ZOOLOGICAL NOMENCLATURE

IN accordance with prescribed routine, the undersigned invites the attention of zoologists to the fact that application has been made to the International Commission on Zoological Nomenclature to suspend the Rules and to place in the Official List of Generic Names—

Lepidocyclina Gümbel, 1868, type (1898) *Nummulites mantelli;* objective synonym *Cyclosiphon* Ehrenberg, 1856, type *N. mantelli;*

Lytoceras Suess, 1865, genotype *Ammonites fimbriatus* Sowerby; and

Ophiceras Griesbach, 1880, genotype, *O. tibeticum* Griesbach.

These cases will be held open until about July 1, 1933, to enable zoologists to submit to the commission their opinions, for or against the proposition.

C. W. STILES,
Secretary

SCIENTIFIC BOOKS

Elements of Geophysics as Applied to Explorations for Minerals, Oil and Gas. By DR. RICHARD AMBRONN, Göttingen. Translated by Margaret C. Cobb, Ph.D., New York, McGraw-Hill Book Co.

THIS book is a translation of Ambronn's "Methoden der angewandten Geophysik," published at Dresden and Leipzig in 1926. The attentive reader of either the original or of the translation will learn much about the many branches of geophysics, both of their scientific foundations and of their commercial applications, for, as appears from the title, the latter phase of the subject is the main subject of the book; the foundations are treated only because they are a necessary preliminary. They are, however, adequately treated.

The reader of this book must not expect, however, that a study of it, however careful, even when accompanied by a further study of the numerous books and articles to which reference is made in the text, will put the reader in a position successfully to undertake prospecting for oil, gas or minerals. The author expressly disclaims any such purpose or power. The reasons are not far to seek. Geophysical prospecting, though based on a scientific foundation, is to some extent an art and can not be learned wholly from books but needs practice or personal contact with a teacher, or both. Furthermore, since geophysical prospecting is pursued primarily for profit, the methods used and results obtained are seldom published in detail. This is a loss to science, for the same methods that yield results of commercial value might be expected to yield also results of scientific value, and the "pure" scientist may not unnaturally be envious of the large sums devoted to commercial work in comparison with the meager pittances doled out to research for its own sake.

These ideas, however, lead us a little aside from the book under review. The author's name and position is a guarantee that the facts are competently presented. (He is one of the editors of the *Ergänzungshefte für angewandten Geophysik,* published in connection with *Gerlands Beiträge zur Geophysik,* and the manager of a concern engaged in commercial prospecting.

However, several slips detected by the reviewer in fields with which he happens to be familiar illustrate the practical impossibility of being infallible over the wide range of subjects embraced under the general heading of geophysics. For instance, in Chapter II the numerical values given as those of $\partial g/\partial z$ (g = acceleration of gravity, z = distance along the vertical) are really values of $\frac{1}{g}\partial g/\partial z$, except for an error in the position of the decimal point due to a slip in reproducing the figures in Messerschmitt's work, from which the figures were taken and in which the decimal point is correctly placed and the quantity correctly designated, though not with all the clearness that might be desired. In one instance Messerschmitt's 0.000 000 196 is changed to 0.000 00 296, apparently to agree better with the other figures in the table. Nevertheless 1 and not 2 is the correct figure for the quantity intended and the slip in regard to the decimal point has just been noted. Incidentally recurved $d(\partial)$ for partial derivatives is not used anywhere, so that the formulas containing partial derivatives look as if they might have appeared in an English work of a hundred years ago.

In Chapter II also there is some confusion between the elevation of the geoid above the spheroid and the errors introduced by anomalies in gravity into the elevations above sea-level deduced by spirit leveling. The former may be fairly considerable, perhaps some tens of meters, the latter only a fraction of a meter. In Chapter III the vessel of the Carnegie Institution of Washington that preceded the non-magnetic *Carnegie* is called the *Galileo.* This is a very appropriate name for a vessel engaged in scientific work, but as a matter of fact she was named the *Galilee.* These instances of error of varying degrees of importance may serve to put the reader on his guard against placing a too implicit faith in the literal exactness of every statement made.

The bibliographical references are abundant and constitute one of the most useful features of the

book, but to use them the key to the abbreviations must be consulted, since the names of scientific journals are so much abbreviated that it is impossible to guess even the names of the best known among them.

So far, what has been said applies both to the original German and to the English translation. In the latter the language of the original preface and introduction has been condensed somewhat, but elsewhere the chief changes in substance seem to be additions, mostly a line or two here and there of additional statement, with perhaps additional bibliographical references. In some instances, however, whole paragraphs or pages have been added in order more fully to develop the subject or to bring it down to date. Dr. Cobb has used the translator's privilege to break up many of the long periodic sentences so characteristic of German style into shorter ones more agreeable to English-speaking readers, but the translation still reads like a translation. In many passages the language is not smooth and in some the author's thought is incorrectly rendered. However, for English-speaking readers the translation will be easier to follow than the original and, of course, more nearly abreast of recent developments. It may occasionally be convenient, however, to have the original at hand to refer to.

WALTER D. LAMBERT
U. S. COAST AND GEODETIC SURVEY

SCIENTIFIC APPARATUS AND LABORATORY METHODS

CORRUGATED RUBBER TAMBOUR DIAPHRAGMS

SINCE its invention and description by Marey the tambour has consistently held its place as one of the most widely used and one of the most serviceable devices for exploring behavior. Since the careful analysis of Frank its limitations are well understood. Certain errors due to transmission by an elastic medium are inherent in the system. Errors due to the mass and unfavorable leverage of the recording arm can be reduced in many instances to a negligible minimum but not without some sacrifice of sensitivity. Of the several suggestions for obviating the errors dependent on rubber diaphragms no one has proved satisfactory enough for wide acceptance. For experimental purposes we needed a diaphragm of greater permanence, increased sensitivity and closer proportionality between excursion and air pressure throughout the range of deformation. After trying several materials, including corrugated collodion and cellophane, we have to report a reasonably satisfactory corrugated rubber membrane. As finally made by Mr. Newton this compares favorably with the flat rubber diaphragms with respect to all three desiderata. Their durability is still under test, but the latex preparation that we use is reported by the makers to be very durable. The corrugated membrane tested over four and a half times as sensitive to air pressure as a fresh Harvard Apparatus Company diaphragm under usual tension. A pressure of 5 mm of Hg at a recording leverage of 4:1 gave average excursion amplitudes of 59.9 mm and 12.8 mm, respectively, for the corrugated and flat membranes. A cumulative step-wise series of air displacements of approximately .25 cc each gave the following amplitude steps:

Corrugated	Flat
2.52	2.10
2.49	2.03
2.38	2.02
2.50	1.95
2.59	1.89
2.90	1.85
2.62	1.75
2.83	1.65
2.72	1.68
2.90	1.57
Total ..... 26.45 mm	18.49 mm

Under both tests the corrugated membrane is the more sensitive. In the air displacement test both show changes in amplitude with increasing deformation of the membrane: the flat membrane becoming less sensitive, the corrugated becoming more sensitive, but changing less proportionately than the flat.

Obviously, the corrugated membrane is still in a state of development and must be carefully made to be satisfactory. A few membranes can, however, be supplied at low cost for experimental work. If Harvard tambours are sent to Mr. Newton available membrances will be mounted.

They can be furnished in three grades; average sensitivity, approximately like that on which the tests were made, extremely sensitive, and robust with more rapid recovery. A photographic record of the constants of each membrane in response to a pressure of 5 mm Hg can be furnished on request at cost of time and materials.

RAYMOND DODGE
F. H. J. NEWTON

YALE UNIVERSITY

A METHOD FOR THE DETERMINATION OF THE VELOCITY OF SOUND IN SOLIDS

RECENT developments in vacuum tube oscillators have made the velocity of sound in liquids far more accessible without adding materially to its significance