

MINERALOGY.—*Gillespite, a new mineral.*¹ WALDEMAR T. SCHALLER, U. S. Geological Survey.

A small rock specimen collected from a moraine near his claim near the head of Dry Delta, Alaska range (about 100 miles S. E. of Fairbanks), Alaska, by Mr. Frank Gillespie (after whom the mineral is named) of Richardson, Alaska, was brought to the Chemical Laboratory of the U. S. Geological Survey by Dr. Philip S. Smith of the Survey.

The rock specimen is composed chiefly of a mica-like mineral (gillespite), with a striking red color, which could not be identified by simple tests. By chemical analysis the mineral proved to be a silicate of ferrous iron and barium with the composition $\text{Fe}^{\text{II}}\text{BaSi}_4\text{O}_{10}$. Two other minerals, a grayish green diopside and a white barium feldspar, with the red gillespite, compose the rock. Several other minerals are seen in thin sections but only in very small quantities. The mode of occurrence of the rock is not known but it suggests contact metamorphism with the development of abundant barium minerals.

The red gillespite forms thick scaly masses from one to five millimeters across and nearly as thick. The rock mass is compact and although no crystal faces except the basal plane could be detected, thin sections of the rock suggest an occasional terminal plane on a gillespite. The mineral does not scale off like mica but the basal cleavage is very well developed. The physical properties are: brittle, $H. = 4$, sp. gr. = 3.33. Luster vitreous, color red, streak pink. The color is close to Ridgway's² "Pomegranate Purple," Pl. XII, hue no. 71, tone *i*, and to "Spinel Red," Pl. XXVI, hue no. 71, tone *b*. The powder approaches "Geranium Pink," Pl. I, hue no. 3, tone *d*. Translucent. Optically uniaxial, negative, birefringence very low, strongly pleochroic. Refractive indices: ϵ (rose red) 1.619, ω (pale pink to nearly colorless) 1.621.

In the blow-pipe flame, gillespite fuses easily and quietly to a black non-magnetic globule. Heated in a closed tube, it darkens and assumes a deep violet color, the original red color being regained on cooling. Readily decomposed by HCl, without gelatinization, the mineral flakes being changed to glistening flakes of silica which retain the shape of the original mineral. These residues of silica are doubly

¹ Received October 24, 1921. Published by permission of the Director, U. S. Geological Survey.

² R. RIDGWAY, *Color standards and color nomenclature*. Washington, D. C., 1912.

refracting and are being further studied. Sulphuric acid decomposes the mineral with separation of silica and formation of barium sulphate.

An analysis of a hand-picked sample of gillespite, with only a few per cent of other mineral present gave the following results:

Analysis of gillespite	Ratios	
SiO ₂	50.08	0.831 4.034 or 4 × 1.01
FeO.....	14.60	0.203 0.985 or 1 × 0.99
BaO.....	31.02	0.202 0.980 or 1 × 0.98
Al ₂ O ₃	0.34	
Fe ₂ O ₃	0.56	0.008
Mn ₂ O ₃	0.14	
Insoluble.....	2.20	
Water ^a	0.82	
	99.76	

^a Water determined by "ignition loss" corrected for (assumed) oxidation of FeO to Fe₂O₃. Selected pure fragments of gillespite give no water when heated in a closed tube.

The formula of gillespite is FeO.BaO.4SiO₂ or Fe["]BaSi₄O₁₀. If the ferrous iron and the barium be considered as isomorphously replacing each other, then the formula simplifies to (Fe["],Ba)Si₂O₅. There is, however, no evidence for such isomorphous replacement and as the ratios of ferrous iron and barium in the analysis are sharply 1:1, the formula Fe["]BaSi₄O₁₀ is to be preferred.

The presence of the small quantity of manganese was definitely determined and it is assumed to be present in the strongly chromatic manganic state; the combination of such manganic manganese with possibly a small quantity of ferric iron yielding the deep red color of the mineral. Titanium is not present.

There does not seem to be any group of minerals to which gillespite is closely related, considering its properties and chemical composition.

ICHTHYOLOGY.—*Notice of a spiral valve in the Teleostean fish Argentina silus, with a discussion of some skeletal and other characters.*¹ WILLIAM C. KENDALL and DONALD R. CRAWFORD, U. S. Bureau of Fisheries.

INTRODUCTION

Distribution.—*Argentina silus* is found rather infrequently along the Atlantic coast of the United States, although it is not rare off the coast of Norway. The flesh is edible, but *Argentina silus* is not taken in sufficient quantities to be of economic importance.

¹ Received November 19, 1921.