quence since the reader can easily find correct information by consulting other authorities, but when such errors are widespread and appear in many of the works which the reader would naturally consult with great confidence, they seem to call for correction in a widely read periodical even if the author of such corrections might by some be put therefore into the class of those who "rail at those who arrive." While the average reader may be satisfied with approximately true statements there are those who seek exact information, and this class deserves attention since it embodies most students to whom the world must look for scientific advances. It was Gauss who insisted on accuracy as regards the last figure in tables of logarithms and brought about a reform relating thereto. It is true that he did not achieve greatness thereby but he exhibited a point of view which is fundamental.

G. A. MILLER

CAPACITY AND FREQUENCY MEASUREMENT BY MEANS OF THE NEON TUBE

IN the June 18th number of SCIENCE there appeared an abstract by Professor Frederick Bedell and Herbert J. Reich describing the use of a neon tube oscillator for obtaining a time axis in the study of alternating current wave forms by means of the cathode ray oscillograph. The oscillator consisted of a condenser which was charged at a constant rate through a saturated vacuum-tube rectifier and discharged periodically and automatically by a neon lamp shunted across the condenser. The method of controlling the frequency of discharge, *i.e.*, changing the rectifier plate current by adjusting the filament rheostat, suggested the possibility of using the plate current as a means of measuring the condenser capacity or the frequency of oscillation.

An analysis of the circuit yields the following simple equation for the frequency in terms of the capacity, plate current and maximum and minimum discharge voltages of the neon tube:

$$f = \frac{I_p - I_o}{(C_c + C_o)\ (E_{max} - E_{min})}$$

where C_o is made up of the neon tube capacity, wiring capacity and coupling capacity to the amplifier or phones, and I_o is the leakage current through the condenser and through the neon tube at the time of discharge. This expression seems to be checked very closely by experiment.

With a preliminary set-up containing low-precision rheostats and meters, readings accurate to within one quarter of one per cent. have been obtained in measuring capacity and frequency. For capacity measurement the frequency is maintained constant by comparison with a standard tuning-fork oscillator. Improvement of the apparatus promises to yield a very simple method of measuring capacity with a degree of accuracy quite sufficient for all ordinary purposes.

HERBERT J. REICH

CORNELL UNIVERSITY

OUR WORLD IN THE MAKING

UNDER the above title Professor Herman L. Fairchild has presented "a brief comparison of some geologic problems analyzed under the two views (Laplacian and Planetesimal) of the primitive earth."[1]

Professor Fairchild says:

> An example of innate conservatism, in science instead of religion, is found in the tenacity with which even scientific men are holding to a discredited hypothesis of world origin.

One is entirely justified in assuming that the carefully worked out analysis which follows the above introduction embodies the latest authoritative opinion on the various phases of geological science involved. Under the circumstances the analysis may appear somewhat dogmatic because of the omission of any reference to such contributions to world origin events as those of Jeans,[2] Jeffreys,[3] and others.

Furthermore, certain details of the analysis, such as the discussion of petroleum origin, may appeal to many readers as somewhat out of harmony with this general purport of the paper. According to the analysis one is led to believe that the organic origin of oil is a view engendered by the necessity of a "surficial origin" imposed by the Laplacian hypothesis. There is the further implication that the organic origin of oil can have no general application because "it is not entirely satisfactory for some localized reservoirs of great volume; nor for the peculiar relations in the 'salt domes' of the Gulf coastal plain; nor for the association of the hydrocarbons with crystalline rocks and volcanic phenomena."

It is safe to assume that there is no general recognition of a special problem in the origin of the oil associated with salt domes although the origin of the domes themselves may be considered still a moot question. And again it is generally conceded that in the strikingly few cases of association of hydrocarbons with igneous or metamorphic rocks the association is that of hydrocarbons of exotic origin.

In the light of the overwhelming evidence—less conservative might call it proof—of the organic origin

[1] SCIENCE, Vol. 44, No. 1659, pp. 365–367. October, 1926.

[2] Jeans, James H. Problems of Cosmogony and Stellar Dynamics. Cambridge (Eng.) University Press. 1919.

[3] Jeffreys, Harold. The Earth, Its Origin, History and Physical Constitution. Cambridge (Eng.) University Press. 1924.