But the especial inconsistency is this: if Dr. Hay wishes to use Linné's *Pisces* so as to exclude the sharks, why has he the right to put back into this term of Linné such forms as sturgeons, anglers, sea-porcupines, pipefishes and the like, which Linné himself cast out with the sharks? If this can be done, evidently the sharks also can be restored, and *Pisces* reacquires its normal use.

The present volume touches upon a number of points in which judgments may differ—when one author treads perilously near another's vagaries. Thus I note that Dr. Hay has no scruples in associating such obscure forms as Coccosteans and Pteraspids with true fishes (while ejecting sharks!). Also that the Arthrodiran Placoderms are still grouped with the lung-fishes, as also for the first time are Pterichthyids—and for the latter annexation no reasons are given. These forms are altogether grouped as Azygostei, a new subclass, equivalent to Teleostomi, based doubtless on the presence of a median row of cranial bones; in this event it is evidently a *nomen delendum,* for a similar row of bones occurs admirably in Teleostomes, *Acipenser,* for example. Within the latter subclass the use of Rhipidistia, p. 357, as a superorder equivalent to Crossopterygii, is evidently an oversight.

On all scores, though, returning to our original text, Dr. Hay's volume is a mine of gold to the paleontologist, and the officials of the Geological Survey are to be congratulated on having secured it and given it publication. Such works cannot be too plentiful or too welcome. In another case, however, the publishing authorities would add a helpful favor to specialists if they gave the book a wider margin—say, of two inches at the bottom of the page—so as to facilitate the insertion of addenda and corrigenda.

BASHFORD DEAN.

Neurological Technique. By IRVING HARDESTY, Ph.D. University of Chicago Press, 1902. Pp. 185; 4 figures.

Professor Henry H. Donaldson, in his short introduction to this little volume, states that its object is to serve as an introduction and laboratory guide to the study of the architecture of the nervous system. The material considered falls into three divisions: (1) Laboratory methods; (2) an outline for the examination of the central nervous system; (3) a classified list of the neurological nomenclature (B N A) accepted by the German Anatomical Society.

Excellent judgment has been shown in the selection of the laboratory methods, and care has been exercised to bring to the notice of the student only such methods as may be employed with some assurance of obtaining satisfactory results. In case a number of methods are at hand, which bring out, differentially stained, certain elementary constituents of the central nervous system, only the most important are considered or several methods are combined into one workable method, thus avoiding confusion and, at the same time, enabling a student to employ his time most economically. The methods selected are given in full. The descriptive account of each method is prefaced by a statement in which are enumerated the reagents which will be required in each step of the method and in the descriptive account each reagent used and the time during which it should act are printed in heavy type. The student may thus at a glance ascertain the steps of a method. This portion of the volume, while compiled primarily for the beginner, will prove of service to the investigator and teacher as presenting in compact form the essentials of neurological technique.

In the outline for the dissection of the central nervous system, the (B N A) nomenclature is used almost exclusively. This outline is based on the human central nervous system and consideration is given only to the macroscopic anatomy of the organ; with the exception of certain external features, it may, however, be used for the study of the nervous system of the larger mammals. The outline presupposes that the brain and cord used have been fixed in formalin, and that only one specimen is at the disposal of the student. Attention is drawn to the external features of each region, after which the student is directed to make sections along certain planes located by surface markings, each section thus obtained being considered seriatim. A number of fig-

ures are added to facilitate the location of the section planes.

Timely emphasis is given to the (B N A) nomenclature, and it is hoped that this may hasten its wider adoption. The volume as a whole should prove useful to the student and will no doubt aid teachers in formulating courses in neurology. The typography and press-work are to be commended.

G. Carl Huber.

SCIENTIFIC JOURNALS AND ARTICLES.

Journal of Physical Chemistry. May. 'Synthetic Analysis in Ternary Systems,' by A. W. Browne. This is the description of several experimental applications of Bancroft's new method for analyzing the solid phase appearing in three component systems without removing it from the mother liquor. 'On Indifferent Points,' by Paul Saurel. 'Studies in Vapor Composition, II.,' by H. R. Carveth. A study of simple experimental methods discovered by the application of the phase rule. 'Note on the Optical Rotatory Power of Cane-sugar when Dissolved in Amines,' by Guy Maurice Wilcox. In such solutions sugar is found to have a much higher specific rotatory power than in water.

June. 'The Rate of the Reaction between Arsenious Acid and Iodin in Acid Solutions; the Rate of the Reverse Reaction; and the Equilibrium between Them,' by J. R. Roebuck. An experimental study of the law of the rates at which chemical reactions take place in homogeneous systems. 'On the Triple Point,' by Paul Saurel. 'On the Theorem of Tammann,' by Paul Saurel. 'Experiments on the Electrolytic Reduction of Potassium Chlorate,' by G. H. Burrows.

The Journal of Comparative Neurology for September contains a memoir of 85 pages and two plates by Professor G. E. Coghill, of Pacific University, entitled 'The Cranial Nerves of *Amblystoma tigrinum*,' in which the components of the cranial and first two spinal nerves are described in detail and plotted after microscopic reconstruction. This is followed by an exhaustive comparative discussion of these nerves in the light of other Urodela.

SOCIETIES AND ACADEMIES.

RESEARCH CLUB OF THE UNIVERSITY OF MICHIGAN.

The first meeting of the club was held on the evening of October 8. Mr. Alfred H. White gave the first paper, speaking on the 'Theory of the Incandescent Mantle.'

Data were presented of temperature measurements made upon two kinds of mantles. A pure thoria mantle attained a temperature of 1510° C. and its illuminating value was 1.2 candle power. A mantle with one half per cent. ceria showed a temperature more than one hundred degrees lower and gave thirteen times the light. The conclusion was drawn that the illumination of a mantle was to a greater extent dependent upon the composition of the mantle than upon the temperature. This opposes the conclusions of Le Chatelier and Nernst, who hold that the thoria-ceria mantle attains a higher temperature than a mantle of any other material, and that this causes the unusual illumination. The theory was advanced that the substance of the mantle was a solid solution of ceria in thoria which was capable of transforming the heat of the flame into light more economically than any other substance yet known.

Professor F. Haber, of the Carlsruhe Polytechnicum, who was present as a guest, said that investigations as yet unpublished, conducted by his colleagues Bunte and Eitner, had established the same fact, that a mantle of pure thoria attained a higher temperature but gave less light than one of the usual thoria-ceria mantles.

The second paper was given by Dr. Huber, and represented work done in his laboratory by himself and Mr. Adamson on the 'Morphology of the Sudoriparous and Allied Glands.'

The observations presented were based on models made after the Born plate reconstruction method. The glands reconstructed included ordinary sudoriparous glands, glands from the circumanal and axillary regions, ceruminous glands and glands of Moll. The tubule constituting the coiled portions of the sudoriparous glands studied varies in length from 4.25 mm. to 10 mm., the excretory duct forming one fourth to about one half of its length. The end of the secretory portion of