The symbol h is used because, although it is numerically equal to the ratio of the electrical units, it has not the dimensions of velocity.

The new gravitational equation may be written

$$F = C\frac{M, M^1}{r^2}.$$

The numerical value of C is the reciprocal of the square of the velocity of light.

Putting

$$h = \frac{1}{\sqrt{C}}$$

we may compare it with the well-known relation

$$v = \frac{1}{\sqrt{\mu K}}.$$

On the electromagnetic system $\mu = 1$, so

$$v = \frac{1}{\sqrt{K}},$$

the above equation may be written

$$F = K\frac{M, M^1}{r^2},$$

where K has the numerical value of the dielectric constant of the ether, but it is not a quantity of the same kind.

This rather remarkable relation between the gravitational constant and the constant of the ether is very suggestive. The only ratio e/m that will give this result is the one above used. It is also the most probable experimental value.

It appears to me that this coincidence can hardly be accidental.

If mass is electromagnetic, then the unit of mass here used is the rational unit, and the constant of mass attraction might be expected to be related to the constants of the ether.

The above result not only suggests that matter is electrical in constitution, but that gravitational force is the same in kind if not in degree with electrical forces, and that they act in a common medium.

It may be interesting to point out the relative magnitudes of electrical and gravitational forces.

The gravitational force is

$$F = k\frac{M, M^1}{r^2},$$

and the electrical force between the electricities contained in the masses M, M^1 if they were set free is

$$f = \frac{1}{K}\frac{Q, Q^1}{r^2}.$$

From which the ratio of electrical to gravitational force is

$$\frac{1}{Kk} = (3 \times 10^{10})^4.$$

BERGEN DAVIS.

PHŒNIX PHYSICAL LABORATORY,
COLUMBIA UNIVERSITY,
May 28, 1904.

THE ROYAL COMMISSION ON TUBERCULOSIS.

THE commission consisting of Sir Michael Foster, M.P. (chairman), Professor G. S. Woodhead, Professor Sidney Martin, Professor McFadyean and Professor R. W. Boyce has presented an *ad interim* report. It says:

"After duly considering the matter, we came to the conclusion that it would be desirable not to begin the inquiry by taking evidence—that is to say, by collecting the opinions of others (though this might be desirable at a later stage), but to attack the problem laid before us by conducting experimental investigations of our own.

"The first line of inquiry upon which we entered may be stated as follows: What are the effects produced by introducing into the body of the bovine animal (calf, heifer, cow), either through the alimentary canal as food, or directly into the tissues by subcutaneous or other injection, tuberculous material of human origin, *i. e.*, material containing living tubercle bacilli obtained from various cases of tuberculous disease in human beings, and how far do these effects resemble or differ from the effects produced by introducing into the bovine animal, under conditions as similar as possible, tuberculous material of bovine origin, *i. e.*, material containing living tubercle bacilli obtained from cases of tuberculous disease in the cow, calf or ox?

"We have up to the present made use in the above inquiry of more than twenty different 'strains' of tuberculous material of human origin—that is to say, of material

taken from more than twenty cases of tuberculous disease in human beings, including sputum from phthisical patients and the diseased parts of the lungs in pulmonary tuberculosis, mesenteric glands in primary abdominal tuberculosis, tuberculous bronchial and cervical glands and tuberculous joints. We have compared the effects produced by these with the effects produced by several different strains of tuberculous material of bovine origin.

"In the case of seven of the above strains of human origin, the introduction of the human tuberculous material into cattle gave rise at once to acute tuberculosis, with the development of widespread disease in various organs of the body, such as the lungs, spleen, liver, lymphatic glands, etc. In some instances the disease was of remarkable severity.

"In the case of the remaining strains, the bovine animal into which the tuberculous material was first introduced was affected to a less extent. The tuberculous disease was either limited to the spot where the material was introduced (this occurred, however, in two instances only, and these at the very beginning of our inquiry), or spread to a variable extent from the seat of inoculation along the lymphatic glands, with, at most, the appearance of a very small amount of tubercle in such organs as the lungs and spleen. Yet tuberculous material taken from the bovine animal thus affected, and introduced successively into other bovine animals, or into guinea-pigs from which bovine animals were subsequently inoculated, has, up to the present, in the case of five of these remaining strains, ultimately given rise in the bovine animal to general tuberculosis of an intense character; and we are still carrying out observations in this direction.

"We have very carefully compared the disease thus set up in the bovine animal by material of human origin with that set up in the bovine animal by material of bovine origin, and so far we have found the one, both in its broad general features and in its finer histological details, to be identical with the other. We have so far failed to discover any character by which we could distinguish the one from the other; and our records contain accounts of the post-mortem examinations of bovine animals infected with tuberculous material of human origin which might be used as typical descriptions of ordinary bovine tuberculosis.

"The results which we have thus obtained are so striking that we have felt it our duty to make them known without further delay in the present interim report.

"We defer to a further report all narration of the details of our experiments (and we may say that up to the present time we have made use of more than two hundred bovine animals), as well as all discussions, including those dealing with the influence of dose and of individual as well as racial susceptibility, with questions of the specific virulence of the different strains of bacilli, with the relative activity of cultures of bacilli and of emulsions of tuberculous organs and tissues, and with other points. In that report we shall deal fully with all these matters, as well as with the question why our results differ from those of some other observers."

THE INTERNATIONAL ASSOCIATION OF ACADEMIES.

As we have already noted, The International Association of Academies met in London, on May 24, 25, 26 and 27 under the presidency of Sir Michael Foster. From reports published in the London *Times,* we take the following details. Lord Reay was nominated vice-president and Dr. Diels, Professor Darboux, Count Balzani and Professor Bakhuysen were appointed honorary presidents.

A resolution was passed to the effect that the initiation of any new international organization, to be maintained by subventions from different states, demands careful previous examination into the value and objects of such organization, and that it is desirable that proposals to establish such organizations should be considered by the International Association of Academies before definite action is taken.

Professor Credner moved "That this meeting recognizes the great value of the International Catalogue of Scientific Literature, and the importance of aiding the work by