characteristics of animals brought about by the changes in conditions surrounding them. The series of lectures is extremely interesting and suggestive. It will be found to contain a most excellent summary of the important facts known in regard to variations and the conditions regulating variations in animals and plants, and it will also be found to be full of suggestions to guide further experiments in the future. The work perhaps shows some trace of lack of sufficient care and occasionally carelessness in quotations from the authors cited, but on the whole we must regard these lectures as an extremely valuable addition to our knowledge of the doctrine of evolution and possibly as a stepping-stone into a new department of investigation upon the doctrine of evolution. Especially important are they as opening a new field of research, which is so broad and yet so close at hand that there is opportunity for all to work therein with strong confidence in being able to obtain valuable results.

Text-Book of Elementary Biology. By H. J. CAMPBELL, M.D. London and New York, Macmillan & Co. $1.60.

THE last few years have seen the publication of several books on elementary biology, and those already published very satisfactorily fill the need felt by schools for such works. One can but wonder at the appearance of this new book by Dr. Campbell, especially when we see that it covers practically the same ground as some of the others and in no more satisfactory a manner. The book is entitled Introduction to the Study of Elementary Biology, but it certainly could never be used as such unless it were accompanied by a long course of lectures or by considerable assistance in practical work. The text is too condensed, the subject too crowded and everything is treated in too concise a manner to be intelligible to a student who is beginning to study elementary biology. In some places the text is scarcely more than a catalogue of anatomical details perfectly unintelligible without a large amount of outside assistance. The book is divided into two parts, the first giving general biological truths and the second giving more detailed descriptions of a few types. The author advises the student to read the two parts together and not consecutively, a precedure which most students would be sure not to follow. The author also strongly advises a student to do a considerable amount of practical work in connection with the reading, but nowhere in the book does he give any directions for such practical laboratory work, any directions for obtaining material or for using it, so that a student would be utterly unable to work in the laboratory by the use of this book alone. In short, the book as an introduction is impracticable unless it is accompanied by considerable personal direction on the part of instructors. Seemingly this book is designed chiefly for medical students, or at least so one would judge from the apportionment of space allowed to types. Of 160 pages which are devoted to types, over 55 are taken by the study of parasitic worms including leeches, 31 more with the unicellular organisms, leaving less than 30 pages for all the rest of the animal kingdom, including invertebrates; perhaps the most curious apportionment of space to be found in any text-book. While for an elementary text-book it seems to be not usable, the work does contain an interesting summary of biological principles and facts which would be instructive and pleasant reading to a person already acquainted with elementary biology and wanting an outline summary of leading biological principles. For such a purpose the book many be recommended, and will be found readable and instructive.

Physics. Advanced Course. By GEORGE F. BARKER, Professor of Physics in the University of Pennsylvania. American Science Series. New York, Henry Holt & Co. 902 p. 8°.

THIS addition to the excellent series of scientific text-books published by Messrs. Henry Holt & Co. will be welcomed by teachers of physics both on account of Professor Barker's reputation as a teacher and as an investigator.

In the preface the author states that the progress which has been made in physical science within the past decade has com-

CALENDAR OF SOCIETIES.

Chemical Society, Washington.

Dec. 8.—Subject of Discussion, National Chemical Society Plans.

Jan. 12.—Ninth Annual Meeting. Officers elected: President, Dr. F. P. Dewey; vice-presidents, Mr. Cabell Whitehead, Mr. K. P. McElroy; treasurer, Dr. E. A. de Schweinitz; secretary, Dr. A. C. Peale; additional members of executive committee, Professor H. W. Wiley, Professor F. W. Clarke, Dr. Thomas Chatard, and Professor R. H. Warder. Papers were read as follows: On Some Old Vegetable and Animal Oils, by K. P. McElroy and W. D. Bigelow. An examination had been made of thirteen oils that had formed part of the exhibit at the Centennial Exposition of 1876, with the view of determining the effect of age. The conclusion reached was that age diminishes the iodine number of oils and fats but increases the ether and free acid members. On Some Problems of Physical Chemistry, by Robert B. Warder, who submitted the following as some of the open problems. 1. What is the real nature of matter in atoms and in molecules, in elements and compounds, and in the several states of aggregation? 2. How far can the properties of each kind of matter be exposed as a function of the atoms (or other constituents) of which it is composed? 3. What are the mechanical possibilities and limitations of chemical change? Subject discussed, What May We Hope to Gain from the Congress of Chemistry at Chicago Next August.

New York Academy of Sciences, Biological Section.

Jan. 9.—A. A. Julien, Suggestions in Microscopical Technique, including (*a*) a carrier of cover impressions (mycoderm blood), utilizing as clamps a coil of brass wire moulded in a phial. The same device with a platinum coil serves as a convenient staining phial for cover-glass preparations. (*b*) A suggested medium for mounting delicately intractile protoplasmic objects. (*c*) Devices for avoiding inclusion of air-bubbles in mounts. (*d*) Balsam-paraffine as a ring varnish. O. S. Strong, On the Components of Cranial Nerves of Amphibia. In the seventh a dorsal root was shown to pass off into brain, representing Ophthalmicus, Superficialis, Facialis, and Buccalis of fishes, and innervating the lateral sense-organs of the head. In vagus a root of similar internal origin passes into the R. laterales, innervating the lateral sense-organs of the body. Another component of the facialis is the fascicalus communies of Osborn, which was believed to represent the lobus vagi of fishes. This passes off into the palatinus and mandibulaies internus, innervating the mucous epithelium of the oral cavity; while in the glosso-phangugrus and vagus similar components derived from this fasciculus innervate in like manner portions of the alimentary canal and its appendages. The relation of the results to segmentation of head was discussed. N. L. Britton, A Review of the N. A. Species of Lespedeza, With Comments on the Eleven Native Species, Shown to be Divisible into Two Groups, (*a*) those producing both petalous and apetalous flowers, and (*b*) those in which the petalous flowers are developed. Of the two naturalized species, one, in the south-eastern part the United States, L. striata (shrug) H. and A., is a native of eastern Asia, appearing (about 1848) in Georgia.

Society of Natural History, Boston.

Jan. 18—W. M. Davis and students in geological field-work in Harvard University, Report on a Study of Glacial Sand-Plains in Eastern Massachusetts (illustrated by lantern slides).

Society for the Advancement of Science, Las Cruces, N.M.

Jan. 12.—C. H. Tyler Townsend, Presiden's Annual Address: The Present Status of Science in New Mexico.

pletely changed its aspect, the physics of to-day being distinctly the science of energy. It is from this point of view that the text-book has been written, the classification which has been adopted being based on the most recent views of energy, considered as being ultimately a phenomenon of the æther. The fact is significant that more than half of the entire work has been devoted to æther-physics.

The introductory portion of the book considers, first, physical relations in general, and second, the laws of motion; the latter being discussed, first in the abstract, and second with reference to the action of force upon matter. Under mass-physics energy is first treated of as a mass-condition, and then work, as being done whenever energy is transferred or transformed; the subject of potential being developed as a consequence of mass-attraction. The properties of matter are next considered, including the modern views of its structure; and then follows the subject of sound considered as a mass-vibration. Under molecular physics the phenomena of heat alone are treated; the term heat being restricted, in accordance with modern usage, to molecular kinetic energy. Under the head of æther-physics are grouped: (1) æther-vibration or radiation, (2) æther-stress or electrostatics, (3) æther-vortices or magnetism, and (4) æther-flow or electro-kinetics; following the classification so well set forth by Lodge. Radiation is considered broadly without any special reference to those wave-frequencies which excite vision and are ordinarily called light.

The ground covered is that which is usually traversed by students in the more extended courses in physics in our leading universities, colleges, and technological institutes.

The book is well printed and well illustrated, a colored magnetic map of the United States being given as a frontispiece. The text is interspersed with examples, and descriptions of illustrative experiments in smaller type. The metric system has been used throughout, and all the units employed are those of the C. G. S. system.

Although the preface only bears date of October 1, 1892, a second edition has already been issued.

AMONG THE PUBLISHERS.

A NEW edition of Haeckel's "The History of Creation," has been issued in Germany, and a translation, revised by Professor E. Ray Lankester, is just published in this country by D. Appleton & Co. The book is a popular exposition of the doctrine of evolution in general, and of that of Darwin, Goethe, and Lamarck in particular. The reviser calls it "a statement of the views of one of the most learned, experienced, and honored naturalists of modern times." It is issued in two volumes, with numerous illustrations.

— D. Appleton & Co. publish a "Dictionary of Every-Day German and English," by Martin Krummacher, Ph.D. In addition to the dictionaries proper, it contains lists of the most important technical terms, proper names spelled differently in the two languages, a sound-notation, an outline of grammar, and several pages of "travel talk" in parallel columns.

— Ginn & Company announce "A Students' Manual of a Laboratory Course in Physical Measurements," by W. C. Sabine, Instructor in Harvard University, to be published in February. The manual will contain an outline of seventy experiments in mechanics, sound, heat, light, magnetism, and electricity, arranged with special regard to a systematic and progressive development of the subject. The description of each experiment will be accompanied by a brief statement of the physical principles and definitions involved, and a proof of necessary formulae. That the manual may be of more ready and general service a set of apparatus has been designed which is especially adapted to the course and can be found complete on the market. The book is intended for use in supplementing college courses in physics.