quantity secured by picking on the grizzly above. The waste and calcite are thrown directly to chutes leading to their respective bins, while the lead and zinc ores pass through short chutes to separate troughs just below the picking belt, and are moved by a double shaking conveyer to separate 13-inch disk crushers. The overrun of fluorspar from the picking belt passes in the opposite direction to a 24-inch disk crusher. The lead and zinc ores discharged from their respective disk crushers are carried through pipes across to pulsator jigs in the jig house. From the 24-inch disk crusher the spar and the fine lead and zinc ores are fed into a bin. This bin feeds into the same service pipe which receives the undersize from the shaking screens. This service pipe crosses to the jig house and feeds into a 5-celled rougher jig. The ore from the rougher jigs goes to a cleaner jig having six cells. Provision is made for catching the lead from the righer jig and for taking care of the tailings. Between the rougher jig and the cleaner jig are sand crushers and several pumps, and the system is very flexible. The lead and zinc ores coming from the 13-inch disk crushers are treated by two 4-celled pulsator jigs, having a set of laboratory rolls. Of the ore at present considered normal about 90 per cent. consists of concentrates of fluorspar, galena, and sphalerite (zinc blende). The galena recovered constitutes about 1 per cent. of the concentrates, and the sphalerite still less. It is planned to treat a large quantity of tailings from the oil mill, of greater richness than those now produced, as soon as the new mill is working perfectly. The milling of fluorspar offers rather difficult problems, for unlike most ores, the bulk of the product must be saved, and the waste which must be eliminated constitutes relatively a small percentage. In addition, the separation of the lead and the zinc from the fluorspar is difficult, particularly where such small percentages of the former minerals are present, yet it is essential that they be almost completely removed, since the presence of sulphide ores renders the fluorspar of little value as a flux in steel making. Moreover, if the separation can be completely and economically effected, the lead and zinc ores recovered materially assist in paying the expense of cleaning the ore.

Under normal conditions about 57 men are employed overhead, including office force and superintendents, and about 48 men underground. When visited in April, 1911, this mill had not been entirely completed, and its capacity had not been demonstrated. It was expected, however, that its capacity would far exceed any other mill built to treat fluorspar and associated ores. The product of this mill is carried to Ohio River over an electric tramway 3,300 feet long, and is then loaded on barges and towed to Shawneetown, Ill., Evansville, Ind., or Golgonda, Ill. The river is generally closed by ice for a short period in winter, and in very dry summers the water may become too low for transportation. For this reason an endeavour is made to maintain sufficient stocks of spar from the Rosiclare mines at the railroad in Shawneetown to provide for shortages caused by interrupted shipments.

New Mexico.

Only recently has fluorspar been found in New Mexico in sufficieit quantities for exploitation. The American Fireman's Mining Company, of Kansas City, Mo., in prospecting for metallic ores on property situated 10 miles northeast of Deming, Luna County, N. Mex., has opened a number of veins of fluorspar which give promise of containing nearly if not quite sufficient spar to supply the western market for several years.

Location.—The fluorite occurs on the flanks of a small ridge called "Fluorite Ridge," one of the foothills of Cooks Range, 10 miles northeast of Deming. The most promising prospects have been made in two localities separated by a distance of about 1¼ miles. One of the localities is at the extreme southeastern base of the ridge on a gentle rise about 400 feet above the plain; the other well up the south slope of the ridge about 900 feet above the plain. Deming lies in a nearly flat valley covered by desert deposits, with Cooks Range 10 to 15 miles northeast and the Florida Mountains 10 miles or more southeast. The fluorspar deposits are most easily reached by a 10-mile drive from Deming, but the product is shipped from a siding, on the Atchison, Topeka & Santa Fe Railway, called Mirage, 5½ miles southeast of the prospects.

Geologic Relations.—Fluorite Ridge consists of a central mass of monzonite pohphyry which has intruded strata of Paleozoic and Mesozoic age, chiefly Ordovician limestone and Carboniferous and Cretaceous sandstone, quartzite, and conglomerate. The dips of the sedimentary strata on the south and west sides where the fluorspar is found are very steep, or vertical, and masses of the strata have not only been tilted up by the intrusive action, but folded into the intrusive rock. The base of the ridge is surrounded by an agglomerate consisting of angular masses of ondesite embedded in tuff. Some thin dikes of balast cut the agglomerate, and unconsolidated "desert fill" overlies it at a short distance from the base of the ridge.

Occurrence and Character of the Fluorspar. — The fluorspar occurs in veins, cutting and altered monzonite porphyry. Certain of the veins fill fractures in the rock along which there has been movement in both a vertical and a horizontal direction, but between the walls of some fissures there has not been noticeable displacement. The rock at the southeast base of the ridge is cut by two or more groups of approximately parallel veins. As shown by the openings that have been made, there appear to be at least five or six distinct veins in each group. One group of veins strikes N. 17 deg. E. to N. 27 deg. E., and the other strikes N. 6 deg. E. to N. 18 deg. W., and still other veins were observed to strike at various angles between these limits. The veins are nearly vertical or dip steeply in a southeast or northeast direction. The vein material is mainly fluorite mixed with a little quartz. Where the veins are partly siliceous they resist weathering slightly better than the surrounding porphyry, and therefore leave broken traces on the surface. At the surface the fluorspar in places is altered to calcium carbonate. The thickness of the veins as shown by surface cuts and by prospect pits and shafts ranges from a few inches up to 12 feet or more, but it is generally from 2 to 5 feet. The structure of the veins is in places distinctly banded; in other places the vein appears to consist mainly of a mass of crystalline spar, showing no banding, but carrying pockets of quartz. Brecciation of the vein by which large fragments of the wall rock have been included is not uncommon. The walls of the veins where open to any considerable depth are found to be smooth in places, but they are rarely smooth or regular for many feet, and the wall rock is generally much decomposed.

At the locality on the south slope of the ridge only