

the angle of extinction on the vertical axis rises to 45° as the zone of the clinopinacoid is approached.

Hornblende is trichroic, ranging in colour from deep chestnut to yellowish brown in ordinary light, its scheme of absorption being $c < b > a$. The greatest angle of extinction, $c \wedge a$, that was observed was 27° .

Biotite frequently encloses augite and seems to have generally crystallized later than that mineral. In some specimens (No. 147) an excellent micropoikilitic structure is thus produced, a number of augite individuals being set promiscuously in the larger crystals of biotite*.

Sphene is an abundant accessory and occurs in characteristic wedge-shaped individuals, and also in larger columnar sections. It sometimes polarizes very brilliantly. Accessory constituents.

Iron is constantly present in small grains commonly enclosed in some of the ferro-magnesian silicates. It has the general characters of magnetite and the presence of leucoxene indicates its probable titaniferous character, as sphene was not observed to be altered to that mineral.

Apatite occurs in the usual forms and position, but in places becomes a very prominent accessory.

The structure and mineral composition of this rock ally it with the essexite group and the chemical analysis quite establishes this view. The variety and character of the feldspar, the features of the bisilicates and the prominence of apatite and sphene as well as the occasional occurrence of nepheline and sodalite in very subordinate amounts on the one hand, and quartz in even still smaller proportions on the other, indicate a magma intermediate in composition between diorite and theralite. The specimen for analysis (No. 179) plate iv, was taken from the more acid portion of the mass (Morrisseau's quarry). Chemical composition.

In its chemical composition this rock seems most nearly equivalent to essexite from Rongstock, Bohemia, being in this case somewhat higher in silica than the original essexite of Salem, Massachusetts. Its resemblance to the augite-diorite of Rosita Hills, Colorado**, especially to its orthoclase facies is also noticeable.

* 'On the use of the terms Poikilitic and Micropoikilitic in Petrography.'—G. H. Williams—The Journal of Geology, Vol. 1, No. 2.

** W. Cross, U. S., Geological Survey, 17th Annual Report, Part II, p. 291.