

pupils. Attention was directed to the necessity of developing day courses of instruction in technical schools or polytechnics, of which there should be one in each large town or centre of population. These day courses should be of a high standing, and should be restricted to students of at least sixteen years of age.

One possible reform of great urgency is the improvement in the organisation, curricula, and methods of the evening continuation school, which should link on with the evening technical school. At present, evening continuation schools, save in a few towns, are profoundly unsatisfactory. It was suggested that the time is now ripe for the appointment of a Royal (or Departmental) Commission to deal with the general question of the organisation and coordination of technical education and its relationship to primary and secondary education. With respect to the Imperial College of Technology, it was stated that if the desires of its founders and the needs of the country are to be satisfied, this institution should not undertake work of a diploma or degree standard, but it should restrict itself to post-graduate work, technical research, and such branches of higher technological teaching which are not provided for at present. A danger facing technical education at the present moment is the tendency in some quarters to close the higher classes in pure science in technical institutions, partly through motives of economy and partly through efforts towards an illusory coordination with university college work.

Mr. Wilson then discussed the "culture" value of technical education, maintaining that a broad scientific, technical, or artistic training affords a highly valuable mental discipline, and is truly educational in the strictest sense of the term. The technical schools of this country must be judged, not only by their purely economic results, but by their gradual leavening effect upon the mental inertia and intellectual sluggishness of the nation. Passing on to certain aspects of the work inside the institutions, doubts were expressed as to the value of the elaborate system of scientific and technical examinations now held by the Board of Education and the City and Guilds Institute. In concluding, Mr. Wilson dealt with the subject of "research" in technical institutions. At present the teaching staff of these institutions, although keenly anxious to engage in research, partly for its own sake and partly from motives of professional advancement, is generally unable, save in isolated cases, to do so. The stress of institution work, including, say, ten to fifteen lectures per week, with another ten to fifteen hours' laboratory work, to which is added departmental work, correction of notes and exercises, and preparation of lectures, is so great that "research" under the present conditions is generally impossible.

In the afternoon of May 31 a valuable paper was read by Mr. A. Galbraith (Glasgow and West of Scotland Technical College) detailing the successful efforts recently made in the Glasgow district to coordinate the work of thirty-seven local evening continuation schools with that of the Glasgow Technical College, resulting in approximately five hundred fully qualified evening students, who have successfully passed through a preliminary scientific two years' course in these schools, being annually passed on to the technical college. In the evening the annual dinner of the association was held, the chief guests being the Lord Mayor and the Lady Mayoress of Liverpool, and representatives of educational organisations and institutions, as the National Union of Teachers, the Liverpool University, and local education authorities.

The morning session of June 1, devoted to professional matters such as the salary scale, conditions of service of part-time teachers, superannuation scheme, and legal matters, was opened by the Lord Mayor of Liverpool (the Right Hon. H. Chalenor Dowdall), who in the afternoon gave a reception in the Town Hall to the delegates and members of the association. At night a public meeting was held, when addresses on various phases of technical education were delivered by Mr. Max Muspratt and other prominent local educationists.

The following resolutions on general educational matters were passed during the conference:—

(1) The preliminary training which students receive at present before entering technical institutions is not such

as to fit them for benefiting by the instruction provided. To improve this, the following reforms are desirable:—

(a) No child should be allowed to leave school before the age of fifteen, and the half-time system should be abolished.

(b) In the education of children attending elementary schools special attention should be paid to the teaching of practical arithmetic, elementary science, and to manual training.

(2) Resolutions concerning the present evening continuation schools:—

(a) The evening continuation schools should be affiliated to the higher institutions in their respective districts.

(b) The curricula of the evening continuation schools should be arranged in conjunction with the authorities of the higher institutions, who should have the right of entry or inspection.

(3) Admission to technical schools should, in general, be conditional on the student having reached a standard of education to be subsequently fixed.

(4) (a) The work of the secondary schools should be divided into three branches, viz. (i.) technical-secondary schools (including trade schools); (ii.) commercial secondary; (iii.) classical-secondary.

(b) There should be a properly graded system of scholarships, with maintenance, available at these schools.

(5) This association heartily approves of the general principles embodied in the following recommendations of the Minority Report of the Poor Law Commissioners:—

It should be illegal to employ boys below the age of fifteen or any youth below eighteen for more than thirty hours per week, and boys should be compelled to attend some suitable public institute giving physical and technical training for not less than thirty hours per week at periods to suit the convenience of employers in different industries.

The main points emphasised during the discussions at the conference were the following:—

(1) The pressing need for coordination of technical education with primary and secondary education, especially the linking on of the technical school to the elementary school through the evening continuation school.

(2) The need for the provision of technical-secondary schools in which, while continuing the general education of the pupils in English, a modern language, and science, the curricula shall be such as to afford a suitable training for those who at the end of their secondary-school period will pass on direct to the day technical institution or enter upon industrial or commercial work.

(3) The necessity for the development of higher day technological training, coupled with a generous provision of scholarships with maintenance grants.

ECONOMIC ZOOLOGY.

THE black-currant mite (*Eriophyes ribis*) is a pest only too well known to fruit-growers at the present time, and also one which seems to be rapidly increasing and spreading. Anything that will check its ravages is therefore of great importance, and it is satisfactory to learn that two new parasites of this mite have been discovered and their life-histories described by Miss A. M. Taylor in the April issue of the *Journal of Economic Biology*. The first of these is a minute fungus of the genus *Botrytis*, near akin to the one which attacks silkworms. This fungus, which is deadly in its action on the mites, makes its appearance when the currant-buds begin to swell abnormally owing to the presence of the mites. Spores of the fungus become blown on such mites as are exposed by the bursting of the buds, and under suitable conditions rapidly develop on their new hosts. Neighbouring mites are speedily infected, and the disease spreads until the tiny parasite has worked completely through the bud destroying not only the mites and their eggs, but the grub by which they are accompanied.

These grubs are the larvæ of a minute fly of the family Chalcididae, and they, too, depend for their existence upon the mites, although the number they consume is comparatively insignificant in comparison with the swarms which exist in "big-bud." It is manifest, therefore, that the hope of parasitic infection proving efficacious in the case of the currant-mite must rest with the fungus.

The economic loss to the United States through disease-carrying insects forms the subject of Bulletin No. 78 of the Entomological Bureau of the U.S. Department of Agriculture. Dealing first with malaria, the author, Dr. L. O. Howard, points out how large is the number of persons incapacitated, for a time at least, from work by this fell disease, and how easily the plague may be stayed by the destruction of mosquitoes. As examples, are cited the work that has been so effectually done at Ismailia and also at Havana. Still more serious are the results of yellow-fever, which, in addition to the huge death-losses during epidemics, is responsible for checking the development of cities such as New Orleans, Memphis, Jacksonville, and Charleston. Their progress has been greatly impeded by this one cause, which has led to a general retardation in the industrial advance of the whole of the southern States. The house-fly, or "typhoid-fly" as Dr. Howard thinks it might well be re-christened, is in some degree an even worse enemy to human progress and development than the yellow-fever mosquito, and the urgent need of a war of extermination against both these pernicious insects is strongly emphasised. Although the influence of these enemies to progress has been ignored by historians, it has, nevertheless, been great in the past, and promises, unless checked, to be still greater in the future. "The world has entered the historical age when national greatness and national decay will be based on physical rather than moral considerations, and it is vitally incumbent upon nations to use every possible effort and every possible means to check physical deterioration."

The second annual report of the committee of the South African Central Locust Bureau, drawn up by Mr. C. Fuller, and recently issued by the Government printers at Cape Town, contains a full account of the means taken by the different local administrations for the destruction of locusts during the summer of 1907-8. It is somewhat unfortunate that the Central Bureau has no control over the action of these local bodies, so that its functions are in great measure limited to receiving and transmitting warnings of the approach of locust-swarms. It is, however, satisfactory to learn that German South-west Africa and Mozambique are cooperating with the British Government in the work of prevention. For years past, it is stated, the hope has been entertained by the farmers that the locusts would disappear for a time, as has been the case on previous occasions. Such a disappearance cannot be accelerated by the work of the Bureau, but when it does come, the information gained by the recent work of that body cannot fail to be of the highest value to the country in the future. The work of extermination in South Africa is rendered the more onerous on account of the presence in some parts of the country of two species of locust, one of which breeds much earlier than the other. Consequently, no sooner is one campaign completed than preparations have to be made for a second.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Prof. M. C. Potter, professor of botany at Durham University, has been approved by the general board of studies for the degree of Doctor in Science.

The chemical laboratory will be open for the use of students during the ensuing vacation from July 5 to August 21. Dr. Fenton will give a course of fifteen lectures on the outlines of general chemistry. Mr. J. E. Purvis will give a course of lectures and practical instruction in pharmaceutical chemistry.

Mr. F. G. Smart has offered to give to the University the sum of 600*l.* in order to found two prizes to be awarded in each year, one for botany and one for zoology. The council of the Senate recommends that Mr. Smart's offer be gratefully accepted.

LORD AND LADY STANLEY OF ALDERLEY have endowed the London School of Tropical Medicine with a capital sum producing a yearly income of 50*l.* in memory of their son, the Hon. E. J. Stanley, who died at Sokoto, in Northern Nigeria, on November 14, 1908.

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PROF. SAMUEL AVERY, who has been head of the department of chemistry in the University of Nebraska since 1905, has been elected president of that institution. He was born in 1865, and was educated at Doane College, the University of Nebraska, and the University of Heidelberg.

The University of Glasgow has conferred the honorary degree of LL.D. upon Mr. W. H. Maw, past-president of the Institution of Mechanical Engineers and of the Royal Astronomical Society, and Prof. C. S. Sherrington, F.R.S.

THE Darien Press, Edinburgh, has published for the International Academic Committee of the Students' Representative Council of Edinburgh University "A Handbook on Foreign Study," which has been compiled and edited by Mr. H. J. Darnton-Fraser, convener of the committee. Copies of the handbook may be obtained, price sixpence net, from the offices of the Students' Representative Council. The object of the handbook is to popularise in British academic circles the idea of studying abroad, and to afford persons who desire to follow this course some general guidance as to the best place to go to with the maximum of pleasure and profit. The volume is provided with a short introduction by Mr. Haldane, in which he refers to the value of foreign study, and seven articles on study abroad in various subjects are included. Prof. A. S. Pringle-Pattison deals with philosophy, Prof. William Osler, F.R.S., with medicine, Dr. J. Howarth-Pringle with surgery, Mr. J. A. S. Watson with agriculture, and Dr. T. C. Thomson with science and engineering. Valuable information of the kind a student must have is given about the various universities of Europe, and useful general information concerning study in the various countries of Europe.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Microscopical Society, May 19.—Mr. F. J. Cheshire, vice-president, in the chair.—The Foraminifera of the shore-sands of Selsey Bill, Sussex, part ii.: E. **Heron-Allen** and A. **Earland**.—A new illuminator for the microscope: J. W. **Gordon**. The apparatus provides a simple and effective means by which the intensity of the light can be regulated without disturbing any focal or aperture adjustment.

Linnean Society, May 24.—Dr. D. H. Scott, F.R.S., president, in the chair.—Presidential address, adaptation in fossil plants: Dr. D. H. **Scott**.

Geological Society, May 26.—Prof. W. J. Sollas, F.R.S., president, in the chair.—The cauldron subsidence of Glen Coe and the associated igneous phenomena: C. T. **Clough**, H. B. **Muff**, and E. B. **Bailey**. The succession of volcanic rocks in Glen Coe is mainly a series of lava-flows, of which there are three types, augite-andesite, hornblende-andesite, and rhyolite. Agglomerates, tuffs, and sediments form but a small portion of the sequence. The Lower Old Red Sandstone age of the rocks is proved by the occurrence of plant-remains in shales at the base. The sequence is divisible into groups, which are not, however, persistent over the whole area. Each group may contain different types of lava, which interdigitate one with the other. It is probable that the district was supplied from more than one centre, the foci being independent as regards type of material erupted, although their periods of activity overlapped. The volcanic pile with patches of conglomerate and breccia at the base rests upon an uneven floor, evidently a land-surface, of the Highland Schists, and, further, the eruptions appear to have been subaërial. The cauldron subsidence, which let down the volcanic rocks and the underlying schists some thousands of feet, affected an area roughly oval in shape and measuring eight miles by five.—The pitting of flint-surfaces: C. **Carus-Wilson**. Regular pittings of uniform size are occasionally seen on flints which have been exposed to the weather. It is believed that the pittings are due to mechanical action. Observations and experiments carried out by the author indicate that such markings cannot have been produced by blows, or by any process of desiccation, and that the freezing of the absorbed