

6. CONDITIONS INFLUENCING THE HATCHING OF
HOOKWORM EGGS

Hookworm eggs hatch as readily in ashes as in soil. Hookworm eggs in feces buried to a depth of from 1/2 of an inch to 2 inches hatch and the larvæ develop in numbers, there being only a slight retardation in development. When eggs were buried from 4 to 5 1/2 inches in a clay loam soil, only a few larvæ were able to develop. The invasion of the stools by numbers of fly larvæ was found to be detrimental to the development of hookworm larvæ to the infective stage.

7. THE FINDING OF UNSHEATHED HOOKWORM
LARVÆ IN THE SOIL

The finding, both in field and laboratory studies, of a large percentage of mature hookworm larvæ without their protective sheaths, led to the conclusion that a large proportion of such larvæ in the soil complete their second larval moult and continue to live in the un-sheathed condition.

8. VERTICAL MIGRATIONS OF INFECTIVE HOOK-
WORM LARVÆ

It was found that under certain conditions mature hookworm larvæ when buried to a depth as great as 5 1/2 inches can migrate to the surface. In such a migration the larvæ used up most of their reserve food supply, so that after reaching the surface they were relatively inactive and the cells of the intestine had become almost transparent.

9. HORIZONTAL MIGRATIONS OF INFECTIVE HOOK-
WORM LARVÆ

From laboratory experiments and field observations it was found that mature hookworm larvæ do not migrate actively from their place of development, although they may be carried to considerable distances by the action of water or on the feet of man. These observations showed that the present idea that the soil of considerable areas can be infested by the migrations of the larvæ from limited centers is untenable.

10. LENGTH OF LIFE OF INFECTIVE HOOKWORM
LARVÆ IN THE SOIL

Under the conditions in Trinidad the length of life of infective hookworm larvæ in the soil is short, almost never exceeding six or seven weeks. In an area of a cane field where there was intense soil infestation there was a reduction of over 90 per cent. in the numbers of larvæ in about three weeks after the practical elimination of soil pollution. After six weeks only a very few larvæ were left. In a large series of laboratory experiments carried out with different soils and under different conditions, there was a great reduction in numbers of larvæ after from two to three weeks and an almost complete dying out in six weeks. These findings which are contrary to the present conception of the length of life of infective hookworm larvæ indicate that under tropical conditions, the larvæ will die out quickly in the soil after the elimination of soil pollution by infested individuals.

WILLIAM W. CORT

JOHNS HOPKINS UNIVERSITY,
BALTIMORE, MD.

THE AMERICAN ASSOCIATION FOR
THE ADVANCEMENT OF SCIENCE:
THE TORONTO MEETING

THE second Toronto meeting of the American Association and associated societies will be very conveniently arranged in all its details and promises to be one of the most satisfactory meetings in the history of the Association. The preliminary announcement of the meeting has recently been sent from the Washington office to all members, and the permanent secretary will send copies to all who request them.

The announcement, a 47-page booklet, gives the personnel of the local committee for the meeting (Dr. J. C. Fields, chairman; 198 College St., Toronto) and the list of the chairmen of the twelve subcommittees that have charge of local details, also the list of the Toronto representatives of the various sections. Many features of the meeting are mentioned or described. The usual lists of

officers and committees are included, together with a complete list of the associated societies.

Its international character will be an important feature of this meeting; it is not often that the association meets outside of the United States.

As has been announced in *SCIENCE*, railway rates of a fare and a half for the round trip (on the certificate plan) will be available to those attending. The announcement gives detailed instructions for securing these reduced rates. Every one going to the meeting should secure a certificate when he purchases his going ticket, even though he does not wish to take advantage of the special fares, and all holders of certificates (or round-trip tickets from the far west, outside of the region of reduced rates) should record them at the registration room immediately upon arrival. To secure the privilege of lower fares there must be at least 350 certificates and round-trip tickets (counted together).

The Toronto meeting will be especially convenient and otherwise enjoyable by reason of the special lodging and dining arrangements that have been made by the local committee and its subcommittees. Those in attendance are to be housed in the dormitories of the University of Toronto, and meals will be served in the university dining halls. The meeting places of the sections and societies will be in the university buildings, and only a short walk will be necessary to reach them from the dormitories and dining halls. A uniform rate of \$3 a day will be charged, including meals. The announcement contains the usual table showing hotel rates, but those attending the meeting are urged to take advantage of the rooms and meals provided at the university. To engage rooms, address Professor J. M. D. Olmstead, chairman of the subcommittee on dormitories, 198 College St., Toronto.

There will be an exhibition of scientific apparatus and products. Those wishing to exhibit should address Professor E. F. Bur-

ton, chairman of the Subcommittee of Exhibits, 198 College St., Toronto.

The publicity arrangements for the Toronto meeting promise to be exceptionally good. This work is in charge of the Subcommittee on Publicity, with the cooperation of Science Service, of Washington, D. C. Material for newspaper publication, or abstracts, etc., that may be used as a basis for newspaper notes, should be sent until December 24, to Dr. E. E. Slosson, editor of Science Service, 1701 Massachusetts Avenue, Washington, D. C. After the date just mentioned they should be sent to Professor A. G. Huntsman, chairman of the subcommittee on publicity, 198 College St., Toronto,—or handed in at the publicity office near the registration room. Those planning to give papers or addresses at the meeting are urged to send accounts to Dr. Slosson in advance.

An exhibit of educational motion pictures on scientific subjects is arranged for Tuesday afternoon, December 27, the pictures being furnished by the Visual Education Association.

The meeting will open on Tuesday evening, under the presidency of Professor E. H. Moore, of the University of Chicago. At this time the retiring president, Dr. L. O. Howard, of the U. S. Department of Agriculture, will give his presidential address. A reception will follow the opening session.

On Wednesday afternoon, December 28, there will be a reception in the Royal Ontario Museum.

The Wednesday evening session will be occupied by a lecture given by Professor William Bateson, director of the John Innes Horticultural Institution, Merton Park, Surrey, England. This eminent British scientist is to attend the Toronto meeting under the joint auspices of the American Association and the American Society of Zoologists.

On Thursday afternoon, December 29, Sir Adam Beck, chairman of the hydro-electric commission of Ontario, will deliver a lecture, with motion pictures, on hydro-electric developments in Ontario.

Thursday evening will be devoted to a

general conversazione in Hart House, to which all members of the association and associated societies are invited. Many of the athletic activities of Hart House may be seen, such as boxing, diving, water polo and indoor base-ball. There will be band music and bag-pipe music, and a concert in the music room. A program will be staged in the Hart House theater. Refreshments will be served in the Great Dining Hall of Hart House. Hart House will be open to visitors also on the evenings of Tuesday, Wednesday and Friday.

An exhibit of artistic skating by the Toronto Skating Club, followed by an ice-hockey match, will be given, under cover, on Friday afternoon. All in attendance at the meeting are invited.

The general program of the Toronto meeting, including programs for the sections and for the twenty-one associated societies meeting with the association at Toronto, will be ready for distribution on Tuesday, December 27, at the registration room.

BURTON E. LIVINGSTON,
Permanent Secretary

SCIENTIFIC EVENTS

FOREST EXPERIMENT STATIONS

A RECENT circular by the Forest Service of the Department of Agriculture, entitled "Forest Experiment Stations," outlines what forest experiment stations have done, what they need to do, why they are needed, where they are needed, and what they would cost.

Six stations were established in the West between 1908 and 1913, with a small technical staff at each. In spite of limitations in funds and personnel valuable results have been secured in showing how to plant the Nebraska sand hills, in planting on the western National Forests, in the development of methods of cutting Douglas fir forests, in a study of the relation between forests and streamflow, and many other questions.

The field of forest experiment stations includes forest botany; forest distribution; forestation, from the production, collection, extraction, cleaning, testing and storage of

seed, to nursery practise, direct seeding and field planting; silviculture; forest protection; utilization of products, such as naval stores and forage; forest management, or the regulation of the cut with its basis of data on volume, growth, and yield; the effect of forests on streamflow, erosion, and climate; and, underlying these, studies of the fundamental natural laws governing tree growth and the life histories of the individual species and types.

To meet present forestry needs, a program is outlined which includes ten forest experiment stations, each with a technical staff of from 6 to 12 men, and distributed, 5 in the East, 3 in the Rocky Mountains, and 2 on the Pacific Coast. Specifically, they would cover the Southern Pine belt in the Atlantic and Gulf States, the Lake States, the Northeast, including New England and New York, the Allegheny region, the Southern Appalachian Mountain region, the northern, central, and southern parts of the Rocky Mountain system, and the northern and southern parts of the Pacific Coast region.

THE U. S. PATENT OFFICE

WHEN Commissioner Newton was in charge of the Patent Office in July, 1919, he testified before a committee of Congress to the effect that the situation in his bureau was deplorable and that it was in a worse condition at that time than at any other time since he had been in service. His service began in 1891. The present commissioner of patents in his report to the Congress points out that the degeneration has continued steadily since the testimony of Commissioner Newton was given. Between July, 1919, and June 30, 1921, the Patent Office lost 163 of its examiners. The report states that

These men were scientifically trained and also members of the bar. They have been replaced by inexperienced men, fresh from college, without any knowledge of patent law and without legal training.

During the time the Patent Office has been losing the 163 men aforesaid, the number of applica-