growing animals and the feeding of milking animals.

Part I., and especially the chapters upon metabolism, will be of much interest to the student of nutrition in general, but the special value of the book is found in Part III., in which is made the first serious attempt to apply the more recent knowledge regarding the energy relations of feeding stuffs to practical use. It abandons definitely the assumption which has underlain nearly all previous works of this character that the digestible nutrients, so-called, of a feeding stuff are a measure of its value. In place of this, Kellner puts the actual productive value as worked out by his own investigations and which is shown to differ very widely in many cases from the indications given by the digestible nutrients. While he does not fail to point out that the basis for an undertaking of this sort is still somewhat narrow, yet he believes that the time is ripe for a beginning. He has accordingly, in the appendix, given a series of tables in which the productive value of feeding stuffs is estimated, largely upon the basis of his own results, while the so-called feeding standards are also expressed upon the same basis.

While it is, perhaps, to be regretted that the author has expressed his feeding values in the form of starch equivalents instead of boldly adopting the terminology of energy, and while it can not be denied that his tables are based to a considerable degree upon estimates, nevertheless the book promises to mark a distinct stage of development in the theory of stock feeding and will be welcomed by the large number of those who have become dissatisfied with the present conventional methods in this subject.

H. P. ARMSBY.

SCIENTIFIC JOURNALS AND ARTICLES.

THE contents of the *American Journal of Mathematics* are as follows:

ALEXANDER CHESSIN: 'On a Class of Differential Equations.'

L. P. EISENHART: 'Surfaces with the Same Spherical Representation of their Lines of Curvature as Pseudospherical Surfaces.'

VIRGIL SNYDER: 'On the Forms of Sextic Scrolls having no Rectilinear Directrix.'

LEONARD EUGENE DICKSON: 'Determination of the Ternary Modular Groups.'

THE April issue of the *Journal of Nervous and Mental Disease* opens with a paper by Dr. William P. Spratling and Dr. Roswell Park, on 'Bilateral Sympathectomy for the Relief of Epilepsy,' with report of three cases, and notes on the physiologic effects of cutting the sympathetic, and on the histologic changes found in the cases in question. The microscopical findings are illustrated by two plates. Dr. F. W. Langdon follows with a paper on myelomalacia, with especial reference to diagnosis and treatment, illustrated by charts, and Dr. Arthur Conklin Brush discusses the medico-legal aspects of traumatic epilepsy. The Society Proceedings reported this month include the meeting of the Boston Society of Psychiatry and Neurology held November 17, 1904, and that of the Chicago Neurological Society of the same date.

SOCIETIES AND ACADEMIES.

THE GEOLOGICAL SOCIETY OF WASHINGTON.

THE 166th meeting was held on March 22. The regular program included:

The Coal Measures of Brazil: Dr. I. C. WHITE.

Dr. White discussed the character and distribution of the coal-bearing beds of southern Brazil. The series consists of coarse conglomerates, and gray sandstones at the base, alternating with blue and gray shales up to 350 to 400 feet above the granite upon which the measures rest in the states of Santa Catharina and Rio Grande do Sul, where his principal studies were prosecuted during the past year. Above these basal sandstones, the coal beds occur three to four in number through a thickness of 200–250 feet of alternating gray sandstones, clays and shales. There are two principal coals, the 'Bonita' bed at the base, and the 'Barro Branco' near the top of the coal series. The coal is high in both ash and sulphur, but can be used successfully for locomotives, stationary boilers, etc., in a region where imported coal costs not less than $10 per ton at the seacoast.

Above the coal-bearing member succeeds a series of sparingly reddish clays, and gray sandy shales and sandstones which are followed by light blue shales up to a horizon of dark limy shales which in the states of Paraná and São Paulo contain numerous reptilian remains, *Stereosternum tumidum* of Cope having been found at this horizon, as well as many fossil stems of trees, etc.

Dr. White found at this horizon in Paraná what Osborn pronounces a new form, specifically and possibly generically different from Cope's. It resembles *Mesosaurus tenuidens* of Gervais from the Karoo beds of South Africa.

Above the black shales, *red beds* of alternating shale and sandstone become conspicuous, while capping the same is a great massive conglomerate sandstone often baked and vitrified by the immense outflows of diabase, and basaltic eruptives which penetrate the series at all angles, and which piled in enormous masses on top of the sedimentaries make up the Serra Geral. The entire sedimentary series has a thickness of 2,250–2,500 feet.

Two prolific horizons for fossil plants were discovered by Dr. White, one only 200 feet above the base of the series, and the other 150 feet higher. In these was discovered the genus *Glossopteris* and other forms, some of which are new to science, and which have been entrusted for study and description to Mr. David White. The evidence from the fossil plants and animal remains appears to place these rocks in the Permian, and to correlate the formation with the Karoo beds of South Africa, and the Gondwana series of India.

The Dwyka and Talchir conglomerates of those countries appear to have a corresponding representative in the coarse conglomerates which rest upon the granite in Santa Catharina and Rio Grande do Sul, fifty to sixty miles inland, from the Atlantic coast.

Dr. White will return to Brazil during the present summer to finish up his studies of this coal series for the Brazilian government.

Flora of the Brazilian Coal Measures: Mr. David White.

The paleobotanical material collected by Dr. I. C. White was discussed with special reference to its relation to the *Glossopteris* province. The greater part of the material is from two horizons and localities. The first, near Minas, Santa Catharina province, in a bed below the productive coals and only about 200 feet above the old crystallines, reveals *Glossopteris indica, Gangamopteris obovata, G. cyclopteroides, Phyllotheca* cf. *australis* and *Noeggerathiopsis Hislopi,* besides several new generic and specific types. The second important collection, from the roof of the Irapua coal, in the province of Rio Grande do Sul, at a horizon determined by Dr. White as about 150 feet higher, it being among the productive coals, contains *Glossopteris indica, Noeggerathiopsis Hislopi, Ottokaria* sp. and *Cardiocarpon* sp. The occurrence of *Lepidodendron Pedroanum, Lepidophloios laricinus* and the lepidophytic spores, previously reported from Brazil and especially interesting as showing the contact of the Glossopteris, or Paleoantarctican, flora with the northern Carboniferous flora, becomes all the more interesting and important in view of their local stratigraphic position which was found by Dr. White to be still a little higher than that of the plants last named. The inclusion of southern Brazil in the Indo-Australo-South African or 'Glossopteris' province is, therefore, fully confirmed by the evidence thus brought to hand. The *Glossopteris,* found abundant though fragmentary at Irapua, represents the form described by Seward from South Africa, where it is similarly associated with representatives of the northern lepidophytes. The new material tends to corroborate the conclusion reached by M. Zeiller, that the Brazilian coals are probably of Permian or possibly latest Coal Measures age, their place being apparently in the Karharbari-Newcastle stage.

Mr. W. T. Schaller described the 'Tourmaline Mines of California.'

Geo. Otis Smith,
Secretary.

THE CHEMICAL SOCIETY OF WASHINGTON.

The 158th regular meeting of the society was held Thursday evening, April 13, in the

Assembly Hall of the Cosmos Club. The following program was presented:

The first paper for the evening was delivered by Dr. N. Monroe Hopkins, upon 'The Construction and Operation of Small Electric Furnaces.' The necessary apparatus and appliances were exhibited and a description of the construction and operation of several furnaces was given.

Dr. Chas. W. Waidner, of the National Bureau of Standards, delivered an address upon 'Available Methods of Measuring Temperature.' Numerous stereopticon illustrations were shown and specimens of various forms of thermometers, pyrometers, etc., were described and exhibited.

An adjourned meeting of the Chemical Society of Washington was held Saturday evening, April 15, 1905, in the chemical lecture hall of the Johns Hopkins University, Baltimore, Md.

After a short address of welcome to the Washington members by President Remsen, the following program was presented:

The first paper, entitled 'A New Combustion Furnace,' was presented by Dr. H. N. Morse. A complete furnace connected up ready for operation was shown on the lecture table and a full description of the construction, uses and advantages of the new furnace was given.

The second paper, entitled 'New Appliances in the Works Laboratory,' was presented by Dr. Edward Kellar. A stirring and also filtering apparatus, providing for the manipulation of a series of solutions at a single operation was illustrated and described. A number of improved tongs, etc., for use in handling sets of scorifiers, lead buttons, cupels, etc., at one time in fire assays, were shown and their use described.

A paper entitled 'New Evidence Bearing upon the Existence of Hydrates in Solution' was presented by Dr. H. C. Jones.

The last communication of the evening was presented by Dr. G. W. Lehmann, who gave a description of the investigations which the health department of Baltimore has recently instituted to determine if possible whether the high infantile mortality in certain sections of Baltimore could be connected with the milk supply of those sections of the city. The results of the investigation indicated that the trouble was probably due to inferior brands of condensed milk which are consumed in large quantities by the residents of south Baltimore.

A. SEIDELL,
Secretary.

THE AMERICAN CHEMICAL SOCIETY.
NORTHEASTERN SECTION.

THE fifty-ninth regular meeting of the section was held on Friday evening, March 31, at the 'Tech Union,' Massachusetts Institute of Technology, with President Norris in the chair. About 100 members were present.

Mr. George W. Rolfe was elected a member of the executive committee to fill the vacancy caused by the death of Dr. C. O. Weber.

A eulogy of the late Mr. Frederick J. Warren was read by Mr. Robert S. Weston.

The meeting was devoted to a discussion of the subject, 'Expert Chemical Evidence.' Mr. Arthur D. Little opened the subject with a historical introduction, and treated the subject from the side of an expert in patent causes. Professor E. J. Bartlett described the procedure and position of an expert witness in criminal cases. Professor Henry Carmichael discussed some of the evils of present court procedure in relation to the positions, and the qualifications necessary for a successful expert. Dr. B. F. Davenport gave a reminiscent account of varied experiences as an expert witness. Professor L. P. Kinnicutt discussed the position of the expert in relation to his clients and the court. Mr. A. E. Leach described the position of the state expert in cases of prosecution for infractions of the pure food laws. Professor S. P. Sharples discussed the position of the expert towards the lawyer, who is conducting the case for his client.

ARTHUR M. COMEY,
Secretary.

THE SCIENCE CLUB OF THE UNIVERSITY OF WISCONSIN.

THE seventh meeting of the club for the year 1904–5 was held on Tuesday, April 18,

at 7:30 P.M., in the physical lecture room, Science Hall. The program of the evening consisted of an address by Dr. L. Kahlenberg, on the subject, 'The Nature of the Process of Osmosis.' The speaker presented the main results of an extensive experimental study of osmotic phenomena in which so-called semipermeable membranes have largely figured. Much of the work was done with non-aqueous solutions of various kinds. The speaker held that the substance which passes through the membrane dissolves in the latter, and is extracted from the resulting quasi-solid solution by the liquid bathing the other side of the membrane. He showed that whether osmosis will take place or not depends upon the nature of the membrane and the liquids in contact with it. On the basis of the views set forth, he could furthermore predict in which direction osmosis would take place and specify which substances would pass through the membranes.

The quantitative measurements of osmotic pressures were made with a new and unique form of apparatus, the results obtained with semipermeable membranes showing that the osmotic pressure does not follow the gas laws. The views of osmosis set forth are much like those of Overton who worked along physiological lines. It is of special interest to note that the speaker found cases where colloids pass through membranes much more rapidly than crystalloids, thus furnishing instances in which the commonly accepted views which we owe to Graham are completely reversed. The results of this investigation will be published in detail by the speaker in the near future.

F. W. Woll,
Secretary.

THE TORREY BOTANICAL CLUB.

At the meeting of the club held on March 29, 1905, at the New York Botanical Garden, Vice-President Underwood in the chair and twenty-three additional members present, the following papers were read:

'Remarks on Californian Conifers,' by Le Roy Abrams. The conifers of California have been of extreme interest to the botanical world from the time that that country was first explored. Nowhere do we find such unique trees as the sequoias, and nowhere is there such a profusion of genera and species. Nearly two thirds of the species of the United States, and all but two of the genera occur within the state. The distribution of these species, especially of some of the more local ones, is of considerable interest, and it was upon this subject that Mr. Abrams chiefly dwelt.

By far the greater number of species occur in the extreme northern part of the state. Here, within a radius scarcely exceeding one hundred miles, no less than eleven genera and at least thirty species may be met with. This great profusion is mainly due to the fact that we have in this region a mingling of the typical Californian species with those of the northwest.

Nearly all of the local species are confined to the coastal region. Some of these, such as *Pinus Torreyana, Abies venusta* and *Cupressus macrocarpa,* are extremely local, indeed. The causes of this peculiar distribution along the coast are of great interest and suggest a field for investigation which is full of untold possibilities. Mr. Abrams was of the opinion that present climatic conditions together with the broken and unconnected mountains were no doubt largely responsible for the present status of distribution. He suggested that the great changes in land areas to which this region has been subjected during very recent geological time must have had much to do with shaping the destiny of the flora.

After considerable discussion adjournment followed.

Edward W. Berry,
Secretary.

THE ELISHA MITCHELL SCIENTIFIC SOCIETY OF THE UNIVERSITY OF NORTH CAROLINA.

The 160th meeting of the Elisha Mitchell Scientific Society was held in the Chemical Lecture Room, Tuesday, 7:30 P.M., April 11, 1905. The following papers were given:

Professor J. E. Latta: 'The Edison Storage Cell.'

PROFESSOR H. V. WILSON: 'The Organization of the Ovum.'

PROFESSOR COLLIER COBB: 'Autophytographs.'

A. S. WHEELER,
Recording Secretary.

DISCUSSION AND CORRESPONDENCE.

A PLEA FOR INCREASED REVIEWING OF SCIENTIFIC LITERATURE.

IT has seemed to the writer that more attention should be given to reviewing current literature in zoology, and I am told that the need is greater in some other sciences. It is not necessary to dwell upon the small number of universities in which the library facilities may be called good, upon the fact that our students are slow to gain a ready knowledge of the three or four foreign languages in which appears an increasing volume of scientific literature, or upon the heavy duties in teaching and administration with which our staffs of instruction are burdened. These conditions make reviews of literature especially useful to American men of science. There are, however, more fundamental reasons why the scientific body should pay more (and more serious) attention to reviewing its recent work. The first is that scientific efforts are very manifold and diverse and the output is very great and increasing. Beyond a certain limit, without an increase in the unifying forces, these efforts are bound to become discrete and diffuse. I believe that this limit has been reached. That the same belief is held in Europe is perhaps to be inferred from the great increase in reviewing in the last few years in Germany.

A second reason is that the review should be an important means for the training of investigators, and for leading students to become investigators. This function of the review has, I believe, not been sufficiently recognized, and it is this which especially interests us in America. By reviews the writer does not mean abstracts, which seek to furnish information by a short and easy method. Reliance on abstracts impoverishes and blunts the mind and is dangerous to the true spirit of investigation. Reviews which are essentially abstracts of isolated papers are of doubtful value. Because isolated, they do not aid the student in gaining a broad and fundamental understanding of the field; because abstracts, they can not be relied upon by the investigator; and they are longer than necessary to serve as a guide to the literature.

There are two ways in which reports or reviews may serve a useful purpose: first, as an annotated bibliography or guide; second, as a comprehensive presentation of the work done in a given field. These two legitimate kinds of reviews are quite distinct in their form and purpose. The annotated bibliography is useful to the specialist and instructor. For those who have not a large library at their disposal a mere list of titles is insufficient. It is necessary in addition to have certain information about a paper in order to know whether it is important for one's immediate purpose. It is greatly to the credit of Mr. Field that some of this information has been included in the Zurich bibliography. Fuller information is given in several journals of the *Centralblatt* type in Germany. In America in a special field the same kind of work is being done by the *Journal of Comparative Neurology and Psychology* through the joint efforts of its collaborators. Whether other journals might not well undertake similar work in their fields may, perhaps, better be discussed by others. In no journal with which I am acquainted are the reviews uniform in character or restricted to the kind of information here suggested. To make my meaning clear I may enumerate what, in my opinion, should be included in these brief reviews. Besides the author, title, date and place of publication, number of pages, figures and plates, and price of a book, there should be stated: (1) the material and methods, (2) the subjects treated, (3) the general purpose aimed at or end attained and (4) the reviewer's judgment as to the adequacy of the methods and the reliability of the results, in cases where the paper can be definitely characterized. Such reviews might occupy from six to twenty lines and when printed over the reviewer's signature would constitute a valuable guide for the advanced student and instructor.

The second form of review is useful to the instructor and should be especially valuable