

MISS G. J. SANDERS, formerly principal of the Lowthorpe (Massachusetts) School of Horticulture and Landscape Architecture for Women, has been appointed principal of the Swanley Horticultural College.

A PAMPHLET issued by the Bradford Education Committee describing the courses in chemistry and dyeing held at the Technical College in that town is symptomatic of the altered outlook towards the various branches of the chemical profession brought about by the world-war. These college courses are, in the first place, arranged to meet the growing requirements of the local dyeing industry. Together with the study of colouring matters, practical instruction is given in the art of dyeing in a dye-house with full-sized machinery combined with a finishing plant for completing the commercial treatment of cloth. As in many other technical colleges, there is an entrance examination, in which English and mathematics are compulsory. Special stress is laid on the fact that a sound secondary education up to the age of sixteen or seventeen is a preliminary asset of the greatest importance. The combined course in chemistry, dyeing, and the allied subjects extends over a period of four years. A similar course has been devised for those taking up chemical work in other industries, such as in oil and soap works, or in metallurgy or gas engineering. Both these courses include a certain proportion of mechanics and engineering bearing specially on chemical industries. Students passing satisfactorily through either of these courses receive the college diploma, but the associateship of the college is reserved for those who have had one year's practical experience subsequent to the award of the diploma, and who have submitted a thesis on some previously approved subject. The ultimate object of the curricula of this college is to turn out practical chemists, dyers, and pharmacists, and that these qualifications are appreciated by manufacturers is seen from the encouraging list of appointments secured by the alumni.

An appeal on behalf of the Endowment Fund of the School of Oriental Studies at the London Institution has been issued by an influential committee of which Lord Curzon is chairman. The objects of this new institution are three in number:—(1) To provide a place where the Englishmen who will presently be engaged in governing or garrisoning the Oriental and African parts of the Empire may learn the languages and study the literature, the religions, and the customs of the peoples with whom they will be brought into contact; (2) to offer a training to those who are about to proceed to the same countries to take part in commercial enterprise or avocations; (3) to furnish in the capital of the Empire a meeting-ground and focus for the scholars of the East of all nationalities on their visits to this country. Evidence has been accumulating in recent years that the training of our Civil Servants and officers in the languages and modes of thought of Oriental peoples falls short of the ideal which we ought to have in view. In the new relations that will develop when the war is over there must be a higher standard of efficiency in these respects if our rule is to continue to commend itself to those with whom we are brought into relations. Information has been received that important steps are already being taken in Germany to give a higher education to Germans about to proceed to the East. Provision will be made in the new London school for all the more important languages of the Near, Middle, and Far East, and of Africa. The committee desires to raise an endowment fund of 150,000*l.*, towards which they have now as a result of a preliminary appeal about 10,000*l.* Donations and subscriptions

may be paid to the head office or to any branch of the London County and Westminster Bank, or to the secretary of the executive of the appeal committee at the School of Oriental Studies, Finsbury Circus, E.C. The governing body of the school has appointed Dr. E. Denison Ross, C.I.E., to be its director, and he will take up his work almost immediately. Dr. Ross has travelled extensively in the East. Among his numerous works is the "Tarikh-i-Rashidi," a history of the Moguls of Central Asia.

A SERIES of resolutions referring to the claims of humanistic studies to scientific attention was adopted a couple of months ago by a conference representing the Classical, English, Geographical, Historical, and Modern Language Associations (see NATURE, September 7, p.23). The committee of the Association of Public School Science Masters has just expressed agreement with the principles of education stated in the resolutions; and in answer to an invitation to make a statement with regard to education in the natural sciences, it has sent the following to the chairman of the conference:— "Natural science in education should not displace the 'humanistic' studies, but should be complementary to them. In this capacity natural science meets two needs in particular:—(1) *Search for Truth*: Imaginative power indicates new fields in which further knowledge of truth may be revealed; its subsequent establishment depends on accurate observation, with constant recourse to nature for confirmation. The one aim of natural science is, in fact, the search for truth based on evidence rather than on authority. Hence the study of the subject implies accurate observation and description and fosters a love of truth. The special value of Natural Science in the training of Mind and Character lies in the fact that the history of the subject is a plain record of the search for Truth for its own sake. (2) *Utility*: There are certain facts and ideas in the world of natural science with which it is essential that every educated man should be familiar. A knowledge of these facts assists men (a) to understand how the forces of nature may be employed for the benefit of mankind; (b) to appreciate the sequence of cause and effect in governing their own lives; and (c) to see things as they really are, and not to distort them into what they may wish them to be. It is the business of Natural Science in education to bring this knowledge within the range of all." The statement is signed by Prof. H. H. Turner, president of the Association of Public School Science Masters, and by Mr. A. Vassall, chairman of committee. Probably arising out of the conference referred to above, a Council of Humanistic Studies has been constituted, comprising representatives of the British Academy, in addition to the five associations mentioned above. Its object is to watch educational developments in the interests of the studies represented by these bodies and to co-operate, if possible, with the representatives of natural science. The president is Lord Bryce, and the chairman Sir Frederic Kenyon, to whom communications may be sent at the British Museum.

SOCIETIES AND ACADEMIES.

LONDON.

Geological Society, June 28.—Dr. Alfred Harker, president, in the chair.—Dr. A. Smith Woodward: A new species of *Edestus* from the Upper Carboniferous of Yorkshire; with a geological appendix by J. Pringle. The fossil confirms the interpretation of *Edestus* as a row of symphyseal teeth of an Elasmobranch fish. The row of eight bilaterally symmetrical teeth, fused

together, occurs at the tapering end of a pair of calcified cartilages, which evidently represent a jaw. An imperfect detached tooth probably belongs to an opposing row. The teeth are large compared with their base, and the serrated edges have been worn during life. Small Orodont teeth of the form named *Campodus* are scattered in the shale near the jaw. Markings on the *Edestus* teeth themselves suggest that they have been derived from the *Campodus* type of tooth. The specimen was obtained from shale below the Rough Rock, in the upper part of the Millstone Grit, at Brockholes, near Huddersfield.—A. Holmes: The Tertiary volcanic rocks of Mozambique. With the exception of a coastal belt of Cretaceous and Tertiary sediments, flanked on the west by later Tertiary volcanic rocks, the territory consists of a complex of gneisses and other foliated rocks, intruded upon by granites belonging to at least two different periods. From Fernão Vellosa Harbour to Mokambo Bay the junction of the sedimentary formations with the crystalline complex is faulted, and the volcanic rocks are distributed on each side of the fault. The lavas are of post-Oligocene age, and are the result of fissure-eruptions, the feeding channels being exposed as small dykes that penetrate the underlying rocks. The prevailing lavas are amygdaloidal basalts. An andesite dyke of later date occurs near the Monapo River. In the north, near the Sanhuti River, picrite-basalt, basalt, phonolite, and sölvbergite have been found, and related lavas occurring elsewhere in the area are tephritic pumice and ægirine-trachyte. The "alkali" series can be closely matched by the lavas of Abyssinia, British East Africa, Réunion, and Teneriffe. The amygdaloidal basalts of the "calc-alkali" series are similar to those of the Deccan, Arabia, and East Africa, and also to those (of late Karroo age) occurring in South Africa and Central Africa. Each of the series was probably evolved by a process of differentiation acting on a parent magma. From the composition of the amygdale minerals it is deduced that the parent magma of the "alkali" series was rich in carbon dioxide and under-saturated in silica; whereas that of the "calc-alkali" series was rich in water and over-saturated in silica. The radio-activity of the lavas indicates that the depth from which the parent magma came was probably between thirty-three and forty-four miles from the earth's surface.

Royal Microscopical Society, October 18.—Mr. E. Heron-Allen, president, in the chair.—Dr. Helen Pixell Goodrich and M. Moseley: Certain parasites of the mouth in cases of pyorrhœa. After a general description of the pathological changes in gum tissues resulting from pyorrhœa, illustrated by sections of normal and infected jaws, a detailed account of *Entamoeba gingivalis*, Gros, was given, followed by notes on *Trichomonas* and the interesting complex *Leptothrix* colonies, which give rise to the tartar. Of these parasitic organisms only the *Leptothrix* colonies were considered by the authors as likely to be the cause of the disease.

PARIS.

Academy of Sciences, October 2.—M. Camille Jordan in the chair.—E. Picard: Functions of two complex variables remaining invariable by substitutions of a discontinuous group.—G. Bigourdan: The declaration of Louis XIII. relating to the first meridian. The text of the declaration, dated July 1, 1634, is given in full. The position chosen had no scientific basis.—G. Bigourdan: The propagation of the sound of the cannonade at the front to great distances. There is evidence that the sounds heard are not propagated through the air, but through the soil.—H. Douvillé: The Creta-

ceous and the Tertiary in the neighbourhood of Thones (Haute Savoie).—J. Meunier: The detection of small quantities of selenium; distinction from arsenic. Selenium may cause error in the Marsh test for arsenic when present in minute traces only. A scheme for examining the deposit is given, by means of which selenium can be detected in the presence of arsenic.—P. Garrigou-Lagrange: Luni-solar action and temperature.—J. Amar: The technique of the sense education of men without limbs or sight. Details of the methods and apparatus used in the education of the sensibility of mutilated limbs, and of the sense of touch in the blind.—L. Camus: Vaccinal immunity resulting from intravascular injections of vaccine.

WASHINGTON, D.C.

National Academy of Sciences (Proceedings No. 9, vol. ii., September 15).—J. Loeb: The mechanism of diffusion of electrolytes through animal membranes. For the diffusion of certain electrolytes through animal membranes there is required, besides the osmotic pressure, a second effect, called the "salt effect," upon the membrane. This consists probably in an ionisation of the protein molecules of the membrane.—F. G. Pease: The rotation and radial velocity of the spiral nebula N.G.C. 4594. The radial velocity is +1180 km., in good agreement with the values found by Slipher. The linear velocity of rotation at a point two minutes of arc from the nucleus is more than 330 km.—F. H. Seares: A simple method for determining the colours of the stars. The method suggested consists in determining the ratio of exposure-times which is necessary to produce photographic and photovisual, or, more briefly, blue and yellow, images of the same size.—H. Shapley: Studies of magnitudes in star clusters. III. The colours of the brighter stars in four globular systems. It is concluded that in all the clusters examined, and probably in all globular clusters, the volumes of the bright red stars are very great in comparison with the stars that are fainter and relatively blue.—Janet T. Howell: The effect of an electric field on the lines of lithium and calcium. Lithium and calcium were examined, both for longitudinal and transverse effects.—A. B. Coble: A proof of White's porism.—J. P. Iddings and E. W. Morley: A contribution to the petrography of the Philippine Islands. Six detailed analyses are given of rocks from Luzon, P.I.—W. O. Fenn: Salt antagonism in gelatine. The experiments on gelatine support the hypothesis that anions antagonise cations in their effects upon organisms. The hypothesis here developed resembles that of Clowes except that it requires that NaCl should antagonise any electrolyte which has either a strong anion or a strong cation. The point of maximum antagonism is an isoelectric point at which the amount of alcohol needed for precipitation is at a minimum, and the aggregation or amount of precipitation is at a maximum.—W. O. Fenn: Similarity in the behaviour of protoplasm and gelatine. A close analogy to Osterhout's experiments on the electrical resistance of *Laminaria* is found in gelatine (plus NaOH), if we assume that the effect of time in the *Laminaria* experiments is to increase the concentrations of the salts in the cells of the tissue.—W. E. Milne: Certain asymptotic expressions in the theory of linear differential equations. Formulas more precise than those previously obtained by Birkhoff are given.—H. B. Fine: Newton's method of approximation. A condition is given under which Newton's method of approximation for computing a real root of an equation, and the extension of this method used in computing a root of a system of equations, will with certainty lead to such a root or solution.