

flagellate forms—often Leishmania-like—were more numerous. The authors recall the fact that a flagellate stage of *Leishmania donovani*—the causal organism of kala azar in man—has recently been found by Dr. Wenyon in a dog subinoculated with a strain derived from a human case, and that flagellate stages of *L. tropica*—the organism of oriental sore—have been found in man. In view of the similarity of the morphological cycles of Leishmania and Herpetomonas, the authors suggest that the species of Leishmania are probably insect herpetomonads introduced long ago into man, and usually perpetuating the non-flagellate and relatively non-resistant forms, though capable of assuming the flagellate form.

THE NEW ZEALAND INSTITUTE.

THE forty-seventh volume of the Transactions and Proceedings of the New Zealand Institute constitutes a record of much valuable and painstaking research, dealing chiefly with the fauna and flora of the Dominion. It is gratifying to find that the war has interfered so little with the activities of New Zealand naturalists, and that so many ardent workers are now engaged in adding to our already very extensive knowledge of this important region. Most of the papers in this volume are of a systematic character, and probably work of this kind is the most important that can be undertaken at the present time in New Zealand. Such papers, however, naturally appeal to a very limited number of readers, especially when they are written in the ultra-technical language which so many systematists seem to prefer. This appears very markedly in Mr. Meyrick's revision of New Zealand Tineina, in which the diagnosis of the very first genus contains the following cryptic sentence—if sentence it can be called:—"Hindwings under 1, termen abruptly emarginate beneath acutely produced apex; 3 and 4 rather approximated, 5 nearly parallel, 6 and 7 rather approximated towards base."

We cannot help thinking that, apart altogether from the question of style, a somewhat more generous expenditure of type would be appreciated by those who might like to take up the study of this group of Lepidoptera in New Zealand, and are not already experts in the subject. Mr. Meyrick is of opinion that there still remain a large number of additional species of Tineina to be discovered in New Zealand, and it seems a pity, therefore, that the generic and family characters given only hold good for the New Zealand species, for apparently they may be upset at any time by further discoveries, and may prove quite inadequate for the determination of new forms.

One of the most interesting discoveries recorded in the volume is that of a new genus of gymnoblastic hydroids, *Ascidioclava*, found living as a parasite in the peripharyngeal groove of an Ascidian, and described by Prof. H. B. Kirk.

We are glad to see that local botanists are paying attention to the life-history of the Lycopodiaceæ, which form such an important element in the New Zealand flora. Mr. J. E. Holloway contributes a note on the protocorm of *Lycopodium laterale*, and Miss K. V. Edgerley describes the prothallia of three species. Prof. Charles Chilton gives an interesting account of the recently established Mountain Biological Station belonging to the Canterbury College, the existence of which may be expected to do much to promote biological research.

It is impossible in a short notice to do justice to such a mass of valuable material as this volume contains. We can only express our satisfaction at the great activity displayed, and congratulate all concerned on the results of their labours. A. D.

THERAPEUTIC ACTION OF ULTRA-VIOLET RAYS.

ATTENTION has recently been directed again to the therapeutic action of ultra-violet rays by the publication of a paper in the *Lancet* of January 8, in which a source of light invented by Mr. Simpson was referred to. There is nothing novel, of course, in the fact that certain forms of disease may be cured by exposure to light of wave-length ranging from 300 $\mu\mu$ to 90 $\mu\mu$, but the discovery of a new ultra-violet lamp raises many questions of wide interest. Dr. Sidney Russ has now shown, however, that an arc simply produced between two tungsten rods exactly simulates the so-called "Simpson light," and it is evident that the powerful source of ultra-violet rays thus obtained will prove of service in the treatment of all those superficial lesions which Finsen and others have proved to be favourably affected by this type of radiation. Dr. Russ has further pointed out that even one-tenth of a millimetre of human skin readily absorbs a large part of the ultra-violet rays from this arc, and that less than one per cent. passes to a depth of one millimetre.

When its spectrum is compared with that of the mercury arc, the carbon arc, or one between copper and silver, it is seen to consist of numerous lines grading off towards the shortest wave-length, and affording an exceptionally rich source of ultra-violet light over the region, which is of great therapeutic use. In medical work, however, the cleanliness and convenience of the method by which any particular radiation can be produced are naturally of great importance, and in this respect it is evident that the electric discharge between a broken column of mercury enclosed in an exhausted quartz tube has much to recommend it. On the other hand, the new tungsten arc lamp made by Messrs. Edison and Swan (see *NATURE* of December 23, 1915, p. 467), enclosed in a silica bulb instead of in glass, would no doubt be an ideal means of producing ultra-violet light, and one which could be readily adapted for medical as well as other purposes.

Dr. Russ has contributed a short illustrated article to the *British Medical Journal* for January 22, in which some interesting points are considered respecting the seventeen octaves of radiations which are now available: from visible light to the gamma rays of radium. He deals very clearly with the X-ray spectrum, the dangers of prolonged or frequent exposure to that radiation, ultra-violet light, and some of the chief physical facts with which medical students should become acquainted.

THE UTILISATION OF PEAT.¹

PEAT AS A SOURCE OF POWER.

THE problem of the utilisation of peat for industrial purposes is one of perpetually recurring interest, and scientific men in many countries have turned their attention to search out a solution. This is not surprising in view of the fact that the amount of combustible matter in the world's peat deposits exceeds that of all the known coal-fields. For Ireland the question is one of vital interest. Her coal deposits are small and relatively unimportant, while nearly one-seventh of the area of the country, *i.e.* more than two and three-quarter million acres, is covered with peat, much of which is of excellent quality. This represents a vast amount of potential energy awaiting only a practical means of utilising it.

¹ Abridged from articles entitled "Peat as a Source of Power," by Mr. George Fletcher, and "Some Chemical Aspects of the Peat Problem," by Prof. G. T. Morgan, F.R.S., published in the *Journal of the Department of Agriculture and Technical Instruction for Ireland* (vol. xvi., No. 1).