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.

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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.

of petroleum, it would be of great interest to know more about the "localized reservoirs of great volume" for which the organic origin of oil "is not entirely satisfactory." Certainly, more detailed explanations must be made of the analysis if it is to be of the greatest possible usefulness.

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AN OBSERVATION AT THE TIME OF THE AURORA

BETWEEN 8:45 and 9:00 P. M. to-night (October 14th) we observed a peculiar phenomenon which seems to have some connection with the Aurora Borealis.

The auroral streamers were very strong, and we went into a north room to view them. There was no house illumination: all electric lights were turned off, so as to see the streamers better. Outside there was a moonlight of medium clarity. No perceptible wind was blowing; the air was unusually clear, and the point of observation was exceptionally free from obstructions and street or house lights, being on the top of a treeless hill 725 feet above sea level, in northern New Jersey. The outdoor illuminations against which the phenomenon was observed were a few street lights *about half a mile away.*

While watching the Aurora, my son happened to hold his face close to one of the window panes, so that some of the warm moisture of his breath was precipitated on the glass. Then began the curious thing. The entire area of mist of the glass seemed to begin drifting and blowing at a great rate. It looked for all the world like a tremendous snowstorm. Heavy flakes and wisps of driven snow appeared to be flying past us outside of the pane. It is important to record that *the movement was entirely toward the north and horizontal.* There was *no upward movement,* as one might expect if this had been merely the evaporation of the condensed moisture on the pane.

This movement was visible on no clear pane. As the moisture passed, the movement vanished; as we breathed afresh on the pane, the illusion—if it was one—came back full force.

We waited until the Aurora had ceased, which was about 9:15 P. M. Then, only the faintest trace of the streamers being anywhere visible, we again breathed on the pane; but now no such phenomenon developed.

Will some expert on auroras or radioactivity or relativity or something else kindly enlighten us? Or have we stumbled on some new oddity in this mysterious realm?

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SCIENTIFIC BOOKS

Heteroptera or True Bugs of Eastern North America. By W. S. BLATCHLEY. The Nature Publishing Co., Indianapolis, Ind. 1,116 pages, 12 plates, 215 text figures, Oct., 1926.

THIS is the fourth of Blatchley's books on the systematics of the insect fauna of Eastern North America and upholds the high standard set in the "Coleoptera of Indiana."

The general account of the group, including directions for collecting, is followed by a systematic arrangement tabulating the families, genera and species. The descriptions of the 1,253 species are mostly new, but in the Miridae and Corixidae, owing to the difficulties in obtaining identified material, it was necessary to compile descriptions of some species. A few species are described as new, chiefly from Florida, and a number of tropical species are recorded from Florida for the first time. The nomenclature and classification are those generally accepted, but in a few cases there are changes. With many species the host-plant is given and something of the habits.

The descriptions appear full and sufficient and the synopses, though partly compiled, are well made, altogether easily the best book on the Hemiptera of our country, and it will long be the one most necessary to the student, be he a beginner or a specialist. As with the others of this author's works it will undoubtedly stimulate the study of our insects. One can not refrain from expressing the greatest admiration for the ability and energy which, overcoming numerous obstacles, has pushed this work to such a successful conclusion.

N. BANKS

SCIENTIFIC APPARATUS AND LABORATORY METHODS

THE EXTRACTION OF FAT FROM SPECIMENS PRIOR TO CLEARING BY THE POTASH METHOD

IN specimens cleared by the potash method the fat of the superficial and muscular fasciae is partially saponified and appears in the cleared material as opaque, white masses which often prove a serious impediment to accurate observation of the skeletal elements as noted by Strong (1925).[1] After the treatment with potash it is apparently difficult to get rid of the fat, as Strong was unable to find a suitable solvent for these masses and found it necessary to dissect them away.

This difficulty may be obviated by the extraction of

[1] Strong, R. M., 1925, "The Order, Time and Rate of Ossification of the Albino Rat (Mus Norvegicus Albinus) Skeleton," *Amer. Jour. Anat.*, Vol. 36, 313–55.