

- (1.) *Tysonite and Bastnäsité*; (2.) *Meteoric Iron from Indian Valley Township, Virginia*; (3.) *Anatase*; (4.) *Sapphire*.

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- (1.) *Tysonite and Bastnäsité from Crystal Park, near Mainton Springs, Colorado*.

ABOUT two years ago Mr. T. A. Herstand of Mainton Springs, Colorado, made a remarkable find of tysonite and bastnäsité at Crystal Park, near Mainton Springs, Colorado. The entire find consisted of one crystalline cleavable mass of tysonite, covered with bastnäsité, weighing in all fully six kilograms. It was found in a coarsely crystalline granite, and no other deposit has been discovered subsequently, although considerable search has been made by various prospectors. Up to the time of this find all the tysonite discovered in Colorado has not amounted to more than 50 grams.

The tysonite was principally of a rich cinnamon-brown colour with a perfect basal cleavage, and frequently contained patches from one to three cm. in diameter which were entirely transparent.

In the fissures of both minerals is found a creamy white pulverulent mineral which is evidently an alteration product of the bastnäsité.

Both the tysonite and bastnäsité exhibit very pronounced absorption spectra when viewed with a spectroscope; sections of both minerals cut parallel to the basal plane show the same uniaxial interference figure, which suggests that the two minerals may belong to the same crystalline system, and that possibly the bastnäsité is either only an alteration product of the tysonite, or a differently-coloured variety of the same mineral.

(2.) *An undescribed mass of Meteoric Iron from Indian Valley Township, Floyd County, Virginia*.

This mass of meteoric iron was found in Indian Valley Township in the spring of 1887, and weighs 14 kilos; it is a cubic iron, having a very marked crystalline structure, and shows the Neumann lines on etching with dilute nitric acid.

It furnished Mr. L. G. Eakins, of the U. S. Geological Survey, the following result on analysis:—

Iron	...	...	93.59
Nickel	...	...	5.56
Cobalt	...	...	.58
Copper	...	...	trace
Phosphorus	...	...	.27
Sulphur	...	...	.01
Silica	...	...	trace
			99.96

The surface of the iron is very much corroded, and it is certainly not a recent fall.

(3.) *Octahedrite (Anatase) from near Placerville, Eldorado County, California.*

Implanted on some highly interesting quartz crystals with rather unusual enclosures I observed some crystals of a mineral new to the Pacific Coast, and one which, though frequently observed in Europe, is yet of rather rare occurrence in North America—namely anatase.

Up to the present time only two specimens have come to hand; in both the crystals were implanted on the quartz and were highly splendid; on one specimen the crystals were a rich honey-brown by transmitted light; on the other a deep metallic blue. In size none were longer than 3 mm. In form they showed the common habit of the Swiss crystals, namely the pyramid {111} surmounted by a more obtuse pyramid.

The anatase was found in a vein of quartz crystals, varying from the size of a finger up to masses weighing 80 or 90 lbs.

Some of the quartz crystals were of more than usual interest—pellucid masses weighing 50 lbs. each; others enclosed chlorite deposited in successive layers; but the most interesting were those which enclosed, at a depth of from three to ten mm. from the surface of the crystal, and arranged according to the lines of growth, spherical masses (often silvery white), three to five mm. in diameter, consisting of crystallised aggregates of ankerite or siderite. The crystalline form of the latter was rhombohedral, and where exposed they had oxidised to a rusty-brown.

(4.) *The Sapphire Deposits of the Northern Missouri River, near Helena, Montana.*

It was found, on a visit to this locality, that the sapphires are generally flat hexagonal crystals without prism faces, or crystalline fragments.

They vary in colour from light blue, lavender, light red, light green, to almost bottle green, and are very dichroic, appearing blue or green when viewed across the prism, but pink or bright red when viewed along the length of the crystal. They afford very brilliant gems with a remarkable lustre; but no true (sapphire-) blue or true (ruby-) red crystals have been observed from this locality.

The greatest deposits are between Eldorado Bar, Ruby Bar, and other bars along the Missouri River, for a distance of six miles, the central point being 16 miles from Helena.

Until recent years they have not been systematically mined, but have been found in the sluices and pans in the mining for gold, with which they are often found associated in a layer of fine glacial gravel immediately overlying the old slate rock.

In the deposit at Ruby Bar I observed, associated with the gold and the gravel, a mastodon tusk about 3 ft. in length.

The associated minerals were rutile, topaz in brilliant white modified crystals resembling those from Durango, stream tin, curious concentric masses of limonite pseudomorphous after pyrites, cyanite in broken crystals, chalcedony, calcite, and fine ruby-red garnet. From these the locality derives its name.

At Ruby Bar the sapphires were observed in a vein of eruptive rock 6 ft. wide, cutting the green slate. The rock is very much altered, and in it were found, associated with the sapphires, ruby red pyrope garnets and sanidine feldspars.

It is evident that all the sapphires found on the bars were derived from some such rock and were worn out during the glacial period.

Mr. H. Miers, of the Natural History Museum, London, reports that the rock is a vesicular mica-augite-andesite.