

the nation industrially and commercially is to be maintained in face of the fierce competition of the advanced nations of the world. The nation is really entering upon the most critical period of its history. The old spirit was splendid, but it will not avail against modern science any more than we could make progress on the Somme without modern science in furnishing us with the great artillery and high explosives required for battering down the trenches before us. Undue specialisation in secondary schools was undesirable in the best interests of education.

Lord Haldane's address was followed by a valuable paper by Sir A. Trevor Dawson, of Vickers, Ltd., on "Education after the War, with special reference to Engineering Instruction," in which he strongly urged the desirability of apprenticeship beginning at an earlier age than at present, and that the most capable boys should devote a portion of each day to the workshop and the rest to the school, and that every encouragement should be given to capable and talented boys, with a view to their being sent on to the technical college or university to complete their theoretical training, serving their vacations in the works so that they may have the advantage of special courses of advanced work on experimental research. The council of the association was instructed to prepare a public statement dealing with the immediate necessity for the further development of the means of scientific and technical education, and a resolution was passed calling upon Parliament to abolish all forms of exemption from school attendance below the age of fourteen, and to require compulsory facilities for continued education up to seventeen years of age, extending to at least six hours per week within working hours, for all persons employed who have left school. A further resolution was passed to invite the governing bodies of the various agricultural schools and colleges to join the association. On Saturday, October 21, a valuable and suggestive paper was read by Major Robert Mitchell, director of the Regent Street Polytechnic on "What Can Be Done to Train Disabled Sailors and Soldiers in Technical Institutions?" The facilities existing in London for the training of such disabled men in various occupations, and the success which had followed the work, together with the necessity for its further extension throughout the country, were fully set forth.

RECENT WORK ON TSETSE-FLIES.

THE tsetse-flies (*Glossina*) continue to occupy the attention of entomologists working in tropical Africa. Dr. W. A. Lamborn has now published (*Bull. Entom. Research*, vii., part 1) a third report of his investigations into the habits of these flies in Nyasaland (see NATURE, vol. xcvii., p. 90). He believes that an abundance of the flies usually indicates the presence of "big game" in the neighbourhood; yet he doubts whether the destruction of game would be effective in reducing the numbers of the fly, because "the game, if severely harassed, will retire [to surrounding areas] during the dry season, when only it is possible to hunt, returning in the wet and probably bringing more flies with it." In the same number of the bulletin there is also a paper by Lt. Lloyd on *Glossina morsitans* in northern Rhodesia. His observations show that in districts where game is scarce tsetses are often more numerous and troublesome than where game is plentiful; he suggests that this is because the flies, in the absence or scarcity of other mammalian prey, must attack man in larger numbers and with a more violent hunger. Mr. Lloyd, like Dr. Lamborn, finds males much more abundant than females in ordinary collections of *Glossina*, but Dr. Lamborn points out

that the proportion of females is largely increased when flies are caught beneath an umbrella or resting on trees, approaching the equality with the males which is seen in flies reared from puparia. Both writers have interesting notes on species of *Mutilla* (described by R. E. Turner in the same number of the bulletin), the larvæ of which are parasitic in the pupæ of the tsetses, while Dr. Lamborn has shown that a small chalcid (*Syntomosphyrum glossinae*), believed also to be a parasite of the *Glossina*, is really a hyperparasite on the *Mutilla*.

A convenient and useful summary of our knowledge of the tsetse-flies ("Notice sur les Glossines ou Tsé-tsés") by E. Hegh has been published in London under the auspices of the Belgian Colonial Ministry. It serves as an introduction to the structure, life-history, and classification of the insects in tropical Africa generally, but with special reference to the Belgian Congo. M. Hegh begins his historical introduction with the work of Bruce in 1895-6, and seems to ascribe to that distinguished surgeon the discovery that tsetse-flies carry disease. The deadly action of *Glossina* on European domestic beasts was well known to Livingstone during his early African journeys, and in his "Missionary Travels and Researches" (1857) he described the effect of the tsetse's bite on cattle and horses. With a seeming prevision of modern discoveries, he wrote of the "germ" of a poison "which enters when the proboscis is inserted to draw blood," and which "seems capable, although very minute in quantity, of reproducing itself." Bruce's contribution to the subject was the demonstration of this "germ" as a flagellate blood-parasite or Trypanosoma.

G. H. C.

ZOOLOGY AT THE BRITISH ASSOCIATION.

THE papers read in Section D were devoted chiefly to the consideration of problems arising out of the war. An account has already appeared in NATURE for October 19 of the papers on fisheries.

Flies.

Mr. F. M. Howlett gave a lecture dealing with the occurrence, habits, life-history, and means of prevention and destruction of the principal insects which have been troublesome during the campaign in France and Flanders. In another communication he surveyed briefly the known facts regarding the senses of insects, and gave an account of his observations, made in India, on the extraordinary attractiveness for the males of certain species of flies of isovaleric aldehyde, isoeugenol, and methyleugenol.

Miss O. C. Lodge gave an account of studies on the habits of flies in relation to means employed for their destruction. The best bait for blow-flies was found to be liver, brain, and fish which had been already attacked by maggots, and thus rendered more attractive. Baits were found to be much more attractive in the sun than in the shade. The best bait for house-flies is a mixture of casein, banana, any sweet substance, and water. Formalin in water (about 1:13) is apparently the best poison (excluding scheduled poisons) to use against house-flies.

Bilharzia Disease in Egypt.

Dr. R. T. Leiper gave an account of the later results obtained by the War Office Bilharzia Commission in Egypt. After sketching the conditions in a village where 91 per cent. of the schoolboys were found to be infected with Bilharzia, Dr. Leiper stated that the Commission had proved the occurrence of two species of Bilharzia, the chief characters of which he pointed out with the help of lantern illustrations. The egg of