

Messrs. Schneider for the Peruvian Government. The *Ferre* was shipped in the *Kangaroo* in Toulon Harbour on June 28 last, and is now on her way to Callao.

MR. HENRY FROWDE will shortly publish as a permanent memorial of the recent celebration of the 250th anniversary of the Royal Society a volume of collotype facsimiles of the signatures of the founders, patrons, and fellows of the society recorded in its first journal-book and the charter-book from 1660 to the present time. The work will contain a preface by Sir Archibald Geikie, the president. The same publisher has just issued the third edition, revised and rearranged, of "The Record of the Royal Society of London."

### OUR ASTRONOMICAL COLUMN.

#### ASTRONOMICAL OCCURRENCES FOR AUGUST:

- August 2. 8h. om. Jupiter stationary.  
 7. 4h. 58m. Saturn in conjunction with the Moon (Saturn  $6^{\circ} 0' S.$ ).  
 10. 14h. 39m. Neptune in conjunction with the Moon (Neptune  $5^{\circ} 37' S.$ ).  
 13. 0h. 31m. Venus in conjunction with the Moon (Venus  $2^{\circ} 13' S.$ ).  
 ,, 3h. 54m. Mercury in conjunction with the Moon (Mercury  $8^{\circ} 31' S.$ ).  
 14. 3h. 50m. Mars in conjunction with the Moon (Mars  $1^{\circ} 32' S.$ ).  
 20. 1h. 10m. Jupiter in conjunction with the Moon (Jupiter  $4^{\circ} 44' N.$ ).  
 21. 22h. om. Mercury in inferior conjunction with the Sun.  
 24. 9h. 50m. Uranus in conjunction with the Moon (Uranus  $4^{\circ} 26' N.$ ).  
 26. 23h. om. Saturn at quadrature to the Sun.  
 30. 0h. om. Jupiter at quadrature to the Sun.  
 ,, 19h. om. Mercury stationary.

OBSERVATIONS OF NEW STARS.—A paper, full of important observations and suggestions, is published by Prof. Barnard in No. 8, vol. lxxii., of the *Monthly Notices*, in which he discusses his observations of Nova Lacertæ, Nova Geminorum (No. 2) and some other stars.

After dealing with the position and brightness of Nova Lacertæ, he describes the focal peculiarities presented by the star, at different epochs, in the field of the 40-in. refractor. At first, January, 1911, there was a normal image at the normal stellar focus, but 9 mm. beyond that there was also a well-defined crimson image produced by the very strong hydrogen,  $H\alpha$ , radiation. This crimson image was short-lived, and had certainly disappeared by April 9, probably earlier. Then the focus of the nova became longer, finally corresponding to that of a nebula. The stage where there existed the abnormal crimson image was also observed in Nova Geminorum (No. 2) on March 22 of this year, the difference of focus between the normal and abnormal images being 9.3 mm. Prof. Barnard suggests that it should be possible to discover novæ during this stage by sweeping for them, as one does for comets, the criterion being the focal peculiarity produced by the excessive brightness of  $H\alpha$ . He also suggests that, with the 40-in. telescope, there are probably hundreds of past novæ which might now be recognised by their presenting the second condition of longer focus and ill-defined appearance; examples of this class are Nova Cygni (1876), Nova Aurigæ (1891), and Nova Sagittarii (1898).

Prof. Barnard also presents some results of focal

measures of several stars of different types, in which the normal image presented no peculiarities, although in several cases, e.g. P Cygni, he found abnormal images at some distance from the ordinary focus. Discussing the theories concerning novæ, he inclines to the one in which the outburst of the star is supposed to be produced by physical forces inherent in a single body.

THE SPECTROSCOPIC DETERMINATION OF AQUEOUS VAPOUR IN THE ATMOSPHERE.—The determination of the amount of water vapour existing in the earth's atmosphere between the observer and observed body is a matter which enters into several important astronomical problems, and therefore the paper by Mr. F. E. Fowle in No. 3, vol. xxxv., of *The Astrophysical Journal*, is of considerable importance astronomically. Mr. Fowle passed the radiations from a Nernst lamp through long columns of air, of which the quantity of aqueous-vapour content and the physical conditions were strictly recorded, and then, with a spectrophotometer, found the absorption produced by this aqueous vapour in the region of the two bands at  $\lambda 1.13 \mu$  and  $\lambda 1.47 \mu$ . In the laboratory experiments it was not feasible to work beyond an amount of aqueous vapour corresponding to a depth of 0.5 cm. of precipitable water, but by incorporating the results of bolographs secured for high and low sun at Mount Wilson the curves are carried well beyond any amount of aqueous vapour likely to be met with in practice. In subsequent papers Mr. Fowle proposes to give applications of his method.

PERSONAL ERRORS IN TRANSIT OBSERVATIONS.—In his address, as retiring president, to the Royal Society of South Africa, Mr. S. S. Hough gave some most interesting particulars concerning the progressive elimination of personal error from the transit observations made at the Cape Observatory. After describing the eye-and-ear and the chronographic methods, Mr. Hough stated that the differences between two experienced observers not uncommonly amounted to 0.25s., a varying quantity fatal to the researches calling for great accuracy. Then the Repsold hand-driven travelling-wire apparatus was adapted, and when six observers used this regularly, in 1908-9, the personal discordances were very greatly reduced, so that the extreme discordance, for all the observers, was only 0.06s. On the Repsold method being used, in 1911, with the mechanically-driven web, this extreme discordance, for seven observers, was further reduced to less than 0.02s.

### THE BRITISH MEDICAL ASSOCIATION

THE eightieth annual meeting of the British Medical Association was held in Liverpool on July 19 to 27. The first four days were devoted to the representative meeting, at which the representatives of the branches and divisions of the United Kingdom and the Colonies discussed various matters affecting the association, the most important being the question whether the association should make further representations to the Government in respect of the dis-favour with which the Insurance Act is regarded by members of the association. After prolonged discussion, in the course of which the ill opinion of the Act entertained by the medical profession was freely expressed, it was decided by 181 votes to 21 to break off negotiations with the Government. In most cases the representatives had already been instructed as to their vote by meetings of the local divisions, at which resolutions directed against further conferences with the Government had been passed unanimously or by large majorities. It may here be observed that the medical

profession, which is often regarded as very conservative, is efficiently organised for medico-political action upon trade-union lines. The representative meeting has no executive functions, but its resolutions, confirmed in general meeting, are binding upon the council, which is elected by a postal vote upon a proportional representative basis. The association has about 25,000 members, the number of medical men in the United Kingdom being about 33,000.

The provision of sanatorium benefit met with less unfavourable consideration, the working conditions of this portion of the Act being in part determined by those of existing institutions, and being therefore less unacceptable to the members; nevertheless, the opinion was freely expressed that the advantages to consumptives anticipated by the lay Press would prove to be largely illusory.

The scientific business of the association, which did not commence until July 24, extended over three days, during which period, however, only the mornings were occupied with sectional meetings. The time of the sectional meetings was largely occupied with discussions on subjects of interest, the number of papers read being somewhat small. The difficulties attending medical research work were abundantly illustrated, as was also the important part played by the University of Liverpool in the advancement of medical knowledge, particularly in the domain of physiology, pathology, and tropical medicine.

To give an adequate idea of the character and extent of recent scientific advances in medicine, as exhibited in the proceedings of the sections, is impossible within the limits of the present article, but by way of illustration brief reference may be made to the work of two of the sections.

In the Section of Physiology, Prof. Benjamin Moore, F.R.S. (Liverpool), contributed a paper dealing with the importance of substances present in minute amount in food, the value of which cannot be estimated by the amount of heat energy which they contain and can yield to the body on oxidation. This was first observed in respect of inorganic salts, which were at one time regarded as inert constituents, or even as protein impurities, but are now known to be important activators to the functions of the organic constituents, without which these become inert. In the hormones, or internal secretions of the body, organic substances are found which, in minute amounts, stimulate and activate in a very specific way definite tissues and cause changes in nutrition out of all proportion to their mass. From recent researches it would appear to be a general rule, especially seen in man, that some form of stimulus is almost essential, and that, if abstinence or restriction is practised in one form, some other form must be substituted. The various cereal foods which appear so simple in nature also contain basic bodies in minute quantities which exert a powerful stimulant action upon the nervous tissues, and in their complete withdrawal certain well-marked results appear which are intimately connected with diseases of nutrition. These substances appear to be formed in the peripheral layers and are removed in certain methods of preparing the cereals. The effect of removal upon a diet of cereals is exhibited by beriberi in man and by the now well-known rapidly fatal illness, characterised by muscular paralysis and incoordination, first shown by Eijkman to be readily producible in pigeons. In both cases the addition of the defective substance is speedily followed by recovery. One of the active substances concerned in the case of rice has been isolated by Casimir Funk (London), and has been shown to be of relatively simple chemical constitution.

Considerable interest was exhibited in the Section

of Tropical Medicine, where a series of papers, illustrating incidentally the small beginnings of exact knowledge, were contributed by Stephens and Fantham (Liverpool), Kleine (South Africa), Mesnil (Paris), Kinghorn and Yorke (Rhodesia), and Wollbach and Bruger (Boston), dealing with sleeping sickness, which at the present time, as is well known, seriously menaces the future of colonial development in tropical Africa. Another series of researches, also cosmopolitan in character, by Duval (New Orleans), Bayon (London), Marchoux (Paris), Dean (Aberdeen), and Minett (Demerara), dealt with the organisms which have been isolated from leprosy lesions, the relation of which to human leprosy and to rat leprosy is now receiving the attention of scientific investigators. Considerable diversity of opinion, in respect of the significance of experimental investigations, was observable, due in part to the limitations of research.

An excellent exhibition of scientific apparatus and of synthetic products was provided, the interest of which was considerably augmented by the scientific knowledge possessed by many of the exhibitors.

#### PHYSIOGRAPHY OF THE PRAIRIES AND NORTH-EASTERN AUSTRALIA.

THE much-debated problem why the prairies of the United States are treeless is, according to an article by Mr. B. Shimek in the Bulletin of the State University of Iowa, new series, No. 35, essentially one for the botanist, since, despite variation in surface-conditions, there is comparative uniformity in the flora throughout the area. Summarising the available evidence, the author concludes that exposure to evaporation, as determined by temperature, wind, and topography, is the primary factor in the development of the treeless condition, and that the flora persists in the exposed areas because of its xerophytic character. On the other hand, rainfall and drainage, although important as determining the amount of moisture in air and soil, are only a secondary factor, as they may be equal in the forested and treeless areas; while the nature of the soil and the geological formation affect the matter only so far as they induce conservation of water. Prairie-fires were an effect rather than a cause, and when they did act in the latter sense were but local, while seed-dispersal, although accounting for the growth of plants, will not explain the origin and presence of the flora as a whole. Finally, such agencies as the bison and the action of the sea do not enter into the problem at all.

Passing from the prairies of the Wild West to the coast districts of north-eastern Australia, reference may be made to a remarkably interesting article on the physiography of that area communicated to the *Sitzungsberichte der kgl. böhm. Ges. der Wissenschaften* for 1911, art. 32, by Dr. J. V. Danes, who recently spent several months in the country. As is well known, this part of Australia is remarkable on account of the fact that the great "Divide" is on the rim, instead of in the heart, of the continent, where it is formed by the uniform littoral wall of an old peneplane inclining slightly to the west, and abruptly falling to the eastern coast; and likewise for the sudden flexures in the river-valleys, and their abnormal slope, accompanied by waterfalls, as they approach the sea.

Another feature is the presence of shallow lakes in an undulating area, which have been regarded by other observers as indicative of the recent formation of a new "divide," being, in fact, "cut-offs" from the head-waters of the original rivers.

While admitting a former great extension of the