to speak on the arguments and questions interesting to science have been obliged to keep silence, and interesting debates, which would have lost nothing by insertion in the public press, did not take place.

A very good example was given by the Section of General Pathology, one day being dedicated to the discussion of cancer. On this day, many ideas were exchanged between the partisans and adversaries of the parasitical theory of this disease. Prof. Foà (Turin) gave his experiences, which led him to admit the existence of the parasite in cancer, and to his observations M. Cornil and many others replied. Nothing leads more to new researches and helps towards the discovery of the truth than such discussions.

In the Pharmacy Section, Stokvis (whose address we print elsewhere), Lauder Brunton, Fraser, and in the Italian ranks, Colasanti, Fubini, Gaglio, Giacosa, Mosso, and others have made some very interesting suggestions. In the same section, on the proposition of Prof. Giacosa, an order of the day was voted, asserting that the study of the alterations produced in the living body through the absorption of chemical substances constitutes a branch of biological science, having a definite aim, and that it is necessary to give to pharmacological laboratories grants equal to those of physiology and pathology. Many Italian universities have pharmacological laboratories insufficiently equipped, and in many countries pharmacology is taught only as a subsidiary question to therapeutics, which is not a science, but a rational application, and very often empirical.

Physiologists occupied themselves, naturally, with the questions interesting the cerebral function. Prof. Mosso, who brought with him many instruments and animals to serve at his demonstration, showed some of them for the purpose of taking the measurement of the pressure of the blood on the pulse of the patient. The questions of the temperature of the organs were also discussed.

In Surgery many very animated and useful discussions took place.

The principal question which has been discussed was the cure of hernia, ascertaining the large tendency to adopt in every case the most painful process of operation. Jean and Lucas took up the question in opposition to Paci. The surgery of the nervous system was discussed by MacEwan; while D'Antona, of Naples, spoke on the cause of the functional disturbances which follow bone diseases. On this subject a very interesting suggestion was made by Ollier, who is an authority upon it.

Tuberculosis and pneumonia and their therapeutics, and subjects relative to anæmia, with the transfusion of the ferruginous preparations or with organic substances, and malaria, were also the subject of some discussion.

The sudden death of Brown-Séquard was the subject of solemn commemoration in the Medical Section (Prof. Cardarelli) and in the Physiological Section (Prof. Richet).

Altogether the debates raised 2700 questions, and if some were not settled, many others were adjourned which were not included in the orders of the day.

The Medical Exhibition, arranged by Prof. Pagliani, was one of the most complete ever witnessed, and without doubt the most interesting and original part was that relating to the history of medicine by the exhibition of fragments of anatomic models of the Roman epoch; of Egyptian, Greek, Roman surgical instruments of the earliest date; by the illuminated manuscript and by the Greek, Roman, and Arabic classical authors relative to the first works on surgery; by the diplomas and the cards of the old universities; by the manuscripts, pocket-books, drawings of the celebrated anatomists and physiologists of the sixteenth, seventeenth, and eighteenth centuries. All these documents, extracted from the

archives of libraries and museums, were shown to a public competent to appreciate them.

It would be unfortunate if all those riches were dispersed again, and with the view of keeping them together, the Pathological section of the Congress has invited the Minister of Public Instruction to compile a catalogue.

It would be difficult to assert that every one was pleased with the fêtes; but even if the organisation of all the services was not the acme of perfection, there was the beautiful and grand city, its animated streets, its incomparable monuments, its enchanting landscape, and specially its sun. It rained one day, but with the return of the sun the visitors found themselves in the royal garden of the Quirinal, dominant over the town, and with the eternal lines of the landscape coloured by the setting sun. We must mention also the lunch at the Thermal Baths of Caracalla. It is very difficult to say whether the food and drink were distributed equally among the guests, and if some people went away hungry while others went away with their handkerchief full; but I am sure no one will ever forget those grandeurs and immense drawing-rooms, those splendid tables around which thousands of people were delighted, those quiet corners under the shadow of the trees, the bands, and especially the heavens, so beautiful that it caused one cold Teutonic to dance on the old mosaic floor of the Imperial Bath.

PIERO GIACOSA.

THE ROYAL METEOROLOGICAL SOCIETY'S EXHIBITION.

THE Royal Meteorological Society's fourteenth exhibition of instruments was opened on Tuesday, the 10th instant, in the rooms of the Institution of Civil Engineers, Great George Street, Westminster. Each annual exhibition has been devoted to the illustration of some branch of meteorology, the object being to show the progress that has been made in each particular department. The subject chosen for the present exhibition is "Clouds: their Representation and Measurement." From this title it will be readily understood that this is largely a pictorial exhibition, although it includes a considerable number of instruments.

Luke Howard, F.R.S., was practically the first person to carefully study the clouds and to classify them; and in 1803 he published a memoir "On the Modifications of Clouds, &c.," setting forth his classification, which is that in general use at the present time. A fine crayon portrait of Howard occupies a prominent place in the exhibition, as well as two original sketches by him showing clouds gathering for a thunderstorm, and also the commencement of a stratus. The first and third editions of Howard's memoir are shown, while alongside of them is a reprint of the first edition, with facsimiles of the plates, which has just been published under the direction of Dr. Hellmann, of Berlin.

Since Howard's time many attempts have been made to amend or improve his classification of clouds; most of the various nomenclatures which have been proposed are illustrated in the exhibition, such as those recommended by Admiral FitzRoy, M. A. Poey, Rev. W. Clement Ley, Dr. H. H. Hildebrandsson, and the Hon. Ralph Abercromby.

A most interesting and valuable collection of photographs, showing the various forms and modifications of clouds, is arranged around the walls of the rooms. Among the photographs of cirrus and cirro-cumulus, the highest forms of clouds, are specimens taken by M. P. Garnier, at Boulogne-sur-Seine; by M. A. Angot, at Paris; by Prof. A. Riggenbach, at the Säntis Observatory, Switzerland; and by Signor Mannucci, at the

Vatican Observatory, Rome. Mr. A. W. Clayden exhibits a number of enlargements of cloud photographs taken by reflection from a black glass mirror, and he also shows the camera by which they were obtained. The mirror is placed in front of the lens so that the plane of the mirror makes an angle of about 33° with the axis of the lens. The mirror extinguishes the polarised light, and so causes the image of the cloud to stand out brightly on a dark background. Mr. Birt Acres contributes some fine specimens of cloud photography, as also do Dr. F. G. Smart, Dr. A. Sprung, Colonel H. M. Saunders, and Captain D. Wilson-Barker.

Some interesting photographs of several remarkable clouds are exhibited. Two of these show the "festooned cumulus" (or pocky cloud) that formed part of a storm-cloud which passed over Sydney, New South Wales, on January 18, 1893. Mr. H. C. Russell, F.R.S., exhibits two photographs illustrating the "southerly burster" (which is a violent inrush of Polar wind) at Sydney on November 13, 1893. The first was taken at 6 p.m., and shows the clouds preceding the "burster." In the second, which was taken an hour later, the "roll cloud" had come near enough for its peculiar character to be distinctly seen, and the evident rolling up of the cloud is very well shown, as well as the light rain squall which sometimes accompanies these winds. Three photographs of tornado clouds are exhibited, in two of which the cloud funnel was twelve miles distant, and in the third the spiral-shaped funnel is seen trailing at a considerable altitude in the air.

A collection of pictorial illustrations of clouds, from various meteorological works, is also set out in the exhibition. The earliest of these is a plate showing the method of measuring the height of clouds, by means of two theodolites, from J. F. Glöckner's *De Pondere Nubium*, 1722.

The instruments used for observing the direction of motion of the clouds are called "nephoscopes"; and of these there are several specimens in the exhibition, amongst them being those devised by Mr. Goddard, Herr Fineman, General R. Strachey, F.R.S., and Mr. F. Galton, F.R.S. These consist of circular mirrors with radial or parallel lines marked on them, the points of the compass being engraved on the outside of the frames. The direction of motion of a cloud is ascertained by turning the mirror on its axis until the image of the cloud passes along one of the lines. Photo-nephographs, designed by Captain Abney, F.R.S., and by MM. Teisserenc de Bort and G. Raymond, are also exhibited; as well as a model showing the manner in which the pair of photo-nephographs are mounted for use at the Kew Observatory, and the apparatus designed by the late Mr. G. M. Whipple for ascertaining the height, direction, and rate of motion of clouds from the photographs. In this case simultaneous photographs of a cloud are taken by two cameras half a mile apart, and fixed in such a way that their optical axes point to the zenith. The dark slides of the cameras carry a pair of fiducial lines at right angles to each other, and adjusted so that one of the lines shall be parallel to the measured base, and these lines are reproduced upon the cloud photographs. The two negatives are super-imposed in the sliding frames of the apparatus, which are then moved till the images of the cloud exactly coincide, when the parallax is given by a line joining the intersections of the fiducial lines. The parallax having been measured by a pair of compasses, the height of the cloud is at once determined by means of a prepared curve. A similar operation is then performed with one of the same negatives, and a second taken in the same camera after the lapse of one or more minutes. The pictures having been made to coincide as before, the distance between the intersections of the fiducial lines indicates the drift of the cloud. The direction

of the drift is indicated by the position of the line joining the two intersections relatively to the fiducial line parallel to the base. The velocity of the drift, or the rate of motion of the cloud, is found graphically by means of a prepared diagram. Mr. R. Inwards exhibits a simple appliance for estimating the height of clouds of the roll-cumulus type by means of their perspective effect.

The exhibition includes a number of instruments invented or first constructed since the previous exhibition. Mr. R. W. Munro shows a very fine specimen of Dines' recording pressure-tube anemometer, as well as two other patterns of Dines' pressure and velocity gauge for use with the tube anemometer. Mr. J. J. Hicks exhibits Bartrum's open scale barometer, Callendar's compensating open scale barometer, Keating's hydrometer, and some useful and pretty circular levels with the fluid hermetically sealed. Mr. L. P. Casella shows Goad's geodetic altazimuth, a universal sun-dial, some artificial horizons, an alarm thermometer by MM. Richard Frères, and a hypsometer or boiling-point thermometer. Mr. H. Hainsby, a shoemaker at Shanklin, exhibits three ingenious instruments which he has himself devised and constructed. These are an inverted tube-hygrometer, a vapour condenser, and a compensating siphon evaporator for large water surfaces. Mr. H. N. Dickson shows a model of his bottle for collecting samples of sea water from moderate depths, and Dr. W. G. Black shows his louvered glass evaporator.

A number of sketches and photographs of meteorological phenomena are also exhibited, as well as photographs and diagrams of instruments.

A special feature of the exhibition is the large and interesting collection of lantern slides, nearly 300 in number, and mostly of cloud subjects.

WM. MARRIOTT.

NOTES.

THE next meeting of the American Association for the Advancement of Science will be held in August, at Brooklyn. The mayor of that city has just appointed a large and influential local committee to make arrangements for the meeting.

THE fine weather of the past few weeks has enabled General Pitt-Rivers, F.R.S., to resume his excavations at Wor-Barrow, a large twin-barrow near Woodyates, on the borders of Dorset and Wilts. An extensive section has been cut through the tumulus, and quite recently the work of the investigator was rewarded by the discovery on the *old surface line* of two human skeletons. Anthropologists will await with interest the results which may be deduced from the examination and measurement of these remains, and their relation to those already made by General Pitt-Rivers in the round barrows, and in the Romano-British settlements explored in the immediate neighbourhood.

THE Royal Commissioners appointed "to inquire and report what light-houses and light-vessels it is desirable to connect with the telegraphic system of the United Kingdom by electrical communication, for the purpose of giving information of vessels in distress or casualties at sea to places from which assistance could be sent, and of transmitting storm warnings," have presented their second report. Although the general question of signalling was not referred to the Commissioners, it is so intimately connected with the subject of electrical communication that they have considered it, and in the first report they stated that in cases "where the distance from the shore is not great, an improved system of distress-signals (distinct from the usual fog-signals) might, both at rock-stations and on light-vessels, prove an effective temporary substitute for the more costly expedient of electrical communication." This view has