

mittee on condition that the new grants will be applied, pending the reconstitution of the University, to meet existing liabilities and not for new developments. The allocation of the existing annual grants of 31,000*l.*, as well as of the new grants, will be liable to reconsideration after the reorganisation of the University. The Treasury has decided to include in the 1916-17 Estimates an additional sum of 5500*l.* for the first year of the new grants, provided the local authorities continue their contribution of 2000*l.* to the University College at Cardiff. The raising of a further sum of 3500*l.* out of rates, in accordance with the recommendation of the Advisory Committee, is waived until after the war. The Treasury will, however, feel bound to attach such a condition after the war. If that condition is complied with in future years, it will be prepared in addition to pay 500*l.* for each further 500*l.* raised by local authorities over and above 5500*l.* until the total additional grant from the Exchequer to the University and the colleges reaches the figure of 11,000*l.* per annum. The minute also states that the Treasury will be prepared in due course to give effect to the recommendation of the Departmental Committee that half the additional annual cost of maintaining the National Medical School at Cardiff, up to a maximum grant of 5000*l.* a year, should be paid by the Exchequer, on the conditions set out in the reports of the Departmental Committee.

THE plea for increased attention to science put forward in the memorandum, signed by thirty-six men of science, issued last February, referred particularly to the position of scientific subjects in the public schools and at Oxford and Cambridge, and to the marks obtainable, in comparison with classics, in the examinations for the highest posts of the public service. It appears to have been the deliberate purpose of the promoters of the memorandum to limit consideration to these points, which they believe to be of fundamental importance. In any case, a reform of the present attitude towards science shown by administrative officials and legislators might be started by making scientific subjects of capital importance in the examinations for appointments in Class I. of the Civil Services; and it is possible that there is practical wisdom in limiting attention to these aspects instead of surveying the whole field of education. As the object of the memorandum was to assert the claims of science to fuller recognition in the school and the State, it was not necessary to acknowledge the complementary part played by literary studies in a complete education; yet it is scarcely too much to say that none of the men of science who signed the memorial was unmindful of it. A letter which appeared in the *Times* of May 4, signed by several leading representatives of science, as well as of the humanities, suggests that the value of literary studies is being overlooked, while the claims of science are being urged. Science is tacitly classified as technical knowledge and necessary for national prosperity, but it is held that in the education "which will develop human faculty and the power of thinking clearly to the highest possible degree . . . the study of Greece and Rome must always have a large part." In other words, "early specialisation is injurious" if it means elementary science teaching, but not when, as at present, it signifies classical languages and literature. We do not believe for a moment that the best interests of classical and literary studies would suffer if science were given the place in the curriculum now occupied by Greek and Latin; for few pupils ever reach the stage of intelligent appreciation of works in these languages, and for the majority of them good translations in English would serve as useful a purpose as vague interpretations of classical texts.

NO. 2428, VOL. 97]

SOCIETIES AND ACADEMIES.

LONDON.

Challenger Society, April 12.—Dr. G. H. Fowler in the chair.—E. T. Browne: The geographical distribution of Siphonophores. Nearly all the species are tropical, and only one (*Diphyes arctica*) has permanently established itself in cold water. Of ninety species recognised, seventy are common to the Atlantic and Indo-Pacific, and most of the remainder have been found in the Atlantic only.—C. Tate Regan: The distribution of the clupeoid fishes of the genus *Sardina*. The species inhabit the zones between the mean annual surface isotherms of 12° C. and 20° C. They are *S. pilchardus*, of Europe, *S. neopilchardus*, of Australia and New Zealand, and *S. sagax*, of South Africa, Japan, California, and Chile.

Royal Meteorological Society, April 19.—Major H. G. Lyons, president, in the chair.—E. V. Newnham: The persistence of wet and dry weather. The rainfall records of Greenwich, Kew, Aberdeen, and Valencia have been examined in order to find out how often rain falls on the day following successive runs of one, two, three, etc., wet or fine days. The common notion seems to be that after a long run of wet days the chance of a fine day becomes greater, but statistics do not support this conclusion. Generally speaking, the expectation of rain on any day has been found to increase rapidly as the number of previous successive wet days increases, and to diminish with the number of successive fine days in the past. After very long spells of either kind the expectation of further rain reaches a practically steady value. The same conclusion holds for the expectation of rain in a given hour after different runs of wet and dry hours. In illustration, some of the results may be quoted. At Valencia, after seven days of drought, rain falls on the eighth day twenty-four times out of one hundred, but after seven rainy days eighty-six times. For Kew the corresponding increase is rather less, namely, from twenty-seven to seventy-three.—Prof. H. H. Turner: Discontinuities in meteorological phenomena. In a former paper certain critical dates, about six years apart (and formed according to a specified law, apparently related to the movements of the earth's axis), were specified for 200 years back; and it was shown that a number of meteorological data changed abruptly in character at these dates. In simple cases the intermediate chapters are alternately hot and cold, or wet and dry, though other changes are more complex. In the present paper various new data are submitted to the same test and give confirmatory results. The most noteworthy case is that of the mean temperatures at Paris, which confirm the dates for the past century. The changes at the critical dates are shown to be abrupt; the alternation is consistent for seventeen chapters out of eighteen; and it is shown to vary in amount according to a law which suggests the regular action of two disturbing causes, one of which has already been shown to play an important part in these phenomena, and has a period of about forty years; the other, of about fifty years, appearing clearly in Mr. Douglass's measures of Californian tree-rings.

Mathematical Society, April 27.—Sir J. Larmor, president, in the chair.—Major MacMahon: Some problems of combinatory analysis.—Dr. S. Chapman: The uniformity of gaseous density, according to the kinetic theory.—G. N. Watson: Bessel functions and Kapteyn series.—T. C. Lewis: Four Tucker circles.—Prof. H. S. Carslaw: The Green's function for the equation $\nabla^2 u + \kappa^2 u = 0$ (II.).—J. Hodgkinson: The nodal points of a plane sextic.—S. Pollard: The deduction of criteria for the convergence of Fourier's series from Fejer's theorem concerning their summability.—Prof. W. H.

Young: Note on functions of upper and lower type.—
Mrs. G. C. Young: The derivatives of a function.

MANCHESTER.

Literary and Philosophical Society, March 21.—Prof. S. J. Hickson, president, in the chair.—Prof. F. E. Weiss: Recent views concerning the nature of so-called "graft hybrids." The author gave an account of the recent researches made on graft hybrids, describing, among others, the curious form of *Cytisus Adami*, obtained early last century by grafting the purple *Cytisus* on the yellow *Laburnum*, and the more recent productions resulting from grafting shoots of the tomato upon young plants of the nightshade. In this, as in the purple *Laburnum*, reversions to both parental forms are common. Other cases of so-called hybrids are known between the hawthorn and medlar, the quince and pear, and the almond and peach. A summary was given of the various views put forward to account for the production of these curious intermediate forms, and the relationship of the graft hybrids to ordinary seed hybrids was discussed.

April 4.—Prof. S. J. Hickson, president, in the chair.—Prof. G. Elliot Smith: The origin of the cerebral cortex. The cerebral cortex was called into existence during the process of evolution of the vertebrates, and, though difficult to detect in certain fishes, is to be regarded as a distinctive and inherent feature of vertebrate structure. The microscopic *formatio pallialis* of the Cyclostomes represents the undifferentiated rudiment of the whole of the pallium (hippocampal formation, piriform area, and neopallium of the highest vertebrates), and not merely the hippocampus. The cerebellum grew up around the central terminations of the nerves which bring into the nervous system special information concerning the animal's position in space; and its cortical mechanism developed in response to the need for bringing this information under the control of other influences, such as the nerves of vision, touch, the muscular sense, etc., before it is transmitted to the muscles of the body as a whole. The cerebral cortex grew up in a similar way around the central terminations of the olfactory nerve.—Prof. G. Elliot Smith: The commencement of the Neolithic phase of culture. Evidence pointed to the introducers of the Azilian culture as representing an early wave of the Neolithic people, coming probably from Africa into Europe. The author suggested that sporadic bearers of the same culture probably made their way into Europe for many centuries before the close of the Palæolithic epoch there. This would explain many similarities of Magdalenian to Azilian implements, and of both to those of Predynastic Egypt.—J. W. Jackson: The geographical distribution of the use of pearls and pearl-shells. The special appreciation of pearls is intimately associated with the geographical distribution of elements of a culture, including, amongst other things, the use of shell-purple for dyeing and of conch-shells for trumpets. Through Phœnician trade the knowledge of the pearl spread from the eastern Mediterranean *via* the Red Sea and Persian Gulf to India and Ceylon, China and Japan, Indonesia and the Pacific Islands, and, finally, the New World.—J. W. Jackson: The use of shells for the purposes of currency. No form of shell-money has been used so extensively as the money-cowry, *Cypræa moneta*, and this is used in a natural state. The date of the introduction of this cowry-currency is unknown, but it was in use in Egypt in Predynastic times. Shell-currency has been recorded from the Sandwich Islands, New Hebrides, and New Caledonia, and it was extensively used in China and on the Pacific coast of North America. Portuguese voyagers refer to its use in West Africa in the fifteenth century, and it is at present in vogue in tropical Africa.

NO. 2428, VOL. 97]

PARIS.

Academy of Sciences, April 25.—M. Camille Jordan in the chair.—The president announced the death of M. Emile Jungfleisch, member of the Academy.—G. Bigourdan: Monthly distribution of average cloudiness in France. A discussion of observations from thirty-five stations in France and foreign stations close to the French frontier. In the scale adopted 0 indicates blue sky, and 10 a completely clouded sky, and the results are shown in thirteen charts, one for each month, and one for the yearly average, giving the isonephs, or lines of equal cloudiness. More observation stations are required before full conclusions can be drawn.—T. Levi-Civita: The regularisation of the problem of three bodies.—W. Sierpinski: A cantor curve which contains a biunivocal and continuous image of any given curve.—E. Baticle: Calculation of the thrust on a supporting wall by a powdery mass with free plane surface.—Gabriel Sizes: Properties of the law of resonance of vibrating bodies.—J. Deprat: The structure of the internal zone of the preyunnan sheets.—Emile Belot: Contribution to the study of the causes of volcanoes. An experiment showing the production of a miniature crater by the action of locally applied heat to a mixture of water and sand, showing why the vapour is evolved at a considerable distance from the source of heat. Assuming a connection between volcanoes and the influx of sea-water, this explanation removes the difficulty of the South American volcanoes situated a considerable distance from the sea.—E. Mathias: Three observations of globular lightning made at the summit of the Puy de Dome.—F. Jadin and A. Astruc: The manganese in some springs connected with the central massif and some stations in the plain of Languedoc. The amounts of manganese found vary between 0.001 and 0.4 mgr. per litre. The data confirm the conclusions given in previous communications on the amounts of manganese in French mineral waters.—Henry W. Brolemann: An evolutive process in Diplopod Myriapods.—E. Kayser: Contribution to the study of the ferments of rum. A study of the fermentation products produced from beetroot, molasses, and cane-sugar molasses by various yeasts. Figures are given for the higher alcohols, volatile acids, aldehydes, and ethers.—F. Garrigou: The hygienic, rational, and economical treatment of human excreta.—M. Marage: True and simulated deaf-mutism resulting from wounds received in battle. The medical examination of such cases should avoid experiments causing pain to the patient, and in the case of a painful treatment, involving possibly negative results, the consent of the patient should always be obtained.—H. Busquet: The rapid immunisation by small doses of nucleinate of soda, or chaulmoogra oil, against the hypotensive action of large doses of these substances.

BOOKS RECEIVED.

- Statics: A First Course. By C. O. Tuckey and W. A. Naylor. Pp. 299. (Oxford: Clarendon Press.) 3s. 6d.
 Historical Introduction to Mathematical Literature. By Prof. G. A. Miller. Pp. xiii+302. (London: Macmillan and Co., Ltd.) 7s. net.
 The Principles of Agronomy. By Prof. F. S. Harris and G. Stewart. Pp. xvi+451. (London: Macmillan and Co., Ltd.) 6s. net.
 The Influence of Ancient Egyptian Civilization in the East and in America. By Prof. G. Elliot Smith. Pp. 32. (Manchester: University Press; London: Longmans and Co.) 1s. net.
 Annual Report of the Director, Kodaikanal and Madras Observatories for 1915. Pp. 24. (Madras: Government Press.)