MEMORIAL OF OLAF ANDERSEN*

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I knew Andersen for nearly thirty years, yet never felt as completely acquainted with him as with several other persons whom I have known for a much shorter time. He was a man of reserve; not aloof, but selfcontained and self-reliant in the ways that we are accustomed to expect of the Scandinavian peoples. Yet after every discussion of scientific subjects or conversation on casual affairs, I felt better acquainted than before, and I believe that such would be the testimony of all of his associates.

Olaf Andersen was born at Honeföss, Norway, on the 12th of March, 1884, and died at his home at Millington, New Jersey, on the 18th of July, 1941, in his 58th year. He received his early education in Norway and took his Bachelor's degree at the University in Kristiania (now Oslo) in 1903, at the relatively early age of 19. His subsequent professional career was spent exactly one half in the United States and one half in his native Norway, though not continuously in either country.

He early took up work in the geology and petrology of the pre-Cambrian rocks of southern Norway, in association with W. C. Brögger, and was lecturer at the University in Kristiania. In 1911, eight years after completing his undergraduate training, he received the equivalent of our doctorate in science from the University. What led him in this same year to come to Columbia University in New York City for work in petrology and chemistry I never learned; possibly it was through acquaintance with the American geologists who visited Sweden and Norway on the occasion of the International Geological Congress in 1910. His scholarly ability was quickly recognized in this country and in 1912 he joined the staff of the Geophysical Laboratory of the Carnegie Institution of Washington, to work in collaboration with N. L. Bowen on the alkaline earth silicate systems.

During the armistice in the World War six years later the Norwegian government, in common with many other governments, including our own, failed to realize that the trial of national strength was still unfinished, and assumed that an era of peace and uninterrupted prosperity was beginning. Ambitious plans were made for silicate research in Kristiania, similar to that done in Washington, and Andersen was called back to his native country to head this work under the Norwegian Geological Survey. The next ten years proved, on the whole, disappointing,

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Olaf Andersen 1884–1941 although Andersen accomplished some excellent work during this period on the Norwegian feldspars and pegmatites. The German financial collapse affected neighboring countries, government financing in the face of deficits and uncertain exchange values became more and more difficult, and the opportunity in Kristiania shrank. Under these conditions an opening for an experienced petrologist in the newly organized Research Laboratory of the United States Steel Corporation at Kearny, New Jersey, together with an opportunity for teaching at Stevens Institute of Technology in Hoboken, looked like a better choice, and Andersen returned in 1928 to the land where his best-known work had been done and of which three of his four children were citizens by birth. Here he remained for the final thirteen years of his life.

Andersen was married to Borghild Olsen on the 6th of March, 1913, in New York City. Their children, all now resident in this country, are Ragna, Erling, Erik, and Thor.

Andersen's strongest instinct in science was his feeling for workmanship, for doing thoroughly and exhaustively whatever he undertook. For example, his paper on aventurine feldspar remains the last word on the subject, and in our Corporation Laboratory his report on open-hearth furnace bottoms of magnesite is referred back to as a standard. Equally thorough was his preparation of a subject for a scientific address or for instruction, and one of his deepest interests in recent years was his class in geology and petrography at Stevens. He was also gratified to be invited to give a series of lectures at Princeton in 1934, and to take over for a time the classes that had been interrupted by the death of Professor R. J. Colony at Columbia in 1936.

Andersen was not active in many scientific and technical organizations but his ability was quickly recognized in those in which he did take a part. He was president and councilor of the Geological Society of Norway (Norsk Geologisk Föreningen), and received its Reusch Medal in 1931. He was also a member of the Geological Society of Stockholm, and became a Fellow of the Mineralogical Society of America in 1931. He was elected president of the New York Mineralogical Club for the year 1939, and it was a matter of deep regret to us all that he was prevented by his final illness from taking part in the meetings of this Club during the latter part of his term as its president.

The appended bibliography covers his published work but does not include a large number of confidential reports made to the Research Laboratory and the technical committees of the Steel Corporation on such subjects as silica brick, magnesite, olivine, chrome ore, and calcium aluminate cement.

BIBLIOGRAPHY

- Ueber Epidot und andere Mineralien aus Pegmatitgängen in Granulit von Notodden, Telemarken in Norwegen: Archiv. f. Math. og Naturv., **31**, no. 15, 48 pp., 3 pls. (1911).
- (With Bowen, N. L.) The binary system MgO-SiO₂: Am. Journ. Sci., 37, 487-500 (1914). (Papers from Geophysical Laboratory, Carnegie Institution of Washington, no. 172.)
- (With Bowen, N. L.) Das binäre System Magnesiumoxyd-Silicium-2-Oxyd: Zeits. anorg. Chem., 87, 283-299 (1914). (Geophysical Lab. Papers, no. 173.)
- The crystallographic and optic properties of magnesium and manganese pyrophosphates: Jour. Washington Acad. Sci., 4, 318-325 (1914). (Geophysical Lab. Papers, no. 180.)
- The system anorthite-forsterite-silica: Am. Journ. Sci., 39, 407-454 (1915). (Geophysical Lab. Papers, no. 209.)
- On aventurine feldspar: Am. Journ. Sci., 40, 351-399, 3 pls. (1915). (Geophysical Lab. Papers, no. 225.)
- Das System Anorthit-Forsterit-Kieselsäure: Neues Jahrb. f. Mineralogie, Geologie u. Paläontologie, Beil. Bd. 40, 701-758 (1916). (Geophysical Lab. Papers no. 209a.)
- Aventurine labradorite from California: Am. Mineral. 2, 91 (1917). (Geophysical Lab. Papers, no. 280.)
- A method for determination of the volatile matter in oxides of lead. The volatilization of lead oxide from lead silicate melts: *Jour. Am. Ceram. Soc.*, 2, 782-783, 784-789 (1919). (Geophysical Lab. Papers, no. 356; series on Optical Glass, nos. 18 and 19.)
- Ueber Avanturinfeldspäte: Zeits. Krist., 56, 553–580 (1922). (Geophysical Lab. Papers, no. 225a.)
- Ildfaste oxsyders fysikalske kemi. Oversigt over nyere praecisionsundersökelser: Norges Geol. Undersökelse, no. 101, 54 pp., 2 pls. (1922). (Statens Raastofkomite Publ. no. 1.)
- (With Holtedahl, Olaf.) Om Norske dolomiter med bemerkninger om den praktiske anvendelse av dolomite: Norges Geol. Undersökelse, no. 102, 49 pp. (1922). (Statens Raastofkomite Publ. no. 2.)
- En forekomst av ren kvarts i Krödsherred: Norges Geol. Undersökelse, no. 103, 19 pp. (1922). (Statens Raastofkomite Publ. no. 3.)
- Norges Geologiske Undersökelse, dens opgaver og virksomhet: Norges Geol. Undersökelse, Smaaskrift no. 1 (1922).
- Feltspat I. Feltspatmineralenes egenskaper, forekomst og praktiske utnyttelse med saerlig henblikk på den Norske feltspatindustri: Norges Geol. Undersökelse, no. 128A, vii+142 pp., 22 pls. (1926).
- The genesis of some types of feldspar from granite pegmatites: Norsk Geolog. Tidsskr., 10, 113-205, 9 pls. (1928).
- Discussions of certain phases of the genesis of pegmatites: Norsk Geolog. Tidsskr., 12, 1-56 (1931).
- Feltspat II. Norges Geol. Undersökelse, no. 128B, 109 pp. (1931).
- (With Sosman, R. B.) Composition-temperature phase equilibrium diagrams of the refractory oxides. Four plates in 4 colors, 24×19 inches (61×48 cm.). Research Laboratory, United States Steel Corporation (1933).
- (With Sosman, R. B.) Large-scale phase equilibrium diagrams: Bull. Am. Ceram. Soc., 13, 109 (1934).
- (With Lee, H. C.) Properties of tri-calcium silicate from basic open hearth steel slags: Jour. Washington Acad. Sci., 23, 338-351 (1933).
- Magnesia refractories in basic open-hearth steel furnaces: Jour. Am. Ceram. Soc., 17, 221-235 (1934).