

## MEMORIAL OF ROBERT CHARLES WALLACE

J. E. HAWLEY, *Queen's University, Kingston, Ontario.*

Dr. Robert Charles Wallace, former Principal and Vice-Chancellor of Queen's University, and a charter member of The Mineralogical Society of America died at his home in Kingston on January 29, 1955.

Beginning his career as a demonstrator in crystallography at Aberdeen University, Wallace became successively professor of geology at the University of Manitoba, Commissioner of Mines of Northern Manitoba and of the province as a whole, and later head of two other universities, Alberta and Queen's. In his earlier years he contributed much to the science of mineralogy and geology and to the development of the mineral resources of Canada, but as an administrator and one of Canada's foremost educationalists his work set a record which has rarely been excelled and will seldom be equalled.

Dr. Wallace was born in 1881, in the Orkney Islands where he grew to manhood and himself acquired the qualities he thought so typical of the islanders, "qualities of reliability, loyalty, application to work, and love of learning . . .," a certain Scottish quality of humor, and "a natural mysticism which . . . colour(ed) all his thinking . . ."

His early education was obtained at Deerness and Kirkwall where an ingenious headmaster incited his curiosity and interest in the natural sciences and influenced his later specialization at Edinburgh under Sir Archibald Geike where he obtained his Master of Arts degree in 1901 and Bachelor of Science in 1907.

From 1907 to 1909 he pursued graduate work at Göttingen University under Professor G. Tamann, petrologist and one of the early geochemists, and completed his doctorate thesis on the "Binary systems of sodium-barium-strontium metasilicates and the three component system soda-alumina-silica."

On his return to Scotland, Wallace continued his studies at St. Andrew's University on the crystallographic relationships of indium and thallium, acting also as a demonstrator in crystallography. One can well imagine the place he might have made for himself among crystallographers and geochemists had he continued his researches in this direction. His broader interest in education as a whole was developing even at this time and is shown by early papers on the teaching of science and mathematics in the German schools.

Opportunities in Canada, however, beckoned and, in 1910, he joined the University of Manitoba as a lecturer in mineralogy and geology and within two years rose to head of the department, a position he retained until 1928. Among his early investigations as a part-time officer of the



ROBERT CHARLES WALLACE  
1881-1955

Geological Survey of Canada, were the genetic relationships of gypsum, anhydrite and salt deposits of the Silurian in Manitoba and the intriguing problem of dolomitization.

Following the successful establishment of gold mining in Northern Ontario, attention was directed to the Precambrian of Northern Manitoba. Discoveries and early development of the rich copper and zinc ores of the Mandy and Flin Flon, and of gold in Herb Lake and Pipe Lake, soon focused attention on the mineral possibilities of these areas. No better choice could have been made than Wallace's appointment, in 1918, as Commissioner of Mines for Northern Manitoba, a position he held while on leave of absence from the University, till 1921.

Much of his work in this post was of an administrative nature, supervising an area of some 178,000 square miles, and only a small part is shown by his comprehensive papers on the mineral resources of the province. Much of the credit for the development of the Flin Flon deposits, according to Dr. G. M. Brownell, must go to him, and his advice undoubtedly led to the building of the railway from The Pas to Flin Flon. It was, however, in his day to day duties, in dealing with prospectors, promoters, and mining magnates that he showed his outstanding qualities, a sympathetic understanding, sound judgment and "a business acumen frequently lacking in men of academic attainments" (Hague, R. H., 1921—*Can. Mining Journal*, 42, 749.)

As a sequel to his intimate acquaintance with this area came a major contribution (1921) in his discussion of the transfer of the natural resources of Manitoba, Saskatchewan and Alberta from the federal government to the provinces.

On his return to the University, according to Dr. J. S. DeLury, a close associate, he carried a very heavy teaching load, as well as assuming the duties of Commissioner of Mines for the entire province. In spite of this he found time to prepare several papers on both the metallic and non-metallic resources of the province and on a wide range of scientific subjects such as the characteristics of the Flin Flon ore bodies, colloidal processes in rock weathering, and the clays of Lake Agassiz.

In recognition of his standing in the Canadian mining industry, Dr. Wallace was elected successively as councillor (1919–1920), vice-president (1921–23) and president of the Canadian Institute of Mining and Metallurgy (1924), and in subsequent years was frequently called on to present his views on current problems confronting the industry.

In 1928 he was called to Alberta as president of the University and from then on his main efforts were directed toward the broader aspects of education and public affairs, but his interest in the geological sciences and the natural resources of the West never lagged, and bore fruit in his later advisory work with the federal Committee on Reconstruction towards the end of World War II.

From 1936 to 1951 Wallace served as Principal and Vice-Chancellor

of Queen's University and his distinguished record in education both here and at Alberta is well known. During the war he was active in the re-establishment of returning veterans, their education and employment in the expanding development of the natural resources of the country.

For many years he was a valued member of the National Research Council and as the first president of the Ontario Research Council he was in large part responsible for the stimulation of research in both the natural and applied sciences, and for a great increase in post-graduate training of science students both in the province and elsewhere by a continuing system of scholarships. He was the first Canadian member of the Board of Trustees of the Carnegie Foundation for the Advancement of Teaching, and represented Canada at the London conference which created UNESCO. As president of the Royal Society of Canada in 1941 he showed a keen insight into the problems facing this and other countries in post-war days and in his address on "Planning for Canada" laid down important principles for the better development, in the democratic way, not only of natural resources but also of the education and culture of the Canadian people.

Among the many and well-merited honors which came to him were the order of Commander of St. Michael and St. George and honorary degrees from twenty universities in Scotland, England, Ireland, Germany, the United States and his adopted land.

After retirement in 1951 Dr. Wallace remained for a time almost as active as before, both in educational affairs of the province, on the Defence Research Board, and as executive director of the Arctic Institute, in which his efforts were an inspiration to all.

What the sciences of mineralogy and geology lost, or might have gained, in the career of this great man, had he chosen otherwise, accrued in full measure to the fields of education, human relations and the public welfare. His mark has been left on many generations of students of three universities, as on all with whom he came in contact—in the field or elsewhere, in this country and abroad. He will be long remembered.

#### SELECTED BIBLIOGRAPHY OF R. C. WALLACE

1909. Ueber die Binären Systeme des Natriummetasilicats mit Lithium-, Magnesium-, Calcium-, Strontium-, und Bariummetasilicat, des Lithiummetasilicats mit Kalium-, Magnesium-, Calcium-, Strontium- und Bariummetasilicat, und ueber das Dreistoffsystem  $\text{Na}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2$ : *Inaugural-Dissertation*, George-August-Universität, zu Göttingen, 1909, pp. 52.  
High temperature work on the silicates: *Trans. English Ceramics Society*, **IX**, 174–197 1909–10.
1910. Einige Beobachtungen betreffend den Dimorphismus der Ammoniumhaloide: *Centralblatt für Mineralogie, Geologie und Paläontologie*, No. 2, 33–35.
1910. Science in German secondary schools of today: The calculus in the German secondary school. *Secondary School Journal*, May, pp. 38–41, July, 247–250.

1911. Indium und Thallium in krystallographischer Beziehung: *Zeits. Kryst.*, **XLIX**, 5, 417-454.
1911. Indium and Thallium in crystallographical relationship: *Memorial volume of scientific papers*. University of St. Andrews (500th Anniversary), 241-273.
1913. A contribution to the study of dolomitization: *Trans. Roy. Soc. Canada*, **VII**, 130-149.
1913. Review of C. Doelter Handbuch der Mineralchemie I: *Jour. Geol.*, **XXI**, 5 July-August, 465-467.
1914. Gypsum and anhydrite in genetic relationship: *Geol. Mag.*, **VI**, **I**, June, 271-276.
1915. The corrosive action of certain brines in Manitoba (abstract): *British Association, Manchester*, **C11**.
1917. The corrosive action of certain brines in Manitoba: *Jour. Geol.*, **XXV**, 5, July-August, 459-466.
1918. The resources of Manitoba and their development: Printed by University, 64 pp.
1918. The geological formations and mineral resources of Manitoba: *Winnipeg Industrial Bureau*, 8 pp.
1919. The origin of the gold deposits in the Canadian Pre-cambrian: *Trans. Can. Min. Inst.*, **XXI**, 287-292.  
Mining development in Northern Manitoba: *Trans. Can. Inst. Min. and Metall.*, **XXII**, 329-340.
1921. Report and recommendations with references to proposed railway from the Pas to Flin Flon property. Office of Commissioners of Northern Manitoba 1921. 18 pp.
1921. The Flin Flon Ore Body: *Trans. Can. Inst. Min. and Metall.*, **XXIV**, 99-111.
1921. The control of the mineral resources of the Prairie Provinces: *Bull. Can. Inst. Min. and Metall.*, No. **113**, 795-802.
1922. Secondary processes in some Pre-cambrian orebodies: *Trans. Roy. Soc. Canada*, **XVI**, 169-174.  
Blue sky legislation in Manitoba: *Trans. Can. Inst. Min. Metall.*, **XXV**, 5 pp.
1923. The distribution of the colloidal processes or rock weathering: *Trans. Roy. Soc. Canada*, **IV**, 69-77.
1924. An unusual occurrence of cyanite: *Amer. Mineral.*, **9** (6 June), 129-135.  
Manitoba's contribution to Canada's mining opportunities: *Bull. Can. Inst. Min. and Metall.*, March, 10 pp.  
The clays of Lake Agassiz. Their colloidal content. (With J. E. Maynard): *Trans. Roy. Soc. Canada*, **IV**, 9-30.
1925. Relationships in mineral deposits in Northwestern Manitoba: *Econ. Geol.*, **XX** (5, August), 411-441.
1925. Trade in minerals within the British Empire: *Trans. Can. Inst. Min. and Metall.*, **XXVIII**, 8 pp.
1925. Mineral deposits of Hudson Bay Territory. (Presidential address): *Trans. Can. Inst. Min. and Metall.*, **XXVIII**, 301-310.  
The geological formations of Manitoba: *Natural History Society of Manitoba*. 58 pp.  
The mineral resources of Manitoba: *Industrial Development Board of Manitoba*. 48 pp.
1926. The Red river as an erosive agent. (With W. F. Baker and G. Ward): *Trans. Roy. Soc. Canada*, **IV**, 149-167.
1927. The non metallic mineral resources of Manitoba. (With L. Greer): *Industrial Development Board of Manitoba*, 93 pp.  
The history of the salt industry in Western Canada: *Proc. Mississ. Valley Histor. Association*, **VII**, 277-285.  
Varve materials and banded rocks: *Trans. Roy. Soc. Canada*, **IV**, 109-118.

- The natural resources of Manitoba: *Winnipeg Bankers Lecture Club.*, Jan., 11 pp.
1928. Copper zinc and gold mineralization in Manitoba: *Bull. Can. Inst. Min. and Metall.*, February, 10 pp.
- Heavy minerals in sand horizons in Manitoba and Eastern Saskatchewan. (With G. C. McCartney): *Trans. Roy. Soc. Canada*, **XXIII**, **LV**, 199–213.
- The universities in Canada: From "The Universities Outside Europe." *Oxford University Press*, 115–136.
1929. The educational function of the geological sciences: *Trans. Roy. Soc. Canada*, **XXIII**, **IV**, 3 pp.
1936. Reflections after Yosemite: *Queen's Quarterly*, **V**, **43.4**, 418–421.
1937. Canada's geographical barriers. How can they be overcome? *Queen's Review*, **11.2** 33–39.
- The scientific man in public affairs: *Proc. Roy. Can. Inst.*, **IIIA. II**, 101–115.
1938. The changing values of science: (Hector Maiben Lecture to AAAS.) *Science*, **88**, 2282. September, pp. 265–271. *C.S.T.A. Review*, **18**. September, 305–312.
1940. The role of Canada: *Bull. Can. Inst. Min. and Metall.*, **336**, 157–160.
- The engineer in education and in life: *Bull. Ass. Prof. Eng.* (Ontario) **7.2**, 3–4.
1941. Science and our way of life: *Macdonald Coll. Journal.*, **1.7**, 2–3.
- Planning for Canada. (Presidential Address): *Proc. Roy. Soc. Canada*, **35**, 65–83.
1943. Education and the new freedom: *Canadian Student*, **21.4**, 39–40.
- The Canadian universities and the war: *Queen's Review*, **17.3**, 59–64. *Canadian Affairs*, **1.5**, July, 1–10.
- Are we using Canada's wealth aright? *Can. Geog. Jour.*, **26.5**, 226–229.
- Report of the sub committee on the conservation and development of resources, R. C. Wallace, Chairman. (Advisory committee on reconstruction): *King's Printer*. Ottawa. September, 29 pp.
1944. The engineers' need of humanities: *Engineering Journal*, **27.12**, December, 626–627.
1945. Franklin Delano Roosevelt: *Queen's Quarterly*, **52.2**, 131–134.
1946. Education in a democratic society: *Queen's Quarterly*, **53.4**, 430–438.
- Organization for Canadian research: *Industrial Canada*, **47.3**.
1947. The Ontario research commission: *Engineering Journ.*, **30.5**, 217–219.
- Science and British industry: *Queen's Quarterly*, **54**, 291–216.
1948. Some thoughts on education: *Trans. Can. Inst. Min. and Metall.*, **51**, 201–204.
- The meaning of education: Pamphlet, *International Business Machines Corp.*, 7–14.
1949. The dilemma of the scientist: *Proc. Roy. Can. Inst.*, **iiia**, **14**, 52–55.
1950. Andrew Carnegie: (Address Carnegie Foundation for the Advancement of Teaching), *Queen's Review*, **24**, 247–248.
1953. Research and Canada's natural resources: *Special Libraries*, **44** (7), 265–267.
1954. Rae of the Arctic: *The Beaver*, March, 28–33.
- Some reflections, geographical and otherwise: *Can. Geog. Journ.*, **48**, 8–9.
1955. As I look back: *Queen's Quarterly*, **41**, **4**, 490–497.