forward. Most medical schools as well as most departments of biology deplore this tendency and would be glad to compel premedical students to broaden the biological base on which to build their medical work. But they have not been strong enough to force the students into the preparation which would be best for them, and in this situation general physiology has languished.

Biochemistry, perhaps even more than physiology, is properly a field of general biology. But many departments of biochemistry instead of representing the fundamental science are mere adjuncts of medical schools. At the other extreme "Agricultural Chemistry" developed independently, starting from very narrow applications of chemistry to fertilizer analysis and such practical matters. Happily the progress of the science has brought about considerable rapprochement between the agricultural and the medical biochemists, but there is still far too wide a gap between them. Like physiology, biochemistry is in its nature more properly a pure science which (like physics) should be strongest in universities, rather than an applied science (like engineering) strongest in technical schools. In suggesting this I am not pleading especially for the pure sciences, for I believe it can not be gainsaid that strong departments concerned with these sciences for their own sake would extend and increase the usefulness of their applications.

The scarcity of departments of pure physiology and of pure biochemistry is sufficient evidence that the biological sciences in the universities are not strong enough to stretch out and occupy all of the fields of biology which should be cultivated. They need help here from the applied branches. Agriculture and medicine should unite in demanding that the universities establish departments of physiology, of biochemistry, and of bacteriology to prepare students for the technical schools with no more emphasis on applications than is given by university departments of physics preparing students for the engineering schools. If this were done, all biology would be greatly strengthened. The corresponding departments in the technical schools would find their own hands strengthened and would grow into an increased usefulness which would be hard to envisage at the present time.

All biological sciences spring from the same root. They are like a tree with many branches. Some of the branches, however, have grown so vigorously and reached such distances from the trunk that they have forgotten their origins and consider themselves independent trees. This analogy is due to C. V. Taylor of Stanford, a zoologist, who is distressed by the degree of separation that has developed among the different members of our group. Taylor points out that all living things are made of a protoplasm which, despite the widely diverse types into which it develops, remains on the whole surprisingly uniform in fundamental character throughout. The laws of its evolution and of its inheritance are the same everywhere. To a very large degree even its cellular structures are constant.

In so far as the analogy of the growing tree is applicable, it will be recognized that it is just those branches which grow most vigorously that get farthest away from the main trunk. Also, in the tree there is dead wood and there are rotten branches which may not be detected until stress and storm search them out. Likewise, on a tree leaves which almost touch may draw their sustenance from different branches which may have grown independently for a long time so that the only way to get from one to the other is to go clear back to the root. In the tree the original connection to trunk and to roots is essential. If it is severed at any point, every part beyond the cut dies.

The question really before the assemblage of sciences now grouped under biology and agriculture is whether we are comparable to a tree with a single trunk or whether we are more like a bush with many trunks from the same root. If we are like a bush, the health of any one branch is of little concern to the others. Indeed, when a branch is cut out of a bush the others grow all the better, profiting from the removal of competition. But if we are like a tree, then it behooves us to look after the health of the trunk that supports us all.

Is biology like a bush or is it like a tree? The question can be answered with assurance only with the passage of time. It is permissible, however, to make one observation: Bushes rarely attain any great height and they are mostly shortlived. The really tall and permanent growths are all trees.

OBITUARY

JOHN JOSEPH RONAN

ENEMY torpedo action on October 14, 1942, tragically ended the career of a young Canadian scientist, John Joseph Ronan, field officer of the Geological Survey of Newfoundland. On leave from St. Francis Xavier University, Antigonish, Nova Scotia, to whose staff he had just been appointed, Mr. Ronan was proceeding to Newfoundland to resume field work on war minerals when he was numbered with 137 who lost their lives in the sinking of the Newfoundland Railway Steamship *Caribou* in Cabot Strait.

John Joseph Ronan was born at Antigonish, Nova

Scotia, on April 18, 1917, the son of Dr. and Mrs. M. F. Ronan. He received his early education at Morrison School and graduated in 1935 from St. Francis Xavier University with the degree of B.Sc., *magna cum laude,* a few weeks after his eighteenth birthday. Some of the results of his petrographical studies for the M.A. degree at the same institution were incorporated by his professor, the late Dr. Donald F. MacDonald, geological adviser on Panama Canal work, in "Contributions to Panama Geology" (*Jour. Geol.,* 45: 655–662, 1937).

In 1936 Mr. Ronan was awarded an assistantship in the Department of Geology at the Catholic University of America, Washington, D. C., which position he occupied for the next three years. In 1939 he went to the University of Wisconsin as holder of the Charles R. Van Hise Fellowship and remained at Madison until June, 1942, as research assistant.

Laying a broad and firm foundation of field experience for his professional career, Mr. Ronan spent the summers of 1936 to 1940 as field assistant with parties of the Geological Survey of Canada in Nova Scotia, Quebec and Ontario. The Department of Mines of Nova Scotia in 1941 made him a grant to study the igneous rocks of Guysborough County; this was to have been the subject of his doctorate dissertation at the University of Wisconsin.

Unselfishly interrupting his graduate research, which was nearing completion, Mr. Ronan last summer assumed charge of one of the field parties of the Geological Survey of Newfoundland to investigate iron and strontium resources, and after the regular field season consented to supervise further diamond drilling operations on these ores, which are important in the war effort. He met his death when about to take up his winter duties.

In grateful tribute, the mineral location at Boswarlos, Port au Port Bay, west coast of Newfoundland, to which John Joseph Ronan was devoting his scientific training, henceforth will be known officially as the "Ronan Strontium Deposit."

A. K. SNELGROVE
GEOLOGICAL SURVEY OF NEWFOUNDLAND

RECENT DEATHS

DR. HARRISON E. HOWE, editor of *Industrial and Engineering Chemistry,* died on December 10 at the age of sixty years.

ROBERT PEELE, professor emeritus of mining engineering of the School of Mines of Columbia University and editor since 1917 of "The Mining Engineers' Handbook," died on December 8. He was eighty-four years old.

DR. ALFRED BAKER SPALDING, since 1930 emeritus professor of gynecology and obstetrics of the School of Medicine of Stanford University, died on November 27 at the age of sixty-eight years.

DR. FREDERICK MARK BECKET, consultant to the Union Carbide and Carbon Corporation, New York, N. Y., died on December 1 at the age of sixty-seven years.

CHARLES W. FREDERICK, head of the Science Division of the lens factory of the Eastman Kodak Company at Rochester, N. Y., died on November 29 at the age of seventy-two years.

THE death at the age of eighty-four years is announced of Sir Henry Miers. Sir Henry was Waynflete professor of mineralogy at the University of Oxford from 1895 to 1908; principal of the University of London, 1908 to 1915, and vice-chancellor of the University of Manchester and professor of crystallography, 1915 to 1926.

Nature records the death of Dr. Alfred Baker, emeritus professor of mathematics of the University of Toronto, where he occupied the chair of mathematics from 1887 until 1919, president in 1915 of the Royal Society of Canada, on October 27, at the age of ninety-four years; of Dr. J. N. Collie, F.R.S., emeritus professor of organic chemistry of the University of London, on November 1, at the age of eighty-three years, and of Dr. J. C. Schoute, emeritus professor of botany of the University of Groningen, president of the sixth International Botanical Congress, at the age of sixty-five years.

THE death is announced at the age of seventy-seven years of Professor Carl Dorno, who founded and directed the Physical Meteorological Observatory at Davos, Switzerland.

SCIENTIFIC EVENTS

GRANTS FOR WAR RESEARCH TO THE UNIVERSITY OF CINCINNATI

CONTRACTS with the United States Government for war research by the University of Cincinnati negotiated during the summer, reported by Dr. Raymond Walters, president of the university, were approved on October 6 by the board of directors of the university.

Ranging from $2,500 to $12,000 and amounting in all to $42,000, these contracts are for investigations now under way in the College of Medicine and the department of leather research of the university for the Office of Scientific Research and Development and in the College of Engineering and Commerce for the Army Air Corps.

In several instances the federal grants were exten-