

Bilharzia haematobium is terminal-spined, and the cercariæ are found in the fresh-water molluscs, *Bulinus contortus* and *B. dybowskii*. The egg of *Bilharzia mansoni* is lateral-spined, and the cercariæ occur in *Planorbis boissyi*. From these molluscs the cercariæ escape, and were proved to enter experimental animals through the skin as well as through the mucous membrane of the mouth.

Protozoa and Disease.

Dr. Helen Pixell-Goodrich gave an account of the amœbæ parasitic in man, namely, *Entamoeba histolytica*, the specific cause of amœbic dysentery, from the large intestine; *E. gingivalis*, from the mouth; and *E. coli*, a harmless species, feeding on the contents of its host's intestine. Dr. Pixell-Goodrich devoted special attention to *E. gingivalis* in relation to pyorrhœa, but although this amœba occurs so commonly in these lesions, it was not considered to be the cause of the disease. The morphological similarity of the trophozoites of *E. gingivalis* and *E. histolytica* was pointed out, and the large characteristic inclusions of the former were held to be the nuclei of lymphocytes.

Dr. T. Goodey's paper dealt with the results of observations by Mr. Wellings and himself on *E. gingivalis*, which they found in the mouths of both young and old persons wherever there was accumulation of food débris. They concluded that there is nothing to show that the organism is in any way causally connected with pyorrhœa, the food bodies being nuclear fragments of decomposed salivary corpuscles.

Dr. Annie Porter gave an account of observations by Dr. H. B. Fantham and herself on the flagellate protozoa associated with dysentery, with special reference to cases from Gallipoli. *Trichomonas hominis* has been found in cases of severe diarrhœa at Salonica; prophylaxis is directed to the prevention of contamination of food or water by infected material and by possible insect carriers and rodents (similar Trichomonads occur in rats, mice, and rabbits), and to the isolation of human "carriers." Cases of Tetramitus diarrhœa have been found among patients from Egypt, Gallipoli, and Salonica. *Giardia (Lambli) intestinalis* was found to be the commonest flagellate in the stools (3800) of the soldiers examined, and in some cases occurred in enormous numbers; one stool was estimated to contain 14,400,000,000. *Giardia* derived from man is pathogenic to kittens and mice, producing erosion of the intestinal cells. Rats, mice, and cats can act as "reservoirs," and by contaminating the food and drink of man may spread the organism.

War and Eugenics.

Mr. Hugh Richardson stated the case for the institution of an inquiry into the after-effects of war on population. He pointed out the nature of the evidence available or to be sought, the statistical methods to be employed, and, after referring to the various and dubious theories held in the past, indicated some of the problems which seemed capable of solution. Subsequent speakers—Dr. Chalmers Mitchell, Dr. Doncaster, Dr. Tocher, and Prof. MacBride—were emphatic in supporting the case for an impartial inquiry and for the collection and preservation of statistical information by the Registrar-General, the Army recruiting staff, school medical services, and other agencies.

Dr. F. A. Dixey exhibited and commented upon a series of insects collected on the way to and from and in Australia in 1914. Mr. Heron-Allen exhibited lantern-slides illustrating the mussel fishery and the life of Alcide d'Orbigny at Esnandes.

NO. 2452, VOL. 98]

The Friday afternoon was devoted to a visit to the Dove Marine Laboratory at Cullercoats, the members being taken over the laboratory and aquarium by the director, Prof. Meek. J. H. ASHWORTH.

ENGINEERING AT THE BRITISH ASSOCIATION.

MR. GERALD STONEY devoted his presidential address to a review of some of the errors committed in the past by masters and men in the engineering industry. An abridgment of the address appears elsewhere in this issue of NATURE.

After the address a paper on "Limit Gauges" was read by Dr. R. T. Glazebrook, director of the National Physical Laboratory. This subject has been forced upon the attention of the whole engineering world by its importance in the manufacture of munitions. The greatly increased scale of manufacture necessitated the production of an enormous number of gauges, both for workshop use and for testing. The National Physical Laboratory has acted as the checking authority for the correctness of the gauges employed by the Government inspectors. Dr. Glazebrook first described the principles of limit gauging and then the various methods and apparatus evolved for dealing with the problem at the National Physical Laboratory.

A paper on "The Principle of Similitude in Engineering Design" was read by Dr. T. E. Stanton, who discussed the possibilities and difficulties of obtaining accurate information for the design of structures, ships, aeroplanes, propellers, etc., from tests made on small models.

The late Mr. Leslie Robertson, who was lost on the *Hampshire*, had promised to read a paper on the work of the International Standards Committee. Mr. le Maistre, who has succeeded him as secretary of the committee, took over the task, and read an interesting paper on "Standardisation and its Influence on the Engineering Industries."

Mr. H. T. Newbiggin described the *raison d'être* of the Michell type of bearing. Already in common use for thrust bearings, it is now being experimentally applied to journal bearings.

Prof. W. M. Thornton discussed "The Influence of Pressure on the Electrical Ignition of Methane," and described experiments showing that, as the pressure is gradually increased, the energy in the spark necessary to cause ignition increases in a stepped, discontinuous manner.

Prof. W. H. Watkinson described some tests showing that Diesel engines could be worked satisfactorily with compression pressures considerably lower than those usually employed.

Prof. G. W. O. Howe read a paper on "The Calculation of the Capacity of Aerials, including the Effects of Masts and Buildings." Papers on this subject were read by the author at the Sydney and Manchester meetings; in the present paper the subject is carried further, and a number of numerical examples and experimental results are given which fully confirm the method of calculation.

Mr. McLachlan described the results of some experiments on a Poulsen arc, to determine the best magnetic field strength to employ for maximum output and for maximum efficiency.

The only research committee that reported at length was that on "Complex Stress Distribution," in connection with which Dr. Stanton exhibited a model of a new machine in use at the National Physical Laboratory for subjecting a specimen to a rapidly reversing combination of bending and twisting.

The last day of the meeting was devoted to a joint discussion with the Chemical Section of the report of the Committee on Fuel Economy.