quick growth, are all in favour of operations. The following are the results of his experiments on the cerebral hemispheres :—"Very convincing facts are obtained by removing the cerebral hemispheres in new-born animals, and allowing them to grow up. The result is idiotismus. There is also reason to locate the organic conditions of voluntary movements in the cortical substance of the brain, but there is no reason to accept the corpus striatum as a motor ganglion. The hemiplegion following the destruction of the nucleus lenticularis can be satisfactorily explained by the rupture of fibres passing through the internal capsule. But admitting the cerebral cortex as the organ for voluntary movements, there is no necessity to have another motor ganglion. Indeed, Gudden's experiments on new-born rabbits, by removing portions of the hemispheres, have demonstrated that the organ of voluntary motion is located in the frontal part of the cerebral cortex."

Dr. Ferrier, whose results are referred to in another column, is working in a similar field of observation, with the view of elucidating the relations between certain convolution centres, and definite sets of muscles at the periphery.

FRENCH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE second meeting of the French Association for the Advancement of Science was held at Lyons from the 21st to the 28th of August, under the Presidency of Prof. Quatrefages. This Association bids fair to become as popular in France as the British Association in this country. The work done in the sections which I visited, those of Anthropology and Geology, was, to say the very least, as valuable as that done by our own sections. Among the papers brought before the former, the pleistocene station of Solutré excited considerable interest, and was subsequently visited by the section. The site has been used by man for habitation and burial, as late as the Merovingian times, in which it was a cemetery, and the strata are to a considerable extent *remanié*. The association of remains on that spot of varying age, Palæolithic, Neolithic, and Frankish, seems to throw a doubt on the precise date of the human skeletons, buried at full length, and generally believed to be of the same age as the associated implements of reindeer, and bones of mammoth. Dr. Gosse also read a paper on the reindeer-cave of Veyriers, Switzerland, and exhibited carved implements of reindeer antler, usually called "batons de commandement," which are of the same form as the arrow-straighteners of the Eskimos. Here, as in the caves of Belgium explored by M. Dupont, they presented but one perforation. The debates were very animated, and drew out many valuable remarks from the eminent anthropologist, Dr. Paul Broca.

In the Geological section, papers were contributed by the Comte de Saporta, MM. Dumortier, Beboux, and others, and in the debates Prof. Carl Vogt of Geneva took a prominent part. MM. Falsan and Chantre exhibited and described an elaborate map of the glacial phenomena of the middle basin of the Rhone, drawn on a large scale. They traced the glaciers of the Alps, and of the Jura, as far to the west as the Sâone, and as far to the south as Valence; and they proved that there were two epochs of glaciation, the one during which the area in question was covered by a great ice-sheet, conveying Alpine blocks over the Jura into the valley of the Sâone and middle basin of the Rhone, and the other during which the glaciers were isolated, and local moraines accumulated in the river valleys. These two periods correspond with those which have been noted in Great Britain and Ireland, by Prof. Ramsay, Hull, and others. The map presented a combination of artistic skill, with careful work in the field, which is very rarely met with.

In the evening three popular lectures were given to the public, one of which, by M. Janssen, on the Constitution of the Sun, was admirably illustrated.

The times of meeting of the sections differ from ours, the programme of the day being, first, a morning sitting from 8.30, or 9 to 11 A.M.,—*dejeuner*; and, an afternoon sitting from 3 to 5 P.M.—then dinner; and sometimes an evening sitting commencing at eight, when there were no lectures going on. The sections were 15 in number, and comprised Agriculture and Medicine, as well as those represented in the British Association. There were excursions down the Rhone, and to Geneva; a grand *fete* given by one of the merchants, and a magnificent entertainment given by the City of Lyons in the Town Hall.

In writing this short notice the extreme courtesy and consideration of the French Association to the strangers should not be omitted. Their hospitality to the only English guest present was too great to flow from any personal motive, and evidently was intended as a mark of respect to the British Association. W. B. D.

THE METEOROLOGICAL CONGRESS AT VIENNA

THE Meteorological Congress which met at Vienna during the past month worked very hard amid many difficulties, and we believe will have good results. The Congress sat from Sept. 2 to Sept. 16. The protocols and appendices are in the press, and will appear officially in French and German; while Mr. R. H. Scott has undertaken an English translation, which will appear as soon as possible. The following is a list of the delegates from the various countries :—Antonio Aguilar, Spain; H. Buys-Ballot, Netherlands; Carl Bruhns, Germany; Alexander Buchan, Great Britain and Ireland; J. D. Campbell, China; Giov. Cantoni, Italy; Aristide Coumbary, Turkey; v. Czelechowsky, Austria; F. Doergens, Germany; Prof. Ebermayer, Bavaria; Fradesso da Silveira, Portugal; M. Gloesener, Belgium; Julius Hann, Austria; Hofmeyer, Denmark; Carl Jelinek, Austria; Josef Lorenz, Austria; Heinrich Mohn, Norway; Robert Müller, Austrian-Hungary; Albert Myer, United States; Georg Neumayer, Germany; E. Plantamour, Switzerland; Ernst Quetelet, Belgium; R. Rubenson, Sweden; Guido Schenzl, Hungary; Julius Schmidt, Greece; H. Schoder, Germany; Robert H. Scott, Great Britain and Ireland; Carl Sohncke, Germany; H. Wild, Russia; F. Winnecke, Germany; A. Zamara, Austria. The following is the programme of subjects discussed :—

I. *Instruments.*—1. What is the construction of the barometer most suitable for stations of the second order? Is the use of aneroids at such stations advisable? 2. What model of exposure of thermometers for the observation of air temperature is the best and most suitable for general adoption? 3. What is the best construction for maximum and minimum thermometers? 4. What instruments should be used for determining intensity of radiation, and in what way can the comparison of the results obtained be secured? 5. What is the best apparatus for observing earth temperatures? At what depths ought they to be made, in order that the desired agreement may be attained? 6. What instruments should be used for ascertaining the state of moisture of the atmosphere? Does the psychrometer suffice for this purpose? Can the hair hygrometer be made applicable, and with what limitations? 7. In what way can an agreement in the signs for the directions of the wind be attained? Is the deduction of the mean direction of the wind according to Lambert's formula desirable? Is it desirable or not to include very light winds (force 0) in constructing wind roses for the direction of the wind? 8. What scale is to be used for the force of wind where it has to be estimated without the aid of an instrument? 9. Is the

introduction of simple counting instruments for ascertaining the rate of the wind desirable? What units should be fixed upon as a basis for observing the rate of the wind? 10. What is the most suitable form, size, and position for rain-gauges? At what time of day should the measurement of rainfall be made. 11. Should days of rain and snow-fall be separated from each other, or be counted as the same? 12. Is it desirable in recording the amount of hail to separate the falls of sleet (*graupel*) from those of hail proper? 13. In reckoning thunderstorms, are the storms only to be recorded, or the days in which they occurred? How is sheet-lightning to be regarded? 14. What apparatus is to be recommended for measuring evaporation? What is the most suitable exposure for the vaporimeter? 15. How should the amount of cloud be estimated and recorded? Is it desirable to introduce for clouds, hydrometeors, and for other extraordinary phenomena, a nomenclature which shall be independent of local language, and therefore universally intelligible? 16. Moreover, should other elements which are reckoned meteorological, *e.g.* atmospheric electricity, ozone, &c., be included in the circle of normal observations, and what are the most suitable instruments for observing them. 17. For meteorological measurements should the same units of measure (units of length, degree, time, &c.), be introduced into all countries? or is it sufficient to establish fixed rules for the reduction of the measurements used in different countries?

II. *Taking and calculation of the observations.*—18. Could corresponding times of observation be established at all meteorological stations. 19. According to what rules, periods of time, &c., are the mean values of the various meteorological observations to be calculated? Is it expedient to begin the meteorological year with the month of January, or with the month of December? 20. In what way, and for what periods of time are the normal values of the several meteorological elements to be deduced?

III. *Weather telegrams.*—21. Does the interchange of weather telegrams appear so useful that a wider circulation and more complete organisation should be given to it?

IV. *Maritime Meteorology.*—22. In what way would maritime meteorology be best introduced into the system of general meteorology?

V. *Organisation.*—23. Is it desirable that in each country one or more central stations for the superintendence, collection, and publication of meteorological observations, should be established? 24. In reference to the verification of instruments and the inspection of meteorological stations, can any adequate general rules be laid down? And is it advisable to introduce general instructions for taking and calculating meteorological observations? 25. In what way can the agreement of the standard instruments of the various central establishments be best secured?

VI. *Publication of Observations.*—26. Is it desirable and practicable to publish the meteorological observations of a limited number of stations in each country in a uniform manner and within a reasonably short time after the observations have been made? 27. How is the interchange of meteorological publications of various institutions and countries to be organised most simply, speedily, and certainly?

VII. *The Carrying Out of the Decisions of the Congress.*—28. What measures should be adopted for the accomplishment of the decisions and purposes of the Meteorological Congress? For this purpose, is the establishment of a permanent committee and the arrangement of further meteorological Congresses necessary?

BIRMINGHAM NATURAL HISTORY AND MICROSCOPICAL SOCIETY

ABOUT twenty members of this society, including several ladies, proceeded to Teignmouth in the beginning of September, in fulfilment of the proposed marine excursion, and took up their quarters according to agreement at the Queen's Hotel. The yacht *Ruby* had been chartered for the occasion, and proved a most seaworthy and serviceable craft. Dredging operations commenced on Monday, Sept. 1, and were continued daily throughout the week, in depths varying from 5½ to 20 fathoms. The atmospheric, surface, and bottom temperatures were taken at each sounding, the maximum and minimum results being as follows :—

Atmospheric temperature,	Maximum	66°		Minimum	64°
Surface	„	„	61°	„	58½°
Bottom	„	„	60½°	„	58°

The averages were: atmospheric, 65¼°, surface, 59½°, bottom, 58¼°. A Miller-Casella thermometer was used. On the whole the results of the dredging were very satisfactory. The weather was fine, but cloudy, with occasional rain, and sometimes a little too calm for the work. About 30 hauls of the dredge were made, and specimens of many of the marine invertebrate animals in the neighbourhood secured. The tangles attached to the bag of the dredge sometimes came up literally swarming with echinoderms. By far the most noteworthy capture was *Comatula rosacea*, the feather-star, two individuals of which were taken in the larval pedunculate condition attached near the base of a frond of *Laminaria*, which was torn off by the dredge.* The specimens measured about one-third of an inch each in length. Five young Comatulæ in a free condition, the largest about an inch across, were also taken. A subsequent haul on the following day brought up from the same locality three adults. The members of the Society had the unusually rare opportunity of seeing under the microscope the young feather-stars in the living state. They were but little thicker than sewing-silk, of graceful, erect, lily-like form, and very lively, bending and waving on the peduncle; the arms vigorously contracting in an inward direction. Drawings of the larval Comatulæ in the living state were made to scale by Mr. Wills, with the camera lucida, and the specimens mounted by him for exhibition to the Society. A full description will be communicated to the Society in a report of the excursion. During the evenings the members had the opportunity of examining under the microscope the pedicellariæ of the star-fishes and sea-urchins, and the whip and bird's head processes of certain of the polyzoa, also the structure of Botryllus and other tunicates, the larval forms of crustacea, &c.; objects always interesting, but specially so to a society carrying on its work in an inland neighbourhood far removed from the sea. In the course of the week very enjoyable excursions were made by some of the members down the River Dart to Berry-Pomeroy Castle, Lustleigh, Becky Falls, Moreton Hampstead, Chagford, Exeter, Torquay, &c. On the whole, the excursion has proved a most successful experiment, quite fulfilling the expectations of those who projected it, and it is to be hoped may be succeeded by others in a wider field. The members received much kind attention from the Rev. R. Cresswell, Mr. W. G. Ormerod, Rev. R. C. Douglas, Mr. Adams, and other gentlemen. Most of the party returned to Birmingham by train on Monday, having had a most delightful excursion.—The members of the society who remained in Devonshire after the marine excursion had a great treat on the following Friday, when they were escorted through the famous cavern by W. Pengelly, F.R.S., who courteously explained to them the mode of conducting the explorations, the contents of the flora, and their relation to geological time. Mr. Pengelly also showed them at his own house the collection of bones, teeth, &c., of man, and the extinct bear, hyæna, dog, and other animals, and the flint implements of earlier and later manufacture found therewith in the cavern.

* They were taken in the vicinity of Torbay on Thursday, Sept. 5, at a depth of 12 fathoms on a limestone bottom, the bottom temperature registering 59°.