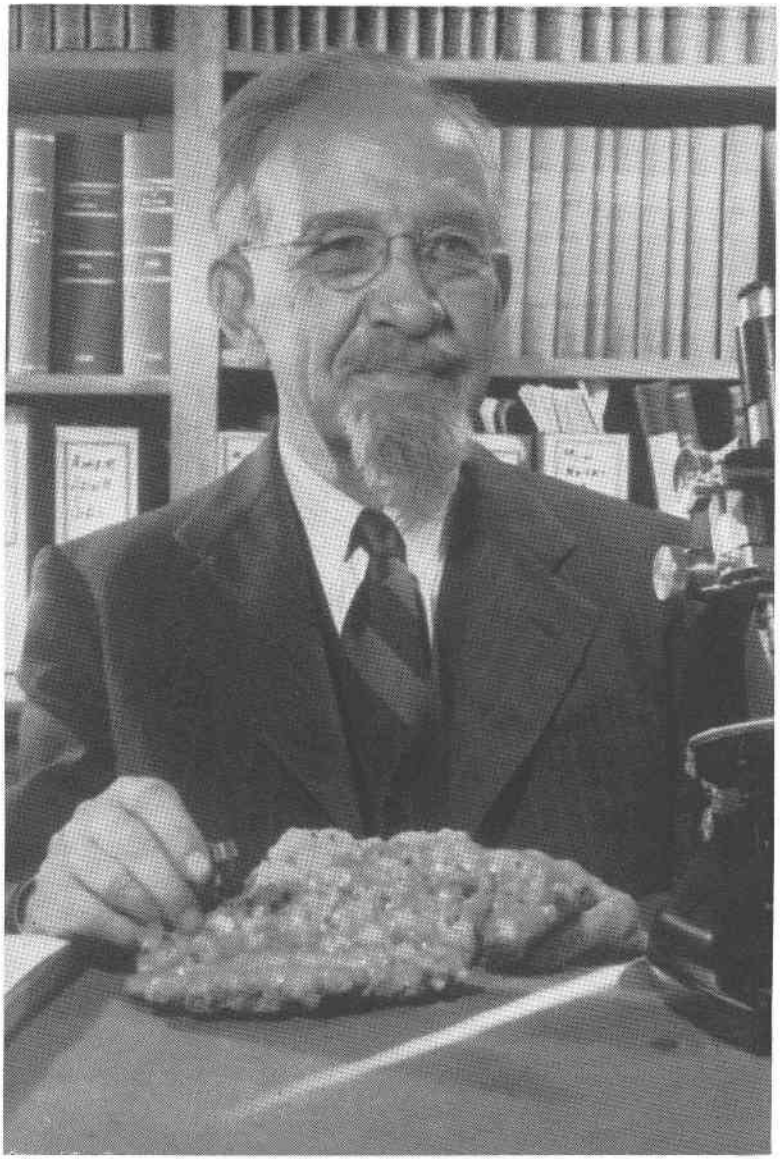

Alexander Newton Winchell
1874–1958

THE AMERICAN MINERALOGIST, VOL. 44, MARCH–APRIL, 1959

MEMORIAL OF ALEXANDER NEWTON WINCHELL

R. C. EMMONS, *University of Wisconsin, Madison, Wisconsin.*

Alexander Newton Winchell, Emeritus Professor of geology, died in New Haven, Connecticut on Saturday, June 7, after a short illness. He was 84 years old. He was born in Minneapolis, Minnesota, on March 2, 1874, the son of a distinguished geologist, N. H. Winchell. He received his B.S. degree in 1896 and his M.S. degree in 1897 from the University of Minnesota, and his D.Sc. from the University of Paris in 1900.

Professor Winchell served as Professor of Mineralogy and Petrology at the Montana School of Mines from 1900 to 1907, and as Professor of Geology at the University of Wisconsin from 1907 till his retirement in 1944. He was chairman of the Department of Geology from 1935 to 1940. He was associated with the U. S. Geological Survey from 1901 to 1910. After his retirement he served as Visiting Professor of Mineralogy at the University of Virginia 1948–49 and at Columbia University 1949–50. He served for three years as resident mineral consultant at the Stamford laboratory of the American Cyanamid Company.

Professor Winchell was a fellow of the Geological Society of America, the Mineralogical Society of America, the Society of Economic Geologists, the American Association for the Advancement of Science and the Wisconsin Academy of Science. He was councillor of the Mineralogical Society of America from 1927 to 1930 and was president in 1932. He was awarded the Roebling medal of the Society in 1955 for meritorious achievement.

Professor Winchell was best known for his books on optical mineralogy which have served the science eminently for many years. The first edition was written jointly by him and his father, and the last, fourth, edition was written in collaboration with his son, Horace. These books appeared in three volumes,—volume 1 being devoted to optical crystallographic theory, volume 2 a very thorough compilation of published data on the optical properties of mineral materials including many charts of his own design on mineral properties, and volume 3, a set of exhaustive tables for the identification of minerals by their properties. His volumes 2 and 3 are unexcelled in any language in their thoroughness and value to the laboratory worker. They appeared also in a Russian edition of 15,000 copies. Immediately prior to his death, he visited Moscow, as is required by Russia, in relation to the royalties on the Russian edition.

In addition to his textbooks on optical mineralogy Professor Winchell compiled a text on the optical properties of artificial minerals and one on organic crystals. He also compiled a textbook on mineralogy.

The major research activity of Professor Winchell is embodied in a

considerable list of published papers on the correlation of the optical properties of crystalline materials and their chemical composition. The graphical representation of these findings will long be a serviceable monument to his devotion to these studies.

During his long teaching career, Professor Winchell made many friends among students who will recall the thoroughness of his training and who recognize the role that his influence has played in their professional accomplishment. His absences from the national meetings were rare and inevitably evoked inquiries on his welfare.

Professor Winchell is survived by his wife, Florence S. Winchell, his two sisters, Mrs. A. W. Grant of St. Charles, Ill., and Mrs. B. J. Denman of Minneapolis, Minn., and by four of his five children—Mrs. R. E. Rettger of Dallas, Texas., Dr. A. V. Winchell of Rochester, N. Y., Mrs. R. J. Lund of Columbus, Ohio, and Professor Horace Winchell of New Haven, Conn. A memorial service was held at Spring Glen Congregational Church in Hamden on Tuesday, June 10.

Bibliography of A. N. Winchell

Minnesota's northern boundary *Minnesota Historical Society* **8,** 1896, pp. 184–212.

The Koochiching granite, *Am. Geologist*, **20,** 1897, 293–299.

The age of the Great Lakes of North America, *Am. Geologist*, **19,** 1897, 336–339.

Mineralogical and petrographic study of the gabbroid rocks of Minnesota, *Am. Geologist*, **26,** 151–188, 197–306, 348–388.

Etude mineralogique et petrographique des roches gabbroiques de l'Etat de Minnesota. *Univ. Paris These*, Paris, 1900. 23 figs. 9 planches, 164 pages.

Notes on certain copper minerals, *Am. Geologist*, **28,** 1901, 244–246.

Note on titaniferous pyroxene, *Am. Geologist*, **31,** 1903, 309–310.

Minnesota's eastern, southern and western boundaries, *Minnesota Historical Society*, **10,** 1905, 1–11.

Production of gold and silver in Montana. *Mineral Resources*, **1903,** 180–181; **1904,** 108–115; **1905,** 130–146; **1906,** 161–180.

Oxidation of pyrite, *Econ. Geol.*, **2,** 1907, 290–294.

Use of "ophitic" and related terms in petrography, *Bull. Geol. Soc. Amer.*, **20,** 1908, 661–667.

Review of nomenclature of Keweenawan igneous rocks, *Jour. Geology*, **16,** 1908, pp. 765–774. Also in *U. S. Geol. Survey*, Mon. **52,** 1911, 395–410.

Elements of Optical Mineralogy. (With N. H. Winchell), D. Van Nostrand, New York, 1909, 350 figs., 4 plates, 502 pages.

Meaning of the conservation movement. *Jour. Geog.*, **9,** 49–59.

Notes on tungsten minerals from Montana, *Econ. Geology*, **5,** 1910, 158–165.

Criteria of downward sulphide enrichment, *Econ. Geology*, **5,** 1910, 488–491.

Memoir of Auguste Michel-Levy, *Bull. Geol. Soc. Amer.*, **23,** 1911, 32–34.

A theory for the origin of graphite, *Econ. Geology*, **6,** 1911, 218–230.

Review of nomenclature of Keweenawan igneous rocks, *U.S.G.S., Mon.*, **52,** 1911, 395–410.

The geothermal gradient, *Science*, **33,** 1911, 464–465.

Graphite near Dillon, Montana, *U. S. Geol. Survey Bull.*, **470,** 1911, 528–534.

Directions for Laboratory Work in Optical Mineralogy, Madison, 1911, 36 pages.

Geology of the National Mining District, Nevada, *Min. Sci. Press*, Nov. 22, 1912. 16 pages as reprinted.

Notes on the Blue Bird mine. (With H. V. Winchell), *Econ. Geology*, **7,** 1912, 287–294.

Brun's new data on volcanism, *Econ. Geology*, **7,** 1912, 1–14.

Discussion of igneous rocks as related to occurrence of ores, *Am. Inst. Min. Eng.* Volume on Ore Deposits, 1913, 303–304.

Rock classification of three co-ordinates, *Jour. Geology*, **21,** 1913, 208–223.

Mining districts of the Dillon quadrangle, Montana, *U. S. Geol. Survey, Bull.* **574,** 1914, 8 plates, 16 figs., 191 pages.

Petrology and mineral resources of Jackson and Josephine Counties, Oregon, *Oregon Bur. Mines*, 1914, 33 figs., XI plates, 265 pages.

Mineralogy and petrology in France, *Science and Learning in France*, 1917, 122–126.

Racewinite: A peculiar mineral from ore deposits in Utah, *Econ. Geology*, **13,** 1918, 611–615.

The dustfalls of March, 1918. (With E. R. Miller), *Mon. Weather Rev.*, **46,** 1918, 502–506.

The dustfall of March 9, 1918. (With E. R. Miller), *Am. Jour. Sci.*, **46,** 1918, 599–609, **67,** 1919, 133–134.

The dustfall of March, 1918. (With E. R. Miller), *Sci. Amer. Suppl.*, No. **2258,** 1919, 234–235.

Further notes on the dustfall of March 9, 1918. (With E. R. Miller), *Am. Jour. Sci.*, **47,** 1919, 133–134.

Handbook of mining in the Lake Superior District. Sect. 1, *Am. Inst. Min. Eng.*, 1920, 1–154.

The origin of graphite, *Econ. Geology*, **16,** 1921, 492–500.

The great dustfall of March 19, 1920. (With E. R. Miller), *Am. Jour. Sci.*, **3,** 1922, 349–364.

Elements of Optical Mineralogy. Part I, Principles and Methods. Second Edition, John Wiley & Sons, New York, 1922, 250 figs., 216 pages.

Studies in the pyroxene group, *Am. Jour. Sci.*, **6,** 1923, 504–520.

Petrographic studies of limestone alteration at Bingham, *Trans. Am. Inst. Min. Eng.*, **70,** 1924, 884–903.

The composition of melilite, *Am. Jour. Sci.*, **8,** 1924, 375–384.

Studies in the amphibole group, *Am. Jour. Sci.*, **7,** 1924, 287–310.

The properties of scapolite, *Am. Mineral.*, **9,** 1924, 108–112.

Isotropic quartz, *Am. Mineral.*, **9,** 1924, 235–237.

The dustfall of Feb. 13, 1923. (With E. R. Miller), *Jour. Agric. Research*, **29,** 1924, 443–450.

Atoms and isomorphism, *Science*, **61,** 1925, 554–557.

A new theory of the composition of zeolites, *Am. Mineral.*, **10,** 1925, 88–97, 112–117, 145–152, 166–174.

Studies in the mica group, *Am. Jour. Sci.*, **9,** 1925, 309–327 and 415–430.

Studies in the feldspar group, *Jour. Geology*, **34,** 1925, 714–727.

The $FeSiO_3$-$CaSiO_3$-$MgSiO_3$-$NaFeSi_2O_6$ system of monoclinic amphiboles, *Am. Mineral.*, **3,** 1925, 335–361.

A new kind of metamorphism, *Econ. Geology*, **20,** 1925, 642–645.

Relations between properties and composition in the amblygonite-montebrasite series, *Am. Mineral.*, **11,** 1925, 246–249.

Doubtful mineral species as illustrated by faroelite, *Am. Mineral.*, **11,** 1926, 82–89.

Some methods of determining refractive indices. (With R. C. Emmons), *Am. Mineral.*, **11,** 1926, 115–118.

Chlorite as a polycomponent system, *Am. Jour. Sci.*, **11,** 1926, 282–300.

The chemical constitution of the tetrahedrite-tennantite system, *Am. Mineral.*, **11,** 1926, 181–185.
Notes on triclinic pyroxenes, *Am. Mineral.*, **12,** 1927, 10–14.
Elements of Optical Mineralogy, Part II, Descriptions of Minerals. Second Edition, John Wiley & Sons, New York, 1927, 333 figs. 424 pages.
Optic and Microscopic Characters of Artificial Minerals. Univ. Wis. Studies in Science No. 4, Madison, 1927, 215 pages.
"Finger Prints" of minerals, *Science*, **65,** 1927, 498.
"Finger Prints" of minerals, *Am. Mineral.*, **12,** 1927, 261–262.
Further studies in the mica group, *Am. Mineral.*, **12,** 1927, 267–279.
Isomorphous relations in $MgSiO_3$ and $AlAlO_3$ in silicates, *Am. Mineral.*, **13,** 1928, 52–56.
Elements of Optical Mineralogy, Part I, Principles and Methods. Third edition, John Wiley & Sons, New York, 1928. 260 figs., 238 pages.
Additional notes on chlorite *Am. Mineral.*, **13,** 1928, 161–170.
Autographs of nature. (With E. D. Johnson), *Rock Products*, Aug. 18, 1928, 63–65.
The composition of muscovite, *Am. Mineral.*, **13,** 1928, 567–569.
Camsellite and szaibelyite, *Am. Mineral.*, **14,** 1929, 48–49.
Dispersion of minerals, *Am. Mineral.*, **14,** 1929, 127–149.
Elements of Optical Mineralogy, Part III, Determinative Tables, Second Edition, John Wiley & Sons, New York, 1929. Color chart and diagrams. 204 pages.
Further studies in the amphibole group, *Am. Mineral.*, **16,** 1931, 250–266.
Microscopic Characters of Artificial Inorganic Solid Substances or Artificial Minerals. John Wiley & Sons, New York, 1931. 311 figs., 5 plates. Determinative tables, 403 pages.
Elements of Optical Mineralogy, Part I, Principles and Methods. 4th Edition, 1931, 270 figs., 240 pages.
Maghemite or oxymagnite, *Am. Mineral.*, **16,** 1931, 270–271.
The lepidolite system, *Am. Mineral.*, **17,** 1932, 551–553.
Ferrotremolite, oxyhornblende and tourmaline, *Am. Mineral.*, **17,** 1932, 472–477.
The new mineralogy. Presidential address at Boston meeting of the Mineralogical Society of America, Dec. 29, 1932, *Am. Mineral.*, **18,** 1933, 81–90.
Elements of Optical Mineralogy, Part II. Descriptions of Minerals, Third Edition. John Wiley & Sons, New York, 1933. 362 figs., 459 pages.
Are there granitic and basaltic shells in the earth? *Science*, **79,** 1934, 32–333.
Report of Committee on Accessory Minerals of Crystalline Rocks. Annual Report, Division of Geology, National Research Council, 1933–34, App. C, 1–25.
The crystal structure of swedenborgite, $NaBe_4SbO_7$. With Linus Pauling and H. P. Klug, *Am. Mineral.*, **20,** 1935, 492–501.
Report of Committee on Accessory Minerals of Crystalline Rocks. Annual Report, Division of Geology, National Research Council, 1934–35, App. F, 1–24.
Further studies in the pyroxene group, *Am. Mineral.*, **20,** 1935, 562–568.
The biotite system, *Am. Mineral.*, **20,** 1935, 773–779.
Report of Committee on Accessory Minerals of Crystalline Rocks, Annual Report, Division of Geology, National Research Council, 1935–36, App. F, 1–22.
A third study of chlorite, *Am. Mineral.*, **21,** 1936, 642–651.
Further studies of the zeolites, *Am. Mineral.*, **22,** 1937, 85–96.
Birefringence-dispersion ratio as a diagnostic. (With W. B. Meek), *Am. Mineral.*, **22,** 1937, 336–343.
Elements of Optical Mineralogy. Part I. Principles and Methods, Fifth Edition. John Wiley & Sons, New York, 1937, 300 figs., 4 plates, 262 pages.

Report of Committee on Accessory Minerals. Annual Report, Division of Geology, National Research Council, 1936–37, App. F.

The optic properties of seignette and related salts, *Am. Mineral.*, **22,** 1937, 1088–1093.

Cordierite, *Am. Mineral.*, **22,** 1937, 1175–1179.

The anthophyllite and cummingtonite-grunerite series, *Am. Mineral.*, **22,** 1938, 329–333.

Report of Committee on Accessory Minerals. Annual Report, Division of Geology, National Research Council, 1937–38, App. B.

Elements of Optical Mineralogy, Part III, Determinative Tables, Second Edition, new printing, John Wiley & Sons, New York, 1939. Colored chart, two diagrams, 228 pages.

Presentation of the third Roebling medal of the Mineralogical Society of America to Leonard James Spencer, *Am. Mineral.*, **26,** 161, 162 (1941).

The spinel group, *Am. Mineral.*, **26,** 1941, 422–428.

Nepheline, *Am. Mineral.*, **26,** 1941, 536–540.

Further studies of the lepidolite system, *Am. Mineral.*, **27,** 1942, 114–130.

Elements of Mineralogy. Prentice-Hall, Inc. New York, 1942. 468 figs. 535 pages.

Optical Properties of Organic Compounds, University of Wisconsin Press, 1943. 157 figs. 1 diagram. 342 pages.

Variations in composition and properties of the calciferous amphiboles, *Am. Mineral.*, **30,** 1945, 38–50.

Montmorillonite, *Am. Mineral.*, **30,** 1945, 510–518.

Mineral oxidation, *Am. Mineral.*, **31,** 1946, 288–293.

Memorial to Francois-Antoicie-Alfred Lacroix, *Proc. Vol. Geol. Soc. Amer. An. Rep.*, **1948,** 183–186.

What is a mineral? *Am. Mineral.*, **34,** 1949, 220–225.

Elements of Optical Mineralogy, Part 2. Descriptions of Minerals. Fourth Edition, 427 Figs. XVI and 551 pp. John Wiley & Sons, 1951.

Optical Properties of Organic Compounds. Academic Press, 1954, Second Edition, Two tables. Two diagrams, 153 figs. xviii and 487 pp.

In addition to these there are several unpublished mining reports. He also cooperated with N. H. Winchell in the publication of a genealogy of the Winchell family.