ART. LVII.—*On Hamlinite, a new rhombohedral Mineral from the Herderite locality at Stoneham, Me.;* by W. E. HIDDEN and S. L. PENFIELD.

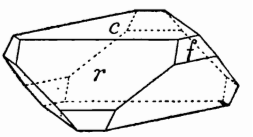
SHORTLY following the announcement of herderite† from Stoneham, the mineral, which we are about to describe, was detected by one of us occurring as minute rhombohedral crystals attached to the herderite and margarodite and associated with a mineral which was subsequently identified as the rare beryllium silicate, bertrandite. As the crystals were observed on only a single specimen and would not have weighed much more than 0·01 gram, if they could have been successfully detached from the matrix, it seemed imperative that more material should be obtained before commencing any investigation. During the past five years, therefore, we have kept up a diligent search for the crystals, examining carefully every available herderite specimen; we have also informed various

* A description of this apparatus will be found in the Transactions of the American Academy of the present year. I have now done much work with ether, tracing the isometrics directly as far as 1850 atm. and something over 215°, without however being able to reach a decision, May, 1890.

† This Journal, III, xxvii, pp. 73 and 135, 1884.

mineralogists of the occurrence of a probably new rhombohedral mineral, requesting them to examine the specimens in their own collections, but as up to the present time no success has attended our efforts we feel warranted in giving as complete a description as possible of the material in hand. We hope that in the future sufficient material may be obtained for a complete chemical investigation. We shall, moreover, consider it a great favor if the readers of this article will carefully examine the specimens of herderite which may be in their possession and aid us in securing the necessary material.

The system of crystallization is hexagonal-rhombohedral. The crystals vary from one to two millimeters in diameter and are quite flat from the predominance of the basal pinacoid. They exhibit the forms *c*, 0001, O; *r*, $10\bar{1}0$, 1 and *f* $02\bar{2}1$,–2, which are developed as shown in the accompanying figure. All of the planes are more or less uneven, especially *r*, which always yielded a number of reflections of the signal, so that it was quite impossible to obtain accurate measurements from them. The angle which was selected as fundamental was $f \wedge f$, $2\bar{2}01 \wedge 02\bar{2}1 = 108° 2'$ from which the length of the vertical axis $\dot{c} = 1{\cdot}135$ was calculated.



Other measurements resulted as follows:

		Measured.	Calculated.
$r \wedge r$,	$10\bar{1}1 \wedge 01\bar{1}1 =$		87° 2′
$c \wedge r$,	$0001 \wedge 10\bar{1}1 =$	about 55°	52° 40′
$c \wedge f$,	$0001 \wedge 02\bar{2}1 =$	69° 15′ – 70° 30′	69° 7½′
$f \wedge r$,	$02\bar{2}1 \wedge 10\bar{1}1 -$	53° 35′ – 54° 27′	54° 1′

The cleavage is perfect parallel to the base. The luster on the basal plane is pearly and on the rhombohedral faces is greasy vitreous, very similar to that of herderite. Some of the crystals are transparent and colorless, others show a faint yellow tint, owing probably to some impurity. Crystals lying on a basal plane, when examined under the microscope in convergent polarized light, show a perfectly normal, uniaxial interference figure, with positive and not very strong double refraction.

The hardness is 4·5. Specific gravity taken with the barium-mercuric iodide solution was 3·228.

Before the blowpipe the mineral fuses at about 4 to a white porcelain-like mass, coloring the flame pale green (P_2O_5). In the closed tube it gives abundant water which is strongly acid and etches the glass (F). It is slowly soluble in acids and gives with ammonium molybdate a strong P_2O_5 reaction. With H_2SO_4 it gives no micro-chemical reaction for Ca. The presence of P_2O_5 interfered with making the ordinary micro-chemical reac-

tions, but a few tests, made on two small crystals by the usual analytical methods, indicate that alumina is probably present, while, from its association with herderite and bertrandite, beryllium may be expected. We have, therefore, undoubtedly a new species, a phosphate (probably of beryllium and aluminum) containing fluorine, and one which promises to be of unusual interest. As it seems best to designate the mineral by a distinctive name we propose for it the name *Hamlinite*, in honor of Dr. A. C. Hamlin of Bangor, Me., whose life-long interest in the development of the mineral resources of his state, and particularly of Oxford County (where this new mineral occurs), has tended to make that region famous as affording some of the most beautiful and highly interesting minerals known to science.

It is to be hoped that the mineral developments now going on in Oxford County will bring to light an abundant supply of this mineral, or enough, at least, to enable us to determine its chemical composition.

April 23d, 1890.