

has caused serious alarm amongst those engaged in the trade. The moth had hitherto been regarded mainly as a pest of cocoa, but in 1929 large stocks of tobacco in London were found to have become infected. The gravity of the situation called for a thorough investigation of the matter and the results of the inquiry carried out by H. H. S. Bovingdon have been published under the auspices of the Empire Marketing Board (H.M. Stationery Office; price 1s.). The pest is readily imported from a number of countries and infestation is chiefly incurred by bales damaged in transport, a fact which negatives the discovery that a wrapping of tarred brown paper covered with hessian acts as a deterrent to the moth. *Ephestia* has a distinct preference for bright cigarette leaf, and though it attacks both kiln and air-cured tobacco it will not feed upon the fire-cured material. As regards measures of control, vacuum fumigation with ethylene oxide is a successful if costly procedure, but the reconditioning of tobacco by a modern machine or storage at low temperature will also destroy all stages of the pest.

News from China

A CORRESPONDENT in China sends us the following items of scientific news:—Prof. Chenfu Wu, of Yenching University, Peiping, has been granted a travelling professorship by the Rockefeller Foundation for use during his furlough year 1933–34 to complete his catalogue of Chinese insects. He will spend part of his time at Cornell University and the rest visiting museums in England and on the Continent.—Prof. Chihwei Luh, of Yenching University, Peiping, has been granted a fellowship by the China Foundation, which he will use at the University of Chicago during his furlough year 1933–34 for further work in neuroanatomy and psychology.—The Alpha Chapter in China of the Biological Honor Society Beta Beta Beta held its annual meeting on June 9 at Yenching University for the initiation of new members and election of officers. Prof. C. L. Liu, of the Biology Department of the Peiping Normal University, presided over the initiation.—At the eighth annual meeting and dinner of the Peking Society of Natural History, held on April 28, Dr. H. H. Hu, of the Fan Memorial Institute of Biology, was elected president of the Society, to serve for the year 1933–34. At the same meeting, announcement was made of the election of Dr. Sven Hedin as honorary member of the Society. The special event of the Society's annual meeting and dinner was the awarding of the King senior medal to Dr. C. Ping, director of the Biological Laboratory of the Science Society, Nanking, in recognition of his work on palaeozoological subjects and also of his work as a teacher of young Chinese scientific workers in whom he has awakened and cultivated a truly scientific spirit. Mrs. T. S. Oldroyd, of Stanford University, California, has been elected a corresponding member of the Society.

Hong-Kong University

IN the *Engineer* of July 28, Prof. C. A. M. Smith, Taikoo professor of engineering in the University of

Hong-Kong, refers to the coming of age of the University, its growth and development, and in the interest of both England and China pleads for a closer co-operation between the University and British industry. The University was opened in March 1912 by the Governor of Hong-Kong, now Lord Lugard, Prof. Smith being the only professor on the staff. To-day there are 15 full-time professors—3 for engineering, 6 in the medical departments and others for mathematics, physics, chemistry, economics, education and English. In 1912 the annual revenue was less than 90,000 (Hong-Kong) dollars, it now exceeds 1,000,000 dollars. The residential system is compulsory, there being seven halls of residence, and students have come from all the 18 provinces of China. The British staff, now numbering 28, takes a keen interest in all the social activities of the University and the Chinese undergraduates have a good record of athletic contests with Europeans and Chinese in the colony. All the engineering equipment in the University—much of it presented—is British, all instruction is in English and British textbooks are used. A thorough training in engineering is given, but it is often desirable for students to proceed to works in England on completing their course. The University, says Prof. Smith, is not merely a local affair, but an Imperial asset. "It is, in a sense, the contribution which Hong-Kong makes to the whole Empire, as well as to China."

French Locomotive-Testing Station

IN *Engineering* of August 4 is a description of the new locomotive-testing station at Vitry-sur-Seine, Paris, which was formally inaugurated on July 29. The plant has been designed by the Office Central d'Etudes de Matériel de Chemins de Fer (O.C.E.M.) and erected on a site belonging to the Compagnie du Chemin de Fer de Paris à Orléans. The main plant is contained in a building about 180 ft. × 80 ft. The essential elements of a locomotive-testing plant consist of a testing bench with supporting rollers on which the driving and coupled wheels of the locomotive revolve, brakes to absorb the power and a dynamometer to record the pull on the drawbar. There are also means for recording the fuel and water consumption and apparatus for measuring steam and water temperatures and pressures, and the vacuum in the smoke box, furnace and ash pit. In the new plant there are eight pairs of rollers of which six pairs can be coupled up to the hydraulic brakes, which were supplied by Messrs. Heenan and Froude, Ltd. Each of the brakes can absorb up to 1,200 horse-power, the permissible rim speed of the rollers is 100 miles per hour and the permissible weight per roller 15 tons, the plant thus being capable of dealing with heavier and more powerful locomotives than are in use in France at the present time. There are several locomotive-testing plants in various countries, some of which were described in Mr. H. N. Gresley's paper, "Locomotive Experimental Stations", read to the Institution of Mechanical Engineers in 1931. The only testing plant in Great Britain is that laid down by the Great Western Railway Co. at Swindon in 1905; but it has often been

advocated that a modern plant should be set up by the railways in conjunction with the Department of Scientific and Industrial Research. No steps, however, have yet been taken in this direction.

Lightning Current Recorders

THE engineers of the staff of the General Electric Co. of America have computed that about 75 per cent of all interruptions to electric service are caused by lightning. In the *Electrician* of August 4 an account is given of a simple magnetic device which has been largely used for recording the currents that flow in the earth conductors of the lattice towers when the line is struck by lightning. Small pieces of magnetic material called magnetic links are mounted on brackets and installed within a few inches of the leg of the tower. At the present time, more than 2,000 of these links are in use on high voltage lines. The link is so placed and designed that the magnetism induced in it is proportional to the highest value of the lightning current. Line patrolmen working under the research staffs of the power companies test the links periodically for magnetisation. The magnetised links are sent to the research laboratories. By inserting them in a measuring instrument called a 'surge-crest' ammeter the pointer of the instrument indicates the maximum value of the lightning current. Currents up to 25,000 amperes have been measured. As the resistance of the 'earth' at the tower is sometimes high, this current may be reflected into the service line with ensuing damage or interruption of the power current. The overhead earth wire at present largely used as a safeguard against lightning was the outcome of previous experimental researches on voltages induced by lightning.

Freshwater Biology

THE report of the Freshwater Biological Association of the British Empire for 1932 shows notable progress in research, membership, and interest of universities and public bodies. The laboratories at Wray Castle, Westmorland, were inspected by a large number of the public on open day, August 10. The field apparatus was shown, as well as specimens of living animals and rare plants, including *Hydrilla verticillata*, a plant moderately abundant in Esthwaite Water, but unknown in any other locality nearer than East Prussia. The light-intensity at various depths in Windermere has decreased within the last decade, indicating enhanced numbers of blue-green Algæ due to increased pollution. The Bernheim rectifier photocell has come into favour because of its chromatic sensitivity and convenience in handling, galvanometer measurements giving direct values. Accurate work with a large system of thermocouples has revealed in Windermere a warm upper layer of water, or epilimnion, separated by an oscillating temperature discontinuity from a colder lower layer or hypolimnion. Inflowing streams carry warmer water, and floods, accompanied by wind operating as a mixing agent, tend to warm the lake, with a consequent increase in diatom numbers and improvement in trout fishing. The behaviour of

Planaria (flatworms) shows that the normal movement of the animals against the current is reversed during the reproductive stage, and also when the water is impure, a reaction which is more delicate than any system of chemical measurement. The epidermis of Planaria is sensitive to light, and its reactions to different temperatures are being studied in a thermostatically controlled observation tank. A new method of controlling a respirometer was shown, applied to estimating the rate of exhalation of carbon dioxide by newts. Colorimetric and electrical apparatus were shown for the measurement of salt concentrations, and microscopes showed the annual growth lines on fish scales.

Archæological Survey of Colorado

IN America the distribution of a physically homogeneous population over a wide and geographically diversified area has given a special significance to the study and determination of cultural similarities and differences and their distribution, for which in archæological studies, survey work is the first essential. The value of the intensive local survey in this connexion is illustrated by the third report of the Archæological Survey of Eastern Colorado, covering the work done in 1932, which is issued by the Department of Anthropology in the University of Denver. Dr. E. B. Renaud, professor of anthropology and director of the Survey, with his assistants and the help of residents, covered 4,071 miles, in which much previously archæologically unknown country was visited and more than a hundred new sites recorded. A journey of reconnaissance was also made in Nebraska. The point of special interest is that Prof. Renaud records the discovery of basketry and other remains in caves south-west of Fowler and north-east of Beulah. It now becomes known for the first time, through the systematic work of the Survey, that the Basket-Maker culture, previously recorded in Utah, Arizona, New Mexico, south-west Colorado and western Oklahoma, also extended so far north as the Arkansas basin in north-eastern Colorado. A second addition made in this season's work to the distribution map of prehistoric culture is the record from many new districts in Colorado and also Nebraska of Yuma and Folsom artefacts, the flaked points believed by many to have been used by hunting peoples of the Upper Pleistocene. On the other hand, the study of the pottery which appears in this report inculcates the necessity for caution in generalisation while the work of the survey is still incomplete. In the previous season the number of sites on which undecorated pottery and pottery decorated with the impressed cord pattern were found was about equal—twenty-three to twenty-five—but this year the decorated pottery sites outnumbered the undecorated by more than three to one.

Magic and Games

IN an interim report issued by the Smithsonian Institution, Washington, on recent investigations by Miss Frances Densmore in collecting songs among the Indians of the south-eastern United States, reference is made to magic connected with the