Terrestrial Magnetism for September, which has just appeared, contains a portrait and biographical sketch of Professor Arthur Schuster. Among other articles in the number are 'The Present Status of our Knowledge of the Earth's Magnetism,' by A. Nippoldt; and 'Note sur une cause d'erreur dans la détermination de la déclinaison magnétique,' by H. Morize.

THE first number of the *Journal of Hygiene*, published by the Cambridge University Press and edited by George H. F. Nuttall, lecturer in bacteriology and preventive medicine in the University of Cambridge, late associate in hygiene in the Johns Hopkins University, Baltimore, is announced for immediate issue. The provisional table of contents is as follows:

'Introductory' by Sir John Simon, Professor William Osler and the Editor.

'Studies in Relation to Malaria.'

I. 'The Geographical Distribution of Anopheles in Relation to the Former Distribution of Ague in England,' by G. H. F. Nuttall, Louis Corbett and T. S. Pigg.

II. 'The Structure and Biology of Anopheles,' by G. H. F. Nuttall and Arthur E. Shipley.

'Pathogenic Microbes in Milk,' by E. Klein.

'Industrial Lead Poisoning,' by T. M. Legge.

'A Rapid Method of determining Carbonic Acid in Air,' by John Haldane.

'The Cause of the Red Color in Salted Meat,' by John Haldane.

'Artificial Modifications of Toxines, with Special Reference to Immunity,' by James Ritchie.

La euille des jeunes naturalistes, edited by Mr. Adrien Dollfus, 35 Rue Pierre-Charron, Paris, having existed thirty years, has taken the opportunity of improving its appearance and intends to concentrate its efforts mainly on the natural history of western and central Europe with the adjacent regions around the Mediterranean. The library at the disposal of subscribers to *La Feuille* now contains about 42,000 memoirs and 300 scientific journals. The November, December and January numbers, which are those that have as yet appeared of this new series, amply fulfill the promise made. The most notable article is 'Revision des espèces de Tritons du genre *Euproctus* Gené, suivi d'un aperçu des Urodèles de la région paléarctique du sud-ouest,' by Dr. W. Wottersdorff.

SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES.

SECTION OF ASTRONOMY, PHYSICS AND CHEMISTRY.

A REGULAR meeting of the Section was held at 12 West 31st St., New York, on the evening of January 7, 1901. Professor Harold Jacoby, of Columbia University, gave an account of a 'New Telescope for Photographing the Pole of the Heavens.' He announced that this plan of photographing the close polar stars had made material progress. A special instrument has been constructed and mounted at the Observatory at Helsingfors, Finland. Photographs of the actual instrument in position for use were exhibited. It is planned to make photographs with this instrument in which the close polar stars will trace out 'trails' on the plate corresponding to their diurnal motion. The effects of refraction, etc., having been eliminated by computation, it is possible to obtain from such photographs the exact position of the celestial pole among the stars and on the date of observation. The intercomparison of results taken on dates six months apart should furnish a new determination of the constant of aberration, and photographs taken annually throughout a series of years should determine the constant of nutation and ultimately perhaps even that of precession.

The actual observing with the instrument will commence in the spring, as soon as the Helsingfors astronomers have finished with the observations of Eros now in progress, and the plates will be sent to Columbia University, New York, for measurements and reductions. An outline of the method to be used, together with a preliminary trial of the same, has already been published by Professor Jacoby, under the title 'Photographic Researches near the Pole of the Heavens,' *Bulletin of the Imperial Academy of Sciences of St. Petersburg*, 5th Series, Vol. 9, p. 41, June, 1898.

Mr. George B. Pegram, of Columbia University, read a paper on the 'Reflection of Light from White Surfaces.' This was an experimental study of some white surfaces with regard to the relation between the intensity of the reflected ray and the angles of incidence

and reflection. It was carried out by means of a special photometer, allowing the use of any desired angles of incidence and of reflection. Among the surfaces tested were plaster of Paris, several kinds of unglazed paper, compressed powders of several kinds, powders not compressed, but gently smoothed with a metal plate, and finally a surface made by allowing fine plaster dust to settle from suspension in the air on a suitable plate. These surfaces in the order named, showed decreasing polarization of the reflected light, and less approach to specular reflection. The fine dust surface showed no polarization, and almost no tendency to regular reflection. The results with this surface, as shown by sets of curves, follow pretty closely the old Lambert's, or cosine, law,

$$\text{Intensity} = A \cos i \cos r.$$

with some departure when both angles were very large. With all the other surfaces the departure was very great for angles greater than 70°. Contrary to the results of Mr. Wright (*Phil. Mag.*, Feb., 1900), these experiments were quite in accord with the demand of theory that the intensity of the reflected ray should be expressed as a symmetric function of the angles of incidence and reflection.

WILLIAM S. DAY,
Secretary.

CHEMICAL SOCIETY OF WASHINGTON.

THE regular meeting was held on December 13, 1900. The first paper was read by Dr. Bigelow and was entitled, 'The Composition of the Ash of Meat Extracts,' by W. D. Bigelow and E. McK. Chace. The relation between solids and ash and between the several ash constituents were discussed in analyses of about 40 commercial meat extracts and of juices prepared from fresh beef.

The second paper, read by Dr. Cameron, was entitled, 'Formation of Sodium Carbonate or Black Alkali by Plants,' by F. K. Cameron. The view popularly held, to which Hilgard, Goss and others have called attention, is found to be correct. It seems probable that the phenomenon is very widespread, but does not assume practical importance, except under special conditions in the arid regions. A discussion of the rôle of mineral nutrients in soil solutions accompanied the consideration of the data experimentally determined.

The last paper, read by Dr. Cameron, was entitled, 'Resistance by certain Plants to Black Alkali,' by F. K. Cameron. It has been found that a few plant specimens exist which can grow in soils containing much sodium carbonate. Three such plants were examined. It was found that these plants had an organic acid or acids formed on their surface, sufficiently strong to decompose alkaline carbonates. It is believed that this acid, or acids, aid in lowering the concentration of the alkaline carbonates in the soil immediately about the plants, and thus protect the root crowns from the caustic action of the black alkali.

WILLIAM H. KRUG,
Secretary.

PHILOSOPHICAL SOCIETY OF WASHINGTON.

THE 527th meeting was held January 5th, the new President, Mr. Walcott, Director of the Geological Survey, in the chair. The evening was devoted to geodetic papers.

Mr. Eimbeck presented informally the question of an apparent error arising in transit observations from the fact that at a locality where there is local attraction of the plumb line the geodetic meridian and the astronomical meridian differ sometimes as much as 30″.

The first regular paper was read by Mr. Isaac Winston on 'The Thirteenth General Conference of the International Geodetic Association,' held at Paris last fall, at which 17 countries were represented, and to which he was a delegate. The principal papers presented there dealt with recent work at gravity stations, the question of variation of latitude, the proposed revision of older triangulations in France and Peru, the nickel-steel alloy with small coefficient of expansion, and the recent and prospective measurements of terrestrial arcs. [This paper is printed above.]

Mr. Schott followed with an interesting historical account of such measurements, pointing out that the Clarke spheroid agreed better than Bessel's with the American observations. Mr. Hayford described more fully the simple new nadir-zenith apparatus of Cornu, to which ref-

erence had been made, the purpose of which is to determine the zenith distance of stars culminating very near the zenith.

The second regular paper was by Mr. Hayford on 'The New Precise Leveling Instrument' of the Coast and Geodetic Survey, with exhibition of it. The instrument is very low and stable, the new iron-nickel alloy is used, the level tube is sunk well into the telescope tube, the parts are not reversible as formerly, and an auxiliary telescope with mirror is provided for the left eye to read the ends of the bubble. Field experience shows that both rapidity and accuracy of working have been much increased by the use of the new instrument. [The full description will be published elsewhere.]

CHARLES K. WEAD,
Secretary.

DISCUSSION AND CORRESPONDENCE.

WHOSE FAULT AT THE U. S. NAVAL OBSERVATORY.

TO THE EDITOR OF SCIENCE: It is natural and very proper that the Superintendent of the Naval Observatory should defend his institution, even vigorously, against charges, where he conceives there is ground for believing there has been lack of fair play. The delicate task imposed upon the Board of Visitors should evidently have been sufficient motive for safeguarding their report against the suspicion of unfairness, if any has been shown, by first giving full credit to the existing organization in preparation for their suggestions looking to an improvement. Otherwise, the entire affair will degenerate into a dispute, and that is the most hopeless basis upon which to approach Congress for remedial legislation.

Your editorial in SCIENCE of January 4, 1901, on the 'Naval Observatory Report' does not seem to be free from the objection that it charges against the administration of the Observatory certain results which do not in reality belong there. You blame it for the removal of the Magnetic Observatory to its present site, and for the imperfections of the instrumental apparatus acquired during the past thirty years. It is very easy to misplace responsibility, but in a discussion of this kind it ought not to be done; and the fact is admitted that in such matters of administration the executive acts upon the advice of his subordinates. Now, certainly, there could not be two more conspicuous examples chosen to show that, where the astronomers have had their own way, the blame is being shifted to the chief. For it is well known that the magnetic observatory was moved by the counsel of the Astronomical Director, in cooperation with that of a prominent visiting English astronomer, and against the arguments of the professor in charge of the magnetic work, and all others in Washington interested in magnetic observations. The action of neighboring trolleys and dynamos was pointed out, but the wish to possess the equipment overruled the interests of science. The fact that the work of the magnetic observatory has not been otherwise efficient is partly due to the appointment of untrained officers of the Navy to conduct the operations, and this is of course a matter of administration. In the planning of new instruments the astronomers have for a long while had their head, and if they chose to experiment in novel constructions and to entrust the building of the instruments to American firms, they ought at least to relieve the administration, which simply expressed their decisions, of the blame for an unsatisfactory outcome of that kind.

This brings up the problem of administration. There are two types of organization, the first, where there is a strong head and a corps of subordinates who are his assistants, and over whom his decisions are final, of which the observatories at Cordoba and Harvard College are examples; then there are staffs formed of practically independent professors whose real bond of union is cooperation, of which the Naval Observatory is an example; other observatories have a mixed system in operation. The first type is calculated to put out a large mass of routine work, and to do immense pieces of observation and reduction along well-understood simple lines; the second type is suited for scientific researches into unexplored territory, where the initiative and the successful progress depends entirely upon the personality of the astronomer. No chief by executive order can aid his research, and the heads of institutions are always only too glad to support the work of men