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ART. IV.—On *Roscoelite, a Vanadium Mica*; by JAMES BLAKE, M.D., San Francisco, California.

THE mineral, to which I have given the name of Roscoelite, —in honor of Professor Roscoe, of Manchester, who has done so much for the chemical history of vanadium,—is a well marked species of mica, containing quite a large percentage of vanadium. It was found in a gold mine at Granite Creek, El Dorado County, in the lower hills on the western slope of the Sierra Nevada. It occurs in the hanging wall of a small quartz vein, the country rock being porphyry. The mica appears to have been principally deposited in fissures in the porphyry, and is usually found in layers from a tenth to half an inch thick, and seldom extending continuously for more than two or three inches. It is also found filling cavities in the quartz. The crystals are quite brilliant, of a dark-green color, seldom more than 0.1 inch long, and, when occurring in fissures, form two series starting from each side of the fissure and meeting in the center. They are also found in nodules with a stellar arrangement, more particularly in the cavities of the quartz. They are strongly doubly refracting. Sp. gr. 2.83. They weather into a light yellow wacke. The whole thickness of the vein-matter in which the mica is found is not more than a few inches. The mine in which it occurs has been worked for gold, and it is in these micaceous deposits that the greater part of the gold is found. Some portions are extremely rich, as much as \$240 having been washed out from a single panfull; and while at the mine I saw \$40 taken from a few handsfull. The gold is commonly found in the form of fine scales which have been deposited between the crystals of the mica. So generally is it diffused that it is impossible to find a piece of the mica as large as a bean that does not contain gold. The mine is worked by means of an open cut, now about 30 feet deep and 150 feet long.

The most interesting fact connected with this mineral is the large proportion of vanadium it contains, and that too, in a form in which it has not before been found, unless the small traces of it detected in some basalts should be part of an analogous compound. When I first discovered the mineral, I expected to find a mica rich in chromium, and, on heating some of it in a test tube with HCl, I obtained a green solution. Finding that by continued boiling with acid the whole of the color was entirely removed from the mica, I availed myself of this method to determine the quantity of what I considered to be chromium; fusing the residue from the acid solution with carbonate of soda and niter, and precipitating with lead, I also ascertained the amount of the alkalis; and, in presenting some specimens

of the substance to the Microscopical Society and at the Academy of Sciences of California in September, I made the general statement that it was a potash-mica, containing 23 per cent chromic oxide and traces of lithia. It was not until I had sent a specimen of the mineral to Dr. Genth to analyze that the presence in it of vanadium was discovered, and to him is due the entire credit of having first detected the true character of this interesting mineral. I have availed myself of the action of nitrohydrochloric acid on the mineral to prepare a considerable quantity of vanadic compounds for physiological experiment, as this affords about the easiest method of obtaining vanadic acid, although it is impossible thus to extract all the vanadium from the mica.

ART. V.—*On some American Vanadium Minerals*; by F. A. GENTH.

1. *Roscoelite*.

I am indebted to Dr. James Blake of San Francisco, California, for a small quantity of the very interesting mineral, which he called "Roscoelite," in honor of Professor Roscoe, whose important investigations have put vanadium in its proper place among the elements.

Roscoelite occurs in small seams, varying in thickness from $\frac{1}{16}$ to $\frac{1}{8}$ of an inch in a decomposed yellowish, brownish or greenish rock. These seams are made up of small micaceous scales, sometimes $\frac{1}{2}$ of an inch in length, mostly smaller and frequently arranged in stellate or fan-shaped groups. They show an eminent basal cleavage. Soft. The specific gravity of the purest scales (showing less than one per cent of impurities) was found to be 2.938; another specimen of less purity gave 2.921. Luster pearly, inclining to submetallic. Color dark clove-brown to greenish-brown, sometimes dark brownish-green.

Before the blowpipe it fuses easily to a black glass, coloring the flame slightly pink. With salt of phosphorus gives a skeleton of silicic acid, a dark yellow bead in the oxidizing flame, and an emerald-green bead in the reducing flame. Only slightly acted upon by acids, even by boiling concentrated sulphuric acid; but readily decomposed by dilute sulphuric acid, when heated in a sealed tube at a temperature of about 180° C., leaving the silicic acid in the form of white pearly scales, and yielding a deep bluish-green solution. With sodic carbonate it fuses to a white mass. The roscoelite, which I received for investigation was so much mixed with other sub-