one set of veins, striking in a northwesterly direction, was observed. They stand nearly vertical or dip steeply toward the northeast. These veins had been opened in only two or three places in 1910, and the maximum width observed was only about 4 feet, not all of which was filled by spar. The veins cut monzonite porphyry, as at the first locality, and were observed to outcrop at intervals in the direction of strike for a distance of one-quarter mile.

Developments—At locality No. 1 the American Fireman's Mining Company opened in 1909 a number of veins by means of shallow cuts, and sank several test pits to depths of 6 to 12 feet and two shafts to depths of about 80 feet. In all, about 20 openings had been made up to August, 1910. A triangular area about one-fourth mile wide at base from northwest to southeast, and about one-third mile from northeast to southwest, has been shown to carry productive veins of fluorspar. The surface of the area slopes gently to the southeast. At the main opening the vein strikes N. 17½ deg. E. to N. 22½ deg. E. and dips 65 deg. to 70 deg. toward the southeast. The vein had been opened to a depth of 75 or 80 feet in August, 1910, and had been worked for a distance of about 100 feet on the strike. The thickness between the walls of the vein measures 4 feet to 12½ feet, the irregularities being due to pinching together of the walls in places. The strike of the vein is apparently slightly sinuous, according to the irregularities in the walls, but there are no evidences of movement between the walls. The rock inclosing the vein is altered to a reddish colour so far as observed, and although the vein walls are smooth and clean in places, in other places there is interpenetration of vein and wall material.

The fluorspar is principally of a light-green shade, but there is some purple spar present, especially near the margins of the vein, and some quartz is present in pockets and thin stringers scattered throughout the mass of spar. The spar is mined from several levels and milled down through chutes to the lowest level, from which it is hoisted in buckets up the shaft to the surface. A steam hoist was being installed in August, 1910. On the strike of the opening, less than 100 yards north of the shaft, an open cut and shallow burrow showed a promising vein of spar with a fork extending in a northwest direction. These veins and one other a few yards to the west are the nearest to the limestone mass, which lies 35 yards or more to the west. So far as could be ascertained, none of the veins extend into the limestone. The greater part of the spar that has been produced in this region has been taken from the shaft just mentioned.

Grades of Western Fluorspar.—None of the spar that has been mined in Colorado and New Mexico has been cleaned in any way except by hand. Mechanical concentration would improve the grade of the Colorado spar greatly, but none of the fluorspar prospects in Colorado have proved of sufficient richness to warrant the installation of washing plants. In certain places water is available, but in others the problem of finding water would be difficult. The Colorado product has never averaged quite high enough in grade fully to satisfy purchasers or to command a price satisfactory to producers. With regard to the deposits near Deming, N. Mex., there is little necessity for washing, but such a process would not be at all feasible on account of thescarcity of water. Supplies of water for men, teams, and hoisting engine have to be hauled from a well more than 4 miles distant on the road to Deming. There is little probability that a well could be obtained by drilling anywhere near the fluorspar deposits on account of the nature and structure of the underlying rocks.

Analyses.—The following table gives analyses of gravel fluorspar from Mirage, N. Mex., generally in carload lots used in basic open hearth steel furnaces, and analyses of spar from Colorado, Illinois, and Kentucky, made on a similar basis, are given for comparison.

Analysis of Fluorspar from New Mexico, Colorado, Kentucky, and Illinois.

Locality	CaF_2.	SiO_2.	Al_2O_3+ Fe_2O_3.	$CaCO_3$.	$MgCO_3$.	Authority.
Mirage, N. Mex.	93.68	4.68	0.74	0.76	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	93.55	4.97	.80	.62	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	91.98	6.60	1.00	.67	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	88.80	9.83	1.10	.48	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	88.30	9.85	1.06	.98	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	89.52	8.62	.92	.79	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	91.32	6.60	.74	.74	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	90.13	7.86	.70	.74	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	92.19	6.05	.68	.83	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	90.90	6.96	.86	.86	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	90.22	7.60	1.04	.68	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	88.59	9.66	.96	.83	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	93.99	3.84	1.12	1.12	Trace	Colorado Fuel & Iron Company.
Mirage, N. Mex.	89.70	8.60	.92	.80	Trace	Colorado Fuel & Iron Company.
Rosita, Colo.	81.55	13.3	5.1	....	.....	Colorado Fuel & Iron Company.
Rosita, Colo.	86.75	9.3	4.2	....	.....	Colorado Fuel & Iron Company.
Rosita, Colo.	82.25	12.6	5.0	....	.....	Colorado Fuel & Iron Company.
Rosita, Colo.	84.3	11.6	n.d.	....	.....	Colorado Fuel & Iron Company.
Rosita, Colo.	60.9	27.0	n.d.	....	.....	Colorado Fuel & Iron Company.
Jamestown, Colo.	76.05	19.8	4.2	....	.....	Colorado Fuel & Iron Company.
Jamestown, Colo.	83.76	12.2	4.0	....	.....	Colorado Fuel & Iron Company.
Jamestown, Colo.	85.9	10.5	3.75	....	.....	Colorado Fuel & Iron Company.
Jamestown, Colo.	79.06	15.24	5.26	....	.....	Colorado Fuel & Iron Company.
Jamestown, Colo.	86.75	8.60	4.46	....	.....	Colorado Fuel & Iron Company.
Marion, Ky.	84.25	2.98	1.28	10.28	.....	Colorado Fuel & Iron Company.
Marion, Ky.	87.8	3.10	2.06	....	.....	Colorado Fuel & Iron Company.