

probable, that the micelle carries, condensed on its surface, not only a considerable proportion of the solvent, but also much of the undissociated solute.

In reference to the general aspects of this work, two comments may be made. In the first place, Prof. McBain, in attempting to determine the real character of soap solutions, has tackled one of the big outstanding problems that called most urgently for a clear solution; the six years which he has devoted to this work have therefore been used far more advantageously than in solving the hosts of minor problems which appeal so strongly to workers who are anxious for immediate publication of results. In the second place, the elucidation of the nature of soap solutions by the theory of the ionic micelle is perhaps the biggest advance that has been made in the theory of electrolytic dissociation since the early work of Arrhenius and van't Hoff. Other workers, especially in physiology, have made use of similar ideas, but in no previous case has the experimental evidence been so complete or the theory established on so firm a basis as in the case of the soap solutions investigated in the Bristol laboratory. T. M. L.

Plant Culture in Denmark.

IN Denmark during the past twenty years there have been great advances in the development of the various branches of plant culture. The organisation and aims of this work are described by Prof. F. Kolpin Ravn in a recent number of the *Scottish Journal of Agriculture* (vol. iii., No. 2, April, 1920). The first Danish experiments on plant culture were commenced in 1860 by B. S. Jorgensen, who took Rothamsted as his model. Later development followed various lines, but one of the most famous pioneers was P. Nielson, who in 1886 became director of the first State experiment station, and laid the foundation of the extensive State experimental work carried on at the present day. In 1893 the root experiments which had previously been instituted by the Society for the Improvement of Cultivated Plants were placed under the control of the State experiment stations, and in 1903 the same thing happened with the wheat and malt-barley experiments of the Royal Agricultural Society.

During the closing years of the nineteenth century various agricultural societies became keenly interested in plant-culture experiments, and by means of special committees on plant industry a large amount of useful work has been carried out. Since 1905 an increasing number of field experiments have been started by the "smallholders'" societies, the members of which have taken up this experimental work with great enthusiasm. All this work is carried out either by the State itself or by institutions with the aid of Government subsidies, the State contributing annually about 25,000*l.* for the development of plant culture. There are eleven State experiment stations, eight of which specialise in agricultural problems and the other three in horticultural problems. Field experiments and laboratory work are included, while various sub-departments carry out investigations on weeds, on plant diseases, and on chemical, physical, and bacteriological problems. The State stations deal with those problems requiring lengthy and very accurate experiments, while the agricultural societies conduct experiments designed to throw light on matters of actual and of local interest. The majority of these experiments deal with the use of fertilisers, and hints as to the final results appear in a very short time. Another section of experimental work is that of plant breeding, which is practised both by public and by private institutions. This work is supported by the

State experiment stations in that all novelties appearing on the market are accurately tested by variety and strain experiments without regard to the person or institution by whom they have been grown. In this way a competition open to all seed-growers and plant-breeders is formed, and this excites great interest, since the results of the experiments determine the market price of the seed.

Prof. Ravn points out that although the work appears to be very much scattered, yet the various institutions keep in close touch with each other by joint meetings, etc., when the general lines of work are discussed and common methods decided upon. It is thought that this type of organisation is most favourable to the development of initiative and to the proper testing of new ideas and products.

Short-period Meteorological Variations.

NO. 102 of the Publications of the Royal Netherlands Meteorological Institute contains Dr. E. van Rijckevorsel's eleventh communication on the subject of secondary maxima and minima. The author maintains that if sufficient years be taken to mask the long-period variations, and mean values for an element such as temperature or barometric pressure be set down for each day in the year, the resulting figures for any station will show a series of waves of an average period of between ten and eleven days, so that thirty-five maxima appear in the annual curve.

The present contribution is devoted principally to a comparison of the barometer values for thirty-three stations from periods varying from forty-three years at Haparanda to only four years at Honolulu and St. Vincent, with those obtained in the long series of seventy-two years (1838 to 1909) at Christiania. The Christiania data are analysed more thoroughly, as the whole series is divided into two thirty-six-year periods A and B; and also the first twenty-four years of A, the last twelve years of B, and the first six years of B are treated separately. Moreover, the data from Christiania, Nerchinsk, and Innsbruck have been specially examined, the means from an equal number of years of maximum and minimum sun-spots having been taken for each of the three stations. Innsbruck is not one of the thirty-three stations, which are themselves grouped according to latitude, the mean latitude of the groups being 67°, 52°, 42°, and 21° respectively. They are fairly well distributed in longitude. Diagrams are given of twelve pulsations, the groups being separated and the stations in each group arranged in order of longitude, and an attempt is made to indicate a sort of systematic variation in the agreement between the several curves.

A final diagram gives apparently ideal curves of temperature and pressure through the year, showing the subsidiary period only affected by some annual variation which flattens the waves at the equinoxes, compared with actual values from fifteen years' data at Bucharest. Dr. van Rijckevorsel has devoted himself for many years to this particular investigation, but it does not seem to have enlisted much support up to the present time. W. W. B.

University and Educational Intelligence.

CAMBRIDGE.—Prof. S. J. Hickson, of Manchester, has been elected an honorary fellow of Downing College. Mr. A. J. Berry has been re-elected to a fellowship.

GLASGOW.—Dr. A. J. Ballantyne has been appointed lecturer in ophthalmology in succession to Dr. M. Ramsay.

LIVERPOOL.—A contribution of 10,000*l.* in support of the University Appeal Fund has been made by the Cunard Steamship Co., Ltd.

The Pacific Steam Navigation Co., Liverpool, has made a contribution of 1000*l.* to the same fund.

THE directors of Messrs. Brunner, Mond, and Co. were authorised at an extraordinary meeting held at Liverpool on August 4 to distribute 100,000*l.* out of the investment surplus reserve account to universities or other scientific institutions in the United Kingdom for the furtherance of scientific education and research. Proposals for the allocation of this grant are under consideration, but no scheme has yet been adopted by the directors.

AN examination for the Aitchison memorial scholarship, of the value of 30*l.*, and tenable in the full-time day courses in technical optics at the Northampton Institute, Clerkenwell, will be held in September next. The scholarship is open to candidates of both sexes between sixteen and nineteen years of age. The compulsory subjects are English and elementary mathematics. The optional subjects, of which only two must be taken, are additional elementary mathematics, physics (heat, light, and sound), chemistry, electricity, and magnetism. Full particulars are given in a leaflet which can be obtained from the hon. secretary and treasurer, Mr. Henry F. Purser, 35 Charles Street, Hatton Garden, London, E.C.1.

News has just reached us that Prof. A. T. De Lury was appointed some months ago to be head of the department of mathematics in the University of Toronto by the Board of Governors on the recommendation of the president of the University, Sir R. A. Falconer. The Staff, Council, and Senate have nothing to do with appointments, and the only check upon the action of the president and the Board of Governors is public opinion. Prof. De Lury has been a member of the teaching staff of the University for many years, and is the author of a number of mathematical text-books which have done service in the schools of the province of Ontario. He possesses high teaching ability, but has not been associated with the research activities which it should be the essential function of a university to create and foster. Without men engaged in the production of new knowledge the work of a university differs little from that of a secondary school preparing students for examinations. Toronto has won much distinction by the scientific investigations of such men as Profs. Macallum, McLennan, and Brodie, and it was hoped that the chair of mathematics would have been filled by someone who possesses the highest research qualifications in mathematics that Canada could produce. If Prof. De Lury can and will build up a strong research staff under him, he will be doing the best service to his University and extend the stimulating atmosphere which some of his scientific colleagues have given to the institution by their work.

AMONG the recent bulletins issued by the U.S. Bureau of Education, Washington, is one (No. 61) entitled "Public Discussion and Information Service of University Extension." It comprises some fifty pages octavo, and deals with the extra-mural activities of the numerous universities and library commissions of the various States. The bulletin submits that university extension should not only offer the opportunity of self-directed study for the great mass of persons who wish to continue systematically their preparation for personal advancement, but should also provide the indispensable connection between scientific knowledge and the everyday practice necessary for sound community development, between the facts

accumulated through research and their application to the practical problems which must be met by individual communities in a democratic society. University education is not merely educational in the limited sense; it attempts to make facts, knowledge, and truth operative in the daily life of the people. The scope of university extension so interpreted includes bureaux of information, lecture schemes—club study and library service—assistance in debates and in other forms of public discussion, together with a novel institution known as the package-library service, by which is meant the compilation by specialists at each university or library centre of information of pamphlets, bulletins, clippings from articles in magazines and other sources on subjects and questions of interest to the public, which are sent on application to individuals or organisations in districts, however remote, within the State. Wisconsin, for example, had in 1918–19 more than 1000 subjects, and the Texas bureau 550, represented in their package-library collections, the contents of each of which are changed from time to time. They cover the whole domain of civic, economic, and State activities. The bulletin gives full particulars of the cost, methods, and organisation of the service, which might with much advantage be introduced into this country. The information bureaux were made much use of, since nearly 180,000 requests for information were received in fourteen States, and in twenty-four States the lectures arranged were attended by upwards of 2,000,000 persons.

Societies and Academies.

PARIS.

Academy of Sciences, July 19.—M. Henri Deslandres in the chair.—F. E. Fournier: The resistance of a fluid to the horizontal translation of a spindle-shaped or spherical body with deep immersion.—A. Haller and Mme. Ramart-Lucas: Bromohydrins and dibromoderivatives obtained from the alkylallylacetophenones,



Compounds of the latter type give bromohydrins on treatment with bromine; under the same conditions methylallylacetophenone gives a stable dibromide, $\text{C}_6\text{H}_5\cdot\text{CO}\cdot\text{CH}(\text{CH}_3)\cdot\text{CH}_2\cdot\text{CHBr}\cdot\text{CH}_2\cdot\text{Br}$.—F. Widali, P. Abrami, and N. Iancovesco: Proof of digestive hæmoeclosia in the study of hepatic insufficiency. It has been shown in an earlier communication that for some time after a nitrogenous meal incompletely digested proteids pass into the portal vein from the intestine, and that these substances are prevented from passing into the general circulation by the normal action of the liver. This has now been applied clinically after a meal of 200 grams of milk or of meat and eggs. No symptoms of hæmoeclosia are given by healthy subjects or by subjects suffering from various illnesses provided the liver is in a normal condition, but with the liver diseased a similar meal is followed by a hæmoeclosic crisis, with alterations in the number of white corpuscles, arterial pressure, coagulability of the blood, and refractometric index of the serum. These symptoms have proved capable of detecting latent disease of the liver when the usual signs are wanting.—E. Ariès: The determination of the last of the three functions which defines the equation of state of ether.—G. Fubini: Automorphic functions.—G. J. Remondos: The modulus and zeroes of analytical functions.—A. Petot: The spherical representation of surfaces and the correspondence by parallel tangent planes.—G. Bruhat: Remarks on the compression of saturated