Why Earth expansion?

by

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Abstract

Rheologic evidence of the Earth's expansion.

Contrary to DIRAC's opinion that the stars expand without changing their masses because of a gradual change of the gravitational constant, the author advocates the idea that the mass of all celestial bodies increases in the course of time. They absorb world ether which is transformed into new born matter in their interior. The evidences of the theory of relativity, e. g. the shift of the perihel of the planet Mercury, the bending of light rays passing the Sun, and the red shift of light from the Sun, are also explained from the rheologic point of view.

My dear listeners!

In laconic brevity the title of my discourse is: "Why Earth expansion?" In somewhat more detail, however, I ought to ask: "Which one of two different interpretations of the cause of the Earth's expansion is the right one?" In connection with modern palaeomagnetic research, to which I[0] contributed the exposed nine model globes of the Earth, some scientists, among them P. JORDAN, Hamburg, L. EGYED, Budapest, S. W. CAREY, Hobart, and K. M. CREER, Newcastle upon Tyne, have endorced the opinion of P. A. M. DIRAC, University of Cambridge, England. On the basis of the theory of relativity since 1938, DIRAC[1] has contended that the constant of gravitation in NEWTON's law is no constant at all, but gradually diminishes in the course of millions of years. In consequence, the diameters of all celestial bodies increase in length, the masses of the stars remaining unchanged. This corresponds to expansion of the stars and to diminishing densities thereof.

Contrary to this, I contend that there is an increase of mass of each star in the course of time. If the mass of a star is increasing, it is to be expected that the volume of the star would generally also increase.

Toward the end of the twenties, I[2...8] endeavoured to explain NEWTON's law hydromechanically assuming that the universe is filled with a medium or a fluid called the ether which is being absorbed in a sink process by all bodies. Thus NEWTONian force is envisioned as a streaming effect.

Fig. 1 shows the ether stream lines of a single ball-shaped, symmetrical ether sink. The lengths of the vectors of the ether velocity diminish with the square of the distance from the ether sink under the supposition that the ether is incompressible.

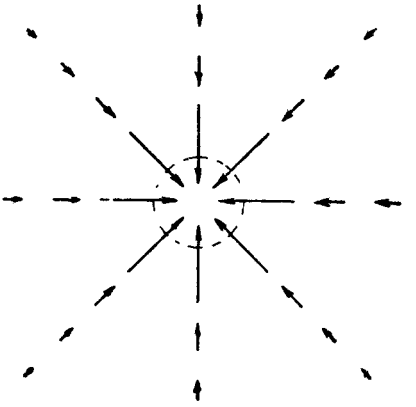


Fig. 1

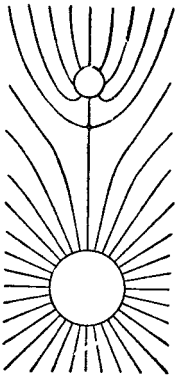


Fig. 2

Fig. 2 shows the ether stream lines connected with two celestial bodies of different size. It is easily seen that the small wedge-shaped sector, from which the smaller sink swallows the ether, is parallel to the junction line between the two ether sinks, and that the wedge is open in the direction away from both sinks. This suggests an analogy to the tail of a comet. When a comet travels around the Sun, it has been observed that the tail of the comet swings about an angle of more than 90° degrees within a few hours.

Equ. (1) shows NEWTON's law in the original form. P is the attracting force. M_1 and M_2 are the two attracting masses. R is their distance apart. k is the gravitational constant already mentioned.

$$P = \frac{k M_1 M_2}{R^2} = b_2 M_2 \qquad \text{Equ. (1)}$$

$$P = \frac{\varrho M_1 \sigma M_2 \sigma}{R^2} = \frac{4\pi k v_2}{\sigma} M_2 \qquad \text{Equ. (2a)}$$

$$= \frac{\varrho S_1 S_2}{R^2} \qquad \text{Equ. (2b)}$$

$$= \frac{\varrho S_1 S_2 e^{(\xi_1+\xi_2)t}}{R^2} \qquad \text{Equ. (2c)}$$

$$k = \varrho \sigma^2 \qquad \text{Equ. (3)}$$

$$v_2 = \frac{\sigma}{4\pi k} b_2 \qquad \text{Equ. (4)}$$

$$\tau = \frac{\sigma}{4\pi k} \qquad \text{Equ. (5)}$$

I have changed this law in a twofold way.

1. Each of the two masses M_1 and M_2 is multiplied by the constant factor σ which corresponds to the number of cubic centimeters of ether which are swallowed by each gram of mass each second. Therefore I call this constant the ether swallowing constant. Instead of the masses M_1 and M_2 there are now the strengths S_1 and S_2 of the two ether sinks which represent the masses; compare Equ. (2 b). Their dimension is cm^3/sec.

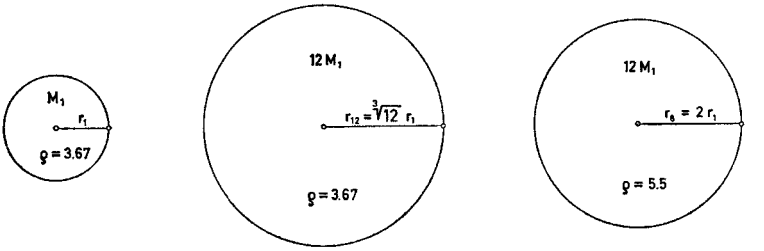
2. In place of the gravitational constant, I now introduce another constant which has a much deeper meaning than just a numerical constant: the constant ϱ which is the density of the ether.

From Equ. (1) and (2 a) we easily get Equ. (3) and (4). Equ. (3) shows the interdependance of the three constances k, σ, and ϱ. In Equ. (4) b_2 is the acceleration of the mass M_2 in the case that the mass M_1 is thought to be at rest. Then v_2 is the ether speed caused by the mass M_1 at the site of the mass M_2. From Equ. (4) we see that the acceleration of a mass in an ether stream is proportional to the velocity of the ether. From this it follows that the proportional constant of Equ. (4) must have a time dimension; compare Equ. (5).

Studying the literature during the thirties, I found that I had discovered Equ. (2) to (5) independently of at least four predecessors, the Suiss scientist J. BERNOULLI[9], the German mathematician RIEMANN[10], the Russian engineer YARKOVSKI[11], and the American mathematician PEARSON[12]. Already RIEMANN and PEARSON discovered Equ. (4) which says: the ether velocity at the site of a mass is proportional to the acceleration of the mass. This must be said in their credit.

My dear listeners! Now I have reached the point in my discours at which the conclusive evidence of the Earth's growing mass in the course of time may be inferred by correctly answering the question: What becomes of the ether which is swallowed by the stars during the millions and milliards of years? RIEMANN, one of my above mentioned predecessors, let the ether disappear metaphysically. Against this, I answer the question thus: In a manner still unknown, the ether which has been swallowed by a star is transformed into matter of measurable density in the interior of the star. From this it follows that the masses as well as the volumes (and, referring to stars of the size of planets and moons, also the densities thereof)

are growing at the same time. YARKOVSKI, another predecessor of mine, contended like myself that new mass is born from the absorbed ether. In the Soviet Union OBRUCEV[13], KIRILLOV[14], and NEJMAN[15] proclaimed the generation of matter by the stars in the course of time.



Earth
700 000 000 years ago
with radius $r_1 = 0.5\, r_8$
$\varrho = 3.67 \frac{gr}{cm^3}$
$vol._1 = \frac{1}{8}\, vol._8$

Earth
with the radius
$r_{12} = \sqrt[3]{12}\, r_1$
$\varrho = 3.67$
$vol._{12} = 12\, vol._1$

Earth
with the present
radius $r_8 = 6371$ km
$\varrho = 3.67 \times 1.5 = 5.5$
$vol._8 = \frac{vol._{12}}{1.5} = 8\, vol._1$

From the equation $e^{\xi t}\, M_1 = 12\, M$ there results: $\xi = 1.12 \times 10^{-16} \frac{1}{sec}$

Fig. 3

In the numerator of equation (2 c), I have included the growing of the masses M_1 and M_2 by the factor $e^{(\xi_1 + \xi_2)\, t}$. In this organic growing function, e is the base of natural logarithms, t is the elapsing time, and ξ_1 and ξ_2 are exponents which depend on the mean density of the two stars.

If we suppose that during the time $t = \sim 700\,000\,000$ years $= 2.2 \times 10^{16}$ sec the volume of the Earth increased by the factor 12, the original radius of the Earth being one half of the present radius,

then the expansion factor $e^{\xi t} = 12$; compare Fig. 3 and HILGENBERG[16]. From this we find $\xi = 1.12 \times 10^{-16}$. But by the weight of the additional eleven masses of the original Earth the mean density of the Earth increased by 50 % to 5.5, the volume being diminished by 30 % to eight former volumes.

If in NEWTON's law both masses are growing, the diameters of the orbits of planets and moons must become smaller because of the growing attractive force, and finally the two stars should unite.

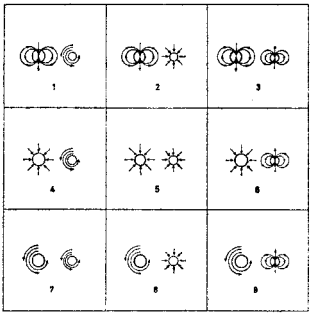


Fig. 4

However, this is in contradiction to observation, the contrary being correct in the case of the Earth and its Moon whose distance from the Earth is gradually increasing. A solution of this dilemna is possible in the following fluid dynamic manner. If the attractive force in NEWTON's law is caused by the described streaming in the fields of the two ether sinks, then it must be expected that such streaming would also produce additional forces and moments. Because of inertial orbiting and rotational movements, stars represent not only sinks but also dipols and whirls. Then, neglecting repetition, nine combinations of pairs are possible; compare Fig. 4.

In 1932, A. BETZ, pupil of the noted fluid flow expert L. PRANDTL, described the forces and moments which appeared when two equal or different stream-line models were superposed. The forces and the moment which are induced, when a dipol is exposed to the field of a sink, are important with reference to the law of NEWTON; compare Abb. 19 of BETZ[17]. Looking from the celestial North Pole, the dipole of Mercury is shown in the central sink field of the Sun in Fig. 5 together with the forces and the moment calcu-

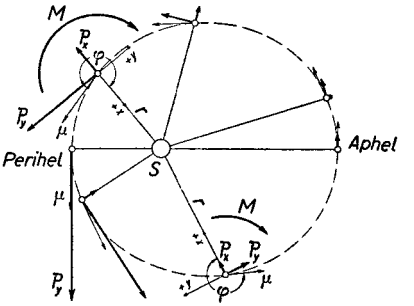


Fig. 5

lated by BETZ. Besides a force P_x which can be neglected because its direction is opposed in the two halves of the orbit, the force P_y continually accelerates the dipole in direction of the orbit. In my view, this force P_y causes the perihel shift of the inner planets of the solar system.

Besides these forces, there is also a moment trying to swing the dipole a w a y from the sink in the field of which it is moving. From this it follows that a star which orbits around a central star, will gradually increase its distance from the latter. Probably this effect overcompensates the approaching effect caused by the growing masses according to Equ. (2 c).

During the third decade I[18] proposed to use the 43" shift of Mercury's perihel during 100 Earth years to calculate the new constants of NEWTON's modified law; but I did not start this work until 1952 simplifying the problem by taking the orbit of Mercury as a circle.

With the known values of:

Radius of planet Mercury $r_{\varphi} = 2420$ km

Radius of orbit of Mercury $R_{\varphi} = 57910000$ km

Speed of Mercury in orbit direction $v_{\varphi} = 47.9 \frac{km}{sec}$

Mass of Mercury $M_{\varphi} = 3.2 \times 10^{26}$ gr

and the equation of Betz $P_{\gamma} = \frac{\pi \cdot r_{\varphi}^3 \cdot v_{\varphi} \cdot \varrho \cdot v_{o\gamma}}{R_{\varphi}}$

the following values were appointed:

$\tau = 18000$ sec

$\sigma = 0.015 \frac{cm^3}{gr\,sec}$

$\varrho = 0.0003 \frac{gr}{cm^3}$

$v_{\odot} = 4880 \frac{km}{sec}$

$v_{o\gamma} = 0.7 \frac{km}{sec}$

$v_{\oplus} = 175 \frac{km}{sec}$

$v_{\oplus\,centrifug.} = 0.84 \frac{km}{sec}$

In accordance with the above values are the following shifts of perihel:

$s_{\mathbb{Q}} = 43''/100$ years

$s_{\varphi} = 2.7''/100$ years

$s_{\oplus} = 0.6''/100$ years

$s_{\sigma} = 0.01''/100$ years

Well, I hope I have succeeded in showing you that one of the eight additional streaming effects of Fig. 4 has an important influence upon NEWTON's law. It seems to me that besides the eight effects shown in Fig. 4 there are also some others, so that a real chain reaction upon NEWTON's law is necessary to get its utmost precision. Especially the inversion of the MAGNUS-effect is necessary to explain the fact that 99 % of the moment of the solar system is established by the planets, so that there remains only 1 % for the Sun; compare HILGENBERG[18a]. The whirl effects of Fig. 4 cause a reversal of the rotation of planets and moons.

Fig. 6 shows σ^2, ϱ, and the product $\sigma \cdot \varrho$ as a function of σ in double logarithmic scale. Likewise four different results in calculating the new constants of NEWTON's law are distinguished.

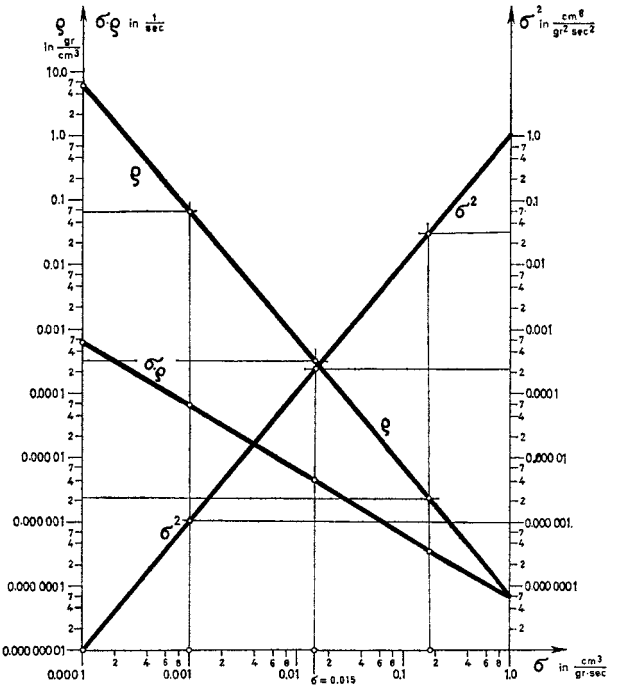


Fig. 6 σ^2, ϱ, and $\sigma \cdot \varrho$ in dependence of σ according to: $k = \varrho \cdot \sigma^2$..... Equ. (3)

On the basis of the Michelson/Morley/Miller-experiment a high value of σ and a low value of ϱ was found. I used the maximum value of 10 km/sec of the measured ether velocity. Recently J. P. ROOS in Cambridge, Mass. USA, wrote me that JASEJA et alii reported the repetition of the MICHELSON-experiment with masers

in 1964. The result given by JASEJA[19] et alii, a variation in the frequency difference of 275 kc/sec, was converted by J. P. ROOS into 9 km/sec of ether velocity. This result does not verify the theory of relativity because it is not a null effect, but is in the previously obtained range of 7 to 10 km/sec of the MICHELSON-experiment. It may be wrong to attribute the now established ether velocity of 9 km/sec as a whole to the horizontal component of the Earth's centrifugal acceleration, as I did in 1939; compare HILGENBERG[20]. This may be avoided in two different ways.

1. The position of the solar system in the Milky Way is north of its central plane. The additional ether stream may represent the motion of the solar system in relation to the Milky Way; compare MILLER[21].

2. The mass center of the Earth is shifted toward the South Pole of the Earth. Consequently an additional ether drift from north to south must result.

The values σ and ϱ on the basis of Mercury's perihel shift are in the medium range: $\sigma = 0.015$ cm³/gr · sec and $\varrho = 0.0002$ gr/cm³. They are the most probable ones; compare Fig. 6.

In calculating the Sun's red shift of light, I found an unprobably high value $\varrho = 7$ gr/cm³ and a low value $\sigma = 0{,}0001$ cm³/gr · sec; compare HILGENBERG[22]. But in this case nobody knows exactly how the light propagates in the moving ether.

Mr. J. P. ROOS, Cambridge, Mass. USA, calculated $\varrho = 0.0011$ cm³/gr · sec from the value 2.25" of the bending of light rays passing close to the Sun.

The value $\sigma \cdot \varrho$ in Fig. 6 would be the exponent of a star's expansion factor in the case that all the ether which is swallowed by the star remains there. I don't believe that this is so. The ether being the food of the stars, their excrements are protons and other particles with velocities up to that of the light; compare KRAFFT/HILGENBERG[23].

My dear listeners, I am hoping that you are interested in these new ideas. I shall leave it to each of you to find the solution of the problem that I talked of at the beginning of my address. You have the choice of deciding for the theory of relativity, or for the ether stream hypothesis. In both cases the Earth about 700 000 000 years ago had a diameter about half as great as to day. In the first case however you would have to ascribe to the Earth a density of 44 which is not very plausible, while in the second case you could ascribe to the Earth a density of 3 to 4 which is close to the present density of the planet Mars; compare Fig. 3.

I thank you very much for your attention, and am grateful to Prof. RUNCORN for inviting me to address you here in Newcastle upon Tyne.

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