24. Mr. H. L. Rietz: 'On primitive groups of odd composite order.'

25. Miss I. M. Schottenfels: 'On the non-isomorphism of two simple groups of order 8!/2.'

26. Professor L. W. Dowling: 'On the generation of plane curves, of any order higher than four, with four double points.'

27. Professor L. E. Dickson: 'The configuration of the 27 lines on a cubic surface and the 28 bitangents to a quartic curve.'

28. Professor E. H. Moore: 'Concerning the second mean value theorem of the integral calculus.'

29. Dr. I. E. Rabinovitsch: 'The application of circulants to the solution of algebraic equations.'

30. M. Emile Lemoine: 'Note sur la construction approchée de π de Mr. George Peirce.'

31. Dr. C. W. McG. Black:

32. Professor Alexander Pell: 'Some remarks on surfaces where first and second fundamental forms are the second and first respectively of another surface.'

At the Colloquium, which was attended by twenty-three persons, two courses of four lectures each were presented:

Professor Oskar Bolza: 'The simplest types of problems in the calculus of variations.'

Professor E. W. Brown: 'Modern methods of treating dynamical problems, and in particular the problem of three bodies.

It is hoped that these lectures may be published in complete form. A summary of them will appear in the *Bulletin*.

The next meeting of the Society will be held in New York, on Saturday, October 26.

F. N. Cole,
Secretary.

PALEONTOLOGICAL NOTES.

VERTEBRATES FROM THE TRIAS OF ARIZONA.

As recently noted in Science, Mr. Barnum Brown was engaged during May and June of this year in making collections for the U. S. National Museum from the Trias of Arizona. The exploration was undertaken in the hope of obtaining ancestral forms of the Stegosaurs, and while unfortunately this hope was not realized much interesting material was obtained, although, like most Triassic specimens, in a very fragmentary condition. A large share of this represents the large Belodont from the Trias of Utah, described by the writer under the name of *Heterodontosuchus ganei*, and comprises fragments of the skull, numerous dermal plates, many vertebræ, all badly broken, and portions of the pelvis and limbs, besides an absolutely complete humerus, ulna and scapula. That this last bone should have escaped destruction, while others far more solid were shattered and scattered beyond redemption, is one of the many puzzling facts that come under the notice of paleontologists. Associated with the Belodont are some bones of a Dinosaur, and as a few teeth referable to the genus *Palæoctonus* of Cope are present they also probably belong to that genus. A humerus has the deltoid and other muscular ridges remarkably well developed, indicating a reptile of the strength and agility that one might expect from the owner of such teeth; it is nearly solid and smaller than might have been expected from the size of the teeth.

In a bed of conglomerate Mr. Brown obtained a number of more or less fragmentary bones, which from the shape of some associated scutes apparently belong to Cope's *Episcoposaurus*. These specimens, and the clayey matrix containing them, are unluckily thoroughly permeated with alkali, which will make their preparation, or even preservation, a matter of difficulty.

Perhaps the most interesting of the specimens are the deeply sculptured ventral plates of some extremely large Labyrinthodont. The interclavicle, which is complete, is 40 cm. long, and 30 cm. broad, 16 by 12 inches, about the size of the corresponding bone in the European *Mastodonsaurus*. It may be of interest to note that when in Washington this spring Dr. Eberhard Fraas identified a fragment of a cranial plate from the same locality as the above as belonging to this genus.

It will be seen that all the species obtained are typically Triassic, the Belodont and *Mastodonsaurus* preeminently so.

F. A. Lucas.

THE APPROACHING MEETING OF THE BRITISH ASSOCIATION.

The British Association—for so it is universally called in Great Britain without any further specification, a testimony to its supremacy among associations—meets at Glasgow on Sep-

tember 11, and a comparison of its work with that of our own Association may be of use. As a rule the addresses of the president and of the presidents of the sections are better suited to their purpose than those of our own officers, although this year there is no reason to avoid a comparison. Indeed it seems evident that in recent years the general addresses before our Association have improved both in substance and in form, being addressed to a wide audience rather than to a few specialists. In regard to the proceedings of the sections, the American Association is on the whole the leader. There are usually at the British Association several eminent men of science, who take a prominent part in the proceedings, but the average number and average importance of the papers presented are probably less than in the case of the American Association. Thus at Denver over two hundred papers were presented; and their quality will compare favorably with those that will be presented at Glasgow. The social entertainments and excursions of the British Association are usually superior to ours. Owing to the interest taken in science by the upper classes in Great Britain, it receives a more marked social recognition than is the case in this country. This, however, is not a matter of great importance; and the British Association has doubtless never been entertained more generously than was the American Association at Denver. The British Association is certainly fortunate in securing the support of a large body of members, especially of annual members. Thus three previous meetings have been held at Glasgow. In 1840, there were in attendance 1,393 members; in 1855, 2,159, and in 1876, 2,800. These members were, however, chiefly local citizens who took an interest in science, attended the meetings and subscribed $5 to support the Association. On the other hand, the American Association has a much larger proportion of scientific men in attendance; and the British Association has certainly never had an accession of nearly 1,200 permanent members, chiefly scientific men, in the course of a year, as has occurred with the American Association during the past year.

At the meeting of the British Association that opens next week, Professor A. W. Rücker, the eminent physicist, recently elected to the presidency of the University of London, will preside and will deliver the inaugural address. The public lectures will be by Professor W. Ramsay, who has chosen as his subject 'The Inert Constituents of the Atmosphere,' and by Professor Francis Darwin on the 'Movements of Plants.'

The addresses of the presidents of the sections, for the preliminary announcement of which we are indebted to a forecast printed in the London *Times*, are as follows: In Section A (Mathematical and Physical Science), the president, Major P. A. MacMahon, will first give an account of the Mathematical Society of Spitalfields, 1717–1845; and, after some remarks upon the present state of mathematics and physics in Great Britain and the teaching of those subjects, will conclude by considering the work of a specialist in science and especially of a mathematical specialist, in relation to the general advance of scientific knowledge. The title of the address which will be delivered by Professor Percy Frankland, F.R.S., president of Section B (Chemistry), is 'The position of British chemistry at the dawn of the twentieth century.' He proposes drawing attention to the factors which have been instrumental in promoting the growing activity in original investigation during the past 20 years. Coming to the present time he will point out the disadvantages under which students of chemistry labor at the universities, and will indicate some of the more important reforms which he considers desirable in the immediate future. The president of Section C (Geology) is Mr. John Horne, of the Geological Survey Office, Edinburgh, who has chosen as the subject of his address, 'Recent advances in Scottish geology.' He proposes to review the progress of Scottish geological work since the last meeting of the Association in Glasgow. In Section D (Zoology), Professor J. Cossar Ewart will probably take the opportunity afforded him in his presidential address of summarizing the results of the long series of experiments he has been carrying out at Pennycuik in connection with the subject of inheritance and telegony. Dr. Hugh Robert Mill is the president of Section E (Geography), and in his address will deal

with research in geographic science. He will argue that geography deals with the forms of the crust of the earth and the influence which these forms exert on everything free to move on the surface. In his presidential address to Section F (Economic Science and Statistics) Sir Robert Giffen proposes to discuss the increase in population during the last 100 years in the chief European countries, in the United States, and in the English-speaking colonies. Among the topics referred to will be the changes in the relative position of European States to each other and to the United States in consequence of the differences in the increase of their population; the increasing dependence of other European countries besides the United Kingdom on supplies of food imported over sea, and the question whether changes in the rate of growth of population in recent years are likely to modify in a material degree the present relative development of the countries in question. Section G (Engineering) will be presided over by Colonel R. E. Crompton, who will first deal with the probable future development of passenger and goods transport as affecting railways, tramways and ordinary roads, and will then touch on the standardizing of parts of machines to facilitate manufacture, concluding with a consideration of the National Physical Laboratory.

In Section H (Anthropology) Professor D. J. Cunningham, F.R.S., of Trinity College, Dublin, will devote his address to a consideration of the part which the brain has played in the evolution of man, especially the structural changes in the brain which have rendered the associated movements required for articulate speech possible, and to arguing that the acquisition of speech has afforded the chief stimulus to the general development of the brain. In his presidential address to Section I (Physiology), Professor McKendrick will briefly pass in review the advance in our knowledge in this branch of science during the past quarter of a century; and he then proposes to discuss some of the problems of what may be called molecular physiology, more especially the question of how many organic molecules may be contained in the smallest particle of living matter, and whether in the ovum, for example, there is a sufficient number of molecules to account for the facts of hereditary transmission. Professor I. Bayley Balfour is president of Section K (Botany). He will deal in his address with the construction of flowering plants, with the intention of showing that they owe their position as the dominant vegetation of the present epoch to their having solved best the problem of adequate water-carriage. The new Section L (Educational Science) is under the presidency of Sir John Gorst. The subject of his address has not been announced.

SCIENTIFIC NOTES AND NEWS.

The Reale Accademia de Lincei of Rome has elected the following foreign members: Emile Picard, professor of higher algebra at the Sorbonne; Edward C. Pickering, director of the Harvard College Observatory; Samuel P. Langley, secretary of the Smithsonian Institution; J. H. Van't Hoff, professor of general chemistry in the University of Berlin; Heinrich Karl Rosenbusch, director of the Mineralogical and Geological Institute of the University of Heidelburg; Charles D. Walcott, director of the U. S. Geological Survey; Theodor Engelmann, of the Imperial Board of Health at Berlin; and Charles Richet, professor of physiology at the University of Paris.

On the application of the Government of Victoria, Australia, for a director of agriculture, officers of the U. S. Department of Agriculture have recommended Professor B. T. Galloway, chief of the Bureau of Plant Industry, and Professor Willett M. Hays, agriculturist of the Minnesota Experiment Station.

Dr. Santos Fernandez, president of the third Pan-American Congress held recently at Havana, has been presented by the members of the medical profession in that city with a gold medal in recognition of his efforts to advance medical science in Cuba.

The Alverenga prize of the College of Physicians and Surgeons of Philadelphia has been awarded to Dr. George W. Crile, of Cleveland, Ohio, for his essay entitled 'an experimental and clinical research into certain problems relating to surgical operations.

The Belgian government has awarded its an-