

is discontinuous, consisting of two parts, namely, muscovite—mariposite, and lepidolite—protolithionite.

The optic properties and their variations in both parts of the system can be shown by the use of lines like contours on the same kind of diagram used for studying the variations in composition.

In general, octophyllite is dark colored and heptaphyllite is light colored, but this distinction is not reliable any more than any corresponding color distinction in other silicate groups of minerals. Colorless mica may belong to the octophyllite or biotite system and black mica may belong to the heptaphyllite or muscovite-lepidolite system. In fact, in several cases, micas have been called "biotite" because of their color, which actually belong to the heptaphyllite system.

In nearly all cases octophyllite has the optic plane parallel to (010) and the optic angle smaller in red light than in blue light, while the reverse conditions are found nearly always in heptaphyllite.

### MEMORIAL OF THOMAS L. WATSON

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In the death of Thomas L. Watson, State Geologist of Virginia, and Head of the Department of Geology at the University of Virginia, geology and mineralogy have suffered a severe loss.



THOMAS L. WATSON  
1871-1924

When Doctor Watson graduated from the Virginia Agricultural and Mechanical College in 1890, it had been his original intention to enter chemistry as a profession, but his strong interest in geology together with a feeling that his native state, Virginia, possessed valuable resources which afforded a great field for study and development, turned him aside from his original plan.

It was therefore not unexpected to find him taking his graduate work in geology first at the University of Virginia, and later at his alma mater, where he received his Master's degree in 1893. In 1895 he went to Cornell University, and took his doctorate there in 1897.

Subsequent to graduation he held positions as instructor in geology and mineralogy at the Virginia Polytechnic Institute, from 1892-5; assistant chemist at the Virginia Experiment Station, 1890-5; private research worker on rock decay, United States National Museum, 1897-8; assistant State Geologist of Georgia, 1898-1901; professor of geology, Denison University, 1901-4; geologist, Georgia Geological Survey, 1902; geologist, North Carolina Geological Survey, 1903; field assistant, United States Geological Survey, 1903-8; and professor of Geology, Virginia Polytechnic Institute, 1904-7.

He was appointed professor of economic geology in the University of Virginia in 1907, and promoted to head professor of the School of Geology in the same institution in 1910.

In 1908 when the Virginia legislature revived the Virginia Geological Survey, Watson was selected as State Geologist and Director.

This appointment to the professorship at Charlottesville and to the Directorship of the State Survey were not only gratifying to him, but represented a wise move on the part of the University and Geological Survey Board, for there was probably no man better fitted to carry on the work than he was. Virginia was his native state, he was thoroughly familiar with it, and welcomed the opportunity to serve it. Indeed he labored unceasingly in the interests of the Survey and the University up to the time when he was forced to bed by his last illness.

During his term of service as State Geologist, he had prepared over 20 reports dealing with various branches of Virginia geology, as well as a number of maps. To the preparation of these, he gave much cooperation and supervision, and while he wanted work completed as promptly as possible, speed was never allowed at a sacrifice of accuracy or thoroughness.

While Doctor Watson had a remarkably broad grasp of geology as his publications show, he was especially interested in economic geology, mineralogy and petrography.

In the earlier years of his career he devoted much time to economic and petrographic problems of the southeastern states, his contributions on the granites and other igneous rocks of the south being noteworthy. He also prepared several reports on the mineral deposits of Georgia while with the geological survey of that state.

In later years his researches were naturally restricted more to Virginia, in which state he found a wealth of material to interest him.

Among his most important pieces of petrographic and mineralogic works, in addition to that on the southern granites already mentioned, are those on the emery deposits of Pittsylvania County, Virginia, in which among other things he identified the mineral hoegbomite, not hitherto found outside of the Routivare iron district of Lapland; and the remarkable rutile-bearing rocks of Nelson County. It was from this latter area with its interesting igneous complex, that he described the curious rutile-ilmentite-apatite rock, which he named nelsonite.

Numerous other mineralogic and petrographic papers, many of them describing rare types of rock occurrences, and interesting minerals in the south, swell the list of his important contributions in this line.

No less important, however, were his many contributions to economic geology, and his papers which deal chiefly with the useful mineral deposits of the southern states are all the more authoritative because of his wide personal familiarity with them in the field.

One of his largest works was that on the Mineral Resources of Virginia prepared in connection with the Jamestown Exposition, which set forth with care and detail our existing knowledge of the geology and mineralogy of the state.

Doctor Watson was also co-author with the writer of two text books on engineering geology. He was busy correcting proof of a new edition of the larger one the day he was taken to the hospital, and did not live to see it completed.

In his teaching work at the University, Watson exhibited the same interest and attention to detail that he did in everything else. His pedagogic work could not help but be successful and stimulating because he had at hand a store of facts gathered over a long period of practical field work, and he understood how to use them to best advantage.

A problem to which Doctor Watson had devoted much time and thought, and on which he had published not a little, but had a still greater quantity of unpublished data, was the weathering of rocks and minerals, and here his knowledge of chemistry and

mineralogy was of great assistance. Those papers of his which had appeared dealt chiefly with the weathering of granites.

In 1921, when the Mineralogical Society began a consideration of the Nomenclature and Classification of Minerals, Dr. Watson was appointed Chairman of the Committee, in charge of the work. Two reports of this committee have already appeared in the *American Mineralogist*.

There were several things which contributed materially to Watson's success as a geologist and mineralogist. One of these was the broad and intense nature of his interest in these subjects. A second was his remarkably fine memory for facts, which applied not only to those he had observed personally, but also those which had been recorded by others. In fact he possessed a remarkable knowledge of scientific literature, and knew where to go for information on almost any geologic topic. A third was his remarkable energy, and the expedition with which he turned out work.

The writer of this biography had known Doctor Watson intimately for many years, and while he held him in high regard as a scientist, the human traits of his character appealed to him especially. He possessed a peculiar quality of making friends and through his spirit of loyalty of retaining them. Moreover his modesty combined with the inborn characteristics of a gentleman never failed to win respect and attention, even from those who knew him casually. He was a strong advertiser of the State of Virginia, but he never advertised himself.

Dr. Watson was a fellow and councillor of the Mineralogical Society of America, fellow and past councillor of the Geological Society of America, member of the Society of Economic Geologists, American Institute of Mining and Metallurgical Engineers, Seismological Society of America, Washington Academy of Sciences, Washington Geological Society, and American Association for Advancement of Science. He was also a member of Phi Beta Kappa and Sigma Xi.