have to be taken to reestablish the fellowship of men of science throughout the world—a fellowship in which the nationalistic impulses of aggression, fear and suspicion can be made partly if not wholly subordinate to the disinterested service of science. Within each nation anti-scientific restraints—censorship and censoriousness, in particular—must be abolished with the utmost possible dispatch. In this reconditioning of scientific endeavor, the benefits of its wartime operation must be preserved in so far as possible, especially the spirit and means of collaboration that the war has developed. The artificial academic barriers that this collaboration has done so much to break down must not be permitted to arise again. Men of science must make concerted efforts to forestall the loss or destruction of the masses of information that have been accumulated in government offices and elsewhere for wartime purposes. Peace will bring a widespread let-down, an inertia that will have to be overcome if this latent science—as it might be called—is to be saved and released promptly for use.

Imperative as will be this reconditioning, it is merely a means to an end. Just as the end in the case of the automobile is to drive it somewhere, so in the case of scientific research it is the production of needed types of science, and the larger problem is what the mechansims of scientific research shall be made to produce when peace returns.

Some might say that it should not be *made* to produce anything in particular—that compulsion stifles originality and initiative, and that scientists should be free to study whatever they please in whatsoever manner they wish. Dr. Smith thinks there is wisdom in this view, provided one important qualification is made. While freedom of science is fundamental, like freedom of speech it is a freedom that imposes responsibilities. It is freedom to investigate whatever one wishes, subject to the dictates of scientific conscience. A developed and enlightened scientific conscience will always incite its possessor to select from among the innumerable subjects by which he is attracted in his chosen field, those in which his abilities can best be employed toward meeting the greatest human needs.

Along with many other contemporary observers, Smith maintains that science has given men a mastery over nature so extensive and so skilful that, if uncontrolled, it may lead, not to making the world more civilized, but to the destruction of civilization itself. This will happen unless an equal degree of mastery can be achieved over the forces, both good and evil, in human nature. Hence Dr. Smith believes that the most urgently needed of all forms of science is that which will contribute to increasing the will and the power of human groups to collaborate with one another instead of cutting each other's throats. The development of this will and this power has traditionally been considered a task for experts in morals rather than for men of science. Good motives, however, whether on the part of an individual or a group, can not be inculcated by moral precepts alone. A child is more likely to behave if given a rational—a scientific, in other words—explanation of the undesirability of ill behavior, than if merely told that such and such conduct is bad. The child ordinarily misbehaves because he feels injured or thwarted, not because of the machinations of Satan or the promptings of original sin. Similarly groups cut each other's throats because they feel, rightly or wrongly, that they are thwarted or imposed upon by other groups possessing greater advantages. Science can often disclose whether such sentiments are founded on fact or fancy, and if they are founded on fact, science can seek for and test out measures of amelioration.

Many of the largest and toughest roots of man's inhumanity to man are embedded in the circumstance that certain groups enjoy advantages over others because they occupy or control particular areas of the earth's surface. There are inter-areal conflicts within every village, every state and every nation, and, worst of all, between nations. Neighbors quarrel over fence lines and wandering cattle; nations fight over boundaries and the control of vast territories. Hence, those branches of science which deal with areas, their occupants and those who control them in terms of their relative advantages and disadvantages can do much to lay bare the roots of human conflict—and the laying bare of roots is a necessary preliminary to their removal. Areal, or regional, research lies partly within the provinces of geology and geography. Hence Dr. Smith believes that our two sciences afford immense potentialities of service to perplexed humanity and that geologists and geographers are in a peculiarly favorable position to produce scientific fruit indispensable for the future of civilization.

OBITUARY

A. H. REGINALD BULLER

A. H. REGINALD BULLER, emeritus professor of botany at the University of Manitoba, Canada, died in Winnipeg on July 3, 1944, after an illness lasting five months. He was nearing the end of his seventieth year.

Long familiar as an enthusiastic and energetic participant in meetings of scientific societies on both sides of the Atlantic, his passing robs the science of botany of one of its most illustrious and colorful figures. In the multiple role of research worker, teacher and public speaker, he possessed a breadth of vision all too rare in our time and an infectious enthusiasm that pervaded his whole life work.

Born in Birmingham, England, in 1874, Dr. Buller received his early education at Queen's College, Taunton. From Taunton he went to Mason College, Birmingham—now the University of Birmingham—and studied for the University of London examinations. When he received the B.Sc. degree from the University of London, he was awarded the Heslop Gold Medal from Mason College.

In 1898, the young student won the "1851 Exhibition Scholarship" which enabled him to proceed to the universities at Leipzig and Munich; from the former university he obtained the doctorate of philosophy. In Germany he came under the influence of such stalwarts of botany as Pfeffer, Strasburger and Hartig. From these great minds he learned the meticulous devotion to detail and the principle of studying the living organism as far as possible under natural conditions, which were later to be among the most valuable characteristics of his own researches and his teaching. His studies of forest pathology published during this period marked clearly the course of a lifetime devoted to the study of fungi in which physiology, natural function and relation to other living organisms were the problems uppermost in his mind.

After leaving Germany, he spent one year at the International Marine Biological Station at Naples, where he studied the fertilization of the eggs of sea urchins. This interest in the sister science of zoology was never lost, and he frequently astonished his students by a lucid explanation of some subject in zoology with which they hardly expected him to be familiar.

In 1901, he was appointed lecturer in botany at the University of Birmingham, and there he began in earnest the mycological research which resulted in the publication of his "Researches on Fungi," of which six volumes are as well known to students of mycology as Brefeld's "Untersuchungen." Until a short time before the onset of his fatal illness, he was still pouring out the results of his studies on the Rust Fungi in manuscript and drawings intended for additional volumes.

Dr. Buller was called in 1904 to the University of Manitoba, where he founded the department of botany and remained its head until his retirement in 1936.

Others will no doubt review in detail and appraise the great volume of publication which early won him recognition. In addition to the "Researches on Fungi," his publications included "Essays on Wheat" (1919) and "Practical Botany" (1929).

He collaborated with Drs. G. R. Bisby and John Dearness in the preparation of "The Fungi of Manitoba" (1929), and later with those authors, and with the late Dr. W. P. Fraser and Dr. R. C. Russell in the expanded book, "The Fungi of Manitoba and Saskatchewan" (1938). He acted as co-editor with Dr. C. L. Shear of W. B. Grove's translation of the "Selecta Fungorum Carpologia" of the brothers Tulasne (1931) and was largely responsible for the publication of this great work. This undertaking was very important to him. He constantly emphasized to his students the necessity of knowing thoroughly the classic literature of their science and realized the value of making available in inexpensive form a classic which was formerly to be found in but a few large mycological libraries.

In the form of a very large number of separate articles, Dr. Buller's mycological writings appeared in almost all the well-known botanical journals. At first concerned chiefly with spore discharge and sexual phenomena in the higher Basidiomycetes, they eventually contributed to a wide range of mycological topics.

Buller's vigorous action regarding the epidemics of stem rust of wheat in Western Canada during the first World War was in no small part responsible for the establishment of the Dominion Rust Research Laboratory in Winnipeg. The men of vision, like Buller, who urged the necessity of fundamental research into the problems of the great rust epidemics of those years must be remembered with gratitude when the successful outcome of these studies is contemplated.

Part of the genius of this man was his diversity of interests. His first love was mycology, but he was at all times a most able botanist in a general sense, as was shown by his first-class knowledge of and interest in both European and Canadian plants. His interest in ornithology and geology was not perfunctory. In fact, there was scarcely a field of science in which he did not interest himself. Shortly after his retirement, he set himself a serious course of study of the newest ideas in physics and chemistry. He tried to understand and was prepared to accept the newer ideas so radical when compared with what was taught in his own student days.

A strongly developed artistic sense manifested itself in his love of nature, of sculpture, of poetry and of music. His library contained many volumes of the best poetry and prose, and one of the last entries in his diary records his pleasure in reading

Milton. His own efforts at versification were the delight of his friends whom he regaled with whimsical poems on scientific subjects and with his beloved limericks of which he had a unique collection.

He found time to enjoy social contacts and retained a picturesque Victorian manner in conversation. Children delighted him and he would often entertain the young folk at the homes of his friends with sleight-of-hand and puzzles.

Dr. Buller's lectures to the public as well as to his own students will long be remembered for the high degree of interest aroused through his almost amusing enthusiasm, and for the rare lucidity of presentation. Those who worked with him learned at least part of the secret of his success in this regard: nothing was too much trouble to him that could possibly serve to illustrate his points. He spent countless hours in the preparation of lectures and threw himself into the task of delivering them with all the energy and resource at his command.

A list of the honors conferred upon him is a significant, even if prosaic, testimony of his recognition. In 1927 he was elected to the fellowship of the Royal Society (London), the first resident of Western Canada to be so honored. The following list includes other honors which came his way:

President of the British Mycological Society, 1913; president of Section IV, Royal Society of Canada, 1914–15; president of the Canadian Phytopathological Society, 1920; president of the Mycological Section of the American Botanical Society, 1921; associate member of the Société Royale de Botanique de Belgique, 1921; Hon. LL.D., University of Manitoba, 1924; Norman Wait Harris Foundation lecturer at Northwestern University, 1927; president of the Botanical Society of America, 1928; president of the Royal Society of Canada, 1927–28; Hon. LL.D., University of Saskatchewan, 1928; Flavelle Medal of the Royal Society of Canada, 1929; Hon. D.Sc., University of Pennsylvania, 1933; corresponding member of the Netherlands Botanical Society, 1935; president of the Section for Mycology and Bacteriology, Sixth International Botanical Congress (Amsterdam), 1935; vice-president of the Mycological Society of America, 1936; Medal of the Manitoba Natural History Society, 1936; Royal Medal of the Royal Society, 1937; delegate of the British Association, Calcutta, 1937; Hon. D.L., University of Calcutta, 1937; visiting professor of botany at the Louisiana State University, 1941; Hitchcock visiting professor of botany of the University of California, 1942; Schiff Foundation lecturer at Cornell University, 1942.

Among his colleagues everywhere Dr. Buller will be remembered as a scientist of extraordinary scientific acumen and integrity. Principal R. C. Wallace, of Queen's University, said of him, "He was the most intellectually and scientifically honest man I ever knew."

Dr. Buller is survived by one sister, Mrs. H. B. Workman, Wimbledon Park, London, and a cousin, Miss Ella Buller, Banbury, England.

HAROLD J. BRODIE
C. W. LOWE

DEPARTMENT OF BOTANY,
UNIVERSITY OF MANITOBA

RECENT DEATHS

DR. JOSEPH MARSHALL FLINT, from 1907 to 1919 professor of surgery at the School of Medicine of Yale University, previously for six years professor of anatomy at the University of California, died on September 16 at the age of seventy-two years.

CHARLES FRANCIS PARK, emeritus professor of mechanical engineering at the Massachusetts Institute of Technology, director of the Lowell Institute School, died on September 25 at the age of seventy-five years.

DR. EUGENE LERNER, professor of psychology at Sarah Lawrence College in Bronxville, N. Y., died on September 1 at the age of forty-three years.

DR. ISRAEL J. KLIGLER, who held the Jacob Epstein chair of bacteriology and hygiene at the Hebrew University at Jerusalem, died on September 23 at the age of fifty-five years.

SIR HUMPHRY DAVY ROLLESTON, who was Regius professor of physic at the University of Cambridge from 1925 to 1932, past president of the Royal College of Physicians, London, died on September 25 at the age of eighty-two years.

SCIENTIFIC EVENTS

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

IN the last eleven years the American people have contributed $29,562,742 to conquer infantile paralysis, according to the report of Dr. Basil O'Connor, president of the National Foundation for Infantile Paralysis, presented at the annual meeting on September 11 of the medical advisory committees of the foundation. At that meeting applications for grants to carry on medical research were considered and further plans were made.

This money was raised through the celebration of President Roosevelt's Birthday and the March of Dimes, held in January of each year, beginning with