

## ABSTRACT OF PROCEEDINGS, MAY, 1904.

The monthly meeting of the Royal Society of Tasmania was held on Monday evening. His Excellency the Lieut.-Governor, Sir John Dodds, presided. There was a large attendance of members and members' friends, many ladies being present.

Mr. Thos. Stephens said it was his duty as well as his privilege, as senior vice-president and the eldest member of the Council present, to bid His Excellency welcome. They regretted very much the loss of their late president, Sir Arthur Havelock, but they, as fellows of the Royal Society, were only too glad to welcome, in his place, one who had filled the same chair before, and one who had always taken a lively interest in the business of the society. (Applause.)

Sir John Dodds said he thanked members most gratefully for the kind words of welcome which Mr. Stephens had spoken to him on their behalf. He assured them that he accepted the words of welcome with feelings of gratification, having the knowledge that they thought what he had been able to do was worthy of comment in that way. (Applause.)

An apology was received for the absence of Bishop Mercer.

### New Members.

Dr. Elkington, Dr. Gerard Smith, and Mr. E. C. Anthony were unanimously elected members.

### Paper.

Dr. Elkington read a paper on "some Relations of Insects to Human Disease." He said the subject upon which he had been asked to address them was one which had, within the past six years, produced a profound alteration in several branches of science. In Tasmania they were, fortunately, free from those scourges of humanity which were known to depend for their spread upon the agency of insect life, but even with us the problem was not wholly one of outside interest, as he would endeavour to show in relation to typhoid. In this case, however, the method of conveyance was purely mechanical, being due to particles of infected matter clinging to the legs and body of flies and other insects, and subsequently deposited upon food material, whence it was taken into the alimentary canal of the victim. It was advisable therefore to clearly distinguish between the two methods by which insects play a part in spreading disease amongst human beings; whether (a) as carrying agents pure and simple, the infecting agent undergoing no change, and not being dependent on the insect in any way; and (b) as bolts intermediary or de-

finite, the infective organism being dependent upon the insect, and undergoing an extra-corporeal phase of development in its tissues. The first group was of distinct importance from the sanitarian's point of view, as it taught us to guard against a real danger in times of prevalence of certain infectious diseases, but the second one far outweighed it. In the second group fell some of the chief scourges of mankind, in tropical regions at any rate, and of these the greatest was malaria. Next to tuberculosis, malaria was probably the greatest cause of death, and of ill-health, with which mankind had to contend. The proof of the conveyance of malaria by the agency of certain species of mosquitoes was to those who knew what the disease really meant, a fact of startling importance, pre-aging the approach of effective means of checking an enemy which, in the year 1897 alone, laid 75,821 British soldiers by the heels in hospital, out of a total strength of 178,000 odd in all India. He need hardly remind them how nobly the promise of that great discovery had been fulfilled, how "the white man's grave" of former years had become the white man's sanatorium, and how it was now possible for the march of Anglo-Saxon civilisation to progress in places where, even six years back, a newcomer could count his reasonable expectation of life on the fingers of one hand. Tropical medicine had assumed such great proportions that it practically formed the pivot upon which turned the whole question of European colonisation in the tropics, and, practically speaking, tropical medicine was very largely based upon the spread of disease by insects. There freedom from malaria practically meant freedom from ill-health. Havana had been cleared of that fell disease in 90 days, after it had had an uninterrupted reign of 140 years. The discoveries that had been made were, he trusted, but a foretaste of those which were to come. The work of Manson, Ross, McCallum, Reid, and others had revolutionised the methods of research into human disease, and there was little doubt that we were on the verge of further great discoveries, in which the lower form of life would be found to play an essential part in diseases affecting mankind. Dr. Elkington, with the aid of lantern slides, thrown on the screen by Mr. Nat Oldham, indicated the manner in which the discoveries were made, and showed how it was ascertained that the dappled-winged mosquitoes, which laid boat-shaped eggs, and had the oval cells in the stomach walls, were the developing parasites of remittent malarial fever. That mosquito belonged to the genus *Anopheles*, be-

ing distinguished from the innocent *Culex* species. He illustrated the difference, and said he had not come across a member of the genus in Tasmania, and though one species had recently been described in Victoria he had not come across any in that State, though he had made an examination of a large number. The mosquito might be killed by fumigation with sulphur or pyrethum powder. That, however, was an incomplete way, as since the anopheles bred by preference in small puddles and shallow stretches of weedy swamp, or slowly moving water free from small fish, its destruction was rather an engineering than a medical question. Much might be done by pouring kerosene or paraffin on the surface in the proportion of about a tablespoonful to every square yard of surface, so as to form a thin film, which clogged the air tubes of the larvæ and pupæ, and also probably killed the adult female while depositing eggs. That remedy would be found efficient by those who were worried by the local culices, which evinced a blood-thirsty disposition, in New Town, at any rate. *Culex* and anopheles larvæ, which were known to every boy as the "wrigglers," were found in every tank and pool in fairly warm weather. All species of anopheles did not carry malaria. *Culicidæ* were especially fond of small collections of water, in pots and tanks—the saucer of a flower-pot on a window-sill might provide sufficient mosquitoes to make the inmates' life a misery, while an ordinary 400gal. tank would stock a neighbourhood. The notoriously malarious localities of Sierra Leone and Freetown, formerly known as "the White Man's grave," had, comparatively speaking, been turned into health resorts within two years of organised effort against mosquitoes, and in Ismalia, a previously notoriously malarial town, the average number of cases had been reduced from 2,000 to 200 per annum by one season's work. Practically, there were no fresh cases of malaria, once the work was got going, and it was now possible to sleep there in safety without a mosquito net, probably for the first time in the history of the town. To sum up the points, which he briefly indicated, the following facts had to be considered wherever malaria had to be dealt with:—There was, firstly, a blood parasite, which was the cause of the disease, and next came a particular genus of mosquito, whose tissues afforded the only place wherein this parasite could complete its life cycle. Malaria could be conveyed from man to man by injecting blood in which the organism was, but that need not be considered in practice. Therefore, in tackling the question of stamping out malaria they naturally attacked the mosquito. The adult insect might be guarded against by mosquito curtains, and other measures, to prevent its

biting. The connection of yellow fever with Havana was almost proverbial. The average number of deaths from that disease alone was fully over 800 in each year, and it had been estimated that some 6,000 persons died of that disease in 1897, and, in addition, the island of Cuba, and adjoining parts of Brazil, acted as an endemic focus whence, at various times, the disease spread to many parts of the world, including Spain, Africa, and even England. In Rio, from 1868 to 1900, over 40,000 people died of it. The Southern States of America had also suffered dreadful visitations from it, so that we may easily understand why "Yellow Jack" was a decaded name throughout South America, the West Indies, and the Southern United States. With the opening of the Panama Canal, and the consequent shortening of the voyage from these localities to Australia, and the Far East, it was very probable that yellow fever would be introduced to this side of the world. Three or four years ago sanitarians regarded this possibility with awe and foreboding; to-day they looked upon it, certainly, as a serious problem, but as one which would give emphatically little trouble, compared to the introduction of a few cases of small-pox. Referring to sleeping sickness, Dr. Elkington's researches made by Dr. Castellani and others showed that the conveying agent in that case was the tsetse fly, previously well-known for the fatal effects of its bite on horses and cattle, but only lately known to be connected with disease in human beings. The curative agent appeared to be a form of organism known as trypanosome, or, as it should be more correctly termed, a herpetomonas, which lived in the blood and fluids of the victim. Dr. Elkington next touched upon the presence of plague in Australia, and said there was a growing tendency on the part of those who had to deal with the disease to regard more and more suspiciously the flea. A good deal of work had been done on those insects of late years, and more than 130 distinct species of fleas had been classified, and new ones were coming into knowledge month after month. Plague was, certainly, a disease of locality, and especially tended to infect those who sleep in such a locality, sparing those who move actively about during their visits, and sleep or rest elsewhere. It chose dark, squalid, vermin haunted vicinities, and avoided to a great extent any well-lighted places. Plague did not, apparently, thrive in the soil, nor was it known to enter the body with the food, in human cases at least. In the ordinary form—excluding pneumonic plague—it entered by the skin, and in the bubonic form, it certainly entered in the lymphatic area, drained by the first affected gland. Water played no part in its dissemination. Referring to the house

fly, Dr. Elkington remarked that it was ubiquitous in its habits, and unpleasant in its history and associations, and, under experiments, it had been proved capable of conveying on its feet and body the germs of disease. In a more enlightened age the housewife would regard flies with the same horror and disgust as she now regarded bugs and fleas. He had little doubt that domestic flies, so-called, were responsible for a fair proportion of cases of communicable disease, especially, perhaps, of typhoid fever. Its possibilities, however, did not end there. Diseases especially, perhaps small-pox, might be readily conceived as spread by that means. He confessed, in fact, to a doubt as to whether the real cause of the aerial

connections of small-pox was not partly or wholly due to insect life.

On the proposition of Sir John Dodds, a hearty vote of thanks was accorded to Dr. Elkington, and to Mr. Plate, for lending works of art to the society.

#### An Ancient Tree.

Mr. R. M. Johnston exhibited a specimen of a piece of a tree which had been found embedded in the rocks near Barnes Bay (Southern Tasmania). He said the trunk of the tree from which the specimen was taken was from 15 to 20 million years' old, and was about 12ft. long and 18in. to 20in. in diameter.

