

coxa marked 3*—on the screen is large, and the two coxæ are fused into a single piece which is firmly fixed into the body. In *Hydrocharis* the coxa is long and narrow; the two coxæ are separate, and each is hinged on to the body. The firm fixing in *Dytiscus* gives it a much more powerful leg-drive than the hinging gives to *Hydrocharis*, and hence *Dytiscus* is a more efficient swimmer.

These differences between the two types are therefore connected with differences in function. The antennæ of *Dytiscus* are feelers, while those of *Hydrocharis* are connected with breathing, and the disposition of the legs and their methods of attachment to the body are connected with differences in mode of progression, *Dytiscus* being a "swimmer," and *Hydrocharis* chiefly a "creeper" on the submerged vegetation.

In these two groups of water-beetles, the *Hydra-drophaga* represented by *Dytiscus* and the *Palpicornia* represented by *Hydrocharis*, we have two types of adaptation to an aquatic existence. Each type has originated independently of the other—that is, they are not descended from a common aquatic ancestor. Each represents a part of a large terrestrial family, and each has probably developed an aquatic habit as a result of competition, stronger land forms having driven the weaker off the land and into the water.

Just as each group has originated under the stimulus of competition, so, within each group, competition has moulded the different forms, and the peculiar details in the life-history of any one form are just those which enable it to retain its place in the community to which it belongs, and to hold its own in the great struggle for existence.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

THE announcement is made of the resignation of Dr. A. L. Bowley of the professorship of mathematics and economics at University College, Reading.

PROF. J. S. KINGSLEY, of Tufts College, has been appointed professor of zoology, in charge of vertebrates, in the University of Illinois.

DR. K. F. MEYER, director of the laboratories of the Pennsylvania State Livestock Sanitary Board, has vacated that position to fill the chair of bacteriology at the University of California. Dr. J. B. Hardenbergh has been appointed to succeed Dr. Meyer in the first-named post.

PROF. HERBERT V. NEAL, who has held the chair of biology at Knox College, Illinois, since 1897, has accepted an appointment to a similar post at Tufts College, Massachusetts. He has already had some acquaintance with the work of that college, having been for the last five years an associate director of the Tufts biological laboratory at S. Harpswell, Maine.

It is announced in *The Indian Medical Gazette* that the scheme for the establishment of a School of Tropical Medicine in Calcutta is now so far advanced towards fulfilment that there is every reason to hope that it will be opened in the autumn of next year. Already valuable work on cholera, epidemic dropsy, dysentery, and other diseases has been done by a few workers in Calcutta. What is now wanted is money. Our Indian contemporary asks for substantial endowments of three or four lakhs for several additional research chairs, or annual subscriptions of 20,000 rupees for each.

AN effort is about to be made to raise a fund of 20,000*l.* for the foundation of a chair of engineering chemistry at Princeton University. This campaign will be undertaken mainly by members of the federation of Princeton clubs of New Jersey, with the object of the

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advancement of chemical industries in that State. The course of instruction to be given by the occupant of the proposed chair will supply engineering students with a knowledge of the commonest construction materials of the chemical industries, and of various materials that now take the place of the direct products of the soil.

A COURSE of lectures on tuberculosis, for general practitioners and especially for candidates as tuberculosis officers, has been arranged by the Royal Institute of Public Health. The introductory lecture will be delivered by Prof. G. Sims Woodhead on October 10. Subsequent discourses will be given by Dr. C. Porter ("The problem of Tuberculosis in relation to Insurance and Public Health"), by Prof. Woodhead ("The Spread of Tuberculosis"), by Dr. J. E. Squire ("Diagnosis"), by Dr. T. N. Kelynaek ("Tuberculosis in Childhood"), by Dr. C. Wall ("General Treatment"), by Dr. C. Riviere ("Specific Treatment," &c.), by Dr. T. D. Lister ("Sanatorium Treatment"), by Dr. A. Greenwood ("The Prevention of Tuberculosis"), and Dr. H. O. West will outline a co-ordinated scheme for dealing with the malady.

THE medical schools of London and the provinces are beginning to announce the opening functions of their winter session. Prof. Sir William Osler, Bart., F.R.S., is to distribute the prizes and deliver an address at St. George's Hospital on October 1; at St. Mary's Hospital, Paddington, the prizes will be presented and an address given by Sir John Prescott Hewett, K.C.S.I., on the same date; Mr. W. Sampson Handley will deliver an address and Sir Squire Bancroft distribute the prizes at the Middlesex Hospital on October 1, on which date also Sir Charles Pardey Lukis, K.C.S.I., will give an address at the London School of Medicine for Women. On October 7 a lecture will be delivered at the University of Birmingham by Prof. Arthur Keith, F.R.S., on "The Present Problems relating to the Antiquity of Man."

MUCH interesting information as to the progress of secondary education in England is contained in the recently published Blue-book (Cd. 6934), "Statistics of Public Education in England and Wales, Part I. Educational Statistics, 1911-12." During the school year dealt with, there were in England 885 efficient secondary schools receiving grants from the Board of Education; of these 358 were for boys, 311 for girls, and 216 admitted both boys and girls. The teaching in these schools was in the hands of 9126 full-time teachers, of whom 4584 were men and 4542 women; and they were assisted by 3082 part-time instructors. The schools were attended by 150,605 pupils—81,383 boys and 69,222 girls. Of the total number of pupils 39,427 were under twelve years of age, 98,623 were between twelve and sixteen years of age, 11,559 between sixteen and eighteen years of age, and 906 more than eighteen years of age. As regards the management of the schools, it may be pointed out that 328 were provided by local education authorities, 427 were foundation and other schools, 48 were Roman Catholic schools, and 28 Girls' Public Day School Trust schools.

THE prospectus for the session 1913-14 of the Day and Evening College for Men and Women at the South-Western Polytechnic Institute, Chelsea, has been received. The day college is intended for students above the age of sixteen, and the courses of study are suited for technological and university purposes. The prospectus, we observe, points out that those who enter for technical instruction should have received previously a sound English education and should have acquired an elementary knowledge of mathematics and, if possible, of physics and chemistry. The courses are arranged to occupy three years.

On entering the student is asked to state whether he wishes to be trained as a mechanical or electrical engineer, or as a consulting or industrial chemist. In any of these cases he will find mapped out for him a complete course of study, involving laboratory instruction, tutorial work, attendance at lectures, exercises in mathematics, geometrical, mechanical, and architectural drawing, and instruction in the workshops. Evening courses in almost every branch of pure and applied science have been arranged at very moderate fees, and in their anxiety that no properly qualified person should be debarred from attending classes through inability to pay fees, the governors have arranged that apprentices, learners, and improvers, under the age of twenty-one years, may be admitted to all classes and courses at half-fees, on production of their employer's certificate.

THE prospectus of the Belfast Municipal Technical Institute for next session has been received. The object of the institute is to provide instruction in the principles of those arts and sciences which bear upon the industries of Belfast, and to show by experiment how these principles may be applied to their advancement. A day technical course has been established to give instruction in mechanical engineering, electrical engineering, the textile industries, and pure and applied chemistry. The course provides a sound training for youths who aim at filling positions of responsibility in various industries. A trade preparatory school, which constitutes a junior section of the day technical department, provides a specialised training for boys who are intended for industrial occupations. The evening classes are suitable for persons engaged during the day who desire to supplement the knowledge and experience gained in the workshop or warehouse. The needs of women are catered for in the same complete manner as those for men. It is not possible here to enumerate all the interesting ways in which the technical instruction committee has endeavoured to assist local industries, but mention may be made of the public textile testing and conditioning house which has been opened in the institute. It undertakes the examination of textile materials with the view of ascertaining their true weight, length, strength, and so on; and it carries out such other investigations as manufacturers and others may desire.

PAMPHLETS giving full particulars in connection with the faculty of medical sciences and with the faculty of engineering for the coming session have been published by University College, London. The college faculty of medical sciences comprises the departments of physics, chemistry, botany, and zoology (the preliminary medical sciences), also the departments of anatomy, physiology, and pharmacology (the intermediate medical sciences), and the departments of hygiene and public health, and of pathological chemistry (post-graduate study). Full preliminary and intermediate courses of study are provided for students desirous of obtaining the medical degrees of the University of London, as well as for students seeking the qualifications of other universities and licensing bodies. Each of the departments is also equipped for more advanced work, and provides facilities for research. The faculty of engineering, including the departments of mechanical, heating and ventilating, electrical, civil and municipal engineering, is intended to provide for students wishing to devote themselves to engineering a systematic training in the application of scientific principles to industrial purposes. The courses are also suited to the requirements of students who intend to enter for appointments in the Indian Public Works Department, Engineering Department of the General Post Office, Department of the Direc-

tor of Engineering and Architectural Works in the Admiralty, Patent Office, and other similar services, or of those who intend to become patent agents, technical teachers, and chemical engineers. The engineering departments have been recognised by the Board of Trade as providing suitable technical training for marine engineers. Facilities are provided for post-graduate and research work in all the subjects.

THE Yorkshire Summer School of Geography, organised this year by the University of Leeds, completed a successful inaugural session on August 23. More than a hundred students were in residence for three weeks at and near Whitby, the headquarters being in the new buildings of the County School, which were kindly lent for the purpose by the governors. Systematic instruction in the methods of modern geographical study was aimed at by choosing Yorkshire as a representative area, and studying as exhaustively as possible all the factors and relationships connected with its structure and location. A course of five lectures on the physical geography and special geological features of the district was given by Prof. P. F. Kendall, together with lectures on the North Sea, and on meteorology by Mr. A. Gilligan. This led to the study of special topics of industrial or historical character, including plant distribution and agriculture (Dr. W. G. Smith), metalliferous and coal mining (Mr. A. Gilligan), the textile and metallurgical industries, ports, fisheries and communications (Mr. L. Rodwell Jones), prehistoric Yorkshire (Prof. P. F. Kendall), the Roman occupation (Mr. P. W. Dodd), Saxon and Danish Yorkshire (Mr. W. G. Collingwood), mediæval Yorkshire (Mr. H. B. McCall), architecture (Mr. S. D. Kitson), place-names and language (Prof. Moorman), Old Whitby as a port (Mr. E. H. Chapman), and river development (Prof. Kendall). The course concluded with two lectures on the teaching of geography by Mr. W. P. Welpton. The practical work included the reading and enlargement of topographical maps, the examination of typical rocks, the making of models and microscope sections, field surveys, and the reading and construction of meteorological charts. Frequent excursions were made to places of geological and industrial interest in the neighbourhood, and an afternoon was devoted to the study of a typical Yorkshire farm, with large-scale plans showing the rotation of crops on each field for the past four years.

SOCIETIES AND ACADEMIES.

CALCUTTA.

Asiatic Society of Bengal, August 6.—E. Digby. Nor'-westers and monsoon prediction. Nor'-westers have hitherto received little scientific attention. The entire literature is covered by a monograph by Sir John Eliot in 1876 and certain observations in a paper of his in 1910 on the anemographic records of Saugor Island. His observations and deductions are summarised. The structure of a typical nor'-wester is analysed. Its form and motion appear to show it is not a cyclonic eddy but a rectilinear splitting of the still-air layer between the lower southerly and upper northerly wind, which takes place transversely to the direction of motion of the storm mass. The absence of hail and the rapidity of the motion support this theory. A typically complete nor'-wester indicates a strong northerly upper current, and therefore the probability that the advance of the monsoon will be delayed. Weak or ill-formed nor'-westers indicate a weak upper current and little opposition to the monsoon. The factors that require study are briefly enumerated and divided into those which can be noted by individual observers and those which require co-ordinated effort.