as an indication of degeneration, was recognized as part of the sexual cycle of the parasite, in which the flagella function as the male element in the manner of the spermatozoon. Convinced of the significance of the fertilizing process, MacCallum predicted its occurrence in human malaria and actually observed it there a few months later on his return to Baltimore.

At the end of the nineteenth century, the thyroid and parathyroid glands were under study, both surgically and experimentally. The fact had been observed that the condition called tetany—twitchings, quiverings and vibrations of the muscles—followed sometimes on the extirpation of these glands. It could be shown that the symptoms arose from the loss of the parathyroids, and it was thought that they arose from a poison-toxin generated in the body, the neutralization of which was a function of these glands. MacCallum and his associates devoted themselves to an investigation of the problem and, in a research extending over several years and through a series of ingenious and convincing experiments, determined that the hyperexcitability of the nervous system, the immediate cause of the symptoms, arose from a deficiency of calcium and could be abolished by injections of that substance. The parathyroids, therefore, were shown to exercise a special influence over the calcium metabolism of the body.

MacCallum was a teacher who attracted many advanced pupils to his laboratory, students looking forward often to academic careers in pathology and in clinical medicine. His attitude toward pathology was a broad one. As early as 1905, he developed at the medical school practical courses in pathological physiology, an innovation the purpose of which was to bridge a gap between pathological anatomy and the clinical subjects. As pathological anatomy deals chiefly with the end results of disease, he aimed by experimental means to reproduce in animals pathological conditions which could be observed directly by the senses and studied through the use of every possible instrument of precision, in the same way as the physiologist investigates the normal functions of the tissues and organs.

MacCallum was the author of an original and admirable text-book of pathology, which reflects his point of view and sets forth his methods of teaching. Published first in 1916, it has gone through seven editions. The plan he adopted was that of following the effects of the various causes that disturb the natural functions and produce the gross and microscopical changes in the tissues and organs, the basis of disease and the resulting physical and chemical changes which interrupt life. Since, therefore, pathology accompanies and even is the foundation of all clinical phenomena, he sought to consider the two sets of occurrences together.

The diseases of other countries and other climes than Europe and America had a fascination for MacCallum. He made three journeys to the South Seas and the Far East, visiting Australasia, the Dutch Indies, including Bali, Borneo, Singapore, Siam, Manila, China, Japan, the Celebes, Saigon and Ankor, Rangoon, Calcutta and Bombay. While he observed these distant countries with the eager eye of the tourist, he was attracted to the hospitals, where he was warmly received and where the facilities of the pathological laboratories were placed at his disposal. He performed many autopsies, collected many pathological specimens, which rich booty he brought back with him to Baltimore, where it served for study and for instruction. In Jamaica, he investigated an epidemic of alastrim—a mild form of smallpox—which provided material for a monograph on that interesting disease. During World War I, he investigated the pneumonia which prevailed in the Army camps in the winter of 1917–1918, the results of which were also brought together in a monograph.

Those who knew MacCallum well were impressed with his strong individuality and his delightful personality, and came to know something of the philosophy of his professional life. In the seventh edition of his pathology, published not long before his last illness, he expressed the latter in a characteristic way: "The advances in medicine and related sciences have again been very great since the last revision of this book four years ago, but it still reminds us of Goethe's statement that 'it is only when we know very little about a subject that we are quite sure; and with knowledge doubt grows.' We must not be dogmatic, for it seems that before us paths lead into a dark forest of mystery, and it is only when we shall have followed them into outer light that we can feel that we have cleared away our doubts."

SIMON FLEXNER

RECENT DEATHS

DR. ROBERT ANTHONY HATCHER, until his retirement with the title emeritus in 1935 professor of pharmacology at the Cornell University Medical College, has died at the age of seventy-six years. He had been connected with the college since 1904, when he was appointed instructor of pharmacology.

HENRY LLOYD SMYTH, professor of mining and metallurgy emeritus of Harvard University, died on April 1 at the age of eighty-two years.

LEWIS W. WATERS, vice-president in charge of research and development and of scientific relations for the General Foods Corporation, died on March 31 at the age of fifty-five years.

HENRY C. RAVEN, curator of comparative anatomy at the American Museum of Natural History, associate

in zoology at Columbia University, died on April 6 in his fifty-fifth year.

DR. WARREN TAYLOR VAUGHAN, of Richmond, Va., specialist in the treatment of allergic diseases, died on April 2. He was fifty-one years old.

GEORGE ALEXANDER ORROK, consulting engineer, from 1898 to 1916 mechanical engineer of the New York Edison Company, known for his work on power plant engineering, died on April 7 at the age of seventy-seven years.

ARNE FISHER, for twenty-four years mathematician of the Western Union Telegraph Company in New York, died on April 8. He was fifty-seven years old.

SIR CHARLES VERNON BOYS, physicist of Andover, England, died on March 31. He was eighty-nine years old.

SCIENTIFIC EVENTS

THE LENINGRAD CENTER FOR SCIENTIFIC WORKERS

THE blockade of Leningrad temporarily interrupted the work of the Leningrad Center for Scientific Workers, of which Professor L. Veriga, doctor of physics and mathematics, is chairman. Its work is described in the *Information Bulletin* of the Embassy of the USSR as follows:

Only in the spring of 1942 were the 367 scientific workers who remained in the city able to renew the activities of the center, which naturally adapted its efforts to the requirements of the front and of the beleaguered city.

Six sections began work immediately, and 17 sections were functioning by the summer of 1943. Those working in the realm of agriculture took up the problem of rationalizing vegetable gardening. Their conclusions led to two important decisions by the Leningrad Municipal Soviet—on the application of quick crop methods in potato growing and the adaptation of a new bacteriological and nitrogenous fertilizer.

A number of popular booklets on these subjects were published, and several consultation stations for aid to gardeners organized. Lectures advocating the adaptation of new agro-technical methods were held at all state farms in the Leningrad zone, and 600 talks were made to agricultural workers. Winter gardens and experimental hothouses were a part of the program.

The section on mechanical engineering devoted itself to the problem of utilizing damaged and worn machines and equipment. Its members came to the aid of the Leningrad power stations and assisted in their reconstruction. Much work was done on new and vital problems in the field of industrial chemistry. The entire body of scientific workers discussed an important paper on "Ways and Means of Keeping the City Clean in the Winter of 1942–43." Many suggestions were made which greatly facilitated this task.

A section on inventions examined all proposals for strengthening the city's defense and improving the municipal economy. The food section concentrated on the problem of extending and utilizing fully the food resources of Leningrad and of vitaminizing the rations.

During the first half of 1943, workers in the literary and historical sections held six sessions devoted to the great masters of Russian literature—Lomonosov, Pushkin, Belinsky, Gorky, Derzhavin, Chernishevsky and Lermontov. A voluminous collection of themes relating to the present war was published.

The scientific workers of Leningrad have renewed their traditional work with the Baltic Fleet, delivering lectures on the most varied topics to the different naval units. During the past six months over a thousand such lectures have been given on board ships and at naval hospitals.

Many who had prepared themes were unable to receive their degrees because of the evacuation of universities and scientific institutes; nevertheless, work on themes continued and numerous papers have been completed during the war. A year ago a rest home was opened for scientific workers.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

THE fifth annual report of the National Foundation for Infantile Paralysis has been made public. It shows that during the fiscal year ended September 30, 1943, grants and appropriations were made amounting to $1,278,836 in five main categories—virus research, research on after-effects, education, medical publications, and epidemics and public health. The local chapters which provide care for poliomyelitis patients in their areas receive half the funds raised each January from the celebrations of President Roosevelt's birthday. General administrative expenses for the year amounted to $84,970.

The sum of $107,000 has been spent for the training of Kenny technicians at the University of Minnesota alone, where the evaluation of the method was first undertaken under the auspices of the foundation. Since the first course in the method was given there in March, 1942, more than nine hundred physicians, nurses and technicians have been trained. Other centers have been opened at institutions in California, Illinois, Indiana, Georgia, Pennsylvania and New York. Grants to these institutions amount to $140,000 to date.

In all more than $500,000 has been spent in testing and evaluating the Kenny method and in training. Recently a five-year grant of $175,000 was made to the University of Minnesota for the purpose of studying the physiological problems concerned with the