portance. Many apparently homogeneous bodies are mixtures and a large number of the minerals in nature show zonal growths at least as great as those of the plagioclase feldspars in rocks. A number of illustrations of the way in which optical study can solve disputed questions in mineralogy will be described in future notes.

OPTICAL EVIDENCE THAT "HYDROGIOBERTITE" IS A MIXTURE[1]

ESPER S. LARSEN

Three specimens labeled "hydrogiobertite," examined microscopically, have proved to be mixtures almost submicroscopic in fineness of crystallization, and as no careful microscopic examination of the original "hydrogiobertite" appears to have been made it is highly probable that it was also a mixture and that the mineral hydrogiobertite does not exist.

The so-called hydrogiobertite from Phillips Springs, California, analyzed by Dr. R. C. Wells,[2] of the U. S. Geological Survey, is made up of successive layers of very minute fibers with some quartz and other impurities. It is made up chiefly of two fibrous minerals but may have some amorphous material. One set of fibers has nearly parallel extinction with positive elongation, a lowest index of refraction α of $1.52 \pm .01$, and a birefringence that is not strong; it may be hydromagnesite. The other has a much lower index of refraction and a much higher birefringence. The two minerals are in part in separate layers, in part intimately intermixed.

A second specimen from Phillips Springs was similar but contained more hydromagnesite (?) and probably some amorphous material.

A specimen from Monte Somma, Italy, kindly furnished the author by Colonel Washington A. Roebling, was also finely crystalline and was made up chiefly of hydromagnesite with some mineral with higher index of refraction and lower birefringence.

There is thus good reason to believe that "hydrogiobertite" has no claim to recognition as a mineral species.

[1] Published with the permission of the Director of the U. S. Geological Survey.

[2] *Am. J. Sci.*, [4] **30**, 189, 1910