The chapters on the plain and concave gratings, considering the space given to other parts of the subject, might have been fuller. The next six chapters contain theory and experiments on polarized light, the rotation of the plane of polarization, the laws of reflection from transparent and metallic surfaces and the spectrophotometer.

Two statements seem to be misleading. On page 90 it is stated that 'the slit in a spectrometer is made infinitely narrow by placing it at an infinite distance by means of a lens.' The meaning, of course, is that the divergence of the rays falling on the prism from one point of the slit is made very small by placing it at the focus of a lens. The angular width of the slit is finite, being equal to the width of the slit divided by the focal length of the lens. Again on page 159 it is stated that 'Ordinary photometers * * * may be used to compare the intensities of the total radiations of two sources.' Authors of texts can not be too careful to point out that the luminous part of the radiations are but a small part of the total energy sent out by a source. Indeed, it is to be regretted that the subject of optics is generally viewed in this limited light, that no mention is made of the instruments, bolometers, radiometers, thermoelements, etc., used in measuring the total energy of sources, and no notice taken of the interesting properties of bodies with regard to radiations other than luminous.

These general criticisms have no large value concerning the special purpose for which the book was prepared. As a manual of advanced optics it is admirable.

G. F. Hull.
Dartmouth College.

SCIENTIFIC JOURNALS AND ARTICLES.

The October number of *The American Journal of Anatomy* contains the following articles:

Joseph Marshall Flint: 'The Angiology, Angeogenesis, and Organogenesis of the Submaxillary Gland.'

Richard Mills Pearce: 'The Development of the Islands of Langerhans in the Human Embryo.'

Robert W. Lovett: 'A Contribution to the Study of the Mechanics of the Spine.'

J. Playfair McMurrich: 'The Phylogeny of the Palmar Musculature.'

Bird-Lore for September–October contains articles on 'The Mystery of the Black-billed Cuckoo,' by Gerald H. Thayer, showing that it is a bird of nocturnal habits; on 'A North Dakota Slough,' by A. C. Bent; 'A Tragedy in Nature,' by William Brewster; 'Nesting Habits of Two Flycatchers at Lake Tahoe,' by Anna Head, and on 'How Birds Molt,' by Jonathan Dwight, Jr., one of the best authorities on this much-mooted subject. There is the sixth series of portraits of *Bird-Lore's* advisory councilors and numerous notes, including an interesting article on 'Mortality among Birds in June,' besides book reviews and the reports of the Audubon Societies.

The *Museums Journal* of Great Britain for September contains the address of the president of the Museums Association, F. A. Bather, delivered at the Aberdeen meeting of the association and devoted mainly to the subject of the better arrangement of art museums. A plea is made for smaller exhibition halls and the display of a comparatively small number of objects amid harmonious surroundings. Among the notes is announced the coming extension of the British Museum (the older building) at a cost of £200,000, and the coming publication of the first volume of a catalogue of the books, manuscripts and maps in the possession of the British Museum, of natural history.

SOCIETIES AND ACADEMIES.

AMERICAN PHYSICAL SOCIETY.

The fall meeting of the Physical Society was held at Columbia University on Saturday, October 31. The meeting was well attended and was marked by discussions considerably more extended than have recently been usual at Physical Society meetings. These discussions add so greatly to the interest of such gatherings that the further development of this feature of the meetings is much to be desired.

It was decided to hold the next meeting of the Physical Society in St. Louis during convocation week in connection with the Amer-

ican Association for the Advancement of Science. Since the Physical Society has been one of the affiliated societies of the American Association ever since its organization, this action was to be expected. It is hoped that this meeting of the society in the west will afford an opportunity for some organization there which will bring the same advantages to the physicists of the middle west which the meetings in New York have brought to those in the east.

The first paper, by Dr. P. G. Nutting, was upon the 'Distribution of Motion in a Conducting Gas.' In the experiments described in this paper Dr. Nutting used a thermopile in the form of a thin flat disk. This could be mounted in a vacuum tube in such a way as to present either its flat surface or its edge to the direction of the discharge. At low pressures the temperature indications were quite different in the two cases, since in one case the full bombardment due to moving ions and kathode rays was received on the surface of the pile, while in the other case only the movement across the line of discharge was effective in heating.

A paper on a special type of radioactivity was next presented by Miss Fanny C. Gates. This paper dealt with a peculiarity in the behavior of sulphate of quinine when heated to about 180° C. and then allowed to cool. During the process of cooling the quinine is found to make the air near it conducting; in fact, at first glance the quinine seems to behave for a while much like a radioactive substance. There are strong reasons for believing that the phenomenon is due to some relatively simple chemical change in the quinine, and the case has been cited as an argument in favor of explaining all cases of radioactivity by recognized types of chemical change. Miss Gates finds, however, that the effect produced by quinine obeys entirely different laws from the similar effect produced by radioactive substances. Experimenting with different electromotive forces and with different distances between plates, she found it impossible to produce saturation in the current due to the ionization by quinine. Even with plates only 3 mm. apart at a potential difference of 900 volts no indication of saturation could be observed. Assuming the ionization to be produced by rays emitted by the quinine it was found that these rays are completely absorbed by a thickness of aluminium which would scarcely affect the radiation from radium or uranium by a noticeable amount. The conclusion reached by Miss Gates is that the phenomenon is entirely different from ordinary radioactivity. She inclines to the view that the ionization is due to rays of ultra-violet light produced by the chemical change and absorbed in the immediate neighborhood of the surface.

A short paper by Mr. W. J. Hammer dealt with certain points connected with excited radioactivity. Mr. Hammer mentioned certain experiments which led him to believe that excited radioactivity was more permanent than is generally supposed, and that while it dies out rapidly at first, it finally reaches a nearly permanent value. Mr. Hammer exhibited numerous radiographs taken by himself and referred briefly to experiments by which animals had been killed by action of Becquerel rays. He also suggested the internal use of radioactive substances in the treatment of disease, in instances where it is impracticable to reach the seat of trouble from without. The active rays might be brought to the diseased parts by the use of solutions of radioactive substances or solutions which have been given excited activity.

In a paper on Van der Waals' a in alcohol and ether Professor E. H. Hall stated the result of calculations intended to test the validity of certain assumptions connected with the well-known Van der Waals equation. The character of the paper is such as to make it difficult to present the results in a brief abstract.

In the afternoon session W. S. Franklin spoke on the 'Misuse of Physics by Biologists and Engineers.' The object of the paper was to call attention to certain misconceptions of fundamental matters in the subject of thermodynamics which are common among engineers and biologists who have occasion to make applications of physics in their work. Pro-

fessor Franklin's paper led to a discussion of considerable interest.

Dr. Bergen Davis exhibited, in operation, his apparatus in which mechanical rotation is produced by the electrodeless discharge. It will be remembered that the apparatus consists of a little anemometer mounted at the center of a vacuum tube. The discharge in the tube is produced by an oscillating current in a surrounding coil. The motion of the ions constituting this current then produces rotation in the anemometer.

In a second paper by Dr. Davis the theory of 'The Electrodeless Discharge' was considered, the discussion being based upon experiments made upon carbonic acid and helium. It was found that the results in these experiments could be explained upon the assumption that ionization was produced by the impact of ions, these being always present to some extent. The theory developed enabled the mean free path of the ions to be computed. It was found to be 4.4 times the mean free path of the molecules. The result agrees very well with the value 4.3 obtained by J. J. Thomson by entirely different methods. Similar computation showed that an ion must move through a potential of 2.5 volts in order to ionize air. By different methods J. J. Thomson has found about five volts for this same quantity, the agreement in this case being, therefore, less satisfactory.

Ernest Merritt,
Secretary.

American Mathematical Society.

A regular meeting of the American Mathematical Society was held at Columbia University on Saturday, October 31. The attendance at the two sessions numbered about fifty persons, including nearly forty members of the society. The president of the society, Professor Thomas S. Fiske, occupied the chair. The following persons were elected to membership: Miss Grace C. Alden, Westfield, Mass.; Mr. L. D. Ames, University of Missouri; Professor R. C. Archibald, Ladies' College, Sackville, N. B.; Mr. W. H. Bates, Purdue University; Miss Harriet D. Buckingham, Lexington, Mass.; Miss Louise D. Cummings, Vassar College; Mr. Harry English, Washington, D. C.; Professor G. A. Gibson, Glasgow, Scotland; Miss Mary F. Gould, Everett, Mass.; Dr. O. D. Kellogg, Princeton University; Mr. W. A. Manning, Stanford University; Dr. C. M. Mason, Massachusetts Institute of Technology; Professor Helen A. Merrill, Wellesley College; Mr. E. A. Miller, Massachusetts Institute of Technology; Mr. E. H. Taylor, State Normal School, Charleston, Ill.; Professor Anna L. Van Benschoten, Wells College; Mr. R. E. Wilson, Northwestern University. Nine applications for membership were received. The total membership of the society is now 448, a gain of 48 since January last.

The office of assistant secretary of the society was revived and filled by the appointment of Dr. William Findlay, of Columbia University. A list of nominations for officers and members of the council was prepared and ordered placed on the official ballot for the election which takes place at the annual meeting in December. A committee was appointed to make arrangements for holding the next summer meeting of the society at St. Louis and to cooperate with the committee of the exposition in organizing the mathematical section of the international congresses.

The publication by the society of the courses of lectures delivered at the Boston colloquium by Professors Van Vleck, White and Woods is under consideration. While the society regularly publishes two journals, it could render still greater service to mathematics in several directions if even a small publication fund were at its disposal, its present income from membership dues being barely sufficient to meet its regular outlay in this direction. In view of the great work which the society has accomplished, chiefly at its own expense, it is to be hoped that it may soon receive a modest endowment to enable it to meet its increasing opportunities in a more effective manner.

The following papers were read at the October meeting:

A. S. GALE: 'On three types of surfaces of the third order regarded as double surfaces of translation.'

L. P. EISENHART: 'Surface of Bonnet and their transformations.'

EDWARD KASNER: 'On partial geodesic representation.'

F. N. COLE: 'On the factoring of large numbers.'

E. GOURSAT: 'A simple proof of a theorem in calculus of variations (extract from a letter to W. F. Osgood).'

BURKE SMITH: 'On the deformation of surfaces whose parametric lines form a conjugate system.'

G. A. MILLER: 'On the number of sets of conjugate subgroups.'

ELIJAH SWIFT: 'On the condition that a point transformation of the plane be a projective transformation.'

IDA M. SCHOTTENFELS: 'On the simple groups of order 8!/2 (preliminary communication).'

IDA M. SCHOTTENFELS: 'The necessary condition that two linear homogeneous differential equations shall have common integrals.'

The American Physical Society was also in session at Columbia University on the same day. The members of the two societies lunched together at the university restaurant. In the evening the members of the Mathematical Society held an informal dinner.

THE annual meeting of the American Mathematical Society will be held at Columbia University, December 28–29. The Chicago section of the society will meet, in conjunction with Section A of the American Association for the Advancement of Science, at St. Louis, December 31–January 1. F. N. COLE,

Secretary.

DISCUSSION AND CORRESPONDENCE.

THE ST. LOUIS CONGRESS OF ARTS AND SCIENCE.

TO THE EDITOR OF SCIENCE: In the number of SCIENCE for August 28, I occupied considerable space in raising certain questions suggested by Dr. Münsterberg's article on the St. Louis Congress in the May number of the *Atlantic Monthly.* I objected

1. To Dr. Münsterberg's basing the working classification and grouping of the schedule or program of that Congress upon a scheme of philosophical methodology (of which he himself happened to be the author), and

2. To the representation made in the article that the Committee on the Congress had given his methodology an official sanction and endorsement by arranging a program upon its basis.

In what purports to be a reply in SCIENCE for October 30, Dr. Münsterberg elaborately ignores the objection I raised and as elaborately attributes and refutes a position which I neither took nor even suggested. The objection which he attributes to me is upon its face either a matter of minor importance or else is absurd. This is an objection to the actual working classification and grouping adopted for the conduct of the Congress. It does not require two pages of SCIENCE to point out that such an objection is trivial if taken to mean an objection to just this or that number and set of divisions, departments and sections; and absurd if taken to mean objection to any classification and grouping whatsoever. Nor does it require a careful reading of my SCIENCE article to discover that I never entertained such objections.

While I regret that Dr. Münsterberg has raised an irrelevant issue, instead of discussing the matter on its merits, I yet take one consolation from his article. His ignoring the real point of my objection suggests that as a matter of fact the philosophical methodology set forth in such a prominent way in the May *Atlantic* has ceased to have (if it ever had) any bearing upon the actual conduct of the Congress; and that what now exists is just a certain working classification, whose exact merits, as I have just indicated, are a matter of detail and not of principle. In that case, while some explanation would seem to be due the editor and readers of the *Atlantic Monthly,* the scientific men of the country may rest reasonably content.

JOHN DEWEY.

THE UNIVERSITY OF CHICAGO.

RECENT ZOOPALEONTOLOGY.

ADDITIONAL DISCOVERIES IN EGYPT.

Cetacea.—Dr. E. Stromer describes a skull and lower jaw of a new species of *Zeuglodon, Z. Osiris,* from the Middle Eocene of Egypt,