of the primary, depending upon the composition of the re-emitting material and its temperature.

T.T. Brown (3-18-75). (I am 70 years old today).

Page 43.

193. Storage of Electricity in Rocks.

Honolulu, Mar. 24, 1975.

Rock sensors act as storage batteries and may be charged. Just how long the charge remains varies with the particular rock. Rocks in series are able to store a higher voltage.

In other words, rocks have a very high (natural) capacitance. More than capacitance, it seems to be in the nature of a persisting excitation. So long as the excitation persists, the voltage sustains.

Thus, it is not simple capacitance depending upon the dielectric constant of the dielectric but something else, a form of excitation which requires an energy input and then decays. This decay is far slower than if the effect were merely capacitance.

This difference (from ordinary condenser action) is clearly noted when the rock is shorted. When the short is removed the potential returns to a value almost as great as before the short occurred.

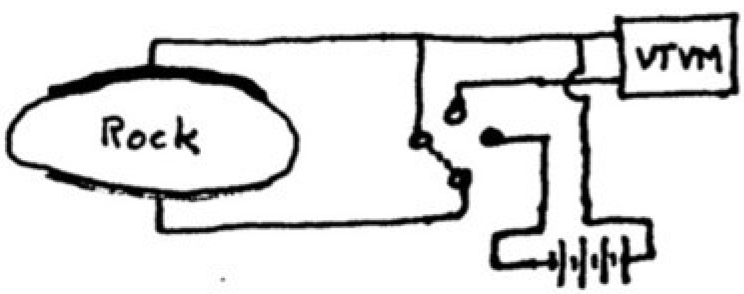


Fig. 1

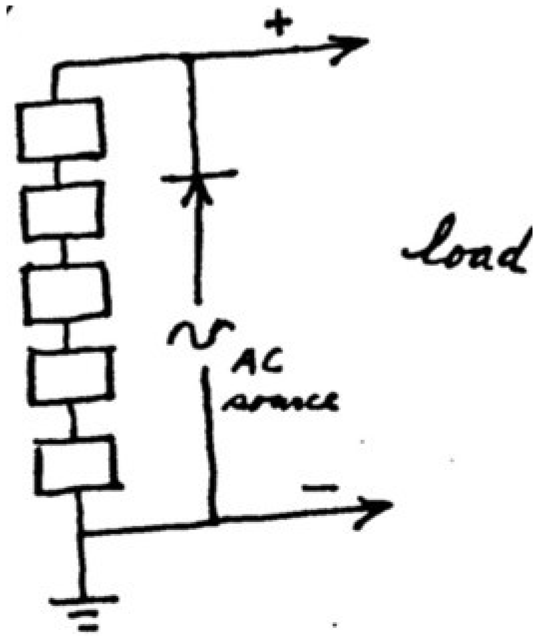
Page 44.

In this respect it is similar to electrets which may be shorted and then return to normal when the short is removed. Hence, we may again refer to rocks as geo-electrets (Sec. 172).

There is this difference. Carnauba wax electrets retain a high voltage but can support virtually no current. Geo-electrets seem to be able to support large currents, depending upon the size. Large rocks may conceivably provide substantial current.

This places the geo-electret in the class of a chemical cell or storage batter, and may, as a matter of speculation, find an application commercially as an energy storage means.

One may picture large blocks of granite, connected in series, as equivalent to storage batteries --- with the advantage of not requiring service or replacement and conceivably having indefinite, unlimited life.



Page 45.

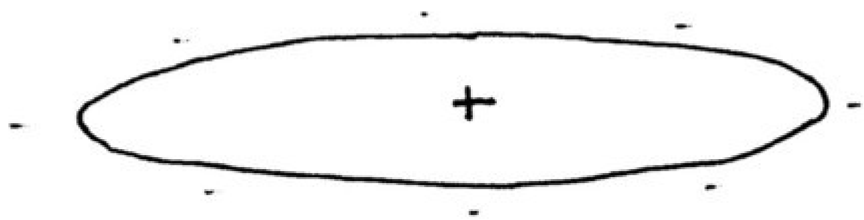
If this is true, and it seems to be what of the great pyramids? Can the atmospheric electric gradient charge the pyramids? Has anyone measured the potential difference between the cap and the base of Cheops? What of the pyramid shape? Is it significant?

Fig. 3

Polarization:

Does all this mean that rocks become electrically polarized by the application o a field? Does the rock contain molecular dipoles which become oriented? Similar to becoming magnetized, can a rock become electrolyzed? Is there an electrical Curie Point, above which polarization is lost?

Let us take, for example, a large flat surface of the earth's granitic crust, apply a positive charge at the center so as to establish a radial field.



Page 46.

This then becomes a radially polarized electrical domain. Measurements of the so-called self-potential of this region would establish the existence of such a domain. Can this pinpoint the presence of subsurface heat? Apparently, it is believed that it can.

This would infer that the hottest region is positive and that the heat gradient and electric gradient are parallel. Hence, in the case of the Koolau Plug, the central region of the plug is positive while the periphery is negative.

This charge retention in rocks, perhaps also in many solids (crystalline and amorphous), may be due to dipole orientation. A gradient or field probably aligns the constituent dipoles, so that a net potential difference results. The greater the number of aligned dipoles, the greater is the net potential. But the alignment decays, as individual dipoles flip to random positions. Hence, the net voltage drops.

Thermal agitation would appear to hasten this decay. Hence, the higher the temperature the more rapid the decay. At some temperature (as with the Curie Point in magnetism) dipole orientation cannot be maintained and the net charge would disappear.

Page 47.

Conversely, at lower (cryogenic) temperatures, the net charge may possibly be retained indefinitely. This, I believe, is true with electrets generally, although certain electret waxes (of very high resistivity) maintain charge for long periods of time.

Going forward with this thinking, one might say that the (natural) residual charge of a rock may be wiped out by heating to a certain temperature which we shall call the Electrical Curie Point. Then apply a high electric gradient to the rock as it is cooling, possibly to some cryogenic temperature where the charge persists without decaying. The stored energy would have come from the applied field. Could it be removed by shorting or an electrical load?

Or would there be a replenishment of that charge thru the mechanism of primary and secondary radiation, as discussed in the earlier sections?

Is it possible that a newly-acquired rock sensor must be polarized to be sensitive to the incident radiation? Does the degree of polarization affect the spectral band to which the rock responds? Can one change the circadian signature of a sensor by applying a field or gradient? This may be

possible with rocks but why would it be effective with the so-called synthetic rocks --- resistor, diode, capacitor sensors where dipole orientation seems inappropriate.

Page 48.

194. Initial Electrical Polarization.

Honolulu, April 1, 1975.

It is believed that the storage of electricity in rocks is the result of polarization, i.e., the alignment of electric dipoles within the body of the rock. When a field is applied, the dipoles are aligned and this energy is retained by that alignment.

As the alignment decays, the charge decays also.

Initial alignment may result from atmospheric gradient, as suggested in Fig. 3, p. 45. This may account for the seemingly valid observation that the upper side of rocks (such as those picked up on the beach) are positive. This may also be accounted for as gravito-electric induction. Perhaps even the atmospheric gradient is the result of gravito-electric induction.

Recent tests, where a field is applied to initially polarize a rock show a phenomenal reversal of initial polarity.

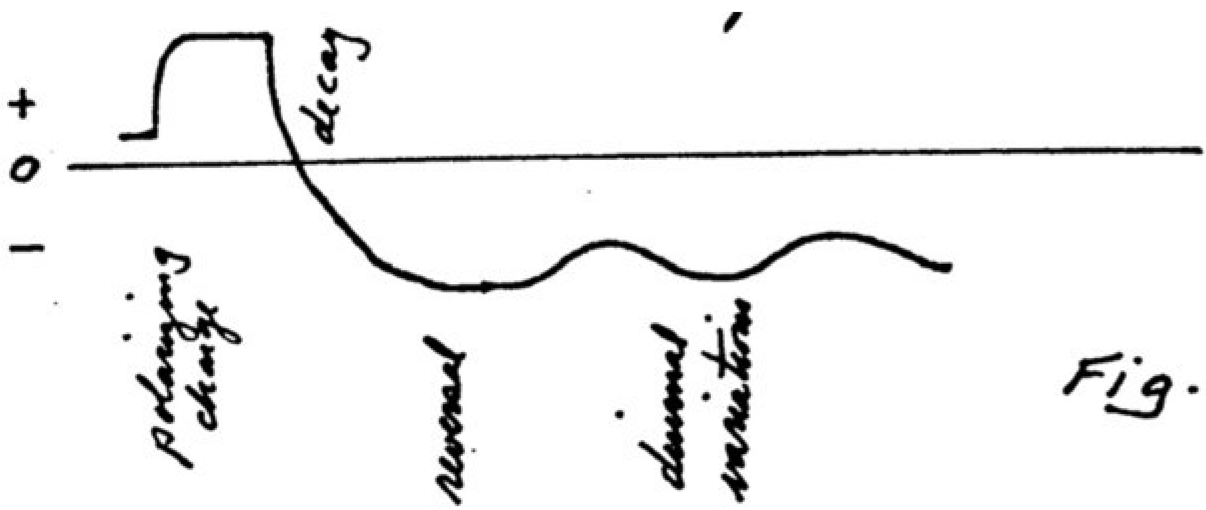


Fig. 1

Page 49.

The mechanism here is certainly not understood. It seems to take place with all rocks.

195. Sand Sensors.

Volumes of sand, in insulated containers, act as rocks. This is probably to be expected. Sand grains in contact with each other actually form a series of dipoles.

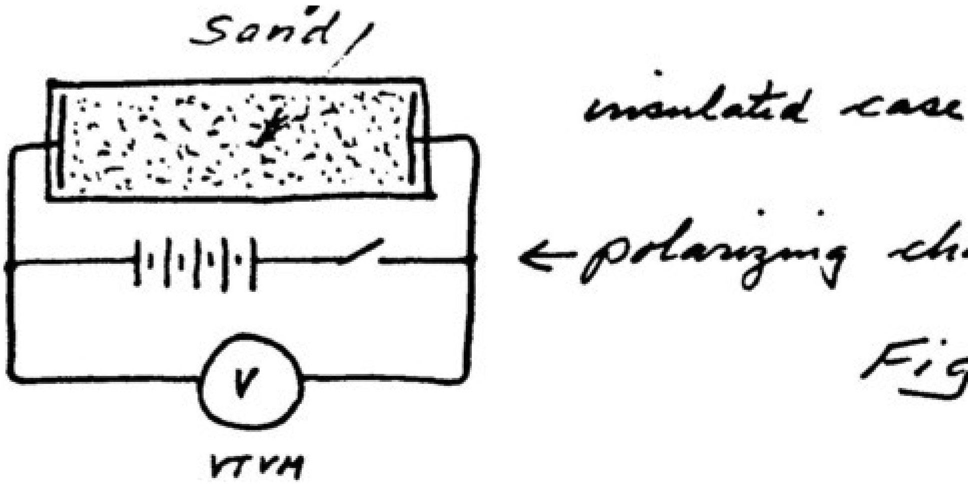


Fig. 2

Here, too, the original polarizing charge decays and reverses, as in Fig. 1. Variations, diurnal and secular, occur then in the reversed charge.

It is believed many granular or powdered materials behave in this way. Tests are proposed with litharge, silica sand, monazite, black lava sand, barium titanate powder, clays, coral sand, etc. Is it a function of mass and/or dielectric constant?

Page 50.

196. Gravity Vector Sensors.

Honolulu, April 2, 1975.

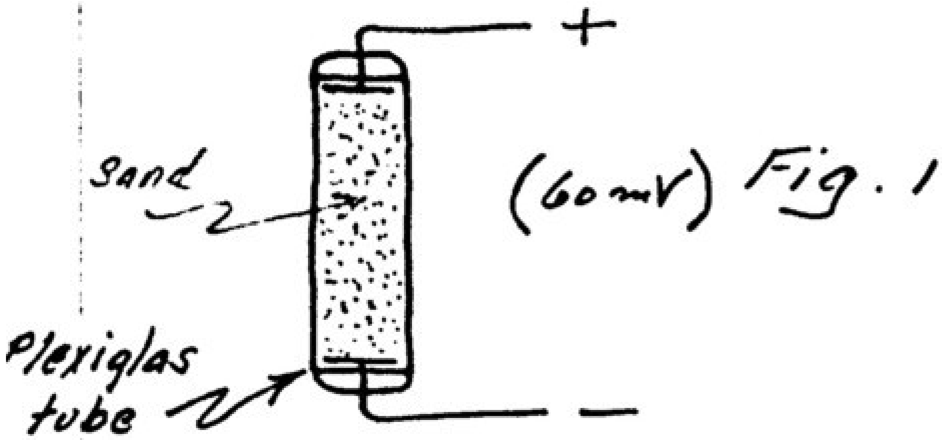
In Sec. 144, Notebook 3, dated 2-7-74, reference is made to the interaction of the gravitational and electric fields. It was pointed out that the atmospheric electric field, the mountain effect, and similar vertically-oriented electric fields may be caused by the gravitational field of the Earth.

This reference goes on to suggest a possible gravity-vector instrument useful in space navigation. It describes such an instrument in Fig. 4 (p. 66), based on the belief that the upper end o a vertical resistor is positive with respect to the lower end.

In Sec. 170 (pp 133 and 134), the electrical polarization (possibly by the gravity flux) was extended to include rocks and grains of sand. Gravito-electric induction was again proposed in Sec. 171 (9-14-74). Improved sensors for gravity-flux were described (p. 139, Fig. 1) where beach sands, or loess, would be settled in a fluid. During settling, the individual sand grains would have an opportunity to orient before compacting. Hence, a permanent geo-electret would be formed. Such a sensor was illustrated in Fig. 1, p. 139. In every case, it is believed that the positive end of the sensor will be up, and negative down.

Page 51.

In an experiment performed today, Kuhio Beach sand was paced in a Plexiglas tube with electrodes at each end, as:



Immediately, the upper electrode became positive. Voltage approx 60 mV.

When the tube was inverted, the upper end again became positive, at about the same potential.

Hence, it again pointed up the relation of electrical polarity wit the gravity vector. It is a difficult phenomenon to explain in terms of contemporary physics. To my knowledge no known electrical manifestation is related to gravity with the possible exception of the orientation of polar molecules in florigen/heterauxin which seems to be responsible for the vertical growth of plants.

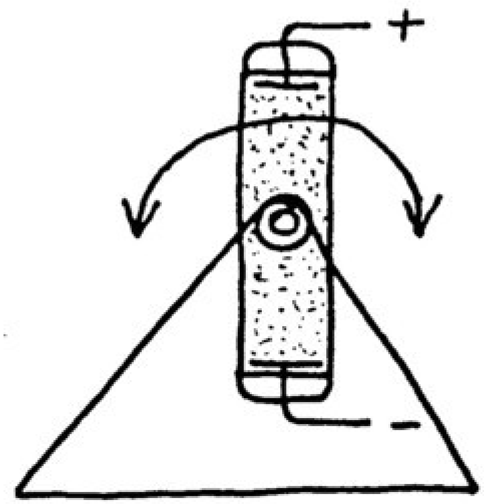
Now, the next question arise: what of centrifugal fluids? Is the effect, as in Fig. 1, responsive to inertial fields? Is there equivalence between inertial and gravitational mass, or is somehow an exception?

Page 52.

Only future tests will reveal the answer.

Today, most of the recording equipment, including the digital data logger was moved to the basement, constant temperature seismic vault of the Hawaii Inst. of Geophysics. Recording was started at 1600.

The vertical sensor is still at my apartment in Waikiki. I shall move it to the University tomorrow. I plan to place it on a trunnion mounting, so as to invert it conveniently. As:



Using a digital VTVM or equivalent to read voltage and polarity.

In the above experiments, it is important to electrically shield the Plexiglas tube from electrostatic gradients in the ambient. Ideally, the tube should be placed within a grounded metal case which is attached to the trunnion support. Shielded cables must be used also. Observations should be made as to whether the maximum voltages occur in the zenith-nadir alignment (as it should be if it truly gravity flux) or whether, if mounted equatorially, it might indicate some contribution by a cosmic field.

Page 53.

197. Electric Dipole Rotation.

Honolulu, April 3, 1975.

In the previous section, vertical dipole induction from the gravity gradient was discussed. Crystalline materials, such as rocks or grains of sand, were considered. It was discovered that the sand sensors were superior to rock sensors for detecting the gravity vector.

The mechanism is not clearly understood at this point, but it is believed that dipole rotation may be responsible. Sand is better than crystalline rock possibly because the resident electric dipoles may rotate more freely.

It is now suggested that amorphous materials and fluids, especially liquids, which have high resistivity, density and dielectric constant, may be better than sand. An insulated tube filled, let us say, with carbon tetrachloride or bromine or acetylene tetrabromide may allow rapid orientation of resident dipoles. Since high resistivity appears to be required, liquids with ionic conduction would not be suitable. Liquids with suspended powders may also be suitable. Matching the density of the liquid to the powder would help to keep the powder in suspension.

Page 54.

198. Sensors in Vertical Series.

Honolulu, April 13, 1975.

Various circuits have been tried, with more or less success, putting sensors in series order to build higher voltages. Strange effects occur which make the results disappointing. After a time, some of the sensors go negative (reverse their polarity) so that the total voltage is not sustained. This seems to occur not only with resistor-diode-capacitor sensors but also with rock sensors in series.

The reason for "going negative" when related in a circuit with other sensors is certainly not clear.

A slightly different circuit is suggested:

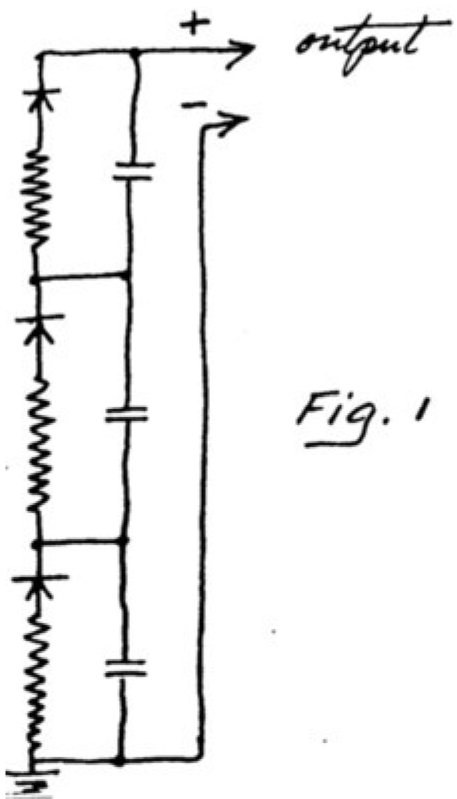


Fig. 1

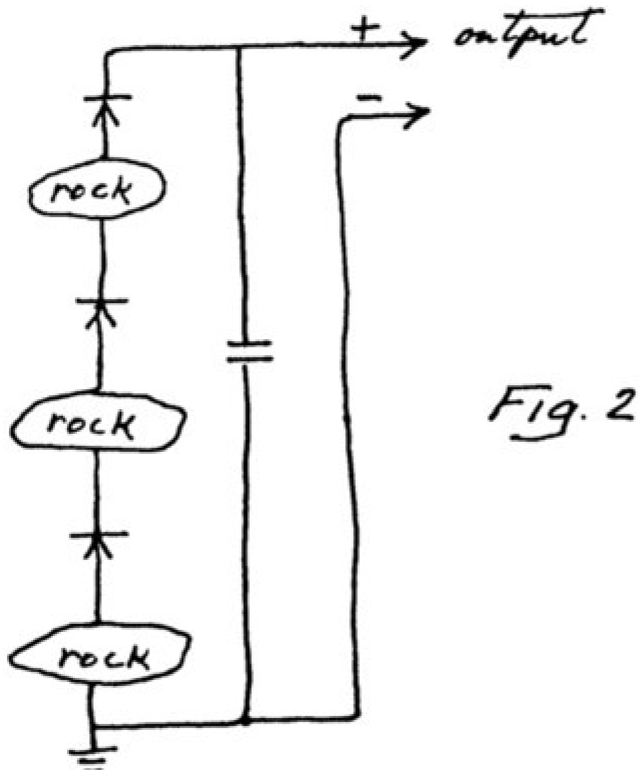


Fig. 2

Page 55.

199. Effects of Ambient Temperature.

Honolulu, April 15, 1975.

For some time, there has been conflicting evidence as to the effect of temperature, not only upon the resistor-diode-capacitor sensors, but also upon the rock and piezoelectric types.

There appears to be some complex temperature dependence upon the sensor itself, but there are instances where the actual sensor temperature is constant and the (remote) ambient temperature changes --- producing a change in output.

In other words, a sensor might indicate a temperature change of a remote medium and yet (itself) remain at a constant temperature. The "remote" medium may be air, or, conceivably, it could be masses of rock, sand, or water. It could be termed a remote-sensing pyrometer, almost like an optical pyrometer except that no part of the pickup changes temperature.

This may turn out to be a phenomenon related to secondary radiation (see. p. 23). If the neighboring radiating mass is warmed, it could radiate more (scalar increase) or it could increase the radiation frequency. This could be entirely a remote-activated effect. The sensor itself need not change temperature.

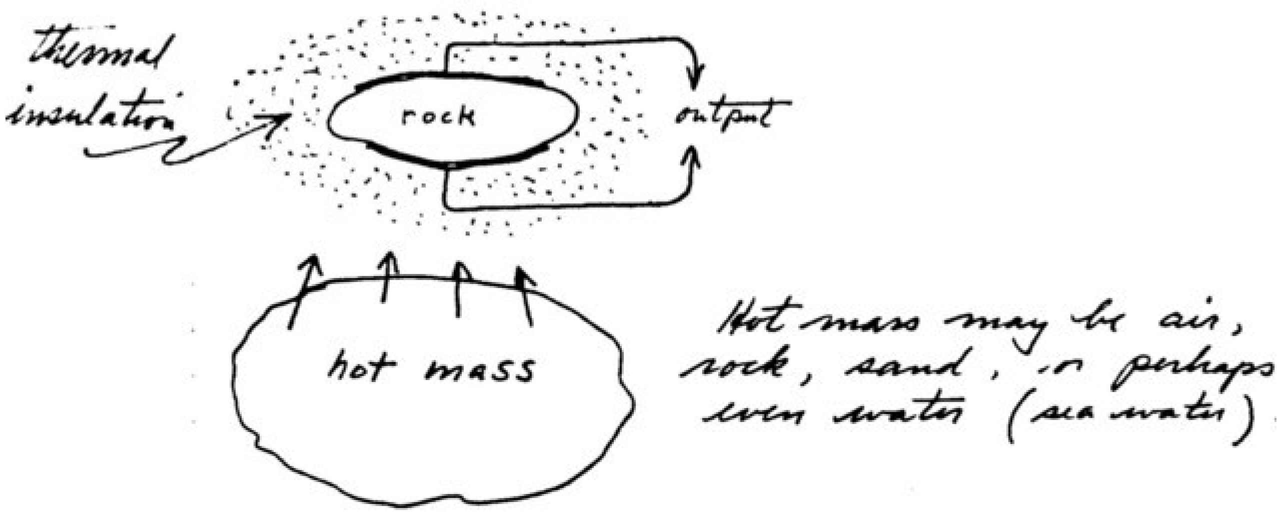
Page 56.

There have been several striking instances which point to this conclusion.

(1) Sensors operating in constant temp. conditions (cabinets) sense the temp. variations of the environment.

(2) Sensors in boxes of large thermal inertia sense rapid changes in the ambient temperature.

(3) The entire phenomenon of diurnal variations, where sensors are heat-shielded.



Air (atmospheric) probably has the greatest (diurnal) effect, although soil, sand or surface rocks may contribute to a daily temperature effect with different phasing.

Could this explain the various diurnal pattern (circadian cycles) which are observed?

Page 57.

200. Electrically Polarized Materials as Sensors.

Almost from the beginning of this research, as early as 1927 at Janesville OH, massive high-K dielectrics have been used. At the naval Research Lab (1931-33), the assigned official project was "The Anomalous Behavior of Massive High-K Dielectrics".

Various massive high-resistance materials were tested. At Janesville, powdered lead monoxide (litharge) was mixed with molten paraffin (or beeswax) and cast into blocks with electrodes cast on opposite sides. These were called "molecular gravitators".

When these blocks were free to move, either as a pendulum or on a rotary support, and charged to 150-300 KV DC, a mechanical force developed which moved the block in the direction neg to pos. The force varied with time even though the applied emf was held constant. This force appeared to have solar, lunar, and sidereal periodicities which was subsequently studied (over the years) in great detail.

Other materials such as lead monoxide and glycerine (chemically reacted), marble, lead monoxide in bakelite binder, were tried with varying success.

Page 58.

In later years, when high-K dielectrics as used in ceramic capacitor, were developed, attention was directed toward barium titanate and the like. As piezoelectric technology developed, other suitable materials came into being.

Today, various piezoelectric products such as those put out by Clevite Corp. (Cleveland) are on the market. Most of these materials are truly massive high-K dielectrics. Great progress has been made in the last 40 years, since the time of the project at NRL.

These new piezoelectric materials are "clay-like" substances which are molded like potters clay and fired. During the firing, a high voltage field (DC) is applied which aligns the natural dipoles and provides a (more or less) permanent polarization, thus making an "electret" capable of retaining a potential difference for a long period of time.

Such an electret, like the earlier classic electrets of carnauba wax, will not support an electrical load. The voltage drops to zero, but recovers again when the load is removed.

Polarized piezoelectric transducers are used in submarine signal applications, sonar, etc. Polarization is needed for in-phase coupling.

Page 59.

The literature on the subject is extensive, but there is still some uncertainty as to the factors which affect the behavior of piezoelectric materials. In the following paragraphs, I shall point out some interesting observations which may (or may not) be related to gravitational radiation.

(1) In the first place, these materials are truly massive high-K dielectrics. Barium titanate is one of the heaviest. Its dielectric constant, in some cases, is over 20,000! And it has very high electrical resistivity.

(2) The polarization life is quite long, and for practical purposes virtually steady. Minimum decay.

(3) It is an ideal material for intercepting gravitational radiation over a broad band, converting the energy of the gravitational radiation into an emf.

(4) Each constituent dipole acts as a gravito-electric converter, resulting in an increase in dipole gradient and total charge.

(5) The total charge of each dipole is additive along the alignment of dipoles so that total polarization (emf) is increased by the incident gravitic radiation.

(6) Hence, there is a certain seeming parallel between piezo-electricity and gravito-electricity. The reasoning is this:

Page 60.

(a) In a photocell, incident light (em radiation) falls on a surface of material which emits electrons (classic photoelectric effect). The electrons are driven (energetically) to a collector electrode nearby. The collector becomes negative whereas the emitting surface becomes positive. Here is then an electric gradient, a polarization, or, if you prefer, an increased polarization.

(b) In a gravitocell, gravitic radiation penetrates thoughout the volume of a polar material, causing one of the constituent poles to emit electrons which are energetically driven to the other pole, leaving the first pole positive and making the second pole more negative, thus increasing the polarization or total emf.

(c) It must be borne in mind that the photoelectric effect is essentially a surface effect --- being the surface exposed to the incident light. Electrons are ejected from various distances below the surface, governed by the light absorption constant of the material, possibly from the Fermi level. The displaced electron (caused by photon absorption) travels through the crystal lattice to the surface. This travel to the surface requires energy and is called the work function.

Page 61.

(d) There is a distinct relation between the frequency of the light and the generated emf. Einstein's equation is $h (v - v_o) = eV$ where h = Planck's constant and v the frequency.

(e) The action of a gravitic quantum or graviton is similar to that of the photon. The action, however, occurs not just on the surface or near the surface, but throughout the volume of susceptable material. It may be termed ponderomotive in that it acts throughout the volume or

mass of material. Rock sensors are examples. The electrical energy is generated throughout the entire volume of the rock, not just on the surface.

(f) High density of the receptor material appears to be a factor. The greater the mass, the higher is the graviton capture rate.

(g) High dielectric constant (high-K) may serve several functions: (1) to slow up the incident graviton so as to facilitate capture; (2) to concentrate the generated emf, or, (3) to store energy.

(h) In the case of a barium titanate sensor, it seems reasonable to assume that the heavier part (Ba) is the electron emitter and therefore positive.

Page 62.

The receptor would be the titanate half and the negative side of the dipole molecule. As in the case of a photocell, escape energy from the barium atom may be required so that work function would again apply. Alloys with cesium might lower that work function, or, as is the case with certain semi-conductors, intermetallic compounds such as Cs3Sb or Na-K-Cs-Sb, or other impurity states could lower the work function.

This may account for the observation that certain rocks, for example, granitic or lava rocks produce higher outputs. Impurities may be desirable.

(i) Since electromagnetic and gravitic radiation are closely related, the energy is directly related to frequency (hv = eV). Hence, the higher frequency bands of the gravitational wave spectrum are the more energetic, and probably have the greater effect on the sensors. Frequencies equal to those of light (especially blue and above) may be the most effective. Possibly gravitic frequencies may extend to those of x-rays or gamma rays.

(j) There is a theory that electromagnetic radiation from a dense star, passing through a fixed magnetic or electric field (surrounding the star or in the path of travel) will be slowly (gradually) converted into gravitic radiation. Hence, gravitic radiation, of the same frequency as light, may be present. One could thing of red, yellow, green, blue or violet gravitic radiation, with wavelengths expressed in Angstrom units (8000 to 4000A) as may be the case.

Page 63.

There would seem to be the possibility that monochromatic lines exist or other typical spectral configurations.

(k) If such conversion actually takes place, i.e., from em to gravitational (at the same frequency), the residual light (not fully converted) must have lower energy than it did at the start --- hence, appear shifted to the red. Could this account for the cosmological red shift or the as yet unexplained redshift of certain stars or clusters?

(l) If this conversion is true, the total gravitic radiation in the band from 4000-8000 A must be great. Could it equal or exceed that of light?

(m) Hence, rock electricity from cosmic gravitic radiation may be homologous with photoelectricity from starlight or sunlight. Gravitoelectric and photoelectric conversions are parallel and the instrumentalities are similar. Both emit electrons (which are captures) by gravitons in one instance, photons in the other. Both convert energy.

(n) The term "white" gravitic radiation may have real significance, as a cosmic energy flux.

Page 64.

Summary:

This section sets forth the parallelism of gravitic and em radiation throughout the entire spectral range. The hypothesis suggests the existence of gravitic radiation of the same frequency as light, extending possibly to x-rays or gamma rays. The lower end of the spectrum, the RF and sub-RF, has already been suggested by Press and Thorne.

Methods of detection are believed to be similar. Gravitons cause emissions of electrons from emissive materials, just as photons do. The gravitoelectric effect parallels the photoelectric effect. The gravitocell is similar to the photocell. Both are energy converters.

The gravitocell is volume dependent while the photocell is surface dependent.

Many natural materials are gravitocells, such as granitic rocks or siliceous sands, lavas, or clays. Polarization is important, so as to direct electron emission, Otherwise, emission is random and no net field or current can be generated.

In a gravitocell, electron emission is facilitated by heating, hence it is somewhat temperature dependent up to its Curie Point. Impurities (certain semiconductors) may reduce the work unction, causing increased eV.

Page 65

Piezoelectric materials with high polarization appear to be desirable because of the "field" needed to direct the electron emission. This field is internal.

Polarization aligns the dipoles within the gravitocell. During electron emission each dipole increases its potential difference, and since the dipoles (aligned) are in electrical series, the net emf of the series increases. Electrodes are at the ends of the series of internal dipoles.

A reverse action may also take place during electron emission. Since the emitted electrons fall through the fixed field, the positive pole attracts the electrons, tending thereby to reduce the fixed field. This could cause, and does appear to cause, polarity reversal in the output. Very strong polarization is suggested to prevent such reversal.

Electron emission may conceivably be directed or influenced by a magnetic field. Direction would be at right angles to the field. This will be the subject of a further section.

Page 66.

201. Quasi-Luminous Gravitic Radiation.

Honolulu, Apr. 19, 1975.

This is an extension of the hypothesis developed in the previous section. It concerns the idea that the broad spectrum of natural gravitational radiation extends beyond the range considered by Press and Thorne (p. 342, *Gravitational Wave Astronomy*).

These authors consider the spectral region from ELF to VHF. The concept presented here concerns the extension into quasi-luminous regions expressed in Angstrom Units, i.e., 8000 to 4000 A.

One reason for this belief is that theory exists in the literature today that em radiation (including light from stars) may be gradually converted into gravitational radiation (of the same frequency) while passing through static electric and/or magnetic fields which exist around certain stars or in galactic space.

Such conversion must generate (if it exists) substantial amounts of quasi-luminous gravitic radiation throughout space. Our eyes cannot see it for the reason that our photosensitive receptors do not capture it.

It is interesting to note that such conversion of the visible light from certain stars to gravitic radiation reduces the energy of the residual visible light, causing a redshift of that residual light.

Page 67.

Is it possible that the anomalous redshift, observed in the light from certain star clusters, is not due to Doppler recession (as previously generally supposed) but to the energy depletion resulting from this conversion?

It may point up the existence of a substantial flux of quasi-luminous gravitic radiation throughout all cosmic space.

Such radiation would have enormous penetrability, whereas light does not.

This penetrability permits gravitic "light" to penetrate throughout large volumes of heavy masses. If the method comprising such masses is electron-emissive through graviton capture --- just as photosensitive material is electron-emissive through photon capture --- a flux of free electrons is created. If a field exists to direct a flow of these free electrons, an electric current is created. This electrical energy is derived entirely from the incident gravitic light.

The so-called "rock electricity" may result from such an energy conversion.

Since the eV so derived is a direct function of frequency, and rocks may vary in functional resonance, various rock specimens may be responsive to various spectral bands and output phasing (in their circadian rhythms) may be quite individual.

Page 68.

In other words, certain rocks may be "green" sensitive, certain others "red" sensitive. And the incident radiation may vary as to green-red balance. The broad background radiation may be termed as white, but it could become reddened or blued in irregular (secular) or diurnal patterns.

Photocells (solar cells) convert light (visible and IR) from the sun. This is a practical source of electrical energy.

Gravitocells convert gravitic light into electrical energy, but the source is galactic, not just the sun. It is possible the sun may contribute to the total flux. This possibility requires further study. The thought here, however, is that this represents a new and untapped practical source of electrical energy if true.

The structure of photocells is technically fairly well understood.

The structure of gravitocells may be closely parallel. It is because of this parallelism that theory and practical development may "hang its hat".

If quasi-luminous gravitic radiation is a valid concept and if the flux density at the Earth is adequate, it could represent an alternate source of much-needed energy of practical proportions.

Page 69.

202. The Structure of the Gravitocell.

Honnolulu, Apr. 19, 1975.

Gravito-sensitive materials bear the same relationship to gravitic light as photosensitive materials bear to ordinary light. Both are fundamentally electron-emissive.

The photoelectric effect is primarily a surface effect (or a variable short distance under the surface). Incident photons penetrate to the conductor band relatively close to the Fermi level within the atom. In semi-conductors, penetration is largely to the valence band. Electrons are emitted (dislodged by the photon) which migrate through the lattice to the material surface. There they may be captured by an electrode which, thereupon, becomes negatively charged. A current can be generated between the main body of emissive material and this electrode.

In photoconductivity, the action is similar. Free additional carriers (mostly electrons) are generated when photon energies are absorbed in electronic transitions. Electrons are excited from

a filled (atomic) band to a conduction band. Electron holes are injected into the valance band. At thermal equilibrium, photoconductivity depends on the energy of the incident photons.

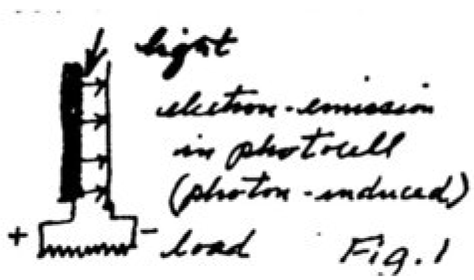


Fig. 1

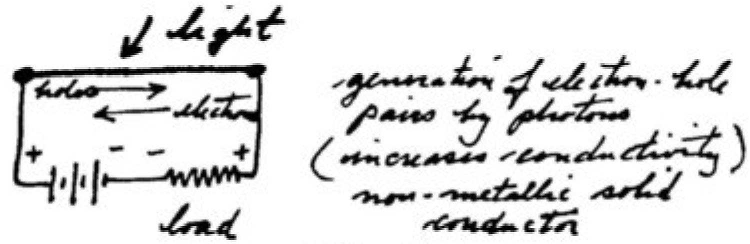


Fig. 2

Page 70.

In both photoelectric and photoconductive phenomena, photons kick electrons loose.

In gravitoelectric phenomena, gravitons also kick electrons loose, but the penetrability of gravitons permits the increase of free electron flux throughout the mass of the conductive (or semiconductive) material which absorbs the gravitons.

Gravitic radiation (let us now think of it as principally gravitic light) is highly energetic but almost perfectly penetrating. It has been said that such radiation is as penetrating as neutrinos! Nevertheless, it is almost perfectly penetrating, not perfectly penetrating. Mass (high density materials) keep it from being perfectly penetrating. Absorption is a function of mass.

Heavy materials would, it would appear, capture an unknown small portion of the ambient graviton flux, but the energy represented by that small portion may be substantial.

Predicated, therefore, on this possibility, graviton capture is assumed. Gravitons (sub-quanta) with energy of gravitic light may be extremely energetic. Their absorption is believed to be capable of electron emission or electron-hole formation.

The thrust of all this is that electrical conduction (generally) may be affected.

Page 71.

This may be termed gravitoelectric conduction or gravitoelectric conductivity. It would be parallel to photoconductivity.

All conductors would be subject to this phenomenon, which would be observed as a change in resistance. It would appear that the more massive conductors would be the more vulnerable. The drop in resistance (caused by graviton capture) would be a function of mass.

However, this may not be strictly true and might depend on electron hole recombination rates and other factors not related to mass.

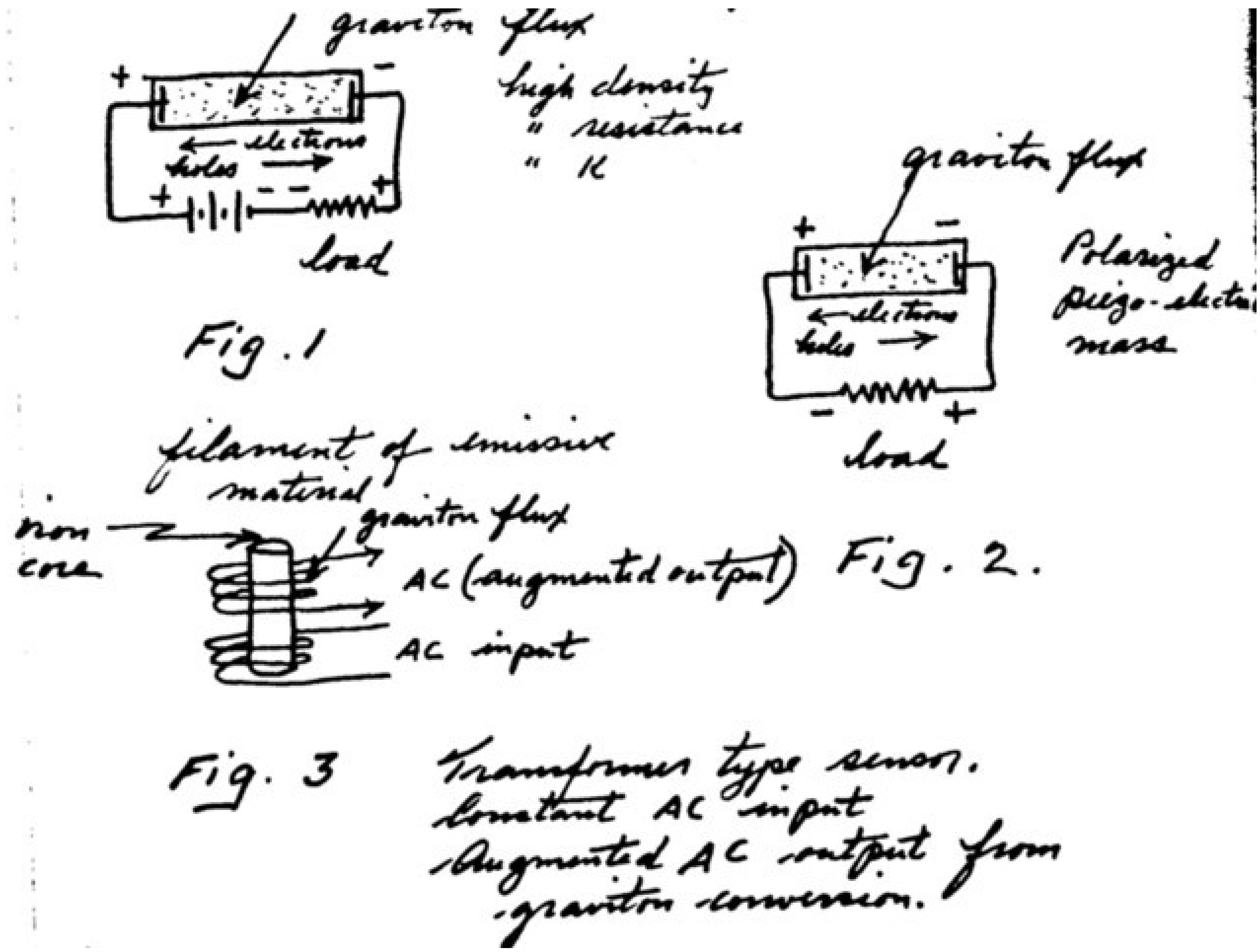
The simplest form of gravitoelectric sensor may be a length of wire which is carrying a current. See Sec. 123, Notebk # 3 (1973. Effects would be observed as a change in resistance.

Any semiconductor may show the same effect. Biased high resistance conductors seem to show an additional effect by acting as an electromotance, i.e., generation of a current. In such a device, the energy of the absorbed gravitons is converted into electrical energy in almost the same way as photons convert into electrical energy.

Page 72.

If the ambient flux of gravitons changes the population of electron hole pairs within a conductor and the net movement of the charge carriers is directed, a usable current is generated.

Charge carriers may be directed by (1) An electric gradient (bias); (2) A magnetic field; (3) A gravity field (such as the Earth's gravity field).



Page 73.

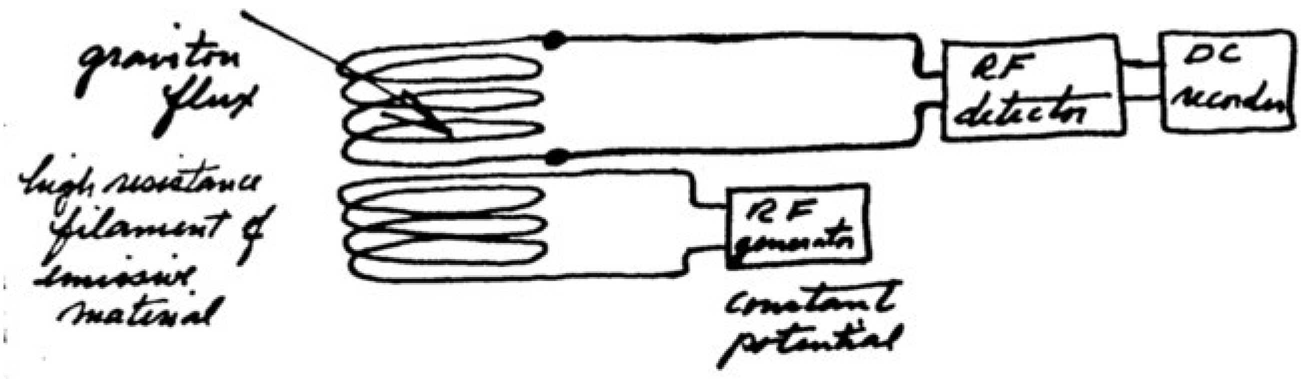
In Fig. 1, polarization is supplied by an HV external battery. Graviton-induced emf is counter to this polarization if electrostatically induced. If current-induced, it is augmentative.

In Fig. 2, polarization is built into the emissive material. An electrostatic field is established within the mass. Graviton-induced charge carriers tend to migrate in the direction of the field, tending to reduce the field, thus decreasing the polarization.

In Fig. 3, the alternating magnetic flux drives the graviton-induced charge carriers (as well as the free resident carriers) so as to increase output current.

This is a new type of sensor. Its output is AC. If RF driven (without core), the output would be augmented RF.

Figure 4:



Page 74.

203. The Effect of Increasing Bias.

Honolulu, April 21, 1975.

In the previous section, it was proposed that additional charge carriers (pairs) are created in massive dielectrics by the absorption of gravitons, an effect similar to pair creation in photoemissive materials by photons.

The difference lies in the difference in penetrability of gravitons and photons. Gravitons easily penetrate thru the massive material, whereas photons penetrate only a short distance below the surface. In the case of photoelectric emission of electrons, the electrons lose energy in escaping thru the crystal lattice (work function). In photoconductivity, it is the change in conductivity which results, rather than the emission of electrons.

The effect of gravitons is presumed to be on conductivity primarily. Electron hole pairs are created throughout the body of dense dielectric material. Recombination takes place rapidly unless a field (or current flow) exists. In such case, the additional charge carriers increase the conductivity.

It would appear that a relationship exists between the current and the conductivity, i.e., the greater the current (or bias, the greater the conductivity.

Page 75.

These would be less time for recombination, or at least the rate would be lower.

In summary therefore, gravitocells should be biased, either by a current flow or by an electrostatic field (electric polarization) or em induction.

Fig. 1, p. 72 illustrates the use of current.
Fig. 2, the use of polarization, and
Fig. 3, electromagnetic induction.
Fig. 4, high-freq. induction.

It is recalled that the first gravitic sensors were believed to be operative because of a change in resistance. Resistance bridges were used, having arms of resistive material of different density.

Later, resistors (>100 megaohms) were used, together with a diode. It is now seen that the diode (once AC was intercepted) provided the flow and the bias, which was then augmented. The establishment of the bias in rocks is not as yet understood. Once established, however, it could be sustained.

But the purpose of this section is to point up the need, even with rock sensors, to use a battery to provide a reliable constant voltage bias.

Page 76.

An experiment is in progress today which, I believe, adds weight to this thinking. As follows:

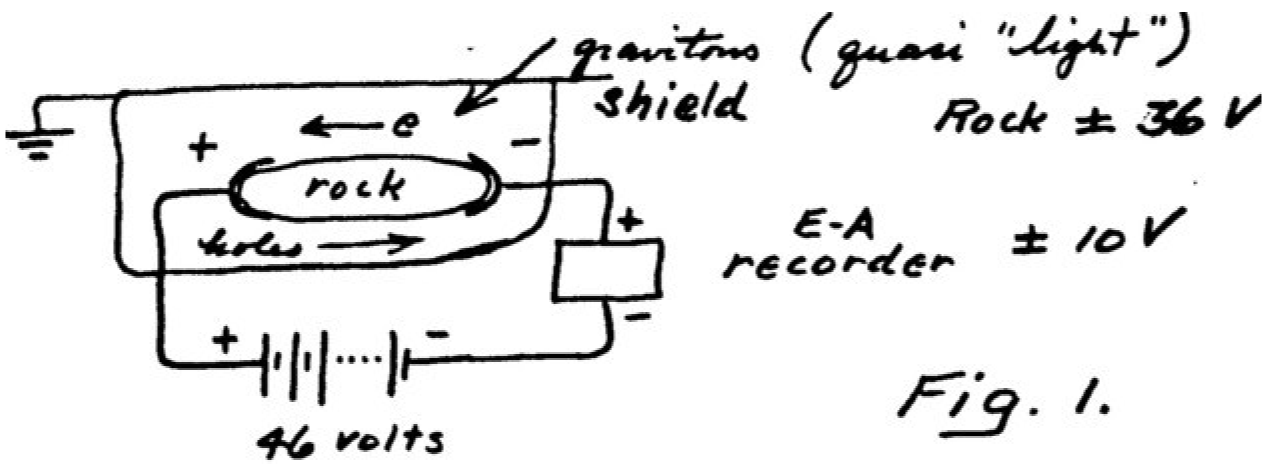


Fig. 1.

The circuit actually measures the conductivity of the rock, but it provides the rock with a bias. Graviton-created charge carriers (electrons and holes) add to the normal conductivity. Variations in gravitic flux are readily observed as a change in conductivity.

It is noted that conductivity increases at noon each day, hence it is an indication that the flux increases at noon. It does not appear to be temperature dependent.

Does this mean that the sun is a source of gravitic light as well as em light? What of gravitic heat --- slightly lower frequency? If this is so, would it represent an alternate source of energy?

Page 77.

204. High Voltage Bias and Energy Extraction.

Honolulu, April 2, 1975.

In the previous section, the biasing of rock sensors was discussed. It appears that the sensitivity (receptivity) or rock sensors to gravitic radiation is increased as some function of bias voltage. In an experiment currently underway a 45 V "B" battery is used. Diurnal sensitivity appeared to increase 10-fold over that of the normal which resulted from the rock's natural self-potential.

The thought, therefore, extends to the use of higher voltages. What would be the result?

With the setup as shown in Fig. 1 (p. 76), voltage across the rock ranges from 35.0 V at noon to 36.0 V during the night. Incoming radiation appears to reduce the rock bias, by lowering the resistance of the rock. This voltage variation is not steadily or smoothly changing; it is highly erratic, possibly noisy. Extraction of energy may be possible by rectifying this noise, as:

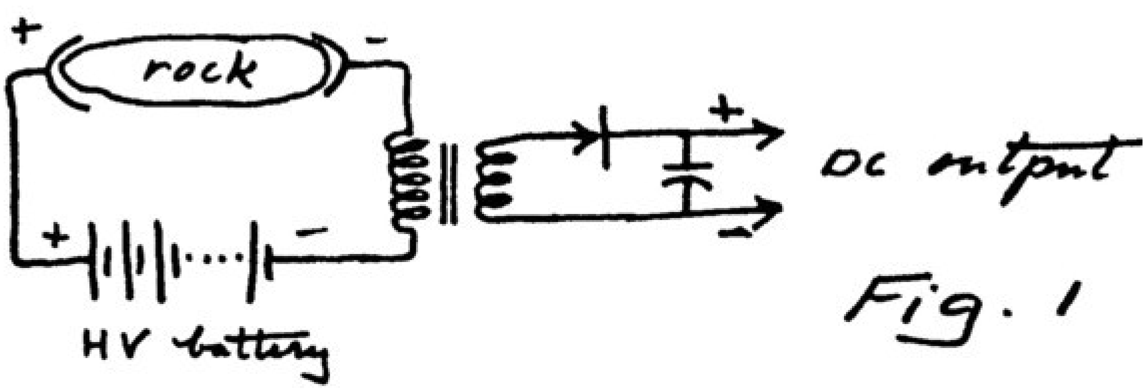
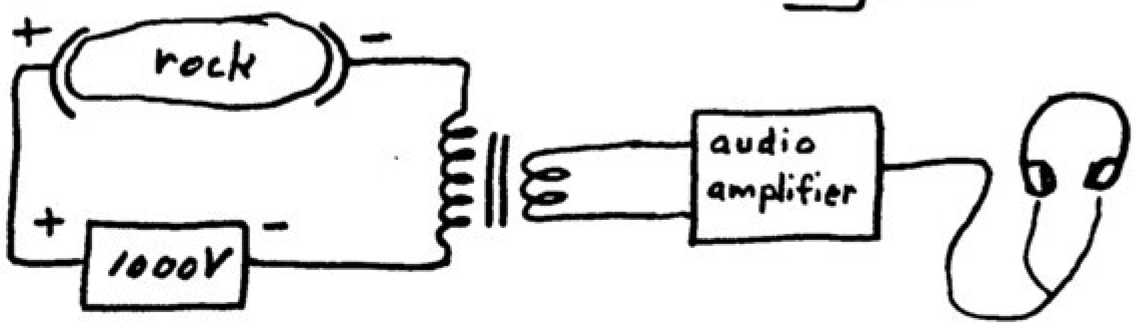


Fig. 1

Page 78.

An alternate circuit which may give interesting results is:

Fig. 2



What sounds will be heard, if any? Perhaps the coupling transformer should be RF along with the amplifier. Will the voltage output of the RF transformer represent the incident gravitic radiation? Can it be recorded on a strip-chart recorder?

If resistors (100 megaohm or above) are substituted for the rock and constant voltage HV supply (possibly 10 to 25 KV) are used with the circuit described in Fig. 2, "resistor" noise may be studied. Will this be the same kind of white noise ordinarily observed as resistor noise (Johnson or Nyquist)? Will there be any evidence that the cause if of cosmic origin?

These questions may be answered when proper equipment becomes available.

Page 79.

205. Bridge Circuits for Higher Sensitivity.

Honolulu, April 25, 1975.

At the very start of these observation on resistive changes (Record Bk. 2), it was believed that a resistance differential effect would be observed between conductors of high mass vs low mass, i.e., tungsten vs aluminum. Resistance bridges were proposed.

In the tests which followed, many bridge sensors were built. All showed positive results but were somewhat erratic. Low voltages <6V were used. Now it appears very much higher voltages should have been used.

Matching rocks against standard resistors, the following circuit is suggested:

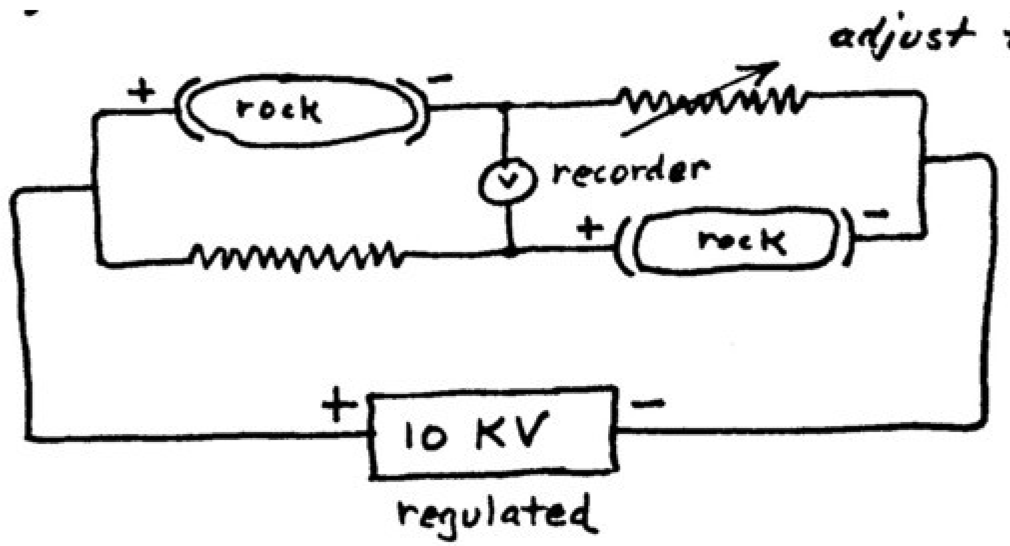


Fig. Bridge

Mass differential is provided between the rocks (or barium titanate blocks) and standard resistors which match in resistance. Adjust to null. It is thought that graviton flux increase will increase the conductivity of the electrically-stressed rocks creating a shift in the null.

Page 80.

Audible variations would be observed by placing an amplifier pickup in the circuit in place of the recorder.

Qualight and Qualitics

In Sec. 201, p. 66, the idea that the spectrum of natural gravitational radiation from space may extend into optical frequencies was presented. This broad natural spectrum, rather than stopping at microwave frequencies (as suggested by Press and Thorne) may conceivably extend upward into thermal and optical frequencies, possibly even to x-rays and gamma rays.

Thus, the gravitic spectrum would parallel the electromagnetic spectrum. One would be the homologue of the other in all respects, except penetrability. Many of the properties of light may also be found in so-called quasi-light.

Hence, to assist in this concept, certain terms have to be invented.

"Qualight" would be defined as quasi-light.

"Qualitics", the homologue of optics.

Page 81.

206. Qualitic Astronomy

Now, added to optical astronomy, radio astronomy and gravitational astronomy is a newcomer. While qualitic astronomy is related to basic gravitational astronomy, it is (or would appear to be) a discipline unto itself.

The whole idea of qualight is new, so far as I am aware. Qualitic radiation from the stars, with its many parallels to light, should be a new and separate regime.

Origin of Qualight

It is conceived that qualight is created by the conversion of light into gravitational radiation. Such conversion is believed to take place (gradually) as light traverses fixed electric and/or magnetic fields, such as those which surround certain dense stars or clusters or exist (for instance) even in the galaxies or in inter-galactic space.

This gradual conversion results in reddening of the residual light, and possibly explains the redshift with distance and the anomalous redshift observed in certain dense and active clusters nearby.

Integrated throughout space, the total energy of this converted light, as a presently existing flux, must be enormous, equaling or possibly exceeding the light flux. In other words, the total flux of qualight may equal (or exceed) the total flux of light.

Qualight has one distinguishing property --- its penetrability. But it cannot be perfectly penetrating.

It is reasonable to assume that absorption is a direct function of mass. Hence, heavy materials would absorb some of the qualight energy. Heavy metals (gold, tungsten, and the light) would appear to be principal candidates. But heavy dielectric materials (of high-K) may also absorb qualight.

Evidence of this absorption is the principal point of concern here. Energy is converted during absorption, possibly in most instances, into electricity or em radiation, being the reverse of the process by which qualight was created in the first place.

Hence, throughout the universe, there may be energy exchange --- em into gravitic radiation and back again into em radiation ending in heat.

Page 83.

In other words, light is converted into qualight which, through a process similar to photoconductivity, creates pairs of charge carriers (electrons and holes) which recombine with the evolution of heat.

Another point of significance is that, if an electric or magnetic field exists in the material where charge carriers are created, so as to prevent immediate recombination, an electric gradient is generated which not only is measurable but may be useful.

In metals, because of high electrical conductivity, electric gradients are low and difficult to observe. In dielectrics, however, electric gradients are readily observed. Hence, one turns to heavy (massive) dielectric materials to observe these effects. This is probably the reason why rocks intrinsically show electric polarization --- the so-called self-polarization.

Properties of qualight homologous to those of light:

(1) Refraction: Bending of qualight by massive bodies seems a reasonable assumption. This will be developed in greater detail.

(2) Re-Radiation (Fluorescence):

When qualight is absorbed by a mass, energy is converted to electricity which, if not conducted away, builds to a maximum or saturation condition. At this point, re-radiation takes place. This re-radiation may be electromagnetic or gravitic or both. It may be in the form of heat or could (in part) be qualight at the same or different frequency. As such, it might be termed gravitic fluorescence.

Rocks of the earth may show gravitic fluorescence. This possibility was discussed in Sec. 183, p. 10. The re-emission spectra of various rocks may be quite different, so as to create domains on the surface of the earth. (Sec. 157, p. 100, Notebk 3).

It has been suggested that astronomical bodies, such as the moon and the planets (as a whole) reradiate, and that the spectral bands may be distinctive to the body. Therefore, for example, the re-radiation of gravitic energy (qualight) by the moon may be observable on earth. It may have its own spectral signature, differing markedly from that of the sun or the planets.

Page 85.

This re-radiation, at the same or different frequency may be termed gravitic fluorescence. It is homologous to optical fluorescence.

Tuned sensors may be able eventually to pick up and distinguish lunar fluorescence from that of other planets or the sun. Such effects may or may not have tidal characteristics. Fluorescence from Mars or Venus may be equally observable.

One begins to wonder at this point as to possible effects of qualight or gravitic radiation generally upon human behavior. Could astrology have some basis in fact?

Are the well-documented correlations between the lunar phases (full moon, etc) and police-crime frequency and hospital attendance traceable to such a relation? Are plant and animal life processes in any way responsive to qualight? Certainly, ordinary light has profound basic effects; why not qualight as well?

The subject has vast implications. It seems to be utterly new and yet not entirely unexpected. Throughout biology there has been a thread of mystery which may be cleared up, at least in part, by the recognition of such cosmic forces.

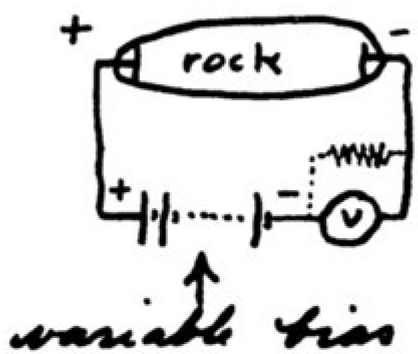
Page 86.

207. Relation of Conductivity to Bias Voltage.

Honolulu April 27, 1975.

There appear to be a definite relation between the conductivity of a rock with the bias voltage applied. Increase in bias causes an increase in conductivity. This is to be expected if polarization results in facilitating charge-carrier separation (electrode and holes) and charge transport.

If incident qualitic radiation initially produces charge pairs (the qualitoelectric effect), the population of such pairs is directly related to the resultant conductivity. And this is further assisted by the existing polarization as established by the applied bias.



At 220 V bias, rock = <100 K ohms; Radiant = > 2 ma.(approximately)

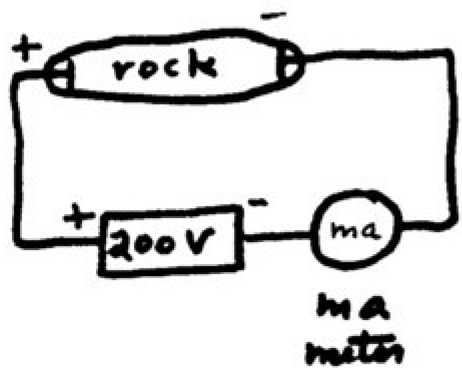
Hence, it would appear that by increasing the bias to the highest practical value, the rock conductivity would be increased and, concurrently, permit a more reliable measure of the intensity of the incoming radiation.

Page 87.

In this circuitry, it would appear that the current readout would indicate the intensity of the incident flux.

High sensitivity indicating (or recording) instruments would not be needed. High input impedance would not be an important or limiting factor.

Using long-life "B" batteries of, say, 200 V, a portable sensor could easily be constructed, as:



This, of course, assumes a linear relation between bias and conductivity. If the relation is not linear (or approx so), and resistance is reciprocal, would the resistance reach minimum somewhere above 200-300 V?

Page 88.

208. The Gravitoelectric Generator.

Honolulu, April 27, 1975.

In the previous section, it was foreseen (based on further confirmation) that very high voltages may be the key to obtaining direct conversion of gravitic energy into usable electricity.

Unbiased rock electricity does not have (it seems) a practical and reliable electrical output. But with a bias of several kilovolts, it may have.

It would seem that rocks (and possibly other equivalent forms of dense dielectrics) will act as an electromotance when biased to the KV range. It is interesting to note that no bias current would be required. Hence, no current is consumed in the excitation. The output of the electromotance represents the net or usable gain. This gain, then, is the net conversion of gravitic energy into electrical energy. Its output is DC.

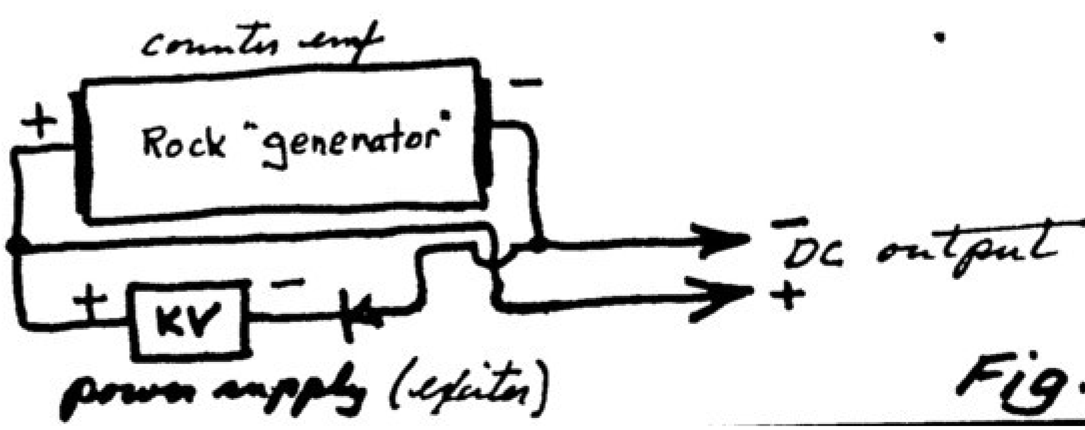


Fig. 1.

Page 89.

Or, a clearer diagram may be:

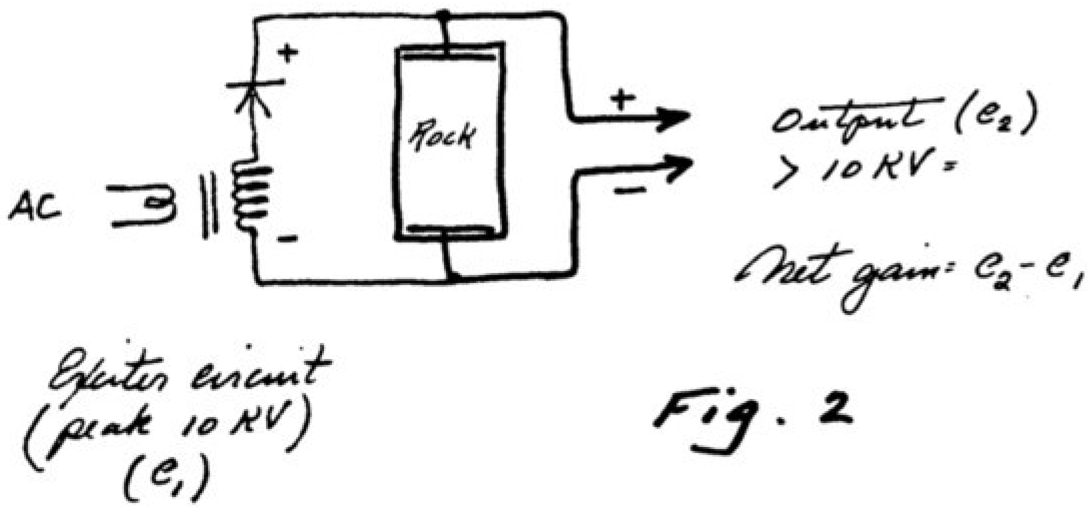


Fig. 2

In the above circuit, as soon as the rock becomes fully biased (10 KV), it is generating a current in excess of the bias current. Minimum energy comes from the exciter and the system becomes self-sustaining.

If excessive current is drawn, the output voltage may be drawn down to below 10 KV, at which time energy is again drawn from the exciter. Output current, therefore, is limited to that value where the output voltage does not fall below 10 KV.

The output voltage of 10 KV is merely illustrative. Larger masses of heavy high-K dielectric (or rocks) and very much increased voltages may be used.

Page 90.

209. Bias-Assisted Sensors.

Honolulu, May 1, 1975.

It now appears quite definite that the sensitivity of the rock sensors is increased by a bias voltage. Such a field (through the body of the rock) provides polarization.

Based on the hypothesis that internal electric polarization facilitates charge-carrier separation (retarding recombination) of the gravitoelectrically-produced pairs, it is reasonable to assume that the increase in conductivity will be a function of the polarization voltage.

In other words, increasing the applied bias increases the rock conductivity. It is quite possible that the amplitude of the diurnal or secular variations will be increased as well.

A simple suggested circuit is:

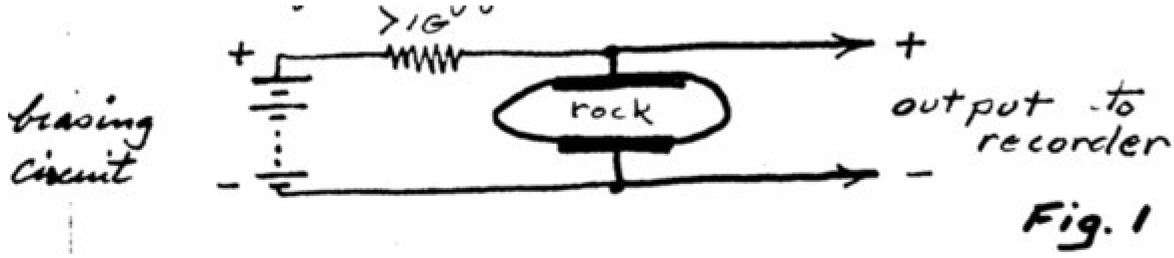


Fig. 1

The resistor provides a cushion so as to permit the variations in rock output to be observed, yet providing a steady polarization voltage to the rock.

Page 91.

Another more sensitive circuit, because it permits a balanced or null position, is:

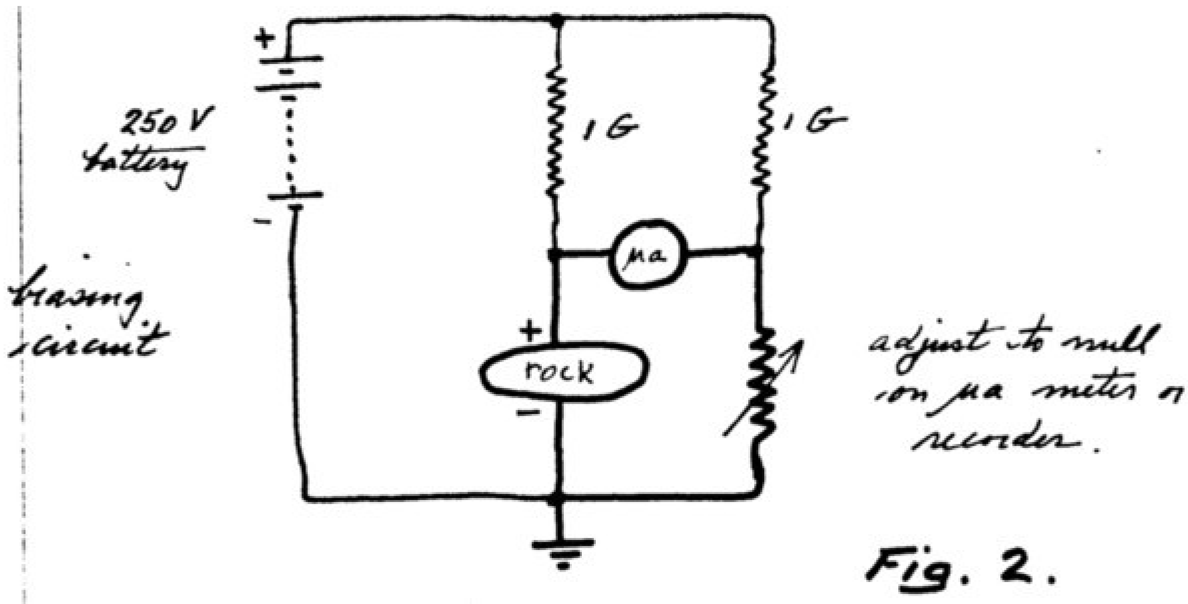
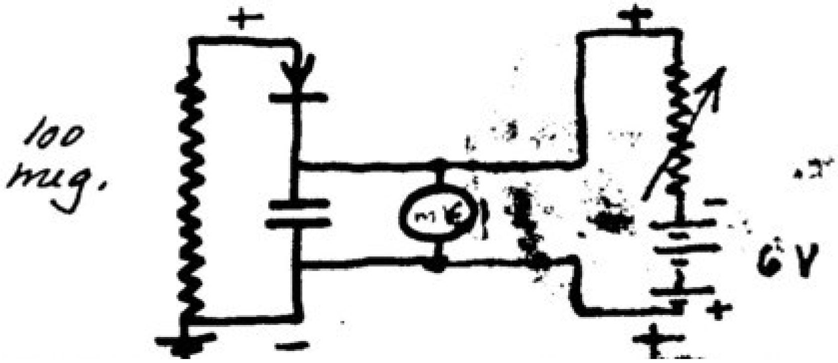


Fig. 2.

In this circuit, the output of the rock is balanced against the steady bias (to a very sensitive null position). Any slight change in the resistance of the rock is readily observed and recorded.

Circuits as in Fig. 1 and 2 are being tested now and the results, so far at least, are quite encouraging.

Another example of bias-assistance in sensors is that of the resistance-diode-capacitance type, the so-called "synthetic" rock, as:

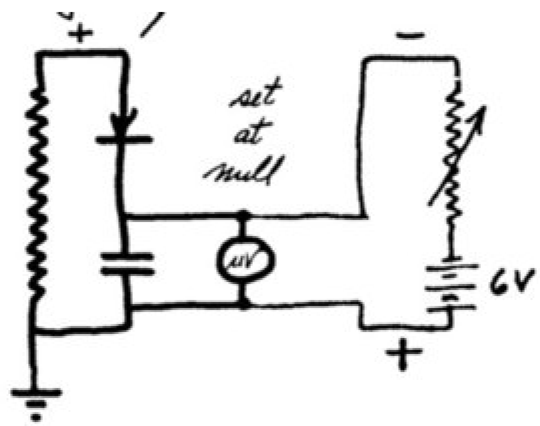


Bias assist

Fig. 3.

Page 92.

In the circuit shown in Fig. 4, the applied bias opposes the polarity of the resistor diode emf, tending to balance the gravitically-generated emf. An adjustable resistance, either in parallel or in series with the 1G resistor, provides for null adjustment. At null, this makes possible an extremely high sensitivity for diurnal measurements.



Opposing bias

Fig. 4

Using two matched rocks and 2 matched variable resistors seek null:

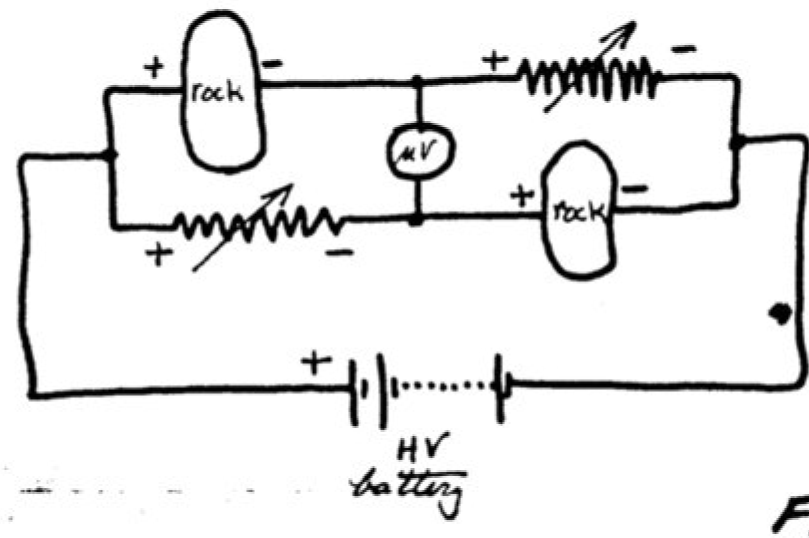
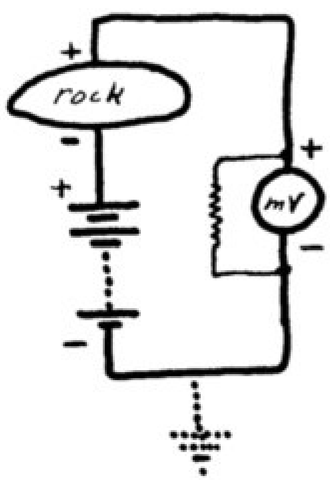


Fig. 5

For detection of diurnal and secular variations.

Page 93.

Simple series-bias circuit:



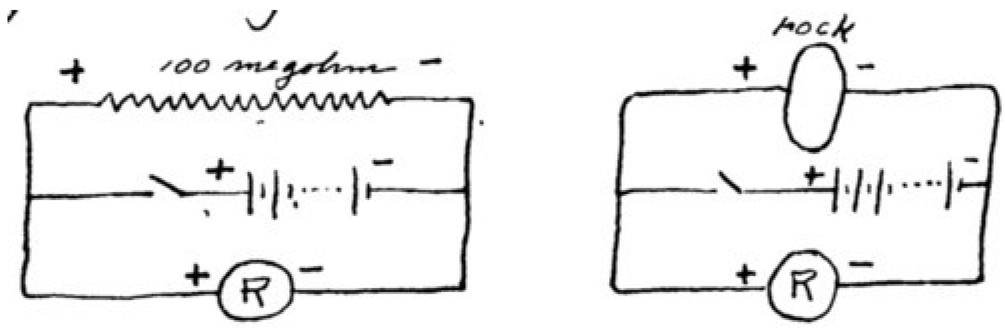
Using shunt across mV meter.

Fig. 6

Battery augments rock emf.

209-A. Retention of Bias by Resistors.

It is observed that battery-biased resistance materials (rocks and carbon spirals) tend to retain the bias. Similar to capacitors, the charge appears to be retained for long periods of time. This is a phenomenon certainly far from being understood.



As in the above circuits, the polarization is retained by the resistor and/or rock for an unexpected and phenomenal length of time.

Page 94.

210. Piezoelectric Materials as Sensors.

Honolulu, May 9, 1975.

In Sec. 200 (p. 58), the use of piezoelectric sensors was discussed. Several units of this type have been tested over several weeks. Results are quite encouraging.

The sensor is a piezoelectric tube (probably lead zirconate or equivalent). It is placed on a thermos flask for temperature stability and the flask is covered with aluminum foil which is grounded. The coaxial lead to the recorder is also shielded and grounded.

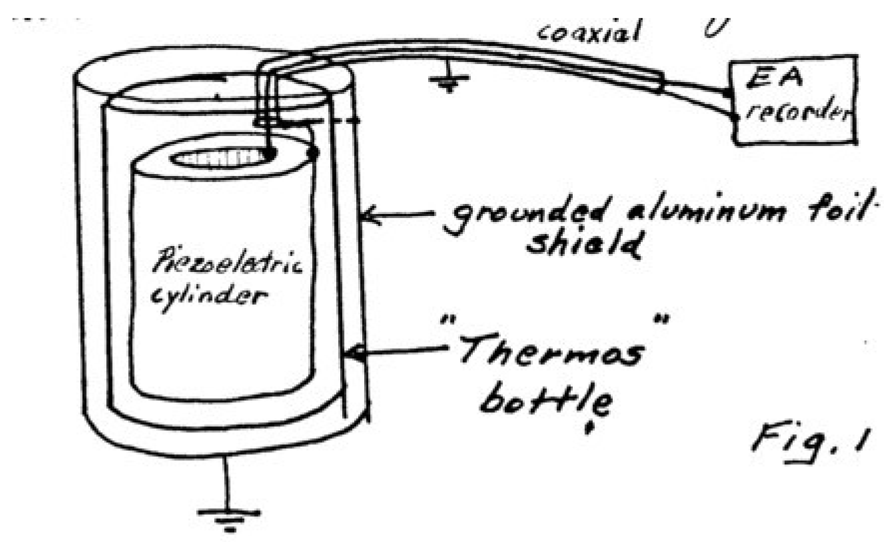


Fig. 1

It is noted that the output, as indicated on the strip-chart recorder, shifts from positive to negative (polarity reversal) with a definite diurnal cycle which does note correlate with room temperature. Placing the sensor in a thermos bottle increase its temperature time constant making it virtually insensitive to rapid variations in temperature.

Page 95.

It is sensitive, however, to sudden atmospheric pressure changes, showing sudden jumps with varying wind pressure. Long-term variations in pressure do not show.

However, these are present long term variations which are diurnal. The interesting finding is that there is a fairly regular polarity reversal (+ to -) in the morning and an opposite reversal (- to +) in the afternoon. During midday, the readings are negative while during the night they are positive. Please note, however, that opposite polarities (depending on recorder connections) are possible.

It is quite clear that polarity reversal take place (at this time of the year) about 8 AM and at about 6 PM.

In assembling the charts over the last 20 days, it begins to appear that there may be a sidereal drift of 4m/day. Assuming an Earth-shading effect, it may mean that the source of this radiation is in the region approx 15h RA. Only by continuing these observations over a period of several months (better 1 year) can one be certain that this sidereal drift continues. If it does, it constitutes good evidence of a cosmic source.

Page 96.

211. Effects of Ambient Mass.

Honolulu, May 25, 1975.

In comparing the results of observations in the seismic vault (Hawaii Inst. of Geopysics) with those on the roof (10th floor) of my apartment building in Waikiki, it is quite apparent that surroundings have an effect.

In the vault, 8 ft below the surface, the surrounding material is broken rock with dense (volcanic) material at floor level. In the penthouse at the apartment, the walls are of concrete block with a concrete slab overhead. It is on the 10th floor with no nearby buildings.

Diurnal variations are pronounced at the penthouse whereas only long-term (secular) variations are observed in the vault. Diurnal variations are minimal.

It would appear that ambient mass is responsible, acting very much like an electrical capacitance, to smooth out more rapid variations.

The mechanism is far from being understood. Speculating a bit:

(1) Ambient mass may re-radiate gravitic (cosmic) radiation on the same (or lower) spectral band. As such, it may be viewed as gravitic fluorescence.

Page 97.

In such an event, the ambient mass may become excited in order to re-radiate, and this excitation may have persistence, therefore

(a) a time lag would be introduced and a soothing effect.
(b) also, possibly energy absorption by the ambient mass, so as to reduce the sensor readings.

In general, this would mean that in order to observe maximum diurnal variations and all sudden changes, elevation (above earth) is important.

Locations in vary tall buildings are foreseen, especially where the surrounding walls of the instrument room are of light (non-metallic) material. To insure against electrostatic gradients, copper screening is suggested. The ideal would be a thermally-insulated wooden shack with complete copper screening, as high as possible above the earth.

It is true that such construction would no shield against magnetic fluctuations, but the sensitivity to such fluctuations can be determined by deliberately introducing magnetic fields throughout the enclosure. The same applies to the penetrating em radiation, that which penetrates the copper screening.

Page 98.

Now that the equipment is being moved to SRI, perhaps some recording might be done at the top of some very high building in San Francisco.

Another interesting test would be to install recording equipment in a mobile lab which could be moved to various elevations and regions of various ambient mass.

It is with this thought in mind that I would like to rent a camper this summer, install recording equipment and travel across the USA.

The necessary 115 V AC could be supplied by a converter from 12V storage batteries which could be recharged periodically.

Perhaps such a trip could start from Palo Alto, using the recorders now being shipped to SRI. Installation could take place at Polytec Prod. Co. at Menlo Park.

If funds become available, July 10 would be a good starting date.

Page 99.

212. Pulse-Polarization of Sensors.

Honolulu, May 25, 1975.

In the previous sections, the polarization of rock sensors by applying DC was discussed. Rocks could be polarized by heating to a temperature above the Curie Point, then applying a high

voltage field as the rock cools through the Curie Point. We might call such electrified rocks geoelectrets. See Sec. 172, p. 137, Notebk 3.

If we are ever to extract usable energy from rocks, several factors must be considered:

(1) The rocks must be strongly polarized.

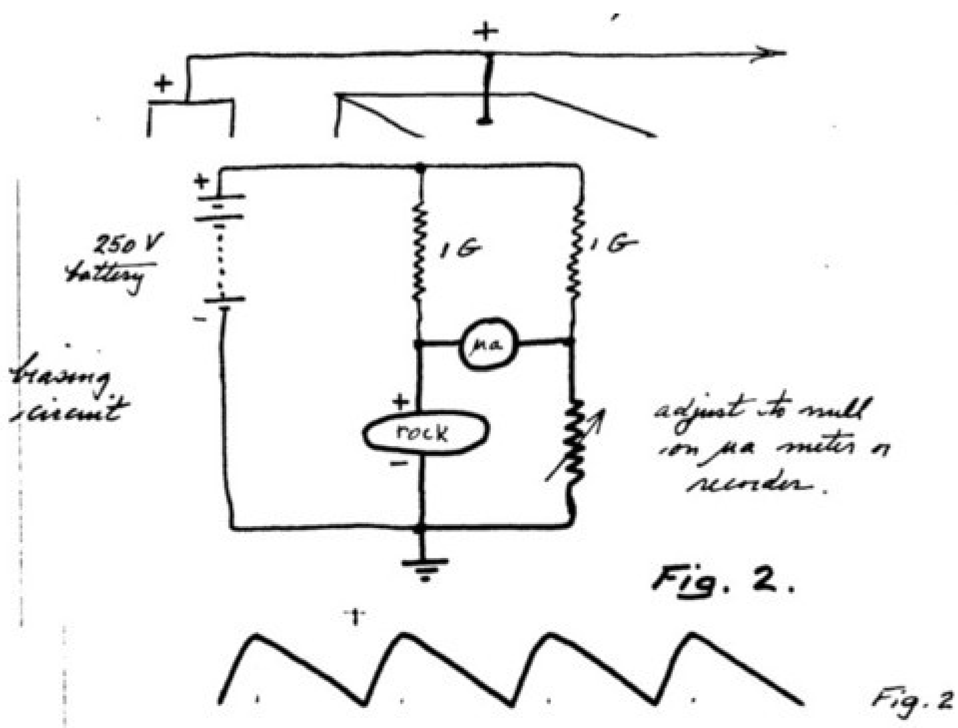
(2) If polarization voltage is supplied, the natural electrical resistance of the rock consumes energy, converting it into heat (Joule heating) and then lost.

(3) It is probable that the polarization energy may exceed the converted (gravitoelectric) energy, i.e., no net gain.

If, however, adequate polarization can be maintained by frequent short duration pulses, the situation may be corrected. It is proposed, therefore, that high voltage pulses (say, 1 millisecond) be substituted for DC excitation, with the pulse frequency being determined as needed to maintain a fixed polarization. Gravitoelectric energy may then dominate the output.

Page 100.

The circuit may be as follows (Figures 1 / 2) ---



Or, a switching arrangement may be provided to disconnect the load during the instant of pulse.

It is assumed that output voltage would decay after each pulse, as Fig. 2.

But the energy differential would favor the output because of the slow decay, being fed by gravitic conversion.

Page 101.

213. Possible Correlation with Dow-Jones Industrials.

Avalon, CA; July 23, 1975.

For many years, I have felt that a correlation may be found between sidereal radiation and the stock market. Even as early as 1937 such a correlation seemed to exist. Then, through the years, no positive follow-up occurred and the effort was abandoned.

Now, realizing that the incoming radiation covers a broad spectrum, ranging from a few Hz to MHz and higher, individual sensors only cover relatively narrow bands. Diurnal phasing and secular variations of the various sensors are all different. The idea of a general correlation becomes lost in the welter of differences.

However, by accident, a certain rock (Catalina Granite) has been connected to a Triplett meter Model 8035 Type 1 for several months. Readout has been charted, and a phenomenal correlation with the DJ Averages appears to persist. It is being watched with great interest.

There appears to be a lag (radiation to DJ) of about 4 days. In the earlier correlation (1937 and 1939), the lag appeared to be about 2 days.

No explanation seems to exist.

Page 102.

Charting was started May 31, 1975 and is continuing (July 23). Five reversal of trend have, so far, taken place. The probability of this is astronomical.

Continual charting is necessary before we can be sure, but if a correlation (with a 4-day lag) is, in fact, confirmed, the financial possibilities are staggering.

In anticipation of such possibilities, I have prepared a prospectus of an experimental market account to be known as the magnum Fund. Such a fund would operate under the aegis of the Townsend Brown Foundation. Participation might be offered to interested scientists or other knowledgeable person purely as a venture experiment.

If successful, profits would be routed into scientific research. The office of the fund would be in Sunnyvale, CA with Dean Witter and Co (Palo Alto) as the broker.

Operation is scheduled to begin about August 1, 1975.

Page 103.

214. Self-Potential in Calcareous Solids.

Avalon, July 23, 1975.

The phenomenon of self-potential in rocks was first observed in Catalina granite. For some time it was believed that it could be observed only in silicaceous materials, but in Hawaii it was also found in beach sand, primarily calcareous.

Now, I am wondering if calcareous solids such as bone (human bone) might also give rise to self-potentials. It would be interesting to try fresh animal bone such as beef), dried bone and even ancient bone to see if an emf is present, and (even more significant) if such potential varies in a diurnal or secular pattern.

If so, one may speculate on the possibility that, in living bone, the bone marrow is affected by the electric field, possibly altering the generation of red blood cells or the many other complex biochemical functions living bone serves in the body.

This may be a clue as to the mechanisms by which sidereal radiation may affect man's mental or physical well-being, hence, his mood relative to investments.

Page 104.

215. Self-Maintained Polarization.

Sunnyvale, CA; Oct. 5, 1975.

The beneficial effects of polarization have been repeatedly observed. There is no doubt that, by initially applying a high voltage to a rock sensor, a higher reading (output) is obtained. The rock acts like a storage battery, retaining a charge for long periods of time. But unlike a capacitor, the charge cannot be instantly shorted. It tends to return to its former value.

However, over long periods of time, the charge gradually diminishes and some rocks "go dead". It is obvious that the rocks have simply become depolarized. Such rocks may be reactivated or repolarized by subjecting them to a high voltage, especially when the potential is maintained or several days.

Since it is believed the incoming radiation (possibly gravitational radiation) produces RF in the body of the rock, a method is herein suggested to maintain polarization.

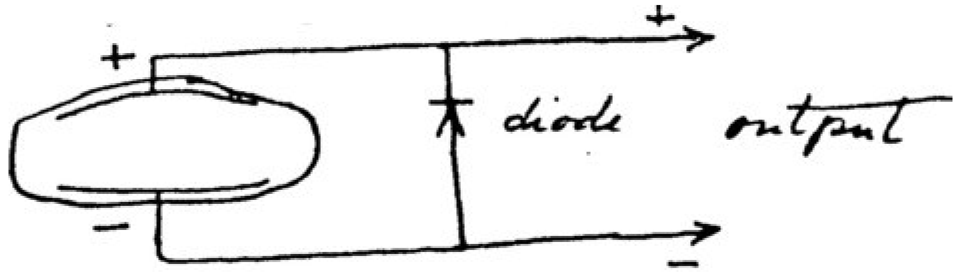
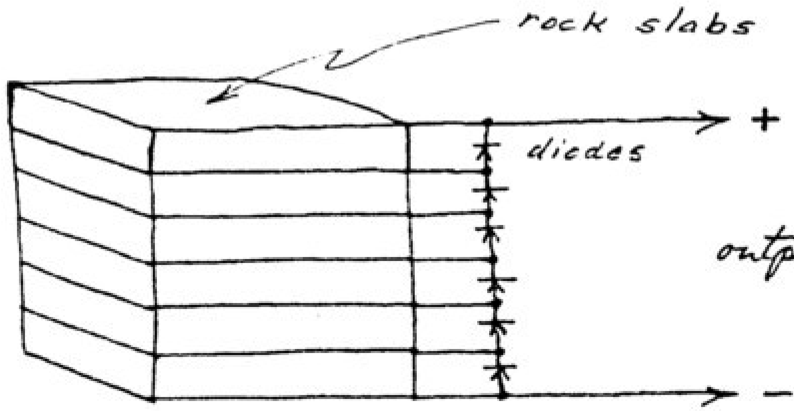


Fig. 1

Page 105.

The use of a diode to rectify the RF supplies a DC polarization voltage. The diode passes pulses only in one direction and will continue to charge the rock so long as the rock output (DC) potential does not exceed the peak inverse of the diode.

Units of this type may be placed in series to produce and maintain higher output potentials. This may be the answer to a commercially useful power source, as:



Before connecting the diodes, the rock slabs should be individually polarized (or if a high voltage --- RF --- is used, the entire series may be polarized at once). The diodes are connected only after the voltage has fallen to a value below the peak inverse of the diodes.

Such a circuit may prevent depolarization.

Page 106.

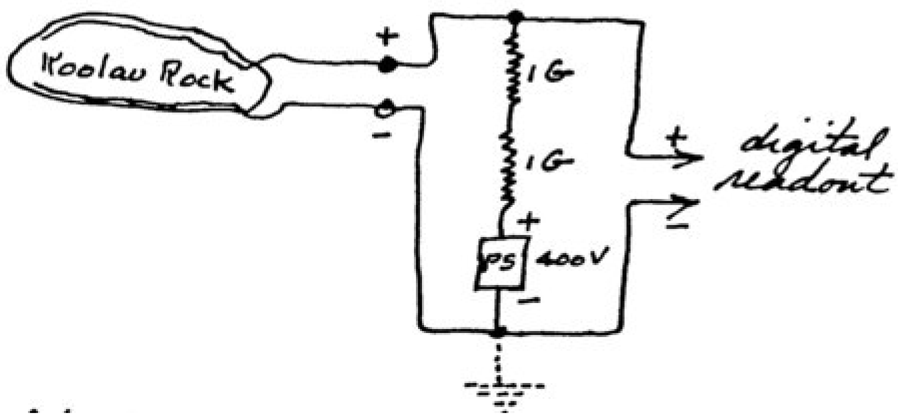
216. Bleeder-Sustained Polarization.

Sunnyvale, Jan. 2, 1976.

In the foregoing sections, various methods have been proposed to maintain polarization in rocks. In Sec. 209, a simple circuit is described to accomplish this.

This circuit now appears to deserve further consideration and testing.

The Koolau Plug rock normally has a self-potential at room temperature of about 400 mV. Using a bleeder-type charging circuit to balance the load of the readout, this self-potential is greatly increased:



Starting today, this circuit, using 400 V power supply and 2G resistors, is being tested for diurnal fluctuations.

Observed variations are as follows:

Page 107.

[Page 107 is blank]

Page 108.

217. Self-Potential in Ceramic Capacitors.

Sunnyvale, Jan. 16, 1976.

Polarized piezoelectric ceramic cylinders were tested in Hawaii, See Sec. 200 and 210. The characteristic of retained polarization appeared to make them effective sensors. This work should be continued.

Now, it appears that ordinary high-K ceramic capacitors are good sensors for diurnal variation and glitches. The so-called "cartwheels" --- 2000 uufd are examples. Even without polarization, the observed diurnal fluctuations are striking.

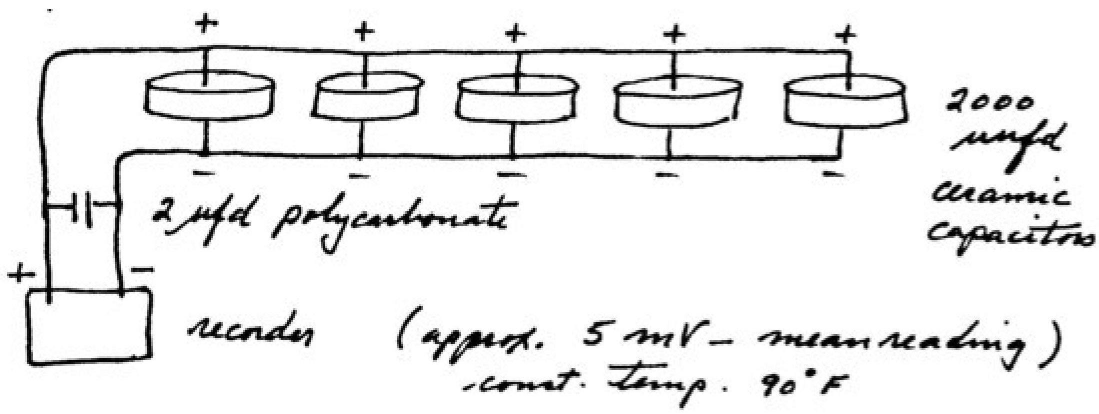
In tests now underway, five cartwheels are connected in parallel. Vestigial self-potential is present to a few millivolts. These capacitors are aligned, when connected together, so that the self-potential or remnant polarizations are in the same direction. Squeezing the individual capacitors with the fingers produces a voltage shift of all five units in the same direction. This, of course, is a piezoelectric effect shared by most ceramic capacitors.

The capacitors are then connected in parallel, enclosed in a plastic (insulating) bag which is then wrapped in aluminum foil which is grounded.

Page 109.

The assembly is placed in the constant temperature (90 F) box and connected directly to a millivolt recorder.

Rapid variations are observed, so that it is helpful to connect a 2 ufd polycarbonate capacitor to smooth the output.



Three glitches have appeared to date (2 neg and 1 pos) which instantly carried the recorder pen to the chart limit. Recovery to the original reading took place within a few minutes.

The rapid fluctuations (extreme sensitivity) is a feature of this system. Diurnal cycles, even at constant temperature, are clearly evident. Atmospheric (barometric) pressure does not seem to be responsible or even to affect the voltage output. Vibration, within the limits of observation during the tests, likewise appears to have no effect.

Page 110.

218. Heavy Metal Oxides as Sensing Media.

Sunnyvale, CA; April 22, 1976.

From the very beginning of this gravitational research (Janesville, 1926), lead monoxide (litharge) has been used as a high-K dielectric material. The advantage stems from is high density (mass as well as its high dielectric constant (K).

Early gravitators were made of litharge bound in paraffin or beeswax.

More recently, litharge-glycerine mixtures have been used. This is not actually a mixture but a chemical compound, inasmuch as a chemical reaction takes place following mixing. This

reaction is exothermic, resulting in a rock-hard mass which is quite heavy and, after drying, is a good (high-K) dielectric.

Sensors made of this material appear to develop self-potential with higher current capabilities. Internal resistance is lower, so that generated power (wattage) is higher. This material makes excellent gravitic sensors --- not particularly piezoelectric and only slightly pyroelectric.

Hence, the direction this research seems to be taking is toward the more massive metal oxides and carbides as dielectric materials.

Page 111.

One of the most promising appears to be tungsten carbide (WC).

Tungsten carbide powder or granules bound in Carnauba wax is suggested. Tests are being planned.

The electret ability of Carnauba wax is well known. It is the classic electret material, capable of generating (more accurately, retaining) quite high voltage, even in the K range when properly polarized. But the resistance of Carnauba wax is so high that only microamperes can be withdrawn. The output energy is entirely related to and dependent upon the (input) polarization energy.

The thought now is that by loading Carnauba wax with tungsten carbide powder, the resulting massive electret would gain energy from gravitic radiation, acting as a converter as well as a storage device.

Tungsten carbide has a very high density (specific gravity) almost that of gold. The carbide has a fairly high electrical resistance, so that it may make an ideal material for gravitic sensors. Tests of this material are being planned at the present time at UC Berkeley.

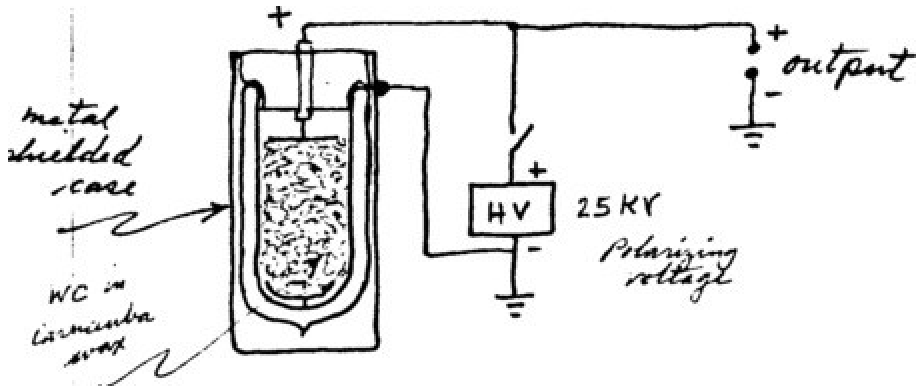
Page 112.

219. Construction of the Tungsten Carbide Sensor.

Sunnyvale, April 23, 1976.

In the foregoing section, tungsten carbide was suggested as a suitable high-output gravitic sensor. The high density of tungsten and the carbide make it particularly desirable as a gravitic radiation receptor. The carbide powder is mixed in a suitable liquid binder such as Carnauba wax (molten) and polarized during cooling and solidification.

To reduce thermal effects (pyroelectricity), casting may be done in Dewar flasks. High voltage DC is applied during cooling to polarize the sensor.



It is believed that the use of WC will provide relatively high self-potential. If allowed to cool and settle slowly, compacting the WC particles, a lower internal resistance will result. This will produce a higher power output (watts).

Page 113.

220. Glycerin-Litharge Sensors.

Sunnyvale; May 6, 1976.

In Sec. 218, the rock-hard mixture of glycerin and litharge (PbO) was discussed. A small shielded sensor (aluminum box 2 x 4 x 6) has been tested and found to be one of the best sensors made to date.

Tests at the UC Berkeley indicate that its power peak is somewhere near 100,000 ohms. Continuous voltage output of approx 5 mV was obtained with a 10,000 ohm resistance load. The output undergoes a surprisingly smooth diurnal cycle of approx 20 mV with the Houston recorder as the only load (100 megaohm).

Strangely, this sensor reversed polarity when it was moved from Berkeley to Sunnyvale. At the moment, it is operating in my apartment in Sunnyvale, ranging from –2 to –20 mV.

Originally, it was polarized (positive) with 300 V DC, while it was hardening. At Berkeley, it indicated approx +50 mV. The reason for reversal of polarity is not known. It is potted in paraffin so there should be minimum moisture (humidity) effect. Also very low, if any, piezoelectric and pyroelectric effect.

Page 114.

221. The Strong Glitch of May 4, 1976.

Sunnyvale, May 6, 1976.

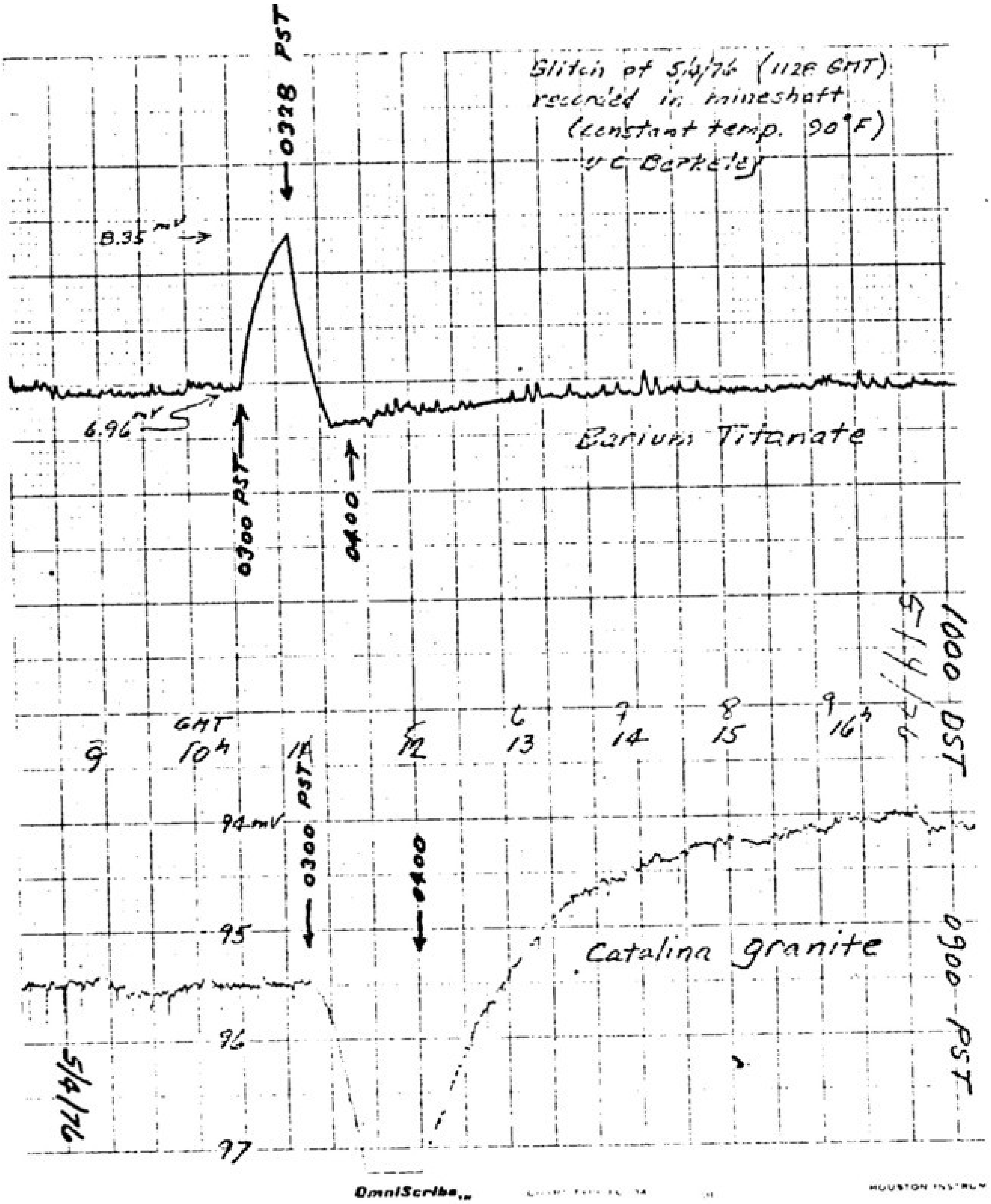
This glitch or event was recorded on both the barium titanate and Catalina granite in the mineshaft at UC Berkeley. It has a sudden commencement at 0300 PST (110 GMT) on Tuesday,

May 4. Catalina granite went off-scale at 97 mV; its peak could not be traced. Barium titanate peaked 28 minutes later (20% rise) --- voltage gain from 6.96 to 8.35 mV, then fell to a minimum at 0350, a total duration of approx 50 minutes.

It is to be pointed out that this event occurred in the mineshaft early in the morning. No person was present. Power failure (or surge) was ruled out by investigation by Jim Jardine, who deliberately produced failure the following morning with no similar effect. Instrumental trouble also was ruled out. The glitch appears genuine.

It is noted that this event occurred at approx 17h sidereal time, at approx upper meridian transit of the galactic center. This may or may not be a coincidence. In any event, it is a strong (pulse) increase in energy recorded in two different dielectrics.

Page 115.


Glitch of 5/4/76 (1128 GMT) recorded in mineshaft (constant temp. 90°F) UC Berkeley
8.35 mV
6.96 mV
0328 PST
0300 PST
0400
Barium Titanate
GMT
9
10h
11
12
13
14
15
16h
1000 DST
5/4/76
94 mV
95
96
97
0300 PST
0400
Catalina granite
0900 PST
5/4/76
OmniScribe

222. Electrolytic Capacitors as Sensors.

Sunnyvale, May 10, 1976

Because of their high capacitance-to-volume ratio, electrolytic capacitors are generally used in compact circuitry. Because of their electrolytic (electrochemical) construction, they usually generate a small emf. This emf is often temperature related.

However, it now turns out that these compact capacitors may also be gravito-voltaic. Test with Mallory 18,000 ufd reveal a surprising diurnal variation at constant temperature. Voltage ranges from –0.5 to –1.5 mV during recordings today. It is noted that the polarity of the self-potential is reversed fro that indicated as the working polarity of the capacitor. Phase is also reversed, with maximum occurring at approx 10 AM and minimum late at night.

Jim Jardine reports that a [blank] ufd electrolytic (at UC Berkeley) shows a pronounced diurnal (and other) variations which surprised him.

I plan to put the Mallory 18,000 ufd in the constant temperature box in the mine. Results will be reported.

Page 116.

223. High Flux Density in the Great Pyramid.

It is fascinating to speculate on the reasons for building the pyramids of Egypt and, for that matter, the massive stone monuments of the Yucatan Peninsula and elsewhere.

Thoughts have been expressed that some form of energy may be concentrated by the peculiar (pyramid) shape. Is it possible that this may be true?

Measurement of self-potential in the mineshaft at Berkeley indicate a greater flux density than outside. If this flux is gravitic radiation (possibly in the optical frequency range), perhaps the same king of increase may be present within the pyramids. Reradiation of the incident primary (from space) by a rock mass may be termed gravitic fluorescence (see Sec. 211). The reradiated energy may have different spectral characteristics from the primary.

Gravitic fluorescence, it is conceived, would be homologous to optical fluorescence. For example, minerals fluoresce under UV light. The color is characteristic if the mineral, not of the incident UV. The re-emission of energy is at a lower frequency.

Page 117.

In the case of gravitic fluorescence of granite, the primary radiation from space may have optical frequency, even quasi-UV, and the re-emission may be gravitic in the Angstrom range or lower. As such, it would be invisible and non-detectable as an em radiation.

In other words, if the granite of the great pyramid serves to intercept and re-emit primary gravitic radiation from space, the flux density at the center of the pyramid would be greater than outside. There may be, in effect, a focusing of the flux toward the pyramid center.

If this is so, the King's Chamber would be located near this focus. Did the architects of Cheops understand this? Could this knowledge have come from a more advanced technology of some extraterrestrial culture?

Is this increased flux density observable today? Would granite sensors, such as those we have in operation at UC Berkeley (in the mineshaft) reveal a higher self-potential?

Another point upon which we might speculate is the strange and unusual structure of the King's chamber and its overhead or roof. Why is there a series of granite rocks, with space between, above the King's Chamber?

Page 118.

This strange structure is as follows:

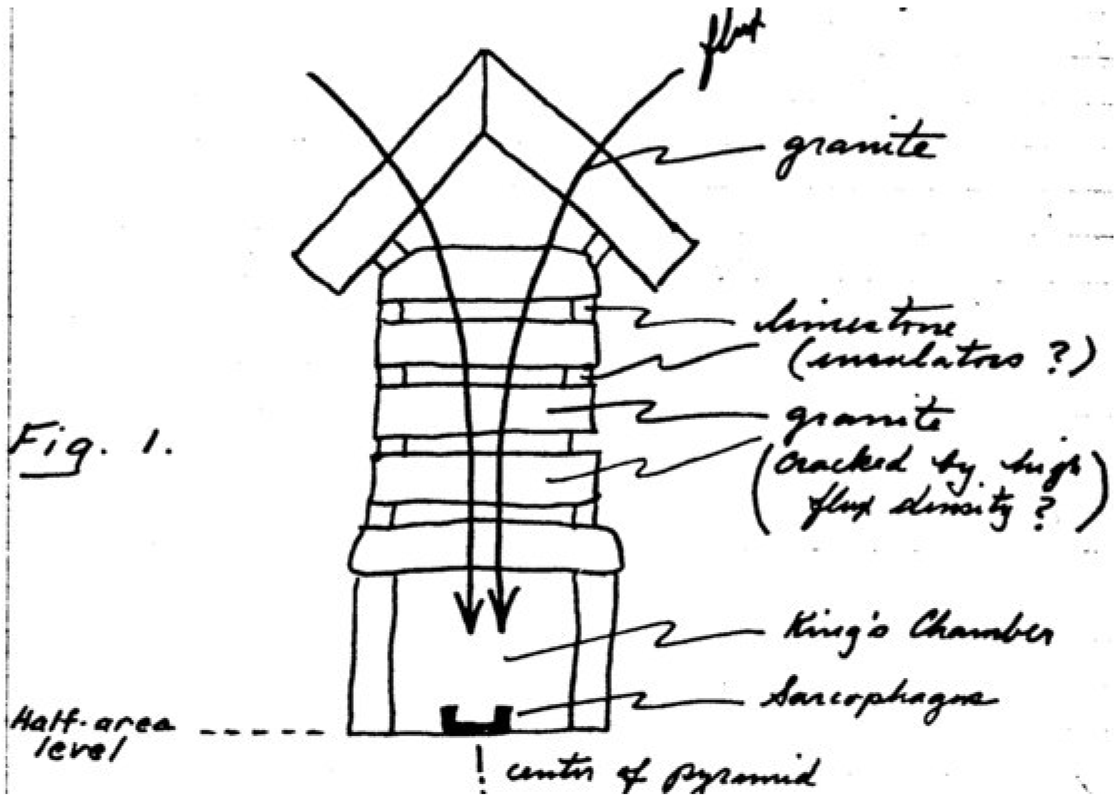


Fig. 1.

Could this configuration amplify the gravitic flux produced by the body of rock forming the rest of the pyramid? Are the limestone blocks insulators? Is this overhead arrangement of granite blocks for the purpose of increasing the flux density in the King's Chamber below?

In the lab, could we use this arrangement of granite slabs (spaced and insulated from each other) to intensify gravitic flux density? Would this produce a higher self-potential in the bottom rock?

Page 119.

224. Biological Effects of Secondary Radiation.

Sunnyvale, June 7, 1976.

If future experiments to confirm the existence of gravitic fluorescence (secondary radiation) from rocks, does this radiation have biological effects?

It is hard to conceive that Nature has failed to utilize this form of energy in one way or another. The fact that our human eyes do not perceive it does not mitigate against its presence all around us. Do birds or fish perceive it? Is the homing instinct related to such possible perception? Were the ancients aware of its existence and/or influence?

In the foregoing section, the thought was advanced that the pyramids (and other prehistoric stone structures) might be receptors and concentrators of gravitic flux. Were the architects aware of the possible effects even though they may not have known the reasons?

Was the geometrical shape of the pyramids convenient as a burial mausoleum for kings or was the shape chosen for other (perhaps advanced) esoteric reasons? Did a more advanced culture (perhaps extraterrestrial) dictate the pyramid shape to accomplish some result?

Page 120.

Was this shape purposely selected and utilized to aid the king in the afterlife? If so, would the increased flux density esoterically assist toward this end?

It is rather amazing to see that the sarcophagus (believed to have held the king's body at one time) is located exactly at the center of the pyramid (Cheops) and at a location which could be the focus of secondary radiation.

It has been reported that mummification is accelerated in the pyramid and that organic bodies do not decay. Could this radiation be responsible? If so, does such radiation assist organic processes or suppress them? Is such intense flux life-giving or death oriented?

What of the many explorers who have penetrated the pyramids in the past? Men who have spent long periods, cutting into corridors, mapping and studying? Was their health or longevity affected? I should like to conduct some research on the subject.

In any event, it would be worthwhile to study the possibility that secondary radiation may have profound effects on biological processes, beneficial or detrimental. Could stone or concrete buildings, for example, prove to be hazardous to health and well-being --- perhaps even carcinogenic?

Page 121.

In this age of concrete buildings, are we overlooking one of the reasons for increased incidence of cancer?

Some measurements of gravitic flux density must be made. A portable sensor, similar to a Geiger counter, would be very helpful. As a geophysical survey tool, a gravitic flux meter may be used to map subsurface domains of granite or geothermal reservoirs, even perhaps deposits of minerals or oil. It is with this end in view that I am hoping to fit out a mobile laboratory or survey vehicle (camper) to conduct profile studies.

Such studies may provide isometric maps of natural flux density across various California (and other) regions which may be extremely valuable. No other survey tool, available today, could provide such information.

A flux meter of this type could be used in the determination of pyramid radiation, if such radiation does, in fact, exist.

A group from SRI pans to make a trip to Egypt this summer in connection with other studies. It is our hope that they will be able to take a gravitic flux meter with them, specifically to use in the Cheops pyramid.

Page 122.

225. Gravitic Radiation Receptor Materials and Binders.

Sunnyvale, June 9, 1976.

Receptors: In looking for possible receptor materials, the principal characteristics would seem to be mass and high dielectric constant. Conducting metals are excluded because of usual inability to obtain voltage gradients in thicker sections. In thin sections (filiform) there is a chance that usable self-potential can be obtained. Long thin wire sensors will be discussed in the next section (226).

In general, high-mass sensors must be of high-resistance materials. Lead monoxide (PbO) was the first of such materials to be tested. It is heavy and has a high electrical resistance.

Barium titanate and lead zirconate-titanate are similarly effective. Both have been used in sensors made to date.

Tungsten carbide is a new contender for the honors and promises to be even more effective (See Sec. 219).

These heavy powders may be bonded by compression, sintering, or by the use of a binder. Initial polarization is not normally possible during compression or sintering, although in the future some technique may be worked out.

Page 123.

Binders: Several liquid binders are possible which can permit polarization during hardening. Among them are the waxes, such as paraffin, beeswax and Carnauba wax. Polarization is accomplished by applying a high-voltage field as the binder hardens upon cooling.

Other binders such as polyurethane and methyl acrylate harden by the use of an accelerator. There are many plastics of this nature which may be used to bind the receptor materials.

Another interesting possibility is ordinary Portland cement. When mixed with water it is electrically conducting, but its resistance increases as it sets. Concrete blocks may prove to be effective sources of gravitic self-potential. If the aggregate is crushed granite, monazite sand or even such receptor material as tungsten carbide, the use of Portland cement (or the like) may be quite effective.

It must be borne in mind that the internal resistance of a gravitic battery must be low if high currents are required. If only high voltage is required, the internal resistance may be high. Peak power output from any receptor material depends upon matching the internal resistance with the load.

Page 124.

226. Long-Wire Sources of Self-Potential.

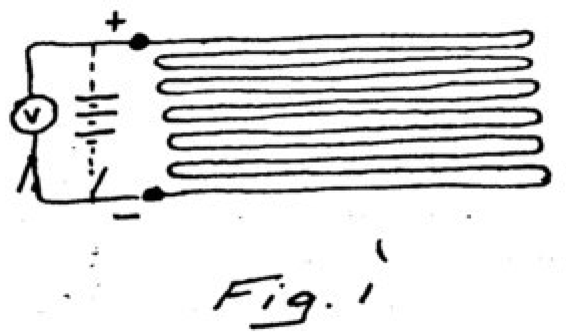
Sunnyvale, June 9, 1976.

The generation of white RF noise in long wires was discussed in Sec. 140 and 180. This RF is rectified by a diode and stored in a capacitor (as DC). If the molecules of the metal forming the wire are polarized aligned) by a strong current while the metal is cooling from a high temperature, the long wire becomes polarized so as to produce a DC self-potential.

Thus, the metal of the wire becomes a gravitic receptor.

Tungsten, due to its high mass (sp. gr. 18) in fine wire form appears to be ideal.

A tungsten wire sensor would then be a non-inductive resistor of very fine wire which has been cooled from a high temperature while carrying a current.



Tungsten wire non-inductive grid heated then polarized while cooling.

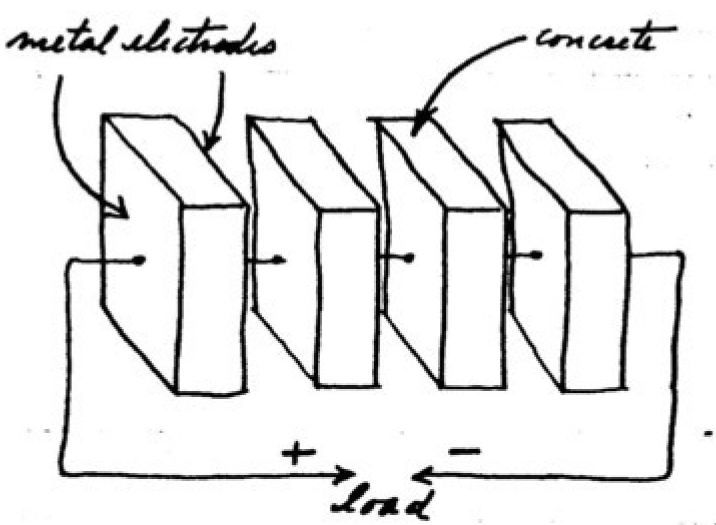
Page 125.

227. Concrete Blocks as Gravitoelectric Converters

Sunnyvale, June 9, 1976.

In Sec. 225, the use of Portland cement as a binder was discussed. This idea may have some real practical value in constructing converters for power generation. Batteries would be large and relatively inexpensive.

Using concrete slabs with suitable crushed granitic or basaltic aggregate, electrically polarized upon curing, self-potential may be developed which would be additive by connecting the slabs in series.



Concrete blocks electrically polarized while curing. Connected in series to produce DC output.

The relatively low resistance of the Portland cement (binder) may provide a high current output.

Page 126.

228. Self-Potential in Long Wire Resistors.

Sunnyvale, June 11, 1976.

In Sec. 226, the idea of long-wire sources of self-potential was set forth. The thought was developed that long wires of massive materials (such as tungsten) being cooled while conducting a current, would retain a polarization which would result in a continuing self-potential.

If this is so, long-wire resistors may be made gravitovoltaic by subjecting them to a high initial voltage, then lowering the voltage slowly as the resistor cools. The high initial voltage and current aligns the constituent molecular dipoles which remain aligned as the current drops and temperature is lowered past the Curie temperature.

Hence, resistive materials in general, if heated by excessive DC current above the Curie point, then allowed to cool, would thereafter become a source of self-potential. In other words, an overloaded resistor may become a battery. This would, indeed, be a surprising discovery if valid.

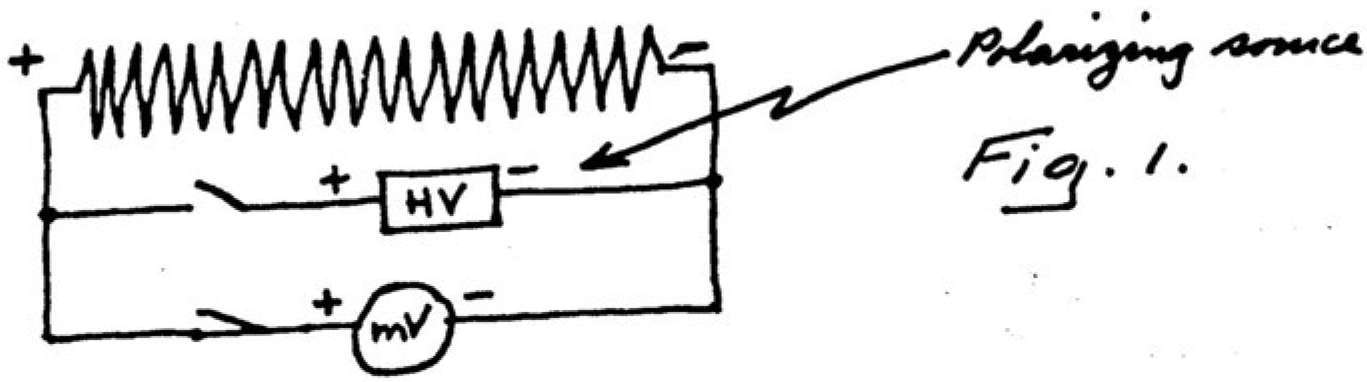


Fig. 1.

Page 127.

One wonders why this effect has not been noticed before. High voltage resistors have been operated at high currents with seemingly constant characteristics, or have they? If anomalies have been noted, perhaps they have been attributed to errors in observation.

Assuming that long-wire resistors can be polarized by DC overloading so that they will (thereafter) produce a voltage, the problem of creating a useful battery may be solved. The internal resistance may be selected to match the load and hence provide peak power output.

Various metals, not necessarily tungsten, may have differing characteristics, as to Curie temperature, retention of polarization, and resultant self-potential. Tungsten was originally suggested because of its high density, but aluminum, iron, copper, nichrome and many other metals, alloys or even ductile cermets may prove to be better.

After all, there is very little basic difference between resistive materials in so far as the ability to generate self-potential is concerned. Mass (density) is important.

Experiments to check the above should be conducted as soon as possible.

Page 128.

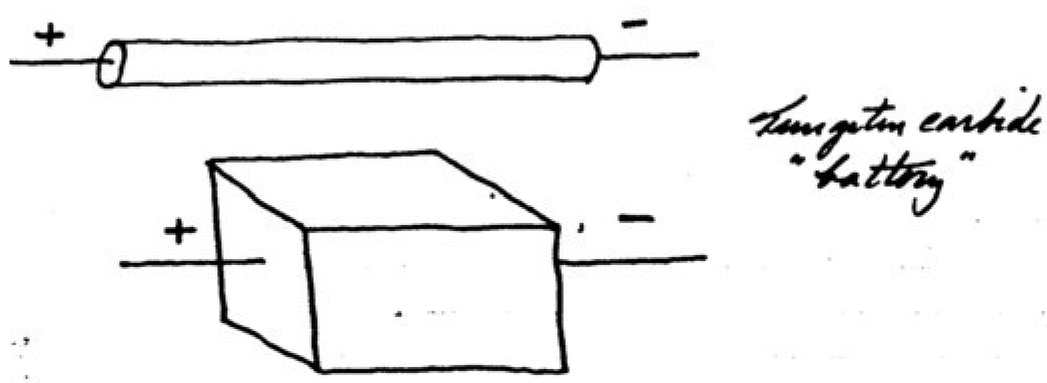
229. Tungsten Carbide Gravitovoltaic Converter.

Sunnyvale, June 13, 1976.

In Sec. 219, tungsten carbide (WC) was proposed as a probable effective material for a battery. Much depends upon its electrical resistance. This will have to be researched. The high mass of tungsten compounds appears to make them ideal as gravitic receptors.

Tungsten carbide (WC), bitungsten carbide (W2C), thorium tungsten and the like may be compressed (as powders) into a heavy semi-conducting mass. Better still, if high temperature casting is possible, or if the material is sintered, the resultant mass may make an effective battery.

Such a mass would be heated above the electrical Curie temperature and then, in the presence of a high electric field, oil-quenched (or otherwise cooled) to retain electric polarization.



Page 129

[Missing]

Page 130.

Also present is a vertical anisotropy, wherein the maximum voltage always appears when the front end is up, i.e., toward the zenith. In most observations, voltage at zenith is double the voltage at nadir. This appears to have no relation to the proximity or direction of an electric line.

When the sensor (resistor, diode, capacitor combination) is horizontal, the azimuth effects are observable with greatest voltage when the front (end) is directed toward the south (presumably the magnetic south). When in this position, voltage is further increased when the south end is raised (presumably to the point (angle) where the sensor is aligned with the magnetic declination).

To be convincing, this experiment must be repeated out in the open, away from power lines, etc., which now confuse the results. Shielding studies should also be carried on, although shielding may cancel out the basic effect in which we are interested.

If this phenomenon is indicative of an ether flow (from the south --- ref. Miller interferometer observations), a metallic casing may "kill" the effect. It is best, for the moment, to utilize the Plexiglass casing alone.

Page 131.

231. Spontaneous Heating of Petroelectric Materials.

Sunnyvale, Oct. 1, 1976.

Where an emf is generated (as in any kind of electromotance, such as a battery), and the external circuit has low resistance, the internal resistance (of the battery) causes heating through Joule "heating".

In other words, if a battery is shorted, it will get hot.

This Joule heating will undoubtedly be present if a petroelectric source is shorted. An active petroelectric sensor should become warmer than its ambient if it is electrically shorted.

The energy of the evolved heat may be converted from optical frequency gravitational radiation. Increased petroelectric voltage would cause increased heating. Therefore, the temperature would necessarily correlate with the diurnal or secular variations in the gravitic input.

If this is true, certain rocks or other gravitovoltaic materials (if shorted) will be warmer than their environment.

Page 132.

This presents some interesting possibilities. For example, a large rock (in nature) may be petroelectrically active, but will not be warmer than the environment until it is electrically shorted. If, however, it is finely ground and the sand-like particles are mixed, and if the particles themselves are petroelectrically active, it follows that shorting per se results from the interacting of the particles.

Conclusion:

(1) Finely ground petroelectric material (especially when compressed) may be found to be warmer than the environment. This spontaneous evolution of heat may show the same diurnal and secular variations as the unground pieces which are electrically shorted.

(2) The spontaneous evolution of heat of certain complex silicates, lavas and clays (ref, Charles F. Brush) may be due to gravitoelectric conversion.

(3) Such heating would be directly related to the energy (at that frequency) of the incident optical-frequency gravitic radiation

This phenomenon appears to be the same as that discovered by C.F. Brush in Sandusky clay and related materials. Calorimetric tests were performed by Harrington, National Bureau of Standards.

Page 133.

232. Commercial Possibilities of Petroelectric Heating.

Sunnyvale, Oct 2, 1976.

If the phenomenon discussed in the previous section actually exists, as present evidence seems to indicate, the practical applications of such a source of heat are virtually unlimited.

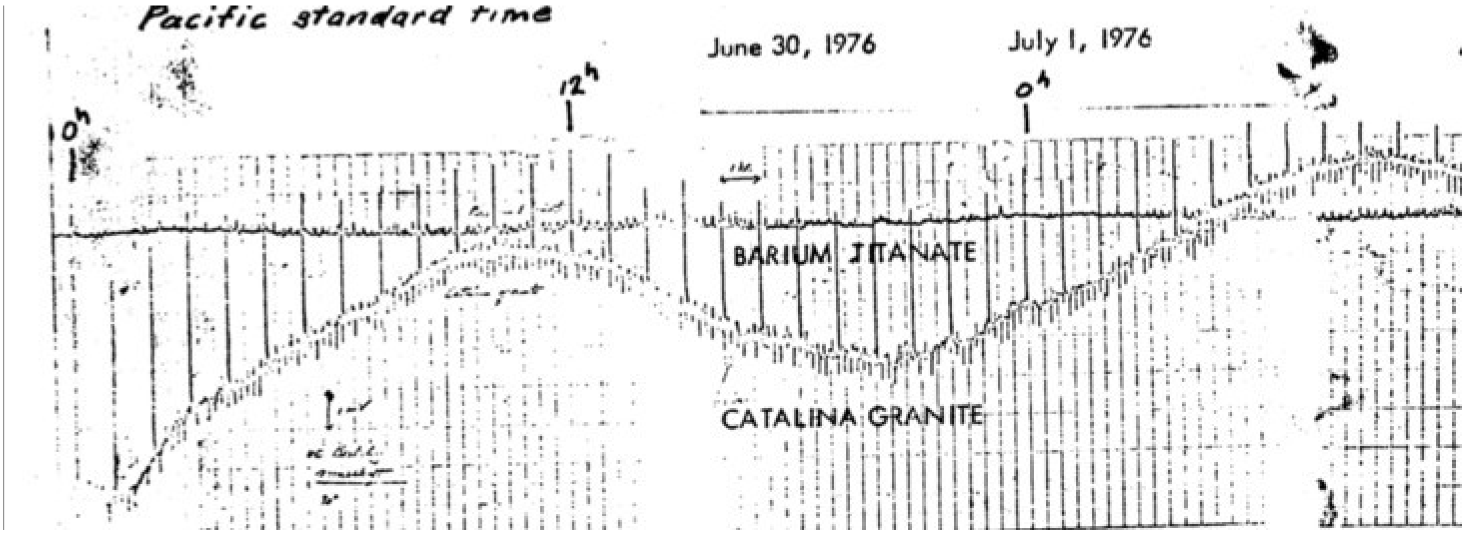
Assuming, of course, that materials may be beneficiated so as to increase their petroelectric activity, finely ground particles of such materials, especially of compressed, may provide:

(1) A direct gravito-to-thermal output;
(2) Spontaneous and continuous heating of materials such as:
(a) Gypsum-compound wallboard for cold climates;
(b) Blankets and certain clothing;
(c) Engine warmers;
(d) Heating devices, low-temp. furnaces;
(e) As a constituent in concrete;
(f) Snow-melting pavement;
(g) No-fog mirrors, etc.,

and various other applications too numerous to mention!

Page 134.

233. Lawson Adit Petrovoltaic Readings



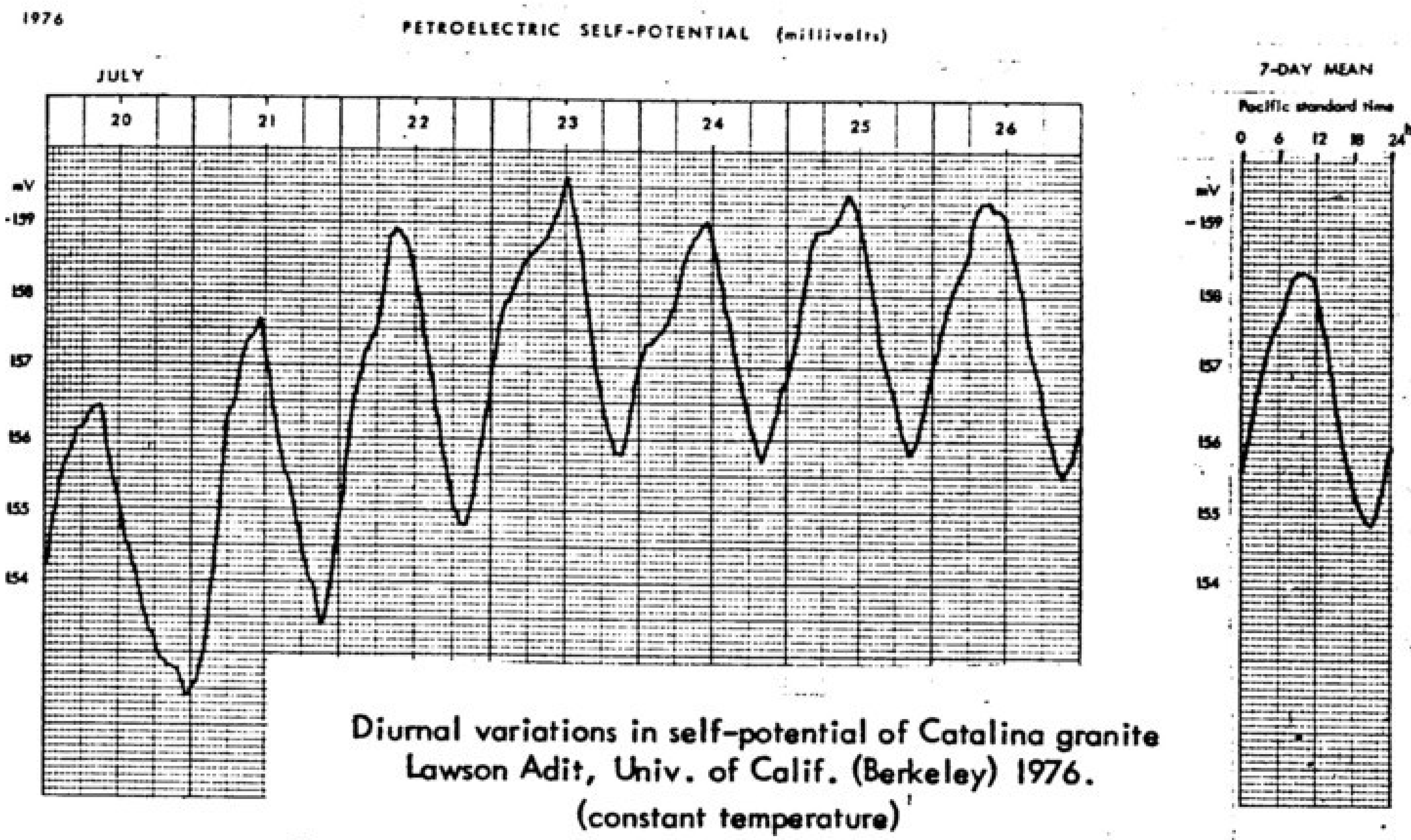
The above readings appear to be typical of petroelectric voltages observed in the Lawson Adit (UC Berkeley) during mid-summer of 1976,

Catalina granite undergoes a diurnal variation, approx 5 mV amplitude, peaking about noon with minimum near midnight.

Barium titanate also shows a diurnal effect primarily in the amplitude of micro-pulsations.

Recording by Jim Jardine, UC Berkeley.

Page 135.



Diurnal variations in self-potential of Catalina granite
Lawson Adit, Univ. of Calif. (Berkeley) 1976.
(constant temperature)

The above readings of Catalina granite were made in the Berkeley mineshaft approx 250 ft back from the entrance and under an estimated 200 ft of rock overburden. Sensors were located in a constant temperature chamber (90 F +/- 4 F) and at a relatively constant humidity. Sensors were electrostatically shielded with grounded shields.

It is noted that both a diurnal cycle and a secular change (gradual rise) was observed.

Recording was unattended. Mineshaft was entered only at the beginning and end of the run. Serviced by Jim Jardine.

Page 136.

234. K-Waves in Space.

Sunnyvale, Nov 18, 1976.

For some time, I have toyed with the idea that the electric permitivity of space, as well a the magnetic permeability, is not constant but varies from place to place, as, for example, in regions of great gravitational potential. Ref. Sec. 109 (1973).

Further, it would appear that variations with time may appear, as, for example, with the passage of a gravitational wave.

Hence, a K-wave may be indistinguishable from a gravitational wave, one being concurrent with the other. The gravitational wave would be difficult to detect, but the K-wave may be relatively easy to detect.

Reviewing the proposal set forth in Sec. 108, Rec. Bk. 2, a capacitance bridge should be considered.

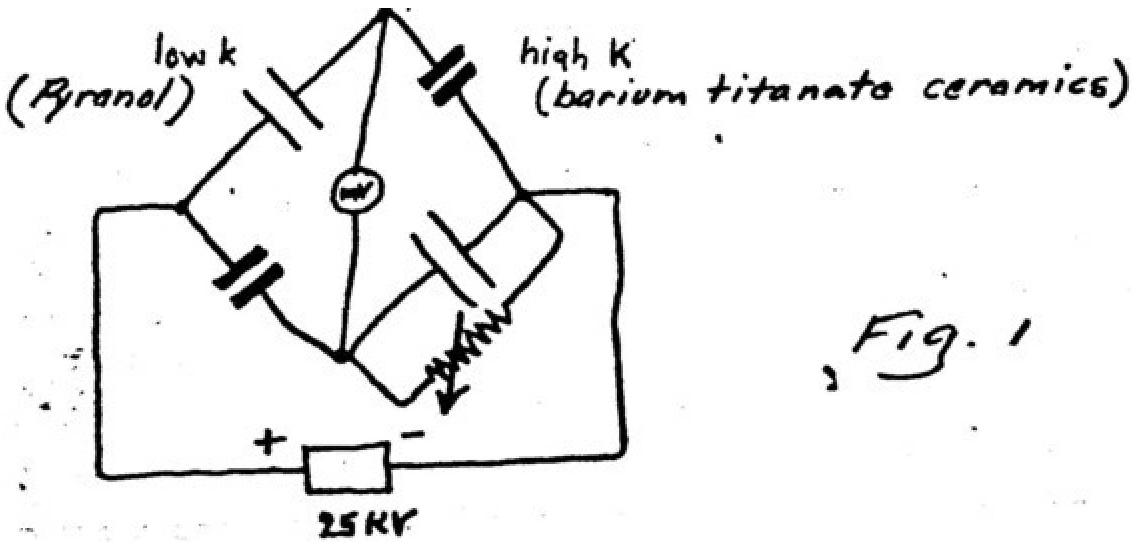


Fig. 1

Page 137.

If the K of the ambient space varies, the low-K Pyranol would be (percentagewise) affected more than the high-K ceramics. Hence, a differential situation would exist. The indicating high resistance multivoltmeter would reveal the differential.

Both types of capacitors will have resistance (leakage) and, therefore, to balance at null, a zero-adjusting resistor must be used (as shown in red).

Petroelectric sources may likewise be used, either with rocks for both legs of the bridge or rocks and capacitors used in balance, as:

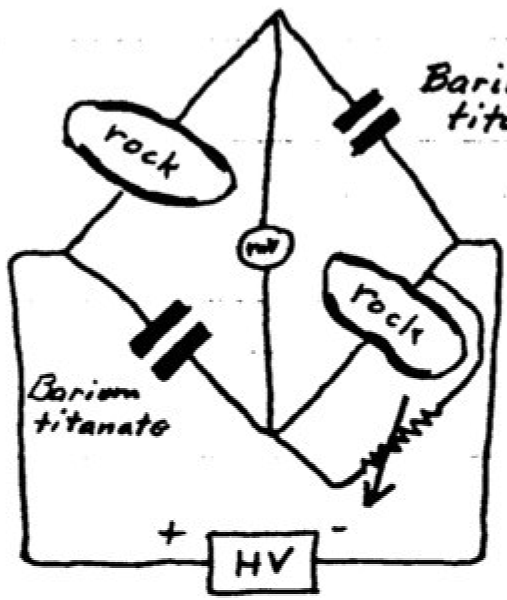


Fig. 2

Such systems must be operated in constant-temperature, magnetically- and electrostatically-shielded boxes.

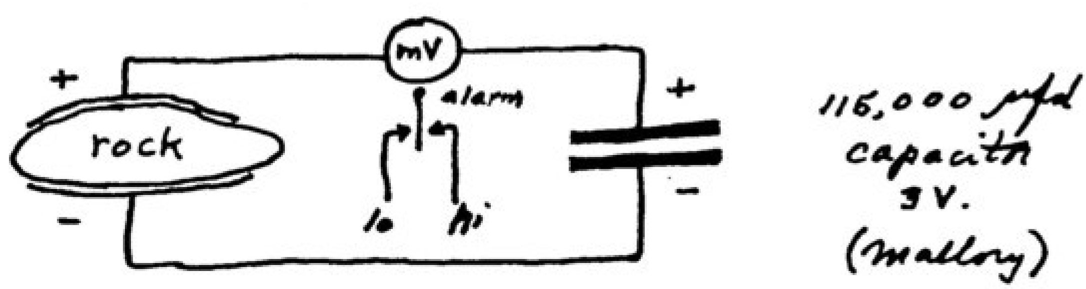
Page 138.

235. Glitch-Detecting Circuit.

Sunnyvale, Nov 22, 1976.

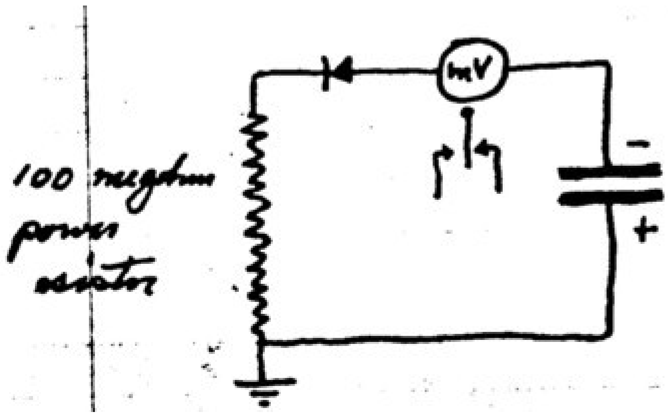
The relatively large amplitude of the secular and diurnal variations make it difficult to set alarm limits (contacts) for glitch warning signals. A continually moving base, acting as a running average, is needed. A sudden glitch, above or below such a base, may trigger pre-set alarm limits, serving as a warning of an oncoming glitch.

Such a circuit is as follows:



Petroelectric emf is stored in the large capacitor, so that only sudden changes in emf actuate the alarm contacts.

The resistor diode sensor may be connected in the same way.



Page 139.

236. Electrolytic Capacitors as Sensors (Part 2).

In the various tests using electrolytic capacitors as storage means, the question has arisen as to the capacitor stability. Do such capacitors develop self-potential similar to rocks? Is such self-potential (if it exists) due to an electrochemical or gravitic source? Does it partake in diurnal fluctuations which are not related to changes in temperature? If it is purely galvanic in nature, continuous readings at constant temperature will reveal the answer. Ref. Sec. 222.

According, preliminary tests are as follows:

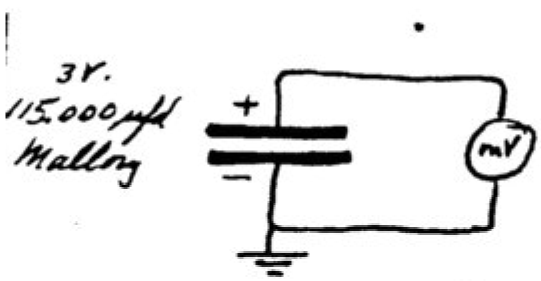


Fig. 1

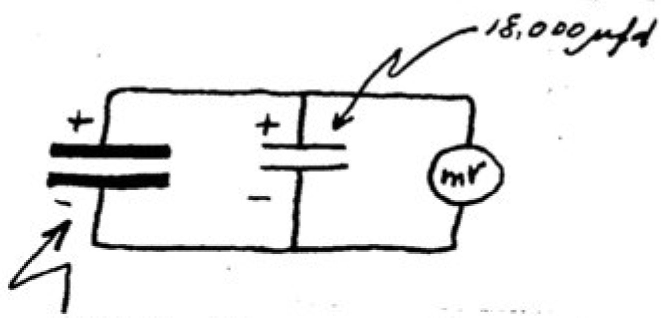


Fig. 2

Readings at room temp. --- variable.

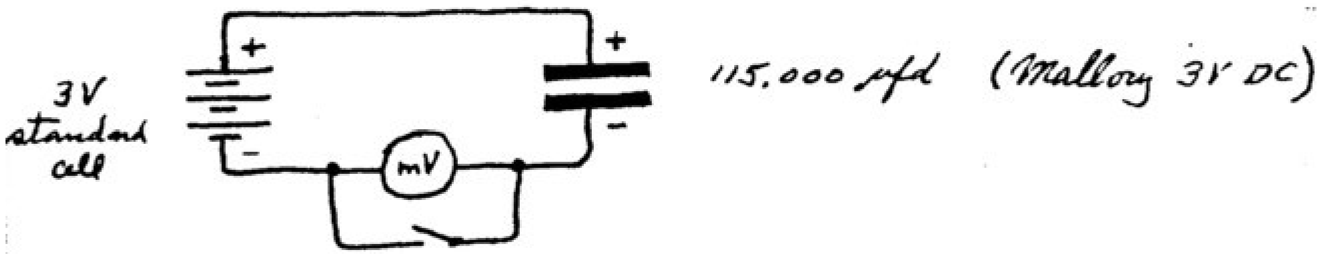
Page 140.

237. Battery-Referenced Electrolytic Sensors.

Dec. 16, 1976.

In the foregoing section, consideration was given to the spontaneous emf produced by electrolytic capacitors. Using high-capacitance units, such as Mallory 3V, 115,000 ufd, with a

standard cell 3V bucking circuit, measurements are proposed for detection of charging-discharging rate, as:



The capacitor is initially charged to 3V by closing switch, allowing sufficient time to become thoroughly saturated. Then the switch is opened.

The conductivity of the mV meter is such as to (normally) keep the capacitor fully charged (polarized). Any variation in the self-potential of the capacitor (above below 3V) will be indicated as a plus or minus voltage by the meter. All this assumes, of course, that the standard cell voltage remains constant. This test should be conducted at constant temperature.

Page 141.

238. Electrolytic Sensors (continued)

Jan. 16, 1976.

In the two previous sections, the use of electrolytic capacitors (of extremely high capacitance) was considered. Tests have now been run for the last several days with rather surprising results.

Using the Mallory 115,000 ufd 3V DC with a single dry cell and the HP digital readout, as:

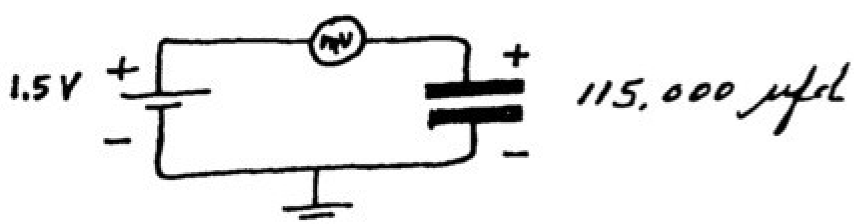


Fig. 1

Results: Battery constant at 1.542 V, the capacitor stabilized at approx 1.080 V, the readout represented the difference 0.462 V. But the readout underwent systematic variations not entirely due to temperature changes. Variations occurred while room temperature remained constant. Furthermore, a strong glitch occurred between 0600 and 0610 (temp. steady at 66 F) today of magnitude 26 mV.

It is to be understood that during this glitch the capacitor emf fell 26 mV and then returned to its former value within 10 minutes. No external factors were observed which could have accounted for the sudden voltage drop.

Page 142.

In an attempt to understand the significance of this negative glitch, the following thoughts come to mind.

(1) It must be recognized that the energy storage in a 115,000 ufd capacitor is relatively great. Over short periods of time, such as 10 minutes, high stability would be expected. What could cause momentary loss of voltage with subsequent complete recovery?

(2) If the stored energy remained constant, voltage change could (I believe) result from a momentary change in the dielectric constant (K) of the dielectric material of the capacitor. A sudden increase in K would cause a proportionate decrease in V.

(3) A similar result might come from a sudden increase in the conductivity of the dielectric.

Hence, the voltage dip may be caused by (1) an increase in K, or (2) an increase in conductivity (decrease of resistance).

Ionizing radiation, such as a cosmic ray shower or gamma ray burst from space could, I suppose, produce a sudden increase in conductivity. If so, the use of electrolytic capacitors as sensors for such penetrating radiation would be worth investigating. To my knowledge, no such evidence exists today.

Page 143.

One must consider the observed fact that the voltage returned to its former value after the glitch. If the momentary effect resulted from an increase in conductivity, would there not be a loss of energy (Joule heating?), although this loss, of course, if it exists, would be miniscule and probably not observable.

The remaining possibility which must be recognized is a momentary change in K of the dielectric. Could such a change be induced by incident radiation or by the ambient K, perhaps even a K-wave from space? See Sec. 234.

The possibility of detecting K waves is certainly exciting. If such waves do exist in space, what is their origin and velocity? Are K waves limited to the velocity of light? Do they convey energy? If not, why should they be limited to the velocity of light?

As to their possible effects, are they observable only in capacitors? Are high-K capacitors more receptive? Are there other manifestations in cosmology, such as pulsing red-shifts or other anomalous optical phenomena?

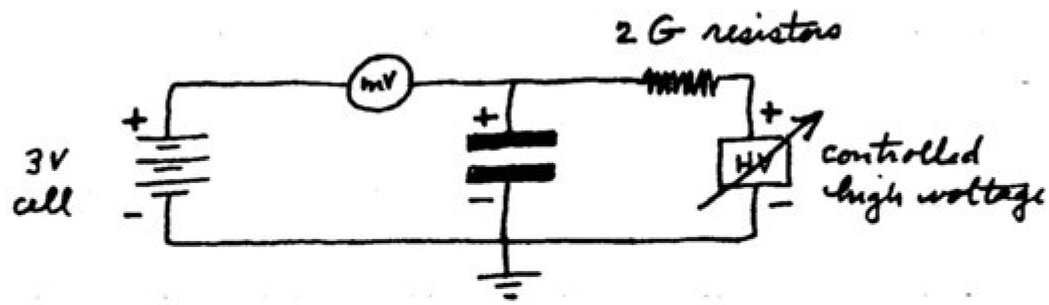
The study of electrolytic sensors must be continued.

Page 144.

239. Zero-Centered Electrolytic Sensors.

In the circuit shown in Fig. 1, p. 141, the meter reads in mV but actually, because of the meter resistance, the reading represents current. Due to the slight conductivity of the capacitor, this current is always positive. The capacitor losses always draw energy from the battery.

In order to increase the sensitivity of the system, the following circuit is suggested:

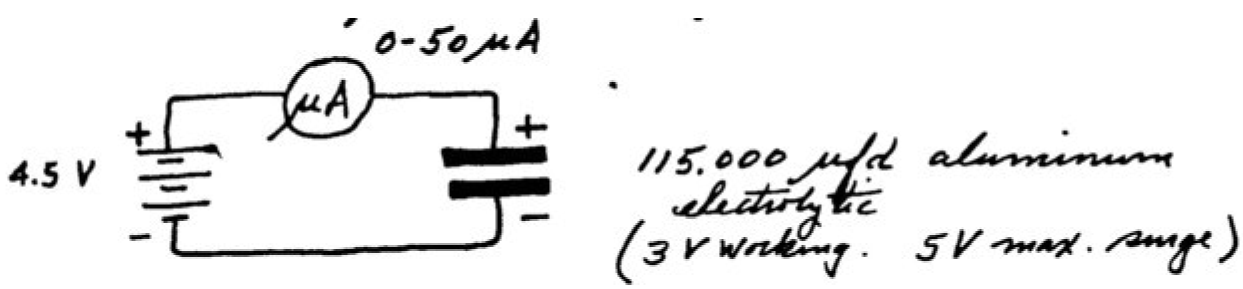


A high voltage bias is preferred in order to pass sufficient current through 2G ohm resistors to effect a null in the recording meter. In other words, the high resistance places no load on the capacitor emf. Once adjusted to null, so that the capacitor is charged to a value equal to that of the battery, the meter will thereafter reflect the voltage differential between battery and capacitor. Such a circuit should have great sensitivity. Alarm contacts on the recorder could signal the onset of glitches.

Page 145.

240. Portable Electrolytic Sensor.

In the foregoing sections, emphasis was placed on the voltage variations observed in electrolytic capacitors. Another approach is to measure the current drain from a standard cell of constant voltage. The current is low, expressed normally in microamperes. Such a system makes possible a portable instrument of rather high sensitivity.



A portable instrument with the above circuit has been constructed. The tests are as follows: [blank]

Page 146.

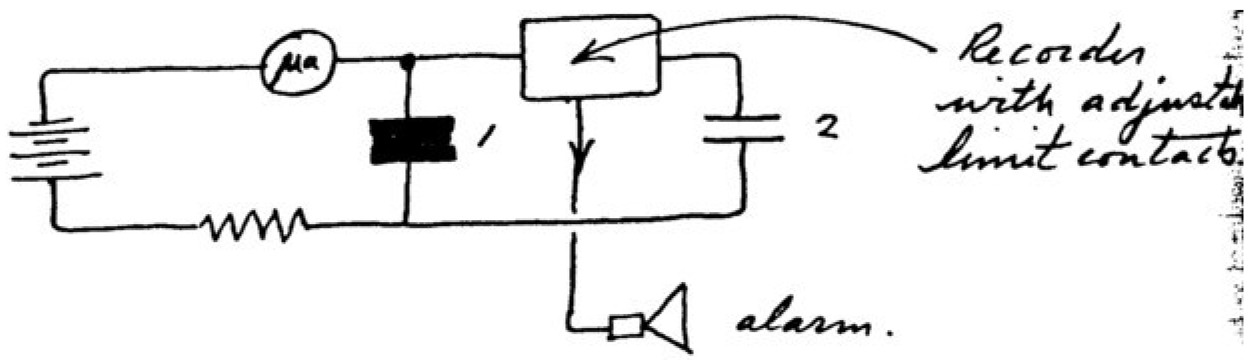
241. Glitch-Signaling Circuit.

Sunnyvale, Feb. 1, 1977.

The appearance of glitches or sudden surges in the recorded voltage or current have presented an enigmatic situation. No explanation exists at this time.

These pulses appear seemingly at random and do not appear to be related to diurnal or secular variations. A circuit which will signal the start of a glitch by ringing a bell or the like, will be a great help in trying to identify the cause of the glitch.

Such a circuit may be as follows:



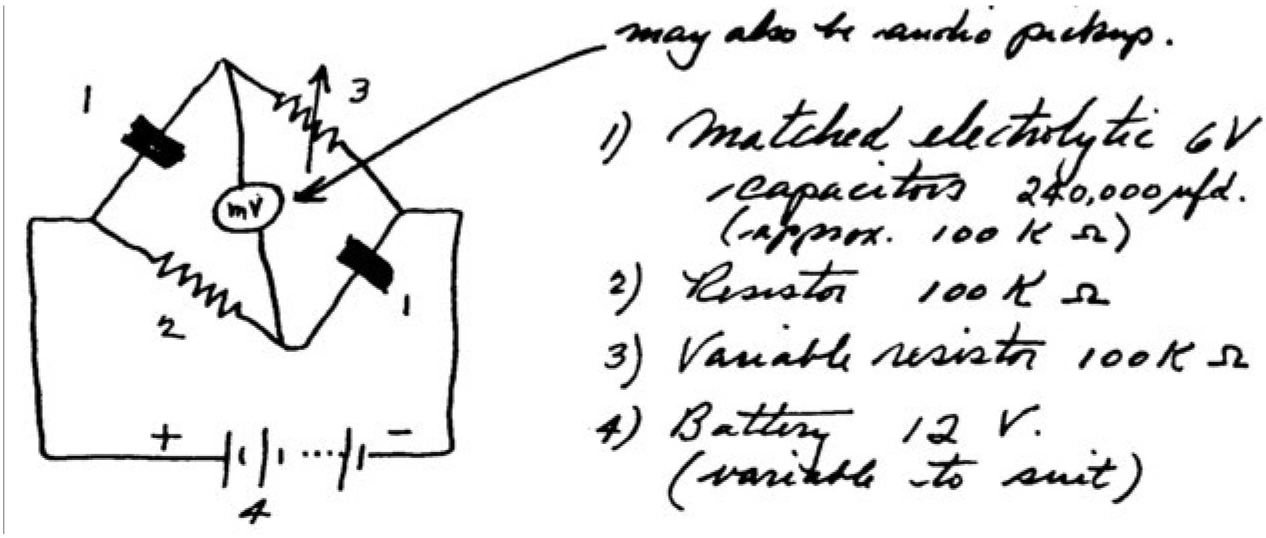
This idea is based on the use (if possible) of an energy storage capacitor (2) which serves as a reference to the voltage of the electrolytic capacitor (1) which is the sensor. Capacitor (2) will follow the long-term variations of (1) but will not follow sudden changes. Voltage difference will trigger the alarm through the use of limit contacts on the sensitive recorder.

Page 147.

242. Bridge Circuits for Electrolytic Sensors.

Sunnyvale, Feb. 2, 1976.

In Sec 205 and 234, reference was made to bridge circuits using rocks or capacitors in balance. Going back to the original idea of resistance changes, now reviewed in the behavior of electrolytic capacitors, the following circuit is suggested:



It now appears that electrolytic capacitors undergo resistance changes of possible cosmic origin which are not shared by standard resistors to the same extent, A bridge circuit to establish a null provides a very sensitive detection circuit. By using an audio amplifying system in place of the millivolt meter, audio detection of the incoming (cosmic) signals may be possible. Care must be taken to avoid exceeding the capacitors' working voltage. Hence, the battery voltage must be evenly divided between the resistors and the capacitors.

Page 148.

243. Comparison --- Electrolytic Sensors and Rocks.

Sunnyvale, Feb 3, 1976.

The recent discovery that electrolytic capacitors of very high capacitance are similar in behavior to rocks is surprising and perhaps quite significant. The problem in this ongoing research has always been the behavior of massive high-K dielectrics. Aluminum electrolytic dielectrics are certainly included in this classification.

The fundamental phenomenon seems to be the spontaneous generation of an emf so-called self-potential. Concurrently, an apparent change in resistance is present. At first glance, one would conclude that the emf is caused by an internal battery action of chemical origin (galvanism). This would be especially understandable in the case of electrolytic capacitors, but would not be explicable with rock self-potential. Even so, the emf developed would surely be temperature dependent, and this, it appears, is true.

When one considers the changes in resistance (or conductivity) of both electrolytic capacitors and rocks, apart from their self-potential (counter-emf), the thought of a penetrating ionizing radiation presents itself. Any increase in such radiation would cause an increase in conductivity or a decrease in apparent resistance.

Page 149.

If K-waves exist, coming from space, the change in dielectric constant of both capacitors and rocks would, conceivably, cause proportionate voltage changes. But these would not be conductivity changes, only apparent resistance changes caused internally by the so-called counter-emf. Hence, it becomes important to distinguish between true changes in emf and conductivity. These factors are not readily separated. Only by concurrently observing each one separately can this be accomplished.

Effects of Temperature ---

There is a direct relationship, although somewhat complex and certainly not proportionate, between temperature and self-potential.

Conductivity is also directly related, but also complex and not proportionate.

Both self-potential and conductivity are influenced (obviously) by unknown external factors. Hence, to obtain pure results, all tests must be conducted at constant temperature.

Glitches ---

Both positive and negative glitches have been observed. If ionizing radiation is considered, a sudden increase (flare) would cause an increase in conductivity in all sensors, possibly also in self-potential.

However, it is noted that glitches are usually negative (in electrolytic sensors) and therefore would indicate a decrease in ionizing radiation (if such exists).

Page 150.

This hardly seems plausible in view of such possible effects as gamma ray bursts or cosmic ray showers, which always increases in ionization and, hence, increases in conductivity.

Changes in ambient (or internal) K, as from the passage of a K-wave would (1) increase the emf as K is lowered, and increase current flow or apparent conductivity; (2) decrease the above if K is raised.

A negative glitch, therefore, may mean a momentary increase in ambient K. Diurnal changes, as reported in Sec. 233, could mean, therefore, K is high when V is down, making the curve of K similar to the curves shown on p. 135, that is, highest at noon, lowest about midnight.

Conclusions:

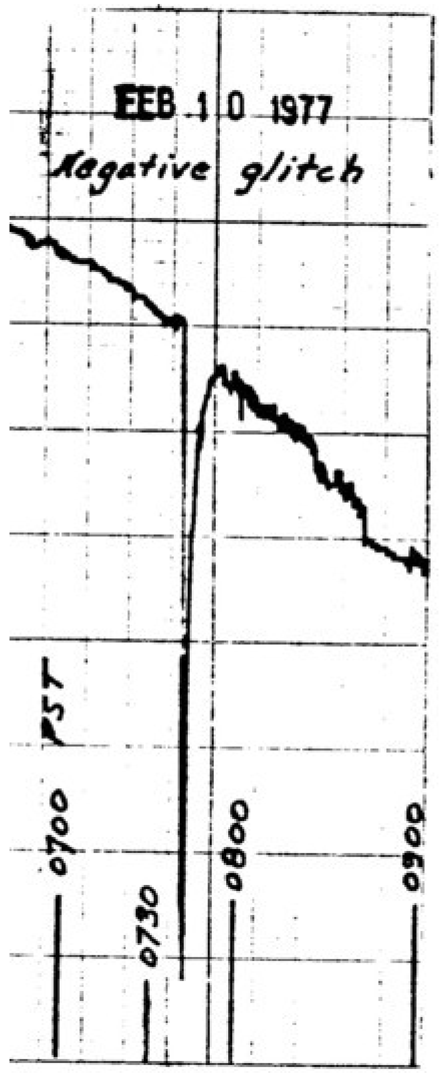
It now appears that ionizing radiation is not responsible for the observed effects, either in capacitors or rocks.

Another presently unknown factor must be responsible.

K-waves or gravitational radiation are candidates, but no conclusions can yet be reached.

T. Townsend Brown (2-3-77)

Page 151.



Your Support Maintains this Service -- and Your Survival ...

The **Civilization Kit**

... It's Your Best Bet & Investment in Sustainable Humanity on Earth ...