Canadian Work on Dermatophyte Fungi

A NUMBER of papers by members of the University of Manitoba form an admirable review of modern knowledge of the dermatophytes, or fungi which produce ringworm and favus diseases of human skin. The general mycologist will find many features of interest in this field of specialist endeavour, and Dr. P. H. Gregory has provided adequate summaries[1].

The outstanding characteristic of a dermatophyte is that it can utilize the highly insoluble scleroprotein *keratin* as a source of energy. This is apparently accomplished by means of a keratolytic enzyme secreted by the organism. Such fungi may be introduced to unkeratinized parts of the body; several have, indeed, been re-isolated from the blood-stream; but they do not seem to be able to parasitize any organ but the skin.

A very high degree of specificity is found. Some species of the genus *Microsporon* produce ringworm of the scalp in children, but not in adults; the lesions disappear naturally at puberty. Certain species parasitize the hands and feet, whilst others attack only the hairy parts of the body. *M. audouini* infects man, but not other animals. This limited pathogenicity cannot be due to chemical differences between the various sources of keratin, for a number of species will attack that substance from all sources—scalp hair from children and adults, pubic hair, human nails, porcupine quills and snake scales—when it is dissociated from living tissues.

The localized fungal infection, known as a 'mycosis', may not be the sole effect of the organism upon the host. 'Mycids' may occur. These are secondary lesions of a non-parasitic nature, but definitely associated with the presence of the fungus in another part of the body. The very great emphasis on the need for keratin as food for the parasitic dermatophytes is rather striking, as they are also saprophytes of a taste sufficiently catholic to include such diverse food substances as tinned oysters, straw, cereal grains and a wide variety of synthetic media. Their characters are also changed in the saprophytic phase, and very numerous forms of organs appear in artificial culture which are unknown in the state of natural parasitism. The spontaneous degeneration known as pleomorphism often occurs in the saprophytic phase; but infection of animals has been accomplished from fungi which have been grown saprophytically upon keratinized tissues *in vitro* for some time. The need for investigation of natural sources of infection raises some very interesting problems for the field mycologist. From what saprophytic substrata can a dermatophyte proceed to attack a human subject? How is the transference to the host accomplished, and by what kind of spore?

Classification of the 880 species of dermatophytes at present described is very difficult. Four different systems of grouping have been suggested, but the general mycologist would only be at home with that of Langeron and Milochevitch, which includes all the ringworm and favus fungi in the Gymnoascaceæ, though perhaps, as yet, with insufficient justification. The system originally proposed by Sabouraud, and revised in 1929, is still the most useful to medical men. It also possesses sufficient parallels with the classification of the Fungi Imperfecti to enable it to be adapted mycologically as future researches should dictate. The local dermatophyte floras of various parts of the world are being studied, and Drs. A. M. Davidson and P. H. Gregory have published their quota[2]. The same two authors have also helped to simplify the problem of classification by their proof[3] that the so-called 'mosaic fungus', often associated with ringworm attacks, is in reality an intercellular deposit of cholesterol crystals. Dr. Gregory discusses reports of the discovery of asci in dermatophytes, and considers their possible relationships with other fungi.

Certain species of dermatophytes cause a green fluorescence to appear on infected hairs when viewed in ultra-violet light. This is due to the presence of a water-soluble substance, and the fact is used to facilitate the diagnosis of ringworm. Dr. A. M. Davidson, S. A. Boyd and C. P. Haltalin have described a very simple and convenient apparatus for this purpose[4]. The work, which is the result of co-operation between a research worker, a physician and an electrical engineer, is typical of the determined team spirit which is very obvious in the publications of the Manitoba workers on dermatophytes, and should not fail to yield results of practical value to humanity.

[1] "The Dermatophytes", *Biol. Rev.*, **10**, 208 (1935); and "The Parasitic Activity of the Ringworm Fungi", *Trans. St. John's Hospital Dermatological Society*, 56–65 (1935).
[2] "The Dermatophytes of Manitoba, Canada", communicated to the Ninth International Congress of Dermatology, and appearing in the first volume of deliberations of the Congress. (Budapest: "Pátria"-nyomda. R.-T.".)
[3] *J. Amer. Med. Assoc.*, **105**, 1262–1264 (October 19, 1935).
[4] *Canad. Med. Assoc. J.*, **33**, 534–536 (1935).

Educational Topics and Events

EDINBURGH.—Prof. James Ritchie, regius professor of natural history in the University of Aberdeen, has been appointed to the chair of natural history, in succession to the late Prof. J. H. Ashworth.

The degree of Doctor of Science has been conferred upon the following: A. B. Brown, for a thesis entitled: "Studies in Cambial Activity"; Sasindra Chandra Dhar, for a thesis entitled: "On certain Investigations of the Properties of the Functions of Mathieu, Whittaker, Weber and other Confluent Hypergeometric Functions: On the Uniformization of Algebraic Curves, and on certain Electromagnetic Waves in Gravitational Fields in Relativity"; Nancy M. Galpin, for a thesis entitled: "Biological and Statistical Studies on the New Zealand Romney Lamb, with reference to Relative Growth Gradients"; J. M. Stagg, for papers on "Terrestrial Magnetism, with special reference to the Magnetic and Non-photographic Auroral Data brought back from Fort Rae, North-West Canada"; J. Carmichael, for a thesis entitled: "Investigations into Tuberculosis in Uganda"; Philippus L. le Roux, for a thesis entitled: "Observations on Schistosomiasis and Paramphistomiasis in Sheep, and Notes on the Morphology of Helminths from Mammals and Birds in South Africa".

LONDON.—Dr. W. J. Hamilton, since 1935 lecturer and deputy director of anatomy at St. Thomas's Hospital Medical School, has been appointed University professor of anatomy (St. Bartholomew's Hospital Medical College).

It has been resolved to institute a B.Sc. degree in chemical engineering for internal students in the Faculty of Engineering.

The following D.Sc. degrees have been conferred: In agriculture, on P. H. H. Gray, of the Rothamsted Experimental Station; in botany, on W. A. Roach,

a recognized teacher at the East Malling Research Station; in botany, on F. C. Steward, of Birkbeck College; in fuel technology, on R. J. Sarjant, of the Imperial College (Royal College of Science); in history, methods and principles of science, on Dr. Douglas McKie, a recognized teacher at University College; in physical chemistry, on C. F. Goodeve, a recognized teacher at University College; in zoology, on R. J. Ortlepp, of the London School of Hygiene and Tropical Medicine.

Alexander Haddow has been re-appointed to the Laura de Saliceto studentship for the year 1936–37. The Sir George Jessel studentship in mathematics for 1936 has been awarded to W. J. E. Butler, of University College.

BEIT fellowships for scientific research, tenable at the Imperial College of Science and Technology during the academic year 1936–37 have been awarded as follows: extensions of fellowships to R. Walls, for the continuation of his research on the metamorphic rocks of north-east Scotland, under the direction of Prof. P. G. H. Boswell; E. W. Hewson, for the continuation of his research in meteorology, more especially the detailed structure of discontinuities between air masses as occurring in England and Canada, under the direction of Prof. D. Brunt. New fellowships have been awarded to: E. K. Woodford, of Olds School of Agriculture, Alberta, 1929–30, and the University of Alberta, 1930–36, for research in the physiology of plants, with special reference to problems of plant growth and metabolism, under Prof. V. H. Blackman; Dr. N. Kemmer, of the Universities of Göttingen and Zurich, for mathematics research, using the ideas and formalisms of quantum theory (especially quantum electrodynamics), under Prof. S. Chapman.

A NEW handbook of information about facilities available for students from other countries at university institutions in Great Britain and Ireland has been published by the Universities Bureau of the British Empire (88a, Gower Street, London, W.C.1). In the sixty-four pages of this pamphlet are set out, succinctly but lucidly, indications of conditions of admission, costs of living, fees and other charges, courses and subjects of study, special courses for overseas students, vacation courses, social amenities, some features of university administration and notes on research facilities and open scholarships. Under the heading "Cost of Living", overseas students are strongly recommended to obtain entrance to hostels, as they provide contacts which are not readily obtainable in the seclusion of lodgings and boarding-houses or even in families where students are received as paying guests. The list of courses of study comprises those which experience has shown may be of special interest to overseas students and research workers. Among special courses for overseas students mention is made of an offer by Ashburne Hall of Residence for university women, Manchester, of places at reduced fees (£13 for the term or £1 5*s*. per week) to foreign women students prepared to give some conversational French, German, Italian or Spanish to students resident in the Hall. Other institutions which offer special courses for overseas students are: University College, London; London School of Economics and Political Science; University College, Exeter; University College, Nottingham; and University College, Southampton.

Science News a Century Ago

Progress on the Liverpool and Manchester Railway

AT a meeting of the proprietors of the Liverpool and Manchester Railway held in Liverpool on July 27, 1836, it was reported that the receipts for the half-year ending June 30, 1836, had been £109,355, and the expenses £69,953. It was also reported that the tunnel at the new station, in Lime Street, Liverpool, would be opened for public business on August 15, and that this new means of approach to the railway would prove of great public accommodation. The expense of erecting this station and the one at Edgehill, which was constructed on a most magnificent scale, amounted to about £150,000. The directors also intended, it was said, to erect a commodious station in Manchester similar to the one at Liverpool, and with that view extensive premises had been purchased in the neighbourhood of Water Street, near the River Irwell.

The Euphrates Expedition

IN a supplement to the *London Gazette* of July 29, 1836, a dispatch from Colonel Chesney to the India Office was published describing the loss of the steamer *Tigris*, the smaller of the two steam-vessels with which he was descending the Euphrates to the Persian Gulf. His dispatch was dated May 28, 1836, from the steamer *Euphrates* at Anna. All had been going well, he said, up to May 17, the survey having been carried 509 miles down the great river and "all was continued prosperity up to the afternoon of the 21st inst when it pleased God to send the calamitous event of which it is now my duty to give a feeble sketch. A little after 1 p.m. the flat boats being a little ahead, and the *Tigris* leading the *Euphrates*, a storm appeared bringing with it, high in the air, clouds of sand from the west-north-west quarter. At the moment we were passing over the rocks of Is Geria (deeply covered) and immediately after made a signal for the *Euphrates* to choose a berth and make fast. . . . The *Tigris* was immediately directed towards the bank against which she struck without injury but with so much violence as to recoil a distance of about eight yards." The wind then veered, said Col. Chesney, the water came aboard and the vessel soon sank. Col. Chesney escaped, but no fewer than twenty officers and men were drowned. The storm only lasted about 12 minutes. In spite of the disaster, which included the loss of instruments, journals and surveys, the work of the expedition was carried on by the *Euphrates* alone, "the party continuing their survey to Bussora hoping to demonstrate the speed, economy and commercial advantages of the river Euphrates".

Medicine in Denmark

ON July 30, 1836, the *London Medical Gazette* published the following note: "Every physician and surgeon in Denmark gets an education which qualifies him to maintain the dignity of his profession, as a worthy member of a class that is generally considered to be one of the most respectable and most liberal. The Danish medical men are usually held in high esteem. . . . Danish physicians and surgeons are so honoured abroad that very often Swedes come to Copenhagen in order to be treated by them. Mountebanks and quacks among the Danish medical men