

More detailed work with *Ascaris lumbricoides* in the guinea pig showed that a marked immunity to re-infestation can be induced by administering infective stages orally or by alternative routes. With the exception of the 'metabolic products' of third-stage larvae, non-viable worm material induced no protective immunity in the guinea pig. The critical period for the release of helminth antigen, which ultimately induces protective immunity, appears to be from four to six days after infestation. The earlier larval stages appear to be unimportant in stimulating immunity. During the period of four to six days after infection the second-stage larvae moult, but in an immune host the growth of the larvae is inhibited and they do not reach the size at which moulting normally occurs. Using a natural marker antibody (Forssman antibody), it was found that the period between the fourth and fifth days after infection was the earliest time at which a marked release of antigen could be expected. Since this period coincides with the commencement of moulting, the moulting process is strongly suspected as an important mechanism for the release of antigens which stimulate protective immunity in the host.

Dr. K. Mellanby (Rothamsted Experimental Station) spoke at short notice, in place of Prof. R. M. Gordon, on reactions to insect bites and infestation by mites and ticks.

Individual animals respond differently to the bites of particular insects, and the responses change with the period and intensity of the attack. Two and possibly three antigens may be involved. The first evokes a weal 5-10 min. after exposure. The second

antigen produces the delayed, tuberculin-type reaction some hours after exposure. Thirdly, there may be a more serious, generalized reaction, distinct from the delayed reaction and possibly related to a third antigen. The antigens are injected with the saliva of the biting insects, but also occur in their tissues. Thus, extracts of larval, pupal and male mosquitoes may give similar reactions to the bites of adult females. Reactions to non-biting insects (for example, sensitization to locusts) are essentially similar to reactions to bites.

A previously unexposed person may not react to a first bite. However, after exposure he shows the immediate reaction to a bite, and on further exposure shows the delayed reaction as well. Generally, further exposure causes the delayed reaction to disappear, and prolonged exposure may eliminate the immediate reaction also.

The reaction of the host does not affect the feeding of most blood-sucking insects, but the feeding of mites and ticks, which may take some days to engorge, may be interrupted in sensitized hosts by the infiltration of leucocytes around the mouth-parts. Sensitization to the scabies mite *Sarcoptes* causes local oedema and the mites tend to leave their burrows; the sensitized individual may be virtually immune to scabies.

Other workers have reported differences in the reaction to bites of clean insects and those infected with parasitic diseases. In the rickettsial disease, scrub typhus, infecting bites may give characteristic local lesions not caused by uninfected mites.

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## INTERNATIONAL SCIENTIFIC RADIO UNION

THE twelfth general assembly of the International Scientific Radio Union was held at Boulder, Colorado, during August 22-September 5 and was attended by more than 550 delegates and observers from twenty-seven countries. The meetings of the full assembly and of the executive and organization committees were held under the chairmanship of Father P. Lejoy, who was serving a second term as president of the Union. This was the first assembly since the recently constituted national committees in Austria, Greece and the U.S.S.R. had been formed; delegates from these countries were warmly welcomed, and they took an active part in the scientific work of all the meetings in Boulder.

As is probably now well known, the main functions of the Union are to promote and organize radio research requiring international co-operation and to encourage the setting-up of such common methods of measurement as may be required for the study of any radio phenomena, whether or not these be directly associated with the Earth and its atmosphere. The work is carried out by seven commissions, each of which is concerned with specific aspects of radio research, and ranging from measurements and standards, and the use of circuits and electronics techniques to all aspects of wave propagation, and terrestrial or atmospheric noise and the important new developments in radio astronomy.

Detailed accounts of the work of each commission will be published in due course in the "Proceedings of the General Assembly". In the meantime, the results

of this work are crystallized in the resolutions which each commission made and presented to the assembly for adoption. These resolutions are being printed in the Information Bulletin of the Union, which is published by the Secretary-General at 7, place Emile Dancu, Uccle-Brussels (Belgium). The most recently issued Bulletin—No. 105—contains the recommendations and resolutions of Commissions 1, 2, 5 and 6, and those of the remainder will presumably be in a later issue. A list of the commissions, with their officers and the national official members, is also given in the same Bulletin.

Prior to the general assembly in Boulder, meetings were held in New York of the Mixed Commission on the Ionosphere under the chairmanship of Sir Edward Appleton, and of the Joint Commission on Radiometeorology with Dr. W. E. Gordon as chairman. The work of these groups is conducted in close co-operation with the corresponding commissions of the International Scientific Radio Union, namely 3, "Ionospheric Radio" and "Radio and Troposphere", of which Drs. D. F. Martyn and R. L. Smith-Rose, respectively, were re-elected chairmen.

At the closing meeting, Dr. L. V. Berkner was elected president, and it was decided that the next general assembly would be held in the United Kingdom in 1960. A revised scale of national subscriptions was introduced, and provision was made for the organization between general assemblies of international symposia on specialized subjects relating to radio scientific matters.