

(vol. lxxxix., p. 435). The Proceedings of the convention have now been published for the University of London Press, Ltd., by Messrs. Hodder and Stoughton. The handsome volume runs to 359 large pages, and contains the inaugural address of the president, Prof. S. P. Thompson—extracts from which were published in *NATURE* of the date mentioned—and the papers read at the convention. The papers are chiefly of a technical description, largely directed to the issues of technical inquiry, and a few are devoted to the details of manufacture. Among the contents of the volume of more general interest may be mentioned the report of Prof. Turner's lecture on the great observatories of America, and Prof. Stirling's popular lecture on optical illusions. A table of constants for calculating spherical aberration forms an appendix; this comprises a selection of logarithms of use in some of the more laborious calculations which the designers of lens combinations have to make. The price of the volume is 10s. net.

THE National Academy of Sciences of the United States of America was founded in 1863, and 1913 sees completed the fiftieth year of its existence. It was decided in 1909 to have prepared for publication, in connection with this semi-centenary of the academy, a volume containing as complete an historical summary as could be brought together in the time available. A committee was appointed to take charge of the matter, and in the summer of 1910 the services of Dr. F. W. True were secured as editor. The result of the labours of this committee is seen in the "History of the First Half-Century of the National Academy of Sciences, 1863-1913," a copy of which has reached us from Washington. It was hoped that a list of the scientific communications presented to the academy since its foundation, some two thousand in number, might be added to the volume, but it has been found impossible in the time available to compile the necessary data. The completion of the undertaking is deferred until a later date. The present handsome volume runs to some 400 large pages, and gives exhaustive information as to the founding of the academy, its annals, and its work as scientific adviser of the U.S. Government. Biographical sketches of the incorporators of the academy add interest to the work, while the numerous appendices provide most useful lists of members, medallists, officers, and so on.

MR. FRANCIS EDWARDS, 83 High Street, Marylebone, London, W., has published the August issue of his catalogue of second-hand books in all classes of literature. The volumes listed include a number from the library of Mr. Thomas Pennant, the antiquary and naturalist.

#### OUR ASTRONOMICAL COLUMN.

AUGUST METEORS.—The most interesting and important season of the year for meteoric work has now arrived. The Perseids return regularly in August, and always repay observation, though there are marked variations in their annual displays.

During the last few years this shower has scarcely justified expectation, but the conditions have not been

very favourable. At the ensuing return possibly the meteors may return in their old-time abundance, but there will be a little interference from moonlight before midnight. This need not, however, materially affect the character of the display, for on the nights of August 11 and 12, when the maximum will occur, our satellite will be only just past the first quarter, and will set on August 11 at 11h. 13m., and August 12 at 12h. 9m. p.m.

It seems desirable to watch the phenomenon closely every year for several reasons. Its period is not yet exactly ascertained, and we are not sufficiently well acquainted with its annual variations. The hourly number of meteors visible should be determined, and the time of their maximum abundance. It is also important to record the apparent paths of such brilliant meteors as may be visible.

In the case of fireballs the lingering streaks give evidence of rapid currents in the upper atmosphere, and should be specially watched. It will be useful to note the position of the streaks amongst the stars and to record the rate and direction of their drift, at short intervals, during the period of their visibility. The streaks are usually from sixty-five to fifty-five miles in height.

Directly a streak is seen a telescope or field-glass should be directed towards it. A streak which remains visible to the naked eye a few seconds can sometimes be watched for five or ten minutes with a glass.

It is astonishing how many of the meteors of the August stream are destroyed every year by collision with the earth's atmosphere. Basing calculations on observed facts, it is probable that between 80 and 100 millions of these meteors are encountered every year. This great annual expenditure might be thought to have a perceptible effect in diminishing the visible numbers, but when we remember that Prof. H. A. Newton computed the number of meteors in the August system as 300,000,000,000,000, it is certain that any apparent falling off in the richness of the shower would only become sensible after many thousands of years.

DISPLACEMENT OF SPECTRUM LINES OF METALS DUE TO IMPURITIES.—An important piece of research work, chiefly interesting to spectroscopists, is that recently communicated by M. Kevin Burns to the *Comptes rendus* for June 30 (vol. clvi., No. 26, p. 1976). M. Burns finds that the presence of a large proportion of luminous vapour in an arc of iron or mercury displaces the spectrum lines of those metals contained in a small proportion in the arc (such as barium, manganese, cadmium) in relation to the positions they would occupy if the metals which produced them were predominant. He suggests that this displacement may be the result of numerous particles in a special condition where they emit light and not of ordinary molecules or atoms; the displacement is not explained by a pressure effect. He points out that the existence of this displacement does not render it prudent to use such lines of impurities as standards in attributing the wave-lengths found from measures made under other conditions.

CIRCULATION IN THE SOLAR ATMOSPHERE.—Anyone who has closely studied a number of photographs of solar prominences photographed on the limb of the sun would have the idea of solar currents brought to his mind.

A systematic study of a large number of such photographs becomes therefore of extreme interest from the solar circulation point of view, and such a study has been undertaken by Prof. Slocum, of the Yerkes Observatory, from spectroheliograph photographs he has taken with the large Yerkes refractor. His second

paper on the subject appears in *The Astrophysical Journal* (June, vol. xxxvii., No. 5), and the conclusions at which he arrives can be best conveyed in his own concise summary. Many prominences, by their shapes or movements, seem to indicate the existence of a horizontal current in the solar atmosphere. This current may have opposite directions at different altitudes in the same locality. It may change its direction, just as the wind changes upon the earth. In middle latitudes the average tendency for movement is towards the poles. In high latitudes the tendency is towards the equator. This tendency is more marked in the northern than southern hemisphere. From lat.  $10^{\circ}$  N. to  $10^{\circ}$  S. the average tendency is from north to south directly across the equator. The prevailing directions mentioned above apply to prominences of all heights.

#### THE BRIGHTON MEETING OF THE BRITISH MEDICAL ASSOCIATION.

A MEDICAL congress, especially in view of the wide development of specialism, rarely if ever helps to bring to light a new discovery or to promote a new theory, or at least to work out an application in practice of some basic theoretic facts. It has, however, the importance of grouping together men who work on widely different lines and are enabled to exchange ideas in a favourable atmosphere. In so far the Brighton meeting of the British Medical Association was undoubtedly very successful. We had, for example, a very interesting address by Prof. C. G. Barkla, F.R.S., on the secondary X-ray radiations in medicine, which, being delivered by a prominent physicist, introduced an element of exact science into empiricism of therapeutic applications. Prof. Barkla gave a detailed description of the scattered, fluorescent, and corpuscular rays. He reminded his audience that all chemical, therapeutic, and physical action attributed to X-rays was due to the secondary radiation of negative electrons. He pointed out that in order to produce a definite effect in an organ there must be a transformation of the energy of Röntgen radiation into energy of corpuscular radiation, as well as an absorption of the latter by the respective organ.

The solid basis and irrefutable arguments of physics could not be found or expected in the discussion on anaphylaxis. This was opened by Prof. W. E. Dixon, who entered into various details of the condition of experimentally produced hypersensitiveness, describing the changes occurring in the muscular and circulatory systems, and emphasising the significance of local symptoms. When he came to declare his preference for one of the three leading hypotheses as to the causation of the "anaphylactic shock," he declared himself in favour of the ferment theory, because he regarded the "classical" side-chain theory as a purely speculative hypothesis, and the more recent "colloidal theory" as still being in its infancy, whereas he found the ferment theory to be based on carefully recorded physiological facts. Prof. G. Sims Woodhead and Dr. Myers Coplans gave examples of clinical conditions which may be looked upon as similar to that of experimental anaphylaxis. Prof. Woodhead made a very interesting remark as to the possibility of explaining some of the phases of pneumonia by the sensitisation of the system by the specific bacterial protein. He also referred to the view largely held as to the possibility of organs being specifically sensitised, as instanced by the uterine muscle in eclampsia.

Drs. Embleton and Thiele related the results of their very remarkable experiments, which have shown that by sensitising laboratory animals by injection of bacterial protein of purely saprophytic bacteria like

*B. mesentericus* one may make them so highly susceptible that a subsequent inoculation of live bacteria of the same species will kill the animals under symptoms of acute septicæmia. These experiments are undoubtedly of a very wide importance, as they may help in producing typical specific disease conditions in experimental animals naturally refractive to the infection produced by ordinary means.

A less debatable basis for discussion was given by Prof. George R. Murray, who dwelt on the importance of internal secretion in disease in a masterly presidential address. He explicitly limited the name of "secretion" to the useful products of glandular activity which pass into the blood stream in order to play some definite part in metabolism. Ductless glands in particular act on other tissues by means of "hormones," which excite definite forms of chemical activity in cells for which they have a special affinity. The glandular cells may form more than one specific hormone; they may also produce "inhibitory hormones," *i.e.* substances which inhibit the chemical activity of the tissue cells instead of exciting them. He passed in review the consequences of an insufficient as well as superabundant supply of glandular hormones, and insisted particularly on the relations of the thyroid and pancreatic gland which tend to inhibit each other. This, as proved by further discussion, is one of the most important facts for the practice, as it tends to explain the machinery of diabetes and all forms of glycosuria. Dr. A. E. Garrod, F.R.S., could not discover any basis for a sharp differentiation of the diabetic and non-diabetic glycosurias. In his belief the progress of research was strengthening the viewpoint that the internal secretion of pancreas was the almost only controller of carbohydrate metabolism in the system. The peculiar forms of glycosuria without a definite diseased condition he tried to explain by a disturbed correlation between the various glands of internal secretion.

A general impression gained from all the various discussions can be summarised in that the medical profession is fully alive to the importance of "control" experiments, that it errs rather in the application of a severe criticism to its scientific contributions, and keeps to the moral, "Prove all things, holding fast that which is good."

#### HYDROGRAPHIC AND PLANKTON OBSERVATIONS IN THE NORTH SEA.

WE have received from the Board of Agriculture and Fisheries the subjoined communication relating to observations to be made in the North Sea:—

The research vessel s.y. *Hiawatha*, chartered for fishery research in the North Sea, left the Tyne on Tuesday for the purpose of making certain practically continuous hydrographic observations, at a fixed position during the first fortnight of August. She will be taking part in a coordinated research into the movements of the great water masses in the North Sea, and for this purpose she will drop her anchor about 150 miles "E. by N.  $\frac{1}{2}$  N." of Shields and commence her work. Her labours will be identical in aim and in the main in methods with researches simultaneously carried out on board eight other vessels, also at anchor, at positions which collectively will permit of the study of conditions representative of the hydrographic conditions over the whole of the North Sea.

Two of these other vessels will be research vessels, acting on behalf of Sweden and Scotland, the Swedish vessel working in the Skagerak, the Scottish well to