Teleost. Of less importance is the cut of the egg-case of a shark labelled as that of the skate, together with similar slips. The introduction of such phrases as 'some fish throw their great stomachs over creatures bigger than themselves, almost as a fowler throws his nets' is hardly to be commended. In the case in question, *Chiasmodon*, the exact mode of feeding of this abyssal fish is absolutely unknown, and probably will ever remain so. But the eversion of the stomach in a star-fish-like manner is a most startling guess. It would certainly be less of a shock to morphologists if they were told that this unique specimen of a deep water fish had captured its food in the way customary with great mouthed fishes, whose distensible jaws enable them to take extraordinary mouthfuls. Perhaps the most harmful part of the book is its theorizing. Without apparently a technical grounding in his subject, the author commends to his readers many independent hypotheses, of which these, selected at random, are examples: that gill-slits were not primary; that filamentous gills, as occurring in shark embryos, are the primitive form; that the teleostean swim-bladder has 'degraded' from a lung-like condition; that 'all our fishes tended more towards being air-breathing or land-haunting creatures formerly'; that, by the evidence of (tertiary) fossils, fishes which are now tropical must have occurred in icy polar seas.

B. D.

BOOKS RECEIVED.

La nature tropicale. J. COSTANTIN. Paris, Alcan. 1899. Pp. 315.

Our Native Birds. D. LANGE. New York and London, The Macmillan Company. 1899. Pp. ix + 162. $1.00.

Elementary Astronomy. EDWARD S. HOLDEN. New York, Henry Holt & Co. 1899. Pp. xv + 446.

Lamarckiens et Darwiniens. FELIX LE DANTEC. Paris, Alcan. 1899. Pp. 191. 2 fr. 50.

Analyse microchimique et spectroscopique. E. POZZI-ESCOT. Paris, Gauthier-Villars. 1899. Pp. 192. 2 fr. 50.

Report of the Proceedings of the Seventh Annual Meeting for the Promotion of Engineering Education, Vol. VII. Published by the Society. 1899. Pp. xxii + 193.

SCIENTIFIC JOURNALS AND ARTICLES.

WE regret to learn that *Natural Science* is compelled to suspend publication. It will be remembered that this was threatened last year but was temporarily averted by a change of editors and publishers. *Natural Science*, while maintaining a high standard, has been, perhaps, the most readable of the scientific journals, and it seems unfortunate that there should not be sufficient financial support to warrant its continuation. There is, however, no scientific journal in the world that is self-supporting, in the sense of paying editors and contributors for their work at what would be its market value in other directions of activity. This, of course, also holds for universities, museums, etc., and there appears to be no reason why scientific journals should not be endowed or subsidized, as is necessary in the case of other scientific institutions. Under the heading 'Eliminated' *Natural Science* takes leave in the following words:

> It is one of the conditions of continued vigorous activity on an organism's part that income be at least equal to expenditure, and the same is true of journals. To try to sustain the activity when the aforesaid condition is not fulfilled is not uninteresting, but there are limits to the possibility of continuing it. We regret to say that we have reached these limits as regards *Natural Science*, of which this is the last number, so far as we are concerned. In spite of generous support from many during the past year, and our own endeavors in publishing and editing, the journal has not reached that measure of success which would seem to us to warrant another year's experiment. We make our bow, then, to the process of natural elimination.

The Journal of School Geography, which has hitherto been published as well as edited by Professor Richard E. Dodge, of the Teachers College, Columbia University, will hereafter be published by the J. L. Hammett Company, of Boston, Mass., and New York City. This change in the business management involves no change in the editorial management or policy.

SOCIETIES AND ACADEMIES.

THE NEBRASKA ACADEMY OF SCIENCES.

THE Academy held its Tenth Annual Meeting on December 1st and 2d in the botanical lec-

ture room of the State University at Lincoln. At this meeting the following programme was carried out:

FRIDAY, DECEMBER 1ST, 2 P. M.

Address by the President—The Present Status of Meteoric Astronomy, by G. D. Swezey.

Report on the Initial Work of the State Geological Survey, by E. H. Barbour.

Some Phases of the Dakota Cretaceous in Nebraska, by Chas. N. Gould.

Geology of Saunders, Lancaster and Gage Counties, by Cassius A. Fisher.

On the Origin of Gneiss, by C. H. Gordon.

Preliminary Survey of the Mammals of Nebraska, by R. H. Wolcott.

Notes on a Bibliography of the Zoology of Nebraska, by H. B. Ward.

A Genus of European Flies hitherto not Reported in North America, by W. D. Hunter.

The Tiger Beetles of Nebraska, by L. Bruner.

Davenport's Statistical Methods, by Ellery W. Davis.

A Rearrangement of the Phycomycetous Fungi, by Chas. E. Bessey.

Some Movements of Plants, by Wm. Cleburne.

SATURDAY, DECEMBER 2D, 9 A. M.

New Fossils from Nebraska and Wyoming, by E. H. Barbour.

Method of Collecting Fossils for the Nebraska State Survey, by Carrie A. Barbour.

A Simple Substitute for the Birge Net, by Charles Fordyce.

Methods of Plankton Measurement and their Comparative Value, by H. B. Ward.

A Plan for the Coöperative Study of the Fresh Water Fauna of Nebraska, by H. B. Ward.

A Few Suggestions concerning Collecting Nets, by R. H. Wolcott.

Pressure and Freezing Tests of the Building Stone of Southeastern Nebraska, by W. H. H. Moore.

A Brief Report on the Growth of Children in Omaha, by Wm. W. Hastings.

A New Nematode Disease of Strawberries in America, by Ernst A. Bessey.

Cold Waves, by G. A. Loveland.

Scarcity of Aquatic Life in Nebraska the Past Summer, by R. H. Wolcott.

Glacial Grooves in Cass County, Nebraska, by E. H. Barbour.

The officers elected for the ensuing year were:

President, Dr. H. Gifford, Omaha, Nebr.

Vice-President, Ellery W. Davis, Lincoln, Nebr.

Secretary and Custodian, Professor L. Bruner, Lincoln, Nebr.

Treasurer, G. A. Loveland, U. S. Weather Dept., Lincoln, Nebr.

Board of Directors: Professor J. H. Powers, of Doane College, Crete, Nebr.; Professor Charles Fordyce, University Place, Nebr.; Acting Chancellor C. E. Bessey, Lincoln, Nebr., and Dr. A. S. von Mansfelde, Ashland, Nebr.

On the evening of December 1st the members of the Academy and the public in general had the privilege of listening to a very interesting lecture entitled 'Observations of a Naturalist in Ecuador,' by August Rimbach, of the Department of Botany, University of Nebraska, at the close of which the members of the Academy sat down to a banquet, at which a pleasant social time was had.

LAWRENCE BRUNER,
Secretary.

WASHINGTON CHEMICAL SOCIETY.

THE regular meeting was held November 9, 1899.

The first paper of the evening was read by Dr. H. C. Bolton and was entitled, 'Reminiscences of Bunsen and the Heidelberg Laboratory, 1863–65,' and was printed in SCIENCE of December 15th.

The second paper of the evening was read by Dr. H. C. Bolton and was entitled, 'Chapters on the History of the Thermometer, I., The Open Air-Thermoscope of Galileo.'

The primitive form of the thermometer was invented about the year 1595 by Galileo; this is proved by extant letters addressed to him by his pupil and friend Sagredo. The instrument was an open air-thermoscope of the inverted type and was early applied to meteorological observations, to testing the temperature of fever patients and to noting temperatures of freezing mixtures.

The very common statement that the thermometer was the invention of C. Drebbel, of Holland, has no basis of fact, as shown by his own publications, copies of which were exhibited by the speaker.

The third paper of the evening was read by

Dr. F. W. Clarke and was entitled, 'The Action of Ammonium Chlorid upon certain Silicates,' by F. W. Clarke and George Steiger.

The authors described a series of experiments in which various silicates were heated in a sealed tube to 350° C. with dry ammonium chlorid. After leaching out the contents of the tube with water it was found that alkalies were removed as chlorids and replaced by ammonia, analcite and leucite are thus transformed into an ammonium leucite:

$$NH_4Al.Si_2O_6$$

which is perfectly stable at 300° and only begins to decompose when heated in the open air to 350°.

Some eight other silicates were given preliminary study and the reaction was found to be fairly general. The product from natrolite contained 8.3 per cent. of ammonia and other zeolites took up from four to six per cent. The investigation is to be continued.

The fourth paper was read by Dr. F. K. Cameron and was entitled, 'Hydrochloric Acid and Aqueous Phenol,' by F. K. Cameron and J. A. Emory.

The authors determined the freezing-point curve for hydrochloric acid solutions, saturated with respect to phenol. Each independently determined the concentrations of the various solutions and their freezing-points for intercomparison. The curve was found to be a straight line, parallel to the curve for water and hydrochloric acid alone, from which it would seem that the solubility of phenol is practically constant through the range of temperature involved, and the lowering of the freezing-point of the solvent is a purely additive effect of the two solutes.

The fifth paper was read by Dr. F. K. Cameron and was entitled, 'The System Water, Hydrochloric Acid and Phenol,' by F. K. Cameron and W. H. Krug.

On lowering the temperature of the system, solid phenol separates. But if the initial mass of water be relatively large its concentration with respect to hydrochloric acid is practically unaffected, while the solid phenol is separating and consequently the temperature of the phenol remains very constant. The freezing-point curve for phenol in contact with aqueous solutions of hydrochloric acid of various concentrations was determined. Its practical value for a rapid determination of the approximate strength of hydrochloric acid solutions was indicated.

WILLIAM H. KRUG,
Secretary.

NEW YORK SECTION OF THE AMERICAN CHEMICAL SOCIETY.

THE regular meeting of the New York Section of the American Chemical Society was held on Friday evening, the 5th inst., at the Chemists' Club, and was well attended, over sixty members and their friends being present. Dr. C. F. McKenna occupied the chair, calling the meeting to order at 8:30 p. m.

After electing four delegates to represent the Section in the Council, the following papers were read:

(1) 'The Importance and Trend of Recent Work on the Chemistry of Life and the Products of Life,' by Jerome Alexander.

(2) 'A Preliminary Study of the Cobalti-Cyanides,' by E. H. Miller and J. A. Mathews.

(3) 'The Chemistry of Corn Oil. First Paper: Determination of the Constants,' by Herman T. Vulté and Harriet W. Gibson.

(4) 'A Practical Electric Furnace,' by A. J. Rossi.

Mr. Rossi exhibited a practical and easily constructed electric furnace with which he has prepared some very rich Titanium alloys, a specimen of which was exhibited with an invitation to break off pieces as samples. Although a sledge hammer was supplied no samples were taken. Arrangements are progressing toward the preparation of these alloys on a large scale for the steel trade.

DURAND WOODMAN,
Secretary.

TORREY BOTANICAL CLUB.

AT the meeting on November 29th, the scientific program consisted of a paper by Dr. C. C. Curtis, on Seaweeds, with lantern views illustrating the chief families and with a condensed summary of the modes of reproduction and other characteristics of each. Dr. Curtis also gave brief directions respecting methods of collecting and preserving the marine algæ, urging the collector to make microscopic study of all

forms, and pointing out the great need of further observation to clear up doubtful points in their reproductive processes.

President Brown exhibited specimens found by Dr. Meredith at Danville, Pa., of *Ajuga Genevensis* and of *Hieracium Pilosella*. The first had been observed on ballast in New York City, but not the latter.

On December 12th, the scientific program was opened by a paper by Dr. L. M. Underwood 'On the Genera of the Schizaeaceae.'

Dr. Underwood explained the peculiar detriscence of the sporangium by which this order of ferns is distinguished, illustrating with figures, and then sketching the history of the order. Linnæus put its species under Acrostichum; Richard was the first to begin segregation, erecting in 1792, the genus *Lophidium*. In 1703, *Schizaea* was founded by Smith, on a South African plant common through the Transvaal region, quite closely similar to our own species of New Jersey. Wallich founded another genus, *Actinostachys*, in 1822, on an East Indian form. Dr. Underwood considered these three genera to be valid, though recent German systematists, as Prantl, have not recognized them.

Swartz constituted another genus in 1800, *Mohria*, from Cape Colony, of which only one species is known. *Lygodium*, our best known genus, was established by Swartz in 1800, and includes one well known Atlantic species, *L. palmatum*, the climbing-fern.

Several other genera, as *Aneimia* and *Trochopteris*, were discussed, with remarks on principal species. About 90 species of the order have been published, largely American and tropical, especially the abundant Brazilian forms of Aneimia and allies.

Professor Lloyd suggested the interest attaching to Trochopteris as possibly a very primitive fern.

Dr. Underwood said it is sparsely represented from Brazilian collections, but perhaps because of its small size and habit of growth close to the ground, the largest specimen known being only three inches in diameter.

The second paper was by Dr. D. T. MacDougal, 'Studies on Hexalectris.' This rare southern orchid is of great interest on account of its supposed near relationship to Corallorhiza, which develops short coralloid undergrowths without roots, but producing a mycorhiza and sending out hyphæ into the soil. Material of Hexalectris from Alabama although possessed of somewhat similar coralloid growths, was found to contain no fungi, and to be without apparent adaption to growth by mycorhiza. No one seems to have seen seen the roots of this plant.

The third paper was by Dr. N. L. Britton, 'Notes on Species of *Crataegus*.'

Dr. Britton exhibited and discussed 34 species of the northeastern United States and remarked upon the great need of persistent field study in determining this genus. One must have flowers, mature leaves and mature fruit from any individual bush before he can begin to find its relationship to any other form. The most difficult part of the genus is perhaps the *C. tomentosa* group. Many southern species have recently been found to extend their range into Virginia, as *C. Chapmani*, *C. Carolina*, etc.; and others in Missouri, as *C. berberifolia*. The identity of the original of *C. coccinea* of Linnæus proves to have a special local interest. Linnæus seems to have had, as often, no specimen before him, but based his description on a plate of Plukenet (and another of Ray). Few herbarium specimens correspond well to the figure, which answers only to leaves of a shrub collected twice near New York, once by Mr. E. P. Bicknell along the Harlem River and once by the late Professor E. H. Day on Persimmon Island near New Rochelle, New York. The leaves bear a remarkable resemblance to those of *Betula nigra*. Search for similar specimens near New York should be made; the leaves are longer and with blunter, shallower lobes than in the commonly-received *C. coccinea*.

Dr. Britton is endeavoring to get together at the Botanic Garden a collection of these species, and now has over a dozen; but the wild stock is very difficult to grow and is impatient of transplanting. Most gardeners graft or grow from seed.

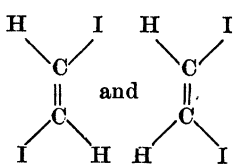
After discussion by Dr. Rydberg, President Brown and others, the Club adjourned.

Edward S. Burgess,
Secretary.

THE ACADEMY OF SCIENCE OF ST. LOUIS.

AT the meeting of the Academy of Science of St. Louis of December 4, 1899, the following subjects were presented:

Dr. Edward H. Keiser talked informally on Some Derivatives of Acetylene, exhibiting specimens of the new liquid acetylene iodide discovered by him in January, 1899. He described the methods of making the compound, and gave an account of its chief physical and chemical properties. The liquid acetylene diiodide solidifies at —21° C. and boils at 185°. It has the percentage composition and molecular weight represented by the formula $C_2H_2I_2$, and is isomeric with the well known solid acetylene diiodide. The speaker announced the discovery of a new method of making the liquid acetylene diiodide, namely, by heating the solid compound to 260° in a sealed tube. The solid compound is thereby partially converted into the liquid compound. Similarly, if the pure liquid diiodide is heated to 260° in a sealed tube, on cooling down, the liquid will be found to have been partially converted into the solid compound. All the facts known indicate that these two iodides of acetylene are stereoisomers, and that their configuration must be represented by the stereometric formulas:



Since Dr. Keiser has found that the solid acetylene diiodide can be converted into fumaric acid, it follows that the first of the two formulas represents the solid acetylene diiodide and the second one the liquid diiodide. Further experiments upon these compounds are under way, and the attempt will be made to convert the liquid diiodide into maleic acid.

Dr. L. Bremer demonstrated some tests for glucose by means of anilin dyes, showing that nearly all of the 'alkaline' anilin dyes, when rendered basic by the addition of sodium hydrate, become decolorized, or have their color greatly modified, on heating, in case glucose is presented. The reactions shown were especially pretty in the case of methylene blue and safranine.

Professor Nipher announced that he had nearly completed preparations for the measurment of wind pressures on the sides of the main building of Washington University. The pressures are to be measured at various points along the west end of the building, having a width of about 50 feet, and along the north front, which is something over 200 feet in length. Simultaneous measurements of wind pressure and wind velocity and direction will be made. The method used is that tested by him on the trains of the Illinois Central Railroad during the summer of 1897. The method was described in No. 1, Vol. VIII., of the Transaction of the Academy of Science of St. Louis. An invitation was extended to members to visit the University and inspect the apparatus.

Professor H. Aug. Hunicke spoke briefly on some observations which he had recently made on the boiling temperature of hydrocarbons, from which it appeared that when T is the boiling temperature (absolute scale), ς is radius of gyration of the molecule, and a is a constant, then $T^2 = a\varsigma$. This holds for the entire series of saturated hydrocarbons, including all isomers. The speaker stated that his observations had not yet been extended beyond the series indicated.

WILLIAM TRELEASE,
Recording Secretary.

DISCUSSION AND CORRESPONDENCE.

DARK LIGHTNING.

MAY I be allowed to make some comment, on the interesting article by Professor Wood on 'Dark Lightning.' He is mistaken in supposing that my results on the same subject have only appeared in a photographic journal. The first announcement was a note read before the Physical Society of London on June 22, 1889, which was published in the *Electrician*, the *Philosophical Magazine* and the *Proceedings* of the Society.

Further details were the subject of a paper read at the Newcastle meeting of the British Association in August of the same year, and an abstract of it appears on page 507 of the Annual Report. Since then there have been numerous