S 1

PART II
Structure of Space

It can be pointed out that the failure of the Michelson-Morley experiment to detect a flow of ether does not necessarily indicate the non-existence of the ether. The results of the theory of Relativity may be obtained with or without an ether.

For certain phenomena, it is desirable and almost necessary to assume the existence of an ether in order to evolve a satisfactory explanation. One example is the force of gravitation, particularly the electro-gravitational effects. The phenomenon of the movement of a dielectric is such an example.

The ether would, then, have many interesting and hitherto unsuspected properties, and it is the purpose of these notes to explore the subject qualitatively and to set forth some of the more important properties. Much of the work is based on facts derived from actual experiments which cannot be satisfactorily explained without the existence of an ether possessing substantially these properties.

S 2

Meaning of K and Mu

Electromagnetic theory assigns real values to K and mu of "free space". For the sake of simplicity the "ether" may be imagined to represent merely these "real values". It follows logically that space may not be uniform and that variations will occur in K and mu.

It is logical, also, to assume that space is "distorted" by the presence of matter and that this distortion actually may be a variation of K and mu. Finally, it is necessary to assign the direction or sense of the variation, and the clue is supplied by the behaviour of a light ray in passing a massive body.

Thus, the deflection of light is toward the massive body, and the effect is similar to or identical with refraction. It may be concluded that the values of K and mu near a massive body are greater. As a matter of fact the gravitational "field" may be visualized as an area or region of higher K and mu. The force of gravitation would then be the tendency to migrate to the higher K and mu.

S 3

Another interpretation is that the force of gravitation is a pressure from the areas of low Kmu to those of high Kmu. It follows that a low Kmu may be actually a region of high pressure in space, causing objects to move toward regions of lower pressure. This may be called "ether" pressure or space pressure, and may be assigned the terms high or low space potential as the case may be.

Perhaps, it is intuitively reasonable to assume that a maximum potential or entropy exists and that lower potentials are present as determined by the "presence" of massive bodies in space. We might consider the maximum potential of space that value where no mass is present, even at infinite distance. * It is not present actually, even in the space between the galaxies.

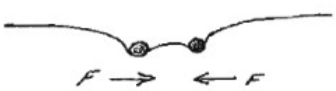
* Heaviside "Electromagnetic Theory", P 461.

An interesting mechanical analogy is a lightly stretched rubber diaphragm without mass, the periphery of which is at infinity. Any mass would distort the sheet downward and by an amount inversly proportional to the square of the distance from the mass.

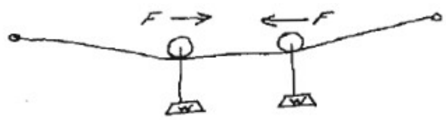
Fig. 1.

S 4

Thus, also, two masses would be pressed toward one another.



Metal balls on rubber diaphragm.
FIG. 2.



Pulleys & weights on wire.
FIG. 3.

The maximum pressure of space can be determined from the energy "contained" in matter:

1 gram = 25,000,000 K.W.h

or

1.25 x 10^16 lbs./sq. in. *

* Ross, New View of Space, Matter and Time. P 333.

Actually, it is difficult to imagine that the energy <u>is</u> contained in matter. More likely, it is the energy of space when referred to a complete void. For example, a glass globe (evacuated) submerged to its crushing depth in the deep sea, would suddenly disintegrate and send out a wave motion possessing energy. But, the energy was contained <u>not</u> in the evacuated globe but in the pressure of the water surrounding the globe.

It might appear that mankind lives in an ether "sea" of tremendous pressure, an ether "sea" likewise of unbelievable energy.

S 5

Since unit positive and negative charges are the building blocks of all matter, it is worthwhile to speculate on the space-structure of the blocks themselves. In this, one is guided by relatively meagre evidence of an experimental nature. But perhaps a good start may be had by considering the mass effects of both, since it already appears that mass increases Kmu and reduces space energy.

Since the proton appears to possess the greater share of the mass of the atom, one would conclude that the positive "field" increases Kmu. For the sake of symmetry, the negative "field" decreases Kmu to the limit permitted by Kmu of "masslesss space". Conversely, the space energy of the electron field approaches that of space devoid of massive bodies, and outward (radial) pressures are maximum.

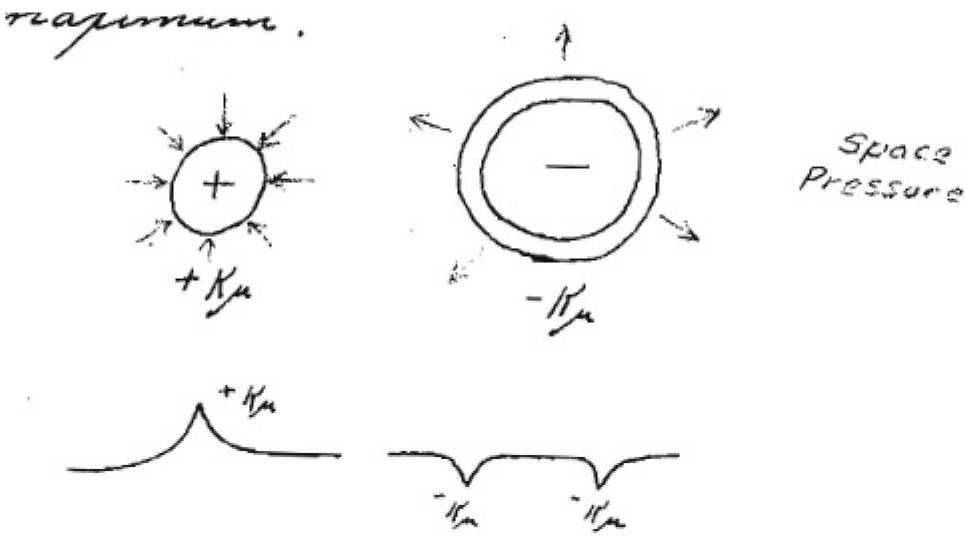


Fig. 4.

S 6

When the unit positive and negative charges are combined, as in the case of a neutron or atom, the increased Kmu of the positive is not completely neutralized by the decreased Kmu of the negative, tho the areas are equal and electrical neutrality results. A slight positive Kmu at the center of the system remains. Thus, a aggregate of these residual positive Kmu's produces the pure gravitational effects of neutral matter.

It is readily understandable that regions of positive Kmu's will be driven together by space energy, and it is fairly understandable that regions of negative Kmu's will be driven apart. Perhaps it would be better to say that normal intra-galactic space has positive Kmu, that regions more positive are driven together and that regions less positive are driven apart. These latter regions may be considered anti-gravitational and are driven out of the field in the same manner as a dielectric of low K is driven out of an electrostatic field with high K, or as a diamagnetic substance is driven out of a magnetic field with high mu.

For the sake of convenience, it is desirable to specify the minimum as that value present in extra-galactic space at an infinite distance from all matter.

S 7

This value will be negative with respect to the value of Kmu, as we know it in intra-galactic space, surrounded as we are by massive bodies. Assuming the accepted value of Kmu = unity, then Kmu minimum may be less than unity if proper units are selected. The potential energy is maximum when

Kmu is less than unity. Any real value of Kmu indicates the presence of a lower potential of space, and a lower velocity of light.

A ray of light, therefore, will describe a path thru space as if it were bent by space pressures on the sides of the ray - as if the ray possessed mass. Increased Kmu and decreased velocity of light go hand in hand.

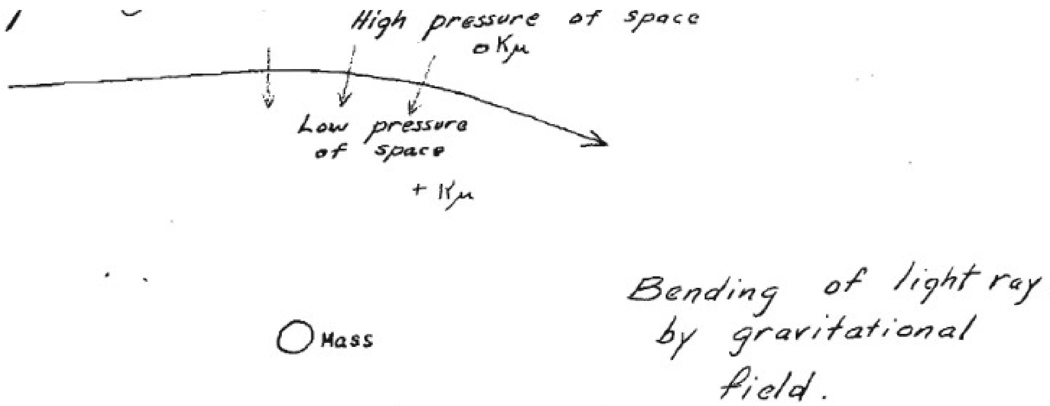


Fig. 5

In intra-galactic space electrons are driven apart. In extra-galactic space electrons do not exist as such. As an electron approaches extra-galactic space, the space energy or pressure gradient which makes it an

S 8

entity ceases to exist. It is conceivable that as an electron gains velocity its Kmu becomes positive, approaching infinite mass, as the velocity approaches C.

Protons, or positrons, as the case may be, have a natural positive Kmu which increases as the field increases (toward the center of the positive charge). Space energy drives these particles together, but well known electrical forces drive them apart.

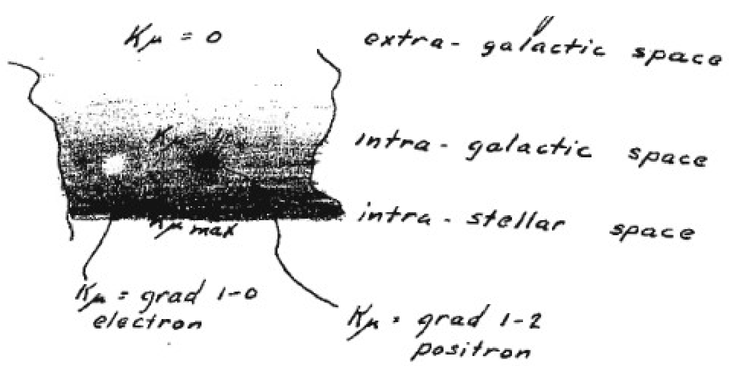


Fig. 6.

The energy situation is just the reverse:

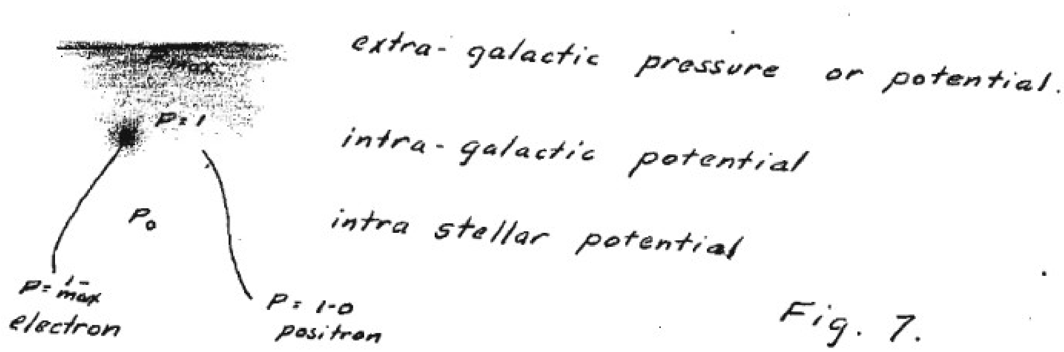


Fig. 7.

Positrons may not exist in the hearts of dense stars for the reason that the energy or pressure differential ceases to exist.

Electrons and positrons are complementary - one tending to increase and the other to decrease

S 9

the space potential of the region wherein they exist.

The combination of an electron and a positron is electrically neutral but the slight positive value of Kmu remains to give the combination mass. In extra-galactic space the neutralizing effect of the electron is lost and the combination, if indeed it can exist, is a particle of great mass. Whereas, at the center of a star the effect is reversed and a value of Kmu is reached where mass no longer increases.

In other words, the mass of a particle increases as the space energy increases. This increase in mass is present where the velocity of light has increased due to lower Kmu. The two, therefore, are closely related.

Electro-gravitational relation

Considering the space potential of extra-galactic space, the field around a unit positive charge is the only "field" which is present. The direction of the force is toward the center of the charge, and the gradient increases toward the center. It is the "slope of the slope" which causes the difference in space potential toward the center of the charge. Whereas the electric field is merely the slope. "The gravitational field is the first derivative of the electric field."

S 10

In intra-galactic space a negative charge produces a gravitational vector away from the charge. This is due to the fact that space energy and pressure is greater than that normal for the region. A combination of a positive charge and a negative charge arranged as a dipole produces a unidirectional gravitational vector from the negative to the positive pole.

If the positive charge is borne by an electrode of large mass (high density) and the negative charge by one of low density, the unidirectional vector is increased. For example, polarized $Pb^{+}O^{-}$ along the line of motion.

Summarizing the above: a strong electric field affects the state of space energy. Regions of high space potential are to be found nearest the point negative charge and regions of low space potential nearest the point positive charge. The line of stress or force normally connects the two opposite charges. The quantity is a vector, depending upon the rate of change of slope of the electric field, directed away from the negative charge and toward the positive charge.

$$\vec{F} = \frac{m_1 m_2 \left(\overleftarrow{E}_1 - \overleftarrow{E}_2 \right)}{d^2}$$

S 11

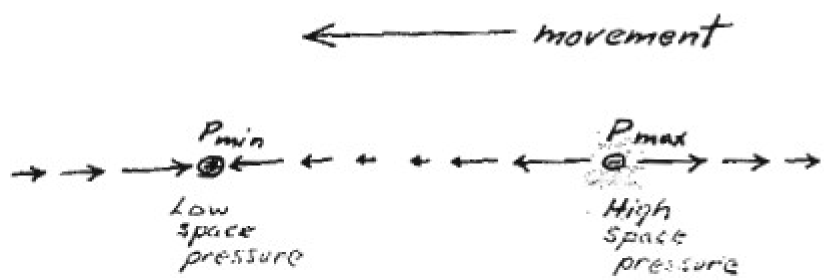


Fig. 8

Space pressure in vicinity of elec. dipole

Force depends upon the mass of the point electrodes and the mass of the region between the points. The exact function of mass is not clearly understood and an attempt will be made to develop the theory along these lines later.

In Fig. 8, true positive and negative charges are illustrated. They are what might be termed absolute charges. In practice, the potential of the Earth must be taken into account. The effects are significant.

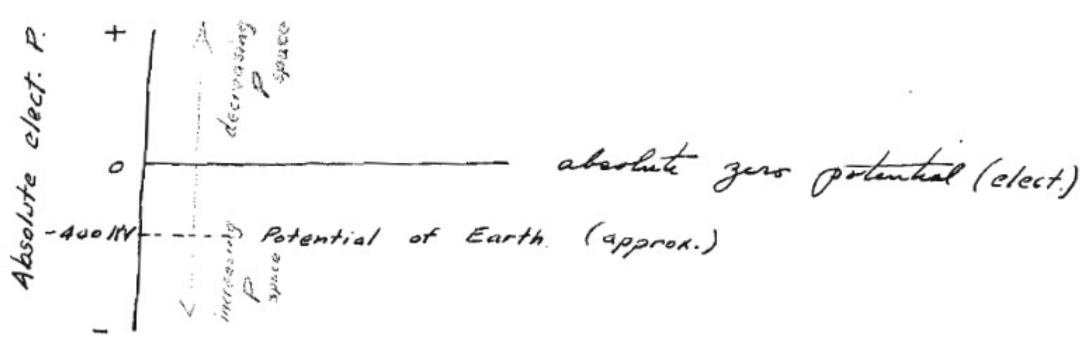
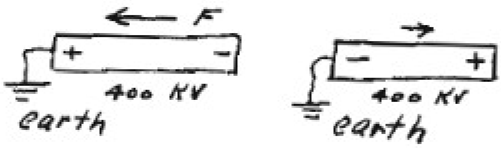


Fig. 9.

For example:



A non-linear electric gradient with steepest gradient near the negative will possess a greater space pressure differential and force than if polarity is reversed.

S 12

If the steepest gradient is near the positive end when the electric (absolute) potential of the "positive" pole is actually negative, the direction of force will be toward the negative pole.

In the series of experiments conducted from 1925 to 1930, this anomalous behavior caused serious difficulty. No satisfactory explanation could be offered.

It will be observed in Fig. 8 that a pressure differential is produced by the electric dipole. The direction or sense of the pressure is, for the system as a whole, inward toward the positive pole and outward from the negative pole. Reaction or recoil pressure which is exerted on the system mechanically is in the opposite direction, ie, from the negative to the positive pole.

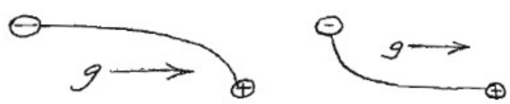
Thus, it may be seen that a radiating dipole exerts pressures in the ether, first in one lateral direction, then in the other. The expanding wave of transverse pressure (electric) and transverse motions (magnetic) comprises the electromagnetic radiation.

S 13

The gravitational field, therefore, is the "slope" of the electric field. The direction of the field is toward the positive charge or potential.

Linear elect. gradient (no grav. field)

Fig. 10.



Distorted elec. gradient (field toward positive)

Fig. 11.

If, however, these point charges are not "absolute" electric potentials, as is usually the case in a "terrestrial laboratory", the following modifications are effective:

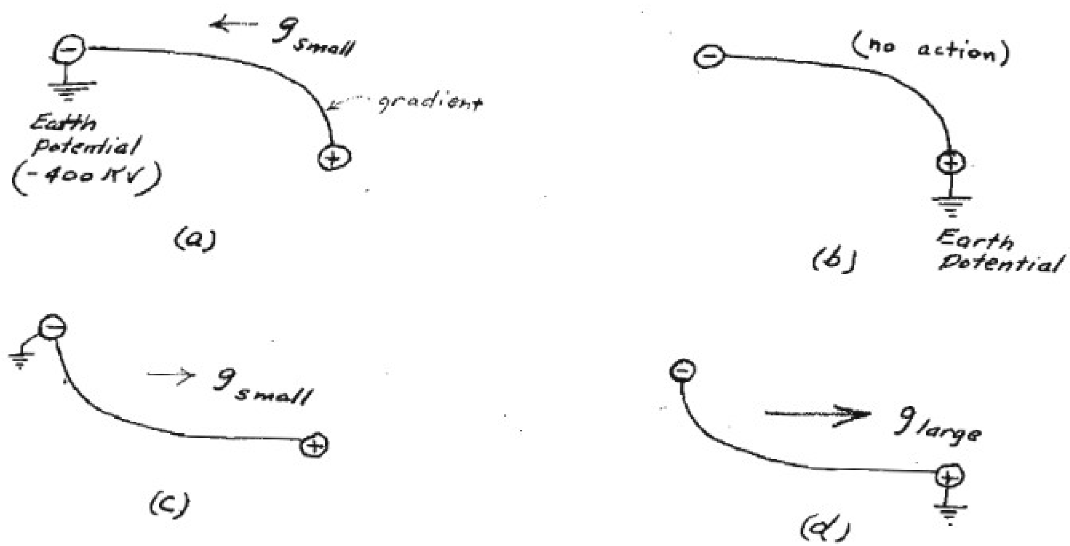


Fig. 12.

Since the intensity of the electric field, as well as the absolute potential, determines the effect in space, it is desirable that connection 12 (d) be utilized. Thus, the greatest gradient occurs

S14

near the pole having the greatest (absolute) negative charge. Kmu, consequently, is reduced to the lowest value for the voltage employed. The Kmu of the positive pole, while reduced below unity, is not reduced as far as that of the negative pole for two reasons: namely,

1. The gradient is not steep at that point.

2. The pole is not so far negative as the negative pole.

Compensation to the point of reversal of action is present in connection 12 (a). Here, the steep gradient is present around the positiev pole, causing great reduction of Kmu for that absolute potential (actually negative). The negative pole, on the other hand, has no nearby gradient and consequently is not reducing Kmu as much as the positive pole. The result, of course, is a movement (or force) toward the negative pole, opposite to that called for in normal action.

Connection 12 (d) is therefore the optimum.

S 15

These four connections are found to give forces qualitatively as indicated - by the series of experiments conducted from 1926 to 1930. See notebooks of these years.

Since the force developed by a differential in gravitational potentials (inversely Kmu) the force is always from the high P to low P, or, in other words, from low Kmu to high Kmu. Normally, this is from the negative to the positive pole - or from the high gradient to the low gradient in the case of one pole earthed.

Naturally, when the connection includes the Earth, the potential of the Earth affects the force developed (when applied voltage and other factors are held constant). As the potential of the Earth becomes more negative the force increases.

Since the action of the Philadelphia instrument is inverse, it follows that increase in scale readings indicates a more positive (less negative) earth. But this is subject to further check.

Therefore, predicated on confirmation by such a check, the principal characteristics of the diurnal variation are:

1. Sun-side of Earth negative.

2. "Windshield" side of Earth positive.

S 16

Therefore, it is indicated that the solar gravitational field exhibited at the Earth induces a charge in the Earth.

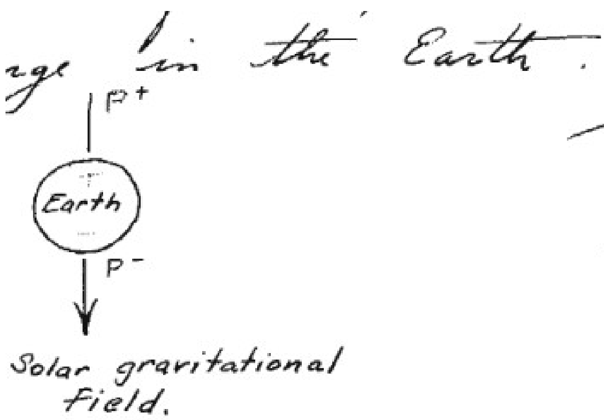


Fig. 13.

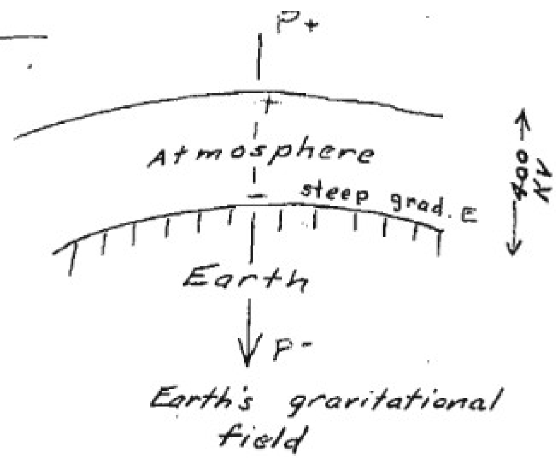


Fig. 14.

A similar field is induced (at least its presence can be so explained) by the gravitational field of the Earth. This field is present in the atmospheric envelope, making the Earth negative (approx 400 KV) with respect to outer reaches of the atmosphere. In a sense, this may be thought of as the electrical equivalent of "g". (100 Volts/meter at the earth's surface).

Acceleration (and probably velocity) causes a similar electric field, with the positive end always in the direction of the acceleration or velocity. Thus the positive charge on that side of the Earth "in front" as it moves both in the orbit around the sun and its motion toward 16" R.A.

Results of observations during 1937 and 1938 indicate a sidereal gravitational field toward a center approx 10" R.A. *

* Distance to galactic center approx 10,000 parsecs (32,500 light years) Orbital speed - 375 km/sec (620,000 m.p.h) P342 - Atomic Physics - Staff Univ. of Pittsburgh. John Wiley

S 17

The electrogravitational equivalence revealed by the ele[ctric] potential of the atmosphere would indicate that an acceleration (or a gravitational field) induces a potential difference (electrical) and that the incorporated mass would tend to move.

If motion is permitted, the electric gradient decreases.

Thus if the atmosphere were permitted to "fall freely" in the Earth's gravitational field, its gradient would vanish. If accelerated upward against gravity, its gradient would increase.

Any block of dielectric in a gravitational field would behave similarly.

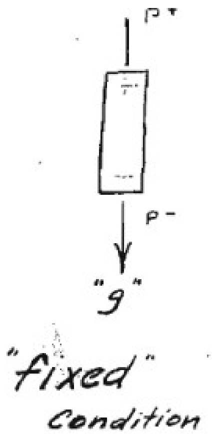


Fig. 15

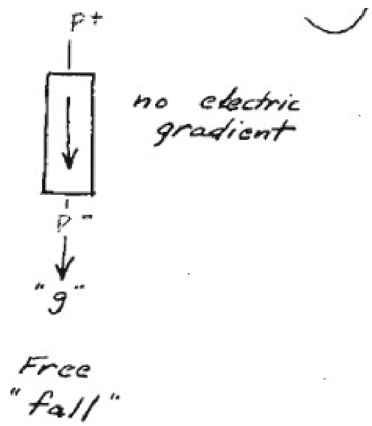


Fig. 16

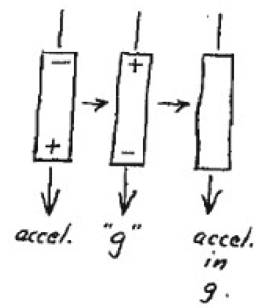


Fig. 17.

Fig. 15 indicates the electric condition of a fixed dielectric in a gravitational field "g". This charge arranges its polarity such that the positive is "up" and high gradient is "down", near the negative pole.

Acceleration produces practically the same electrical condition. Thus acceleration and gravitation are closely related.

S 18

If, due to gravity, a dielectric body accelerates downward, its induced gradient is of such a magnitude and sign as to neutralize the gradient induced by the gravitational field. Fig. 17 shows how these potentials cancel.

Both gravity and acceleration induce non-linear electric fields in masses. The non-linearity of the field representing the magnitude of the gravitational field or the acceleration. Velocity induces a linear electric field, the potential difference being a measure of the velocity.

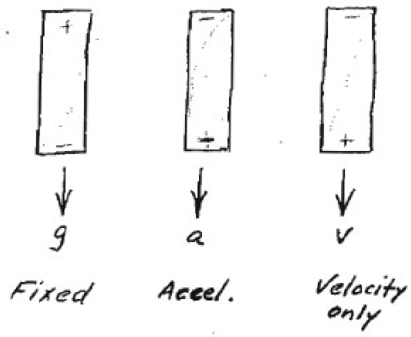


Fig. 18

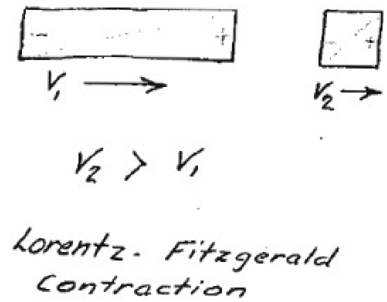


Fig. 19.

Fig. 19 sets forth an explanation of the contraction of physical objects along the line of motion by the increase of potential difference due to velocity.

Positive acceleration throws the steep gradient to the rear or negative end.

Negative acceleration throws the steep gradient to the front as well as the negative pole (as if the rear gradient possessed inertia). ?

S 19

A modification of the explanation beginning on P.S 16 Fig. 14 appears to be necessary.

Actually the gradient of the atmosphere is steepest near the earth, i.e., at lowest elevations. Near the surface of the earth it reaches a value approx. 100 volts/meter. The arrangement of this gradient could well be due to the conductivity of the atmosphere and not a result of the gravitational or accelerational field.

By modifying this hypothesis so that the gravitational effect places the steep gradient <u>away</u> from the Earth, a more satisfactory explanation can be made.

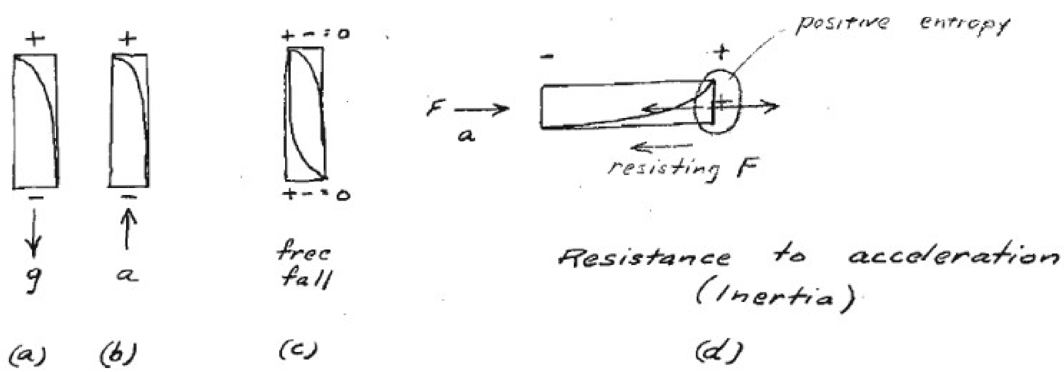


Fig. 19.

Thus, in Fig. 19 (d) the mechanical resistance (F) to acceleration is the electrogravitational F caused by the steepest gradient "in front". Negative acceleration is just the reverse. Force is produced because of the steepest gradient "in the rear".

S 20

<u>The Effect of Dielectrics of Various K</u>

In the foregoing explanations the presence of a high electrostatic field (neg. average) in space tends to lower the value of Kmu below the ambient for the region. A dielectic of high K does not necessarily have a high Kmu (or low gravitational potential). Since the Q of the space is higher it may be argued that the presence of the field produces a greater elevation, not reduction, of the P of space.

Condition of max. F.

Fig. 20.

This is a preliminary assumption, subject to experimental check.

It is difficult to check, however, because the increase of mass is usually accompanied by an increase in K for any dielectric material. The force is a function of the mass caught in the gravitational potential difference, and therefore an increase in K would be actually a mass effect.

S21

Feb 1, 1943

<u>Tests of the Principle</u> No 1.

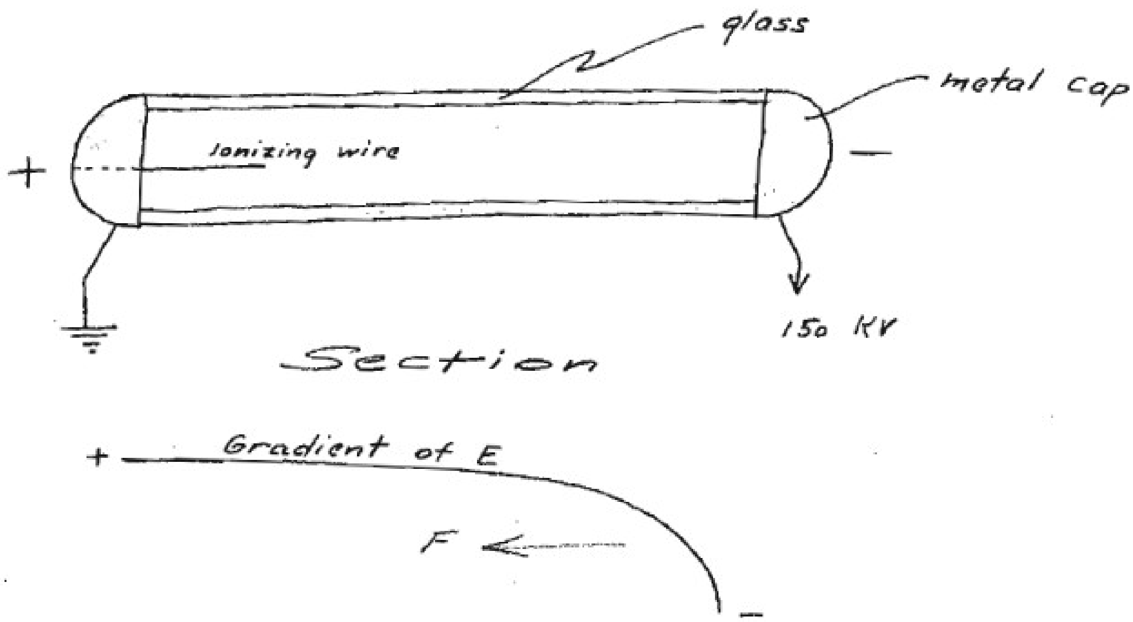


Fig. 21.

One of the simplest tests of the principle is shown in Fig. 21. It consists essentially of a glass tube (preferably heavy flint glass) approx. 4" diameter, 15" long, wall thickness about 1/4". Metal electrode caps are placed at the ends of the glass tube. A fine (.001") ionizing wire projects part way from one end (positive), attached to the electrode cap. A potential difference of 150 KV is applied. The positive is grounded.

A non-linear gradient is formed. Positive space energy is "created" at the negative end, resulting in force or movement of entire system toward the positive end. The force will be a function of the mass of the glass tube.

S 22

Tests of the Principle No 2.

Tests of the Principle. No 2.

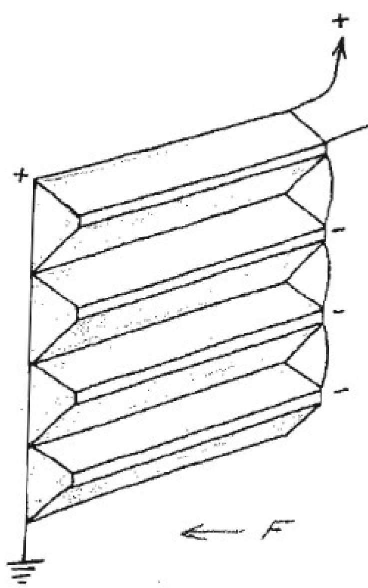


Fig. 22

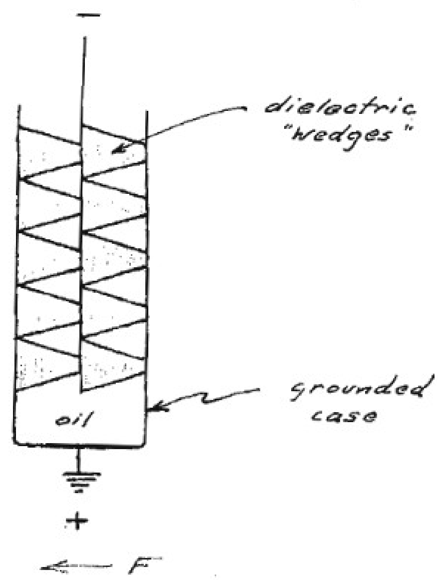


Fig. 23.

In order to obtain the desired non-linear electric gradient in the dielectric material, the wedge-shaped design is suggested. This eliminates the necessity for the ionizer shown in Fig. 21.

When oil is used, as in Fig. 23, care must be exercised to keep its resistivity high in comparison to that of the dielectric "wedges". Electro-gravitational forces are in the direction as indicated.

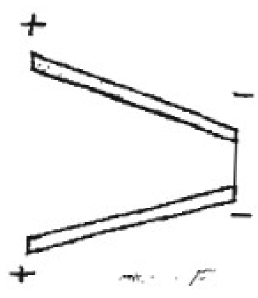


Fig. 23(a)

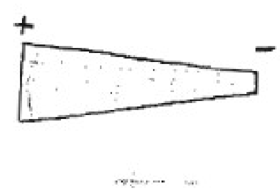


Fig. 23(b)

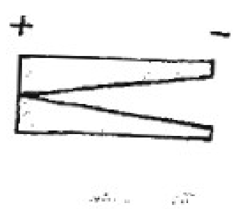


Fig. 23(c)

Types of dielectric wedges
(sections of cones)

S 23

If effects of a differential in mu are similar to those of K, the system illustrated above may produce the indicated force. No actual experimental evidence, however, is at hand. Such a system, if found operative, may constitute the relation (magneto-gravitational) which has been expected.

A dynamical system would include a radiating dipole located near the coil on the permalloy rod. Radiation would be impeded in the direction of the higher mu, the lobe projecting principally in the direction opposite.

S 24

<u>Tests of the Principle</u> No 4.

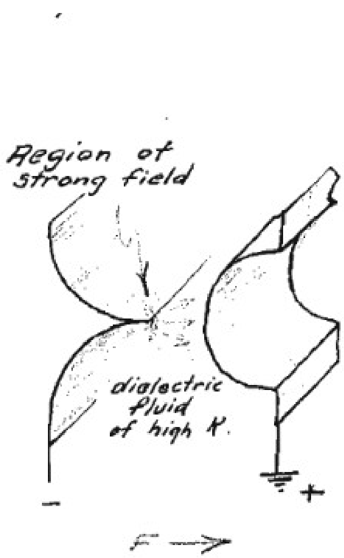


Fig. 25 (a)

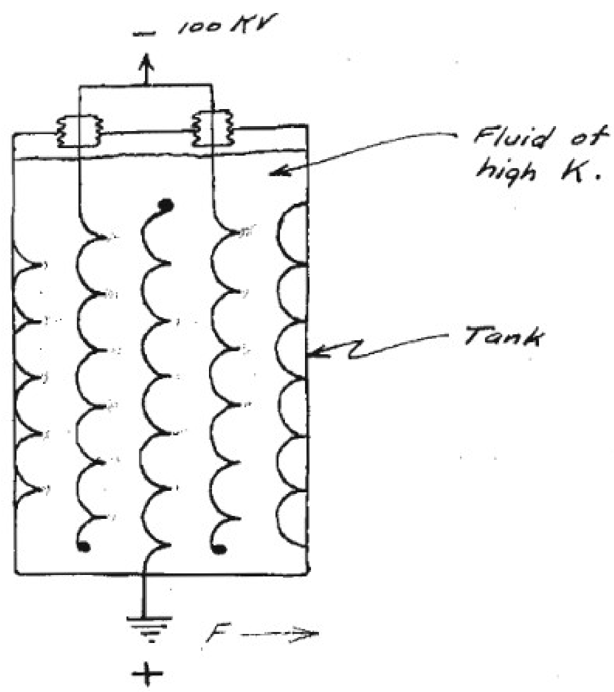


Fig. 25 (b).

Utilizing the strong electrostatic field of a point, the non-linear gradient to a spherical surface, within a dielectric fluid of high K, offers favorable conditions for the generation of the electro-gravitational force. The outstanding advantage is that a rupture of the dielectric, due to excessive gradient, is self-repairing. The space immediately adjacent to the point possesses the greatest "space potential" and the fluid is present throughout the gradient. Forces are produced in the indicated direction, not merely forces due to point discharge but to electro-gravitational gradients. Fig. 25 (b) shows a fully-enclosed system. The forces are developed in the fluid and transmitted to the walls of the tank.

S 25

<u>Tests of the Principle</u> No 5.

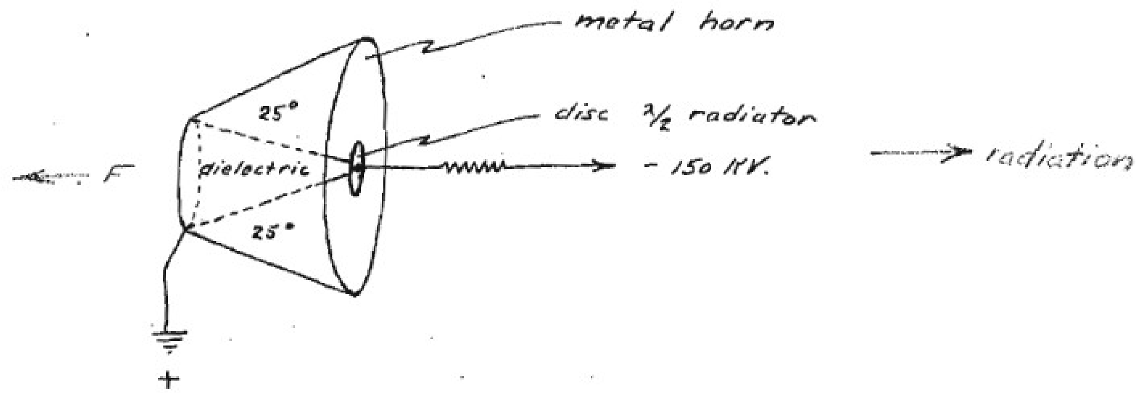


Fig. 26.

This is a dynamical system, parallel to that described in Par. 2 of P. S 23, and is similar in many respects to that shown on P. 75. It features a lambda/2 disc radiator at the high negative terminal. The radiation is impeded by increasing values of K as it travels along the dielectric, but leaves unimpeded outward from the horn as indicated. The electrogravitational force is in the same direction as the radiation pressure.

It may be found desirable to provide a means for heating the lambda/2 disc radiator in order to increase electron emission.

S 26

<u>Tests of the Principle</u> No 6.

Test of the Principle. No 6.

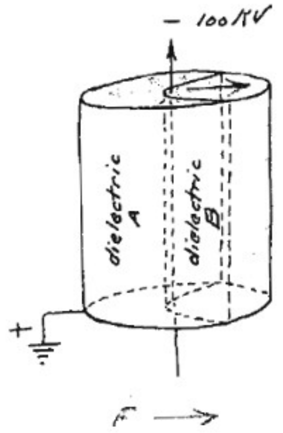


Fig. 27

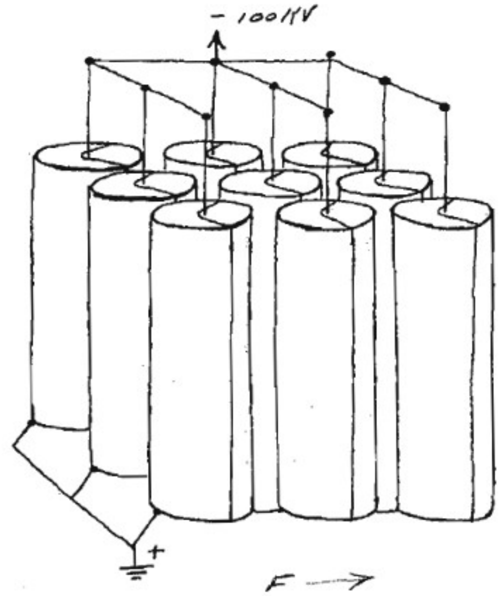


Fig. 28.

This is a "potential" system (as differentiated from a "dynamical" system). It employs a wire electrode (negative) at high potential, concentrically arranged in a cylinder which constitutes the positive electrode (grounded). A small sector of dielectric material B has greater K and mass than dielectric sector A. Since space energy is greatly increased by the steep electric gradient around the wire, gravitational forces are outward from the negative electrode. A mass (and K) differential exists, however, which causes the resultant F in the direction as indicated.

Fig. 28 shows the parallel connection of a multiplicity of "cells".

Feb 1 1943 - T T Brown

S 27

The electro-gravitational equilibrium

In summarizing, it is indicated that electrons, being essentially areas of high space energy cannot exist as entities where space energy is already maximum. In other words, in theoretical mass-free space (extra-galactic), electrons do not possess the gradient which makes their existence possible. See P. S6 & S7. Positrons, on the other hand, can exist due to the great contrast in potential, the gradient in space energy being reversed.

So it can be interpreted that pure space energy is essentially equivalent to electricity and that extra-galactic space is negatively charged. Any gravitational field will possess an electric field, the direction of which is from negative to positive. In this way, gravitational or space potential is inversely related to electrical potential. A fully insulated body assumes an electric charge which is related to the gravitational potential of the space in which it exists.

As an example, in the solar system the electric potential of the planets is of negative origin and that of the sun is positive. The more distant planets are the more negative.

S 28

In a sense, one may imagine the gravitational potential as inversely related to electric potential.

If the sun is considered the seat of the gravitational disturbance in the solar system, the value of P or E at the center of the sun is the minimum for the system.

Consequently, the positive charge is maximum for this region. It has been estimated, as a matter of fact, that the potential of the sun is of the order of a billion volts positive, * with respect to the earth. Other investigators * have indicated the potential of the Earth at 400 KV negative with respect to the highly ionized layers.

By the same token one may predict the electric potential of Venus to be positive with respect to the Earth and that of Mars negative. Both, however, are negative with respect to the sun or positive with respect to Jupiter or Saturn.

It is probable that the potential difference between the sun and its planets increases more slowly as the distance from the sun increases; as

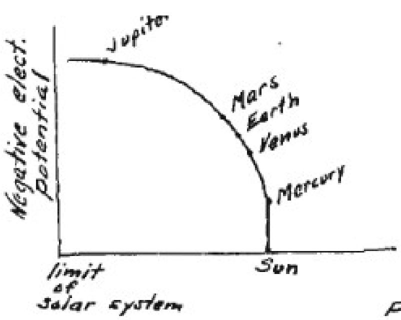


Fig. 29.

Electrical Potential of the Planets due to Gravitational Field of the Sun.

* Heaviside "Electromagnetic Theory"

* [unreadable]

S 29

By the same reasoning, the potential of the moon is negative with respect to the earth, due to its inclusion in the dominating field (gravitational) of the earth.

Perhaps then, this causes the side of the earth directed toward the moon to become positively charged by induction. This may explain the positive swing of the Philadelphia instrument as the moon crosses the meridian.

If the sun is highly positive, the side of the earth toward the sun will acquire an induced negative charge. This also appears to be borne out in the results of the Philadelphia observations.

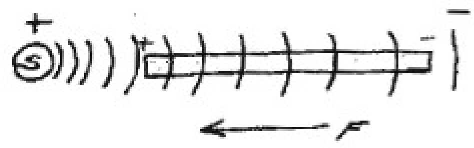


Fig 30.

When a system of masses comprising a dielectric, exists in a gravitational field, the end toward the "attracting" mass will become positively charged with respect to the other end. Likewise, a steeper gradient will be present at the positive end. A gravitational force F is present which depends upon the gradient differential. If the dielectric accelerates in response to this force the gradient differential disappears as the acceleration approaches that of g.

S 30

The disappearance of the induced gradient differential is due to the appearance of an opposing gradient differential due to acceleration. This is the equivalence of the gravitational field and the acceleration "field".

A freely falling body therefore has no gradient differential. It does, however, have an increasing potential differential (elec.) which increases as the velocity increases. P. S19.

Fig. 31.

Centrifugal force is the electrogravitational force due to acceleration. It is equivalent to a gravitational force and is indistinguishable from it. An equilibrium orbit is one in which both forces are equal and opposite.

Centrifugal force not opposed by an equal gravitational force should produce gradient differentials.

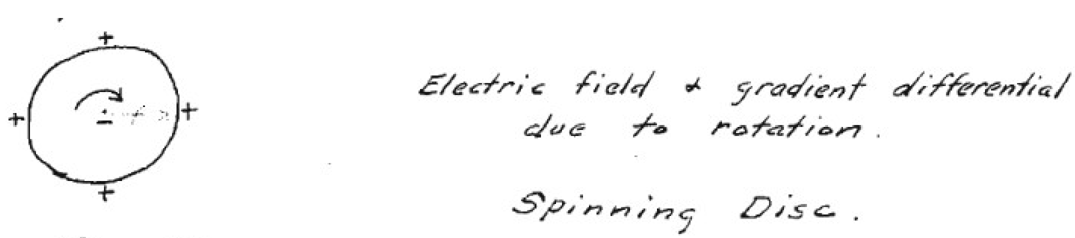


Fig. 32.

S 31

Feb 15, 1943

Centrifugal (electrogravitational) generator.

Based on the foregoing, it appears that a generator can be constructed along the following lines:

When the metallic discs (and in certain cases, dielectric materials) are rotated at high speed, the periphery becomes positively charged and the axis of rotation negative. If a cathode (heated) is placed nearby electrons are drawn out and attached to the disc. As a result a current flows and a potential difference generated across a load as indicated.

When current flows, the steep gradient is (to a slight effect) shifted from the periphery (see P. S30) to the axle, thereby neutralizing some force (centrifugal) at that region. The force indicated by the F (in green) is due to the resultant imbalance. The magnitude of this force is directly proportional to the current which is flowing in the system. If this current is increased by an external battery the force is further increased.

S 32

The effect of rotation is equivalent to the "throwing outward" of the heavier charges which are positive. The "anti-gravitational" electrons are thus displaced to the center. The high gradient is likewise thrown outward as if the electric field itself possessed inertia. Since rotation is equivalent to the effects of gravitation, the "g" of the centrifugal "field" is productive of electrical gradient:

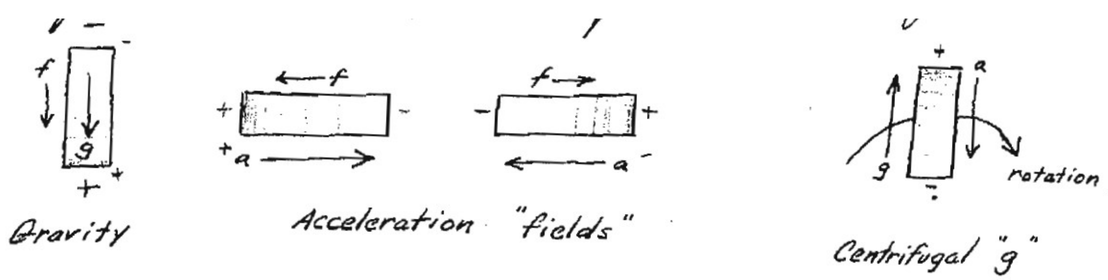


Fig. 34.

It is desirable to call attention to the necessity for the emitting cathode of Fig. 33 to be extended over a considerable arc of the disc in order that the gradient may not be steep at the region where electrons strike the disc. For successful operation the induced gradient must be steep at the axle, in the direction of the cathode.

It is possible also that dielectric discs, made for example from high tensile strength Bakelite, may produce results even with no appreciable current flowing. In this way, the system may be considered "potential" (P. S-26). Strong gradients would be "maintained" against leakage only.

S 33

Feb 22, 1943

Tests of the Principle. No. 7

In order to increase gradient differentials and at the same time reduce the space and voltage requirements, the following structure is suggested:

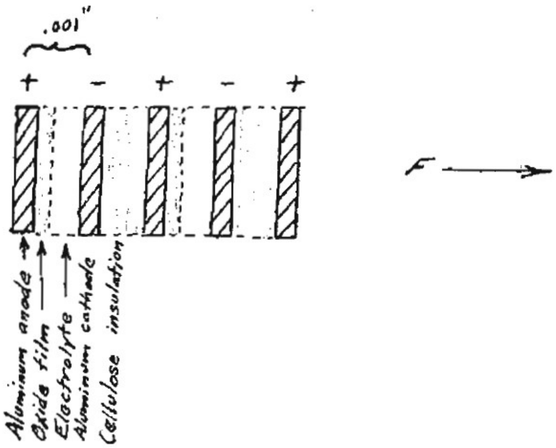
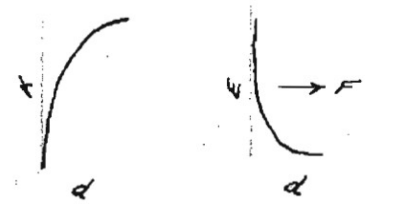


Fig. 35



Distribution of K and E across oxide film.

Fig. 36.

Due to the change of K with d, across the oxide film, the electric gradient is greatest near the anode and falls off to a negligible value at the surface of the electrolyte which forms the central cathode. Electrogravitational force is in the direction away from the steep gradient (as indicated).

What little gradient differential exists in the cellulose insulation is in the region immediately adjacent to (and caused by) the cathode. The electrogravitational force is therefore in the same direction as that in the oxide film.

The system would utilize comparatively low voltages (500 V maximum) but the gradient differential might reach exceedingly high values.

S 34

Tests of the Principle. No. 8

On the basis of an effect due to gradient in K, see P. S 20, the following structure is suggested:

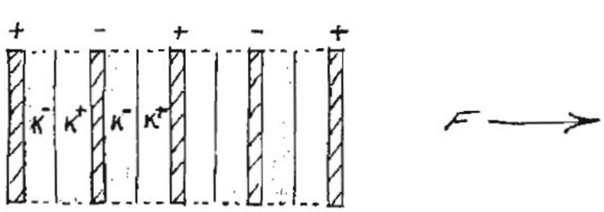


Fig. 37.

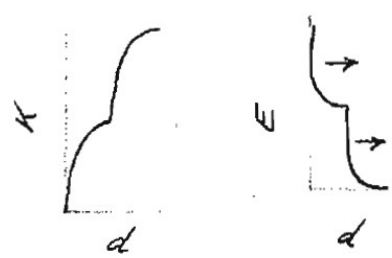


Fig. 38.

Due to the high value of K in one dielectric section and the low value in the adjacent section, the voltage gradient is greatest near the left boundary of the "red" section and falls to a minimum at the right boundary of the "green" section. Electrogravitational force is as indicated. Direction of the force is not changed by reversal of polarity in adjacent units.

The above effect, as well as that set forth in P. S-33, has not been tested. Success of the method is predicated on the assumption that the gradient differential alone, and not the combination of E and K gradient, determines the force.

This latter possibility is worthy of consideration and therefore will be discussed in succeeding pages.

S 35

Feb 23, 1943

Electric gradient differential versus "space potential" gradient differential.

There is an important difference between the two. For instance, where the value of K is physically constant throughout the dielectric, forces result directly from an electric gradient differential. If K varies, the electric gradient varies inversely. The distribution of electric charge (Q) remains the same however. Actually, it would appear that the change Q per unit volume in space determines the “potential” of space. Therefore, what may actually be desired to produce an electrogravitational force is a gradient differential in “space potential” or the “quantity” of change in space. By this reasoning, test No. 8, (and probably No. 7 also) might be expected to fail.

If a dielectric block has a physical gradient in K, the electric field will be found to arrange itself so that there will be an inverse gradient in E, this being so in order that the quantity of charge Q might be evenly distributed. It would be expected therefore that no gradient in Q exists, and no electrogravitational forces would be present.

Fig. 39.

If, however, a condition should be set up where a gradient differential exists in Q, electrogravitational forces are present which attempt to “correct” the condition. The correction is in the form of applied velocity, or in the first stages, acceleration.

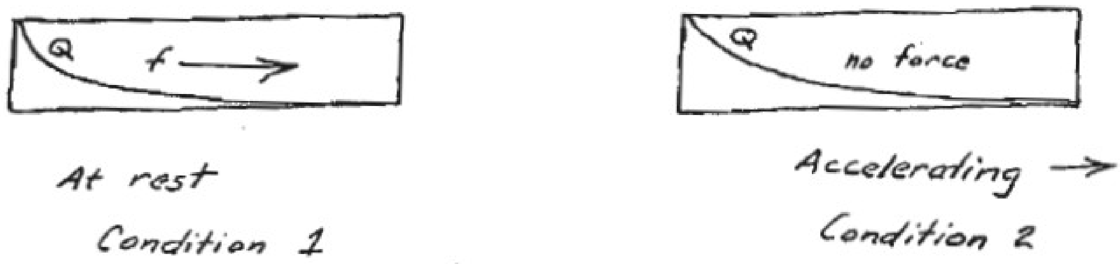


Fig. 40.

Maximum force may be developed by a system possessing both a gradient in K and a gradient in E, thus a maximum gradient differential in Q.

The gradient in E can be obtained by the wedge shape, (P. S-22), and the force is always in the direction away from the high gradient when the system is near the potential of the Earth. In other words, it is toward the large end of the dielectric.

If, at the same time, the wedge would have a non-linear gradient in K, such that the greatest change in gradient is near the small end, the force would be still further increased. Thus:

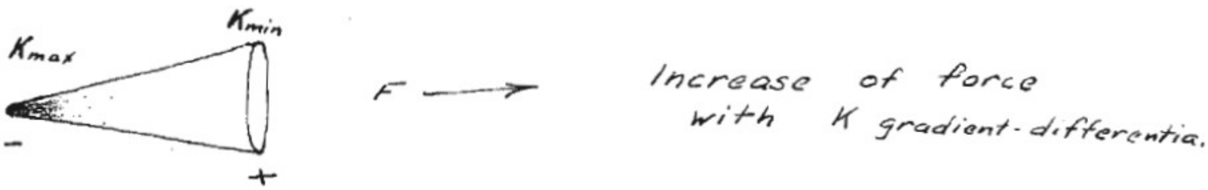


Fig. 41

A gradient in K tends to straighten the gradient of potential (electric) in the case shown in Fig. 41. A very steep gradient in K would even reverse the electric gradient differential. It is conceivable that this would operate to a practical advantage. For instance, where the electric gradient near the cathode is so steep that breakdown would normally result, a high value of K in the region would so shift the field as to reduce the electric strain. Thus the electric field might be made uniform, with a strictly linear gradient, and yet the required gradient differential in space potential would be maintained, and an electrogravitational force would still be present.

Thus, it is possible, and apparently quite advantageous, to have the electric gradient uniform in a wedge dielectric section. Such a construction would prevent excessively high electric fields from forming across the region of restricted cross-section.

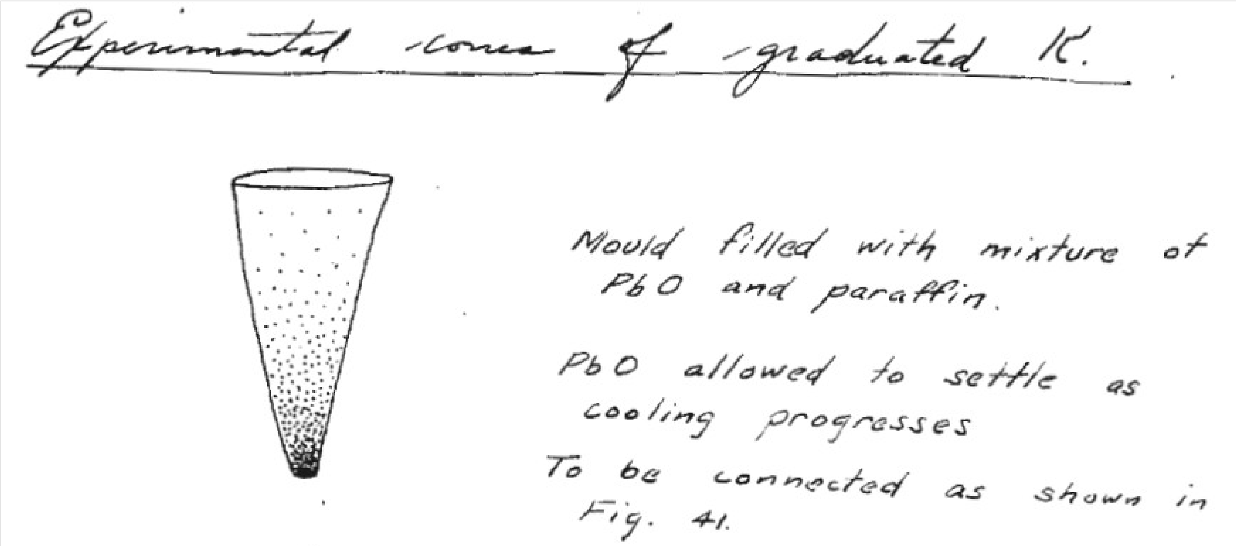


Fig. 42.

Mar 1, 1943 – S 38

Tests of the Principle No. 9

Cones of graduated K, as described on P S-37, can also be formed into arrays. The dielectric wedges described on P. S-22 can also have graduated K, and then formed into arrays. The results apparently will be more satisfactory.

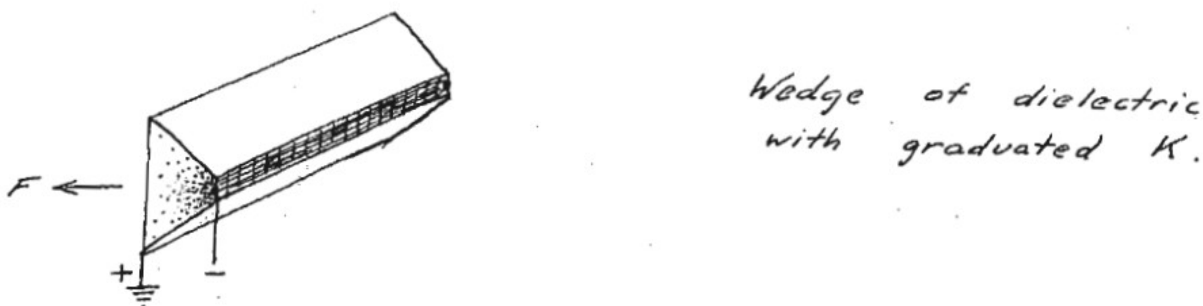


Fig. 43.

Due to the equilibrium between the gradient of K and the gradient of E, it appears that the principal advantage of a gradient in K are:

(1) to prevent excessive fields in the region of restricted cross-section

(2) to permit a greater force due to the presence of regions of high Q

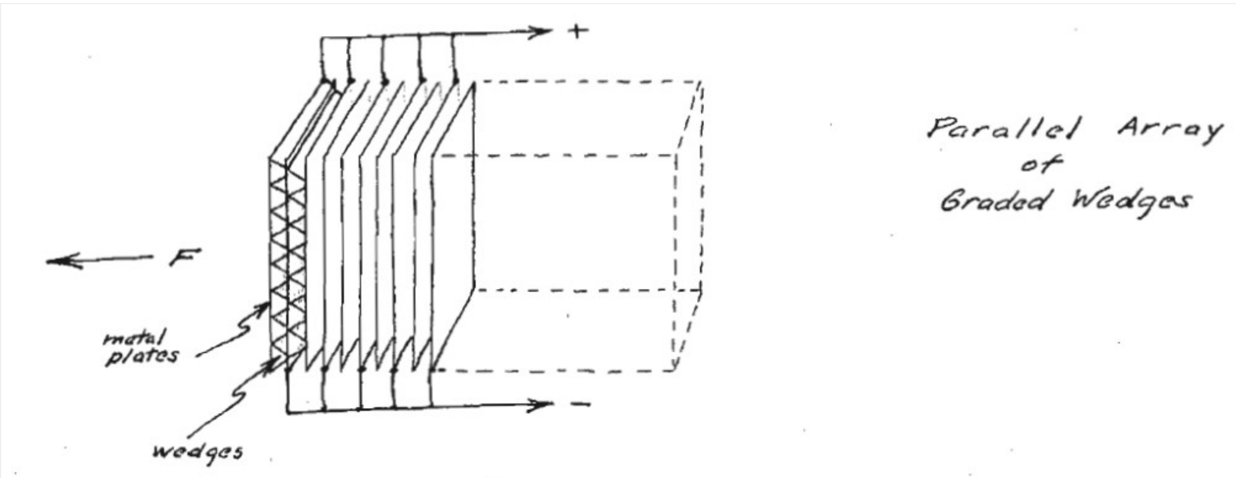
A multiple array of graded wedges is a development of that shown in Fig. 43.

Even without a gradient in K, such an array, when operated at low voltage, appears to have considerable promise.

Mar 3, 1943 – S ?

Test of the Principle No. 10

Pursuant to the development indicated in Test No. 9, the following type of construction appears worthy of consideration:



For a unit to operate on 5 KV, the spacing between successive electrodes could be on the order of ¼ " . Dielectric wedges would be made of PbO with a binder, so prepared as to give a K gradient. Tests of dielectric material of naturally high K, such as slate or marble, and without a K gradient, could be made for the purpose of determining the actual practical value of a K gradient. In general it appears that the force will be a direct function of the dielectric K, and independent of the K gradient. The only effect of the K gradient being to redistribute the electric field so as to cause less strain and less possibility of progressive electric breakdown.

(signature) T T Brown

Witnessed as to date:

Ralph H Swift 3/3/43

William F Mangham 3/3/43

Mar 3, 1943 – S 40

<u>Excitation Potential</u> – AC vs DC

Naturally, direct current, due to the sustained charge, gives best results:

(1) Maximum continuous force

(2) Minimum loss in the dielectric by hysteresis, etc

However, alternating current excitation may be desirable in order to reduce the amount of exciter equipment and the total weight. It is to be borne in mind that the direction or sense of the electrogravitational force is not reversed by a reversal of the electric field. The force depends primarily on the differential in the electric gradient.

Transformers with Benetron rectifiers with suitable filters are required for DC excitation.

For AC excitation, a transformer may be used without additional equipment. For increased efficiency, the inductance of the transformer secondary should be matched to the capacitance of the dielectric system (gravitator) for the particular frequency used, thus creating a tuned circuit.

May 2, 1944

Brownian Movement

The basic considerations, set forth in Fig. 8, P S-11, indicate a continuous force or motion of a dipole, always toward the positive pole if there is any absorbing matter in the space between. It is conceivable that some force or motion might be present if no absorbing matter lies between, due to the pressure differential at the sides (in the alignment of) the dipole.

The suggestion appears reasonable that molecular motion is the result of this pressure differential. Movement of any single molecule would invariably be from its negative elements to its positive elements; the movement of all molecules would appear random.

If a means could be found to align or polarize all molecules in a given volume of matter, it is conceivable that motion of the volume, as a whole, would result.

Probably a considerable amount of polarization or alignment can be accomplished by an electrostatic field, or momentarily by a varying magnetic field.

Another method of approach might be the mechanical. It is possible that supersonic waves might align molecules, much as sawdust is arranged in a Kundt's tube.

Certain forms of solid matter may be found more easily polarized and may even be partly polarized in natural form – for example, quartz crystal, other piezo-electric crystals, alnico or other magnetic material of high retentiveness.

Other lines of investigation might include the use of "electrets", electrically polarized bodies, such as certain waxes, which have hardened in an electric field.

3	4	5	6	7	8	9	
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31	1	2	3	4	5	6	
7	8	9	10	11	12	13	FEB
14	15	16	17	18	19	20	
21	22	23	24	25	26	27	
28	1	2	3	4	5	6	
7	8	9	10	11	12	13	MARCH
14	15	16	17	18	19	20	
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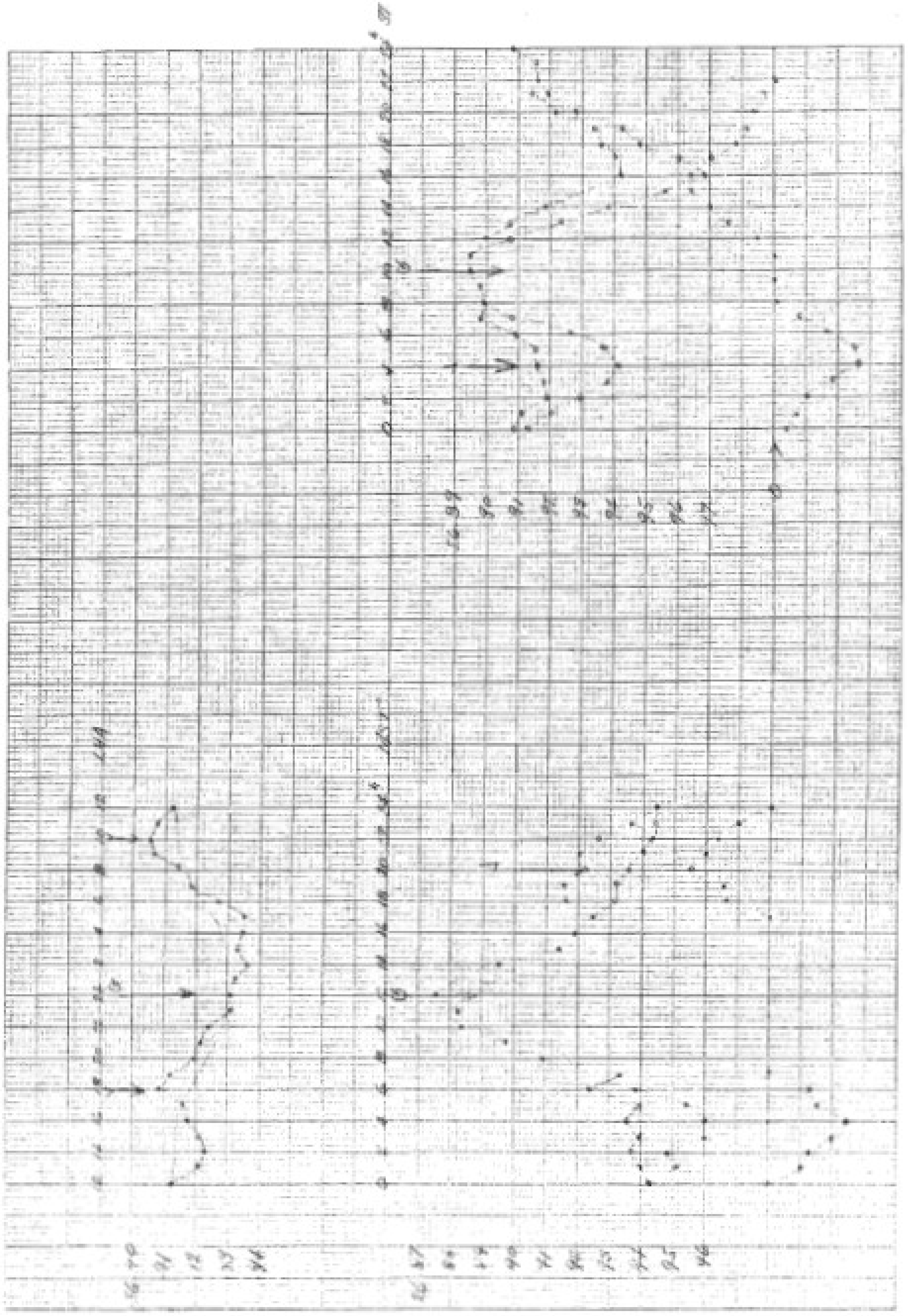

Space Pressure equivalent to Gravitation

On P. S-11, the space pressure effects of the electric dipole were illustrated. It was shown that the oscillating dipole radiated electromagnetic waves laterally. Space pressure first in one lateral direction, then in the other, travels as a wave. Wherever it strikes a conductor, its electrical effects become manifest. However, the alternating electric potentials actually exist in the space the wave traverses. The wave actually changes the electrical condition of “empty space” as it travels along. A conductor, existing in that space, merely picks up the changing potential of the ambient space.

Space pressure differential is indistinguishable from gravitation. Its direction from high pressure to low pressure is the direction of gravitational “force”. One might say that to “look” at an approaching light (or other electromagnetic wave) one would “see” merely a gravitational field operating transversely to the direction of the wave, first to one side then to the other.

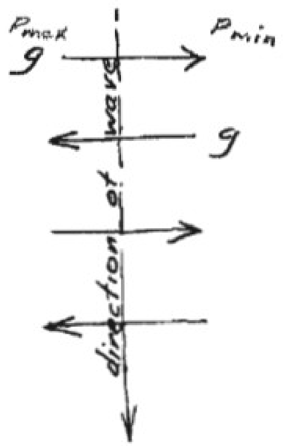

Fig. 45

The “passing by” of this alternating gravitational field induces an alternating current of electricity in any conductor arranged in in the alignment of the field, at right angles to the direction of the wave.

If a sufficiently sensitive tuned reed could be placed in the path of the wave, it is possible it would be set in oscillation or vibration mechanically, in the lateral direction by the transverse gravitational wave.

If the wave travels transversely from the radiating dipole, that is, to the side of the dipole, then by the same token, it must travel away from the ends of the dipole. However, it would not be transverse and would not be “picked up” by a transverse “device”. Rather, it would be pulsating gravitation, with pulsing forces to and fro, in the direction of the alignment of the dipoles.

Fig. 46. Pulsing Gravitation.

Electric potentials of various gravitational potentials

Referring to Fig. 7, P. S-8, in extra galactic space the pressure or potential is maximum. Also the electrical potential is maximum negative. In such space an electron (neg.) cannot exist as an entity, for the reason that the “differences” between the neg. electron and the space surrounding it “do not exist” where no gravitational fields are present, ie, in extra galactic space. The electron is "equivalent" to the space surrounding it. In fact, in the last analysis, the electron merely "melts into" and becomes indistinguishable from that space. One could say that this space is negative and "of the same composition" as the negative electron. Perhaps one could call such space "a completely negatively charged continuum".

As one approaches a material body the quality of space undergoes a change. The space pressure becomes less. The pressure difference causes a gravitational "field" toward the material body. Since the space occupied by said body has a lower pressure or potential, it also as a more positive electrical potential. See P. S-28. Consequently, the body itself shares this ambient electrical condition.

Conceivably, at the center of dense stars in the center of a galaxy, the space pressure is a minimum, approaching if not reaching, zero. Here, the absolute electric charge is maximum positive. A positron, as a separate entity, would not exist, for the reason that it would be of the same composition as the "space" surrounding it. Under such conditions of density (at the heart of dense stars) it is even probable that no "space" does exist, and that a positron, as a "hole" in space, cannot exist where there is no space. This then, would be the positive electrical continuum, more than likely just plain zero.

By such reasoning, only one "kind" of electricity actually exists – the negative. Electrons being "knots" of high "space pressure", while positrons are merely "inverse knots" or holes in space where the pressure approaches zero, "like the center of a cyclone".

The Gravitator

An electric dipole is a gravitator. It gravitates just as surely as a falling body. It possesses a force (from negative to positive) due to a dissymmetry of space pressure. The reaction to the force is in the opposite direction and is in the form of a gravitational field, "blowing backward from the rear". This field extends indefinitely "backward". It reacts against material bodies near and far. The integrated reaction forces, on all objects to the limits of the universe, equal the force of the gravitator in the "forward" direction.

These reactive fields or space pressures (space potential differences) cause electrical potential differences which are exactly equal and opposite to the electrical potentials of the dipole.