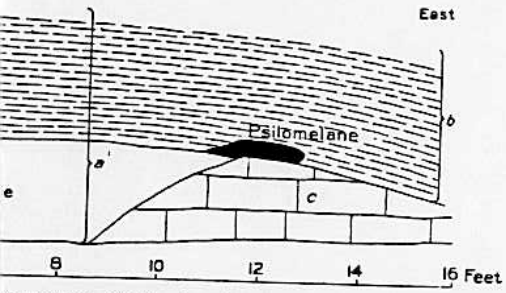
SPECK MINE

half a mile north of Penters Bluff station, ridge on which the Penters Bluff mine is ging to the Speck heirs. As the result of and summer of 1931 by W. H. Denison and ere was shipped about 50 tons of manganese fly carbonates.

rth-south cut 35 feet long which extends feet, exposes a face of 12 feet of St. Clair aring rock. In a portion of the cut the St. Clair limestone is brown instead of the or is obviously due to the presence of manhe St. Clair the Cason shale is represented atic sandstone which ranges in thickness



f Penters Bluff mine showing lens of manganese carne in Cason shale. Black areas represent pockets of shale and phosphate rock containing seams and veins; c, ridges of Fernvale limestone containing veins of

an 3 feet. The top of the Cason is nearly even, because the surface of the Fernvale e Cason was deposited is irregular.

the Fernvale contains much manganese which have partly replaced the limestone from 12 to 30 inches, but some portions one have not been replaced. The man- gray, and the oxide is chiefly hausmantions of the manganese-bearing rock conaring limestone and the phosphatic sand- as much as 1 inch thick of dense, hard manganese carbonate, which are usually ith the vein walls. The veins are widest portion of the limestone adjacent to the the manganese-bearing carbonate in the e to cream colored, and some is red. The

carbonates and adjacent limestone display fracturing and offsetting along the fracture planes. Veinlets of red and cream carbonates and pyrite occur along some of the fractures.

ALEXANDER PROSPECT

The Alexander prospect lies about half a mile east-northeast of Penters Bluff station, east of the road that follows the ridge west of West Lafferty Creek. It was not visited by the writer. It is reported that most of the manganese ore here is low-grade oxide that contains a high percentage of iron, but a little manganese carbonate is reported to be associated with the oxide ore. The prospect has produced 15 tons of ore.

ENOS-LINDSEY CAVE PROSPECT

The Enos-Lindsey Cave, in which a little prospecting was done before 1928 by the White River Manganese Co. and in 1939 by Sims & Harkelroad, is west of the White River and 1 mile southwest of Penters Bluff station. The entrance to the cave is a large opening extending precipitously downward about 30 feet from the bottom of a sink hole in the NW¼NW¼ sec. 8, T. 14 N., R. 8 W. The cave is in an area of Boone chert, and the wall of rock around the entrance reveals the lower portion of the chert and also the underlying St. Clair limestone. The cave is a large one with many branches running in a somewhat horizontal position in the Fernvale limestone, though the floor in large parts of the cave is 25 feet or more below the top of the limestone. The main part of the cave is said to run in a northwesterly direction, and passages totaling many thousand feet in length have been entered. The Cason shale, about 1 foot thick, which lies between the St. Clair and Fernvale limestones, was noted near the entrance, where it is offset 6 feet on an east-west vertical fault with downthrow on the north side, but was not recognized elsewhere in the cave. The prospecting that had been done prior to 1928 consisted chiefly of the collection of 50 samples for analysis from different places in the manganese-bearing rock, which was said to range in thickness from a knife edge to 9 feet and to average about 4 feet. The analyses of the samples are reported to show an average manganese content of 19.44 percent.

In 1939 a steel rail track 1,200 feet long was laid in the cave for the conveyance of manganese ore in buckets on hand-operated trucks to the entrance, where they were hoisted by windlass to the surface. Altogether about 100 tons of ore said to contain 37 percent of manganese was removed in 1939 from the cave and hauled by truck by way of Marcella and Locust Grove to Batesville and Cushman for shipment. The ore was obtained at two places. One of these, where about 25

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tons was removed, was in the roof of the cave at a place where the Fernvale limestone is broken by an eastward-trending fracture that has a possible downthrow of 6 to 8 inches on the north side. The ore here was obtained from an area 10 feet square and through a 3- to 4-foot thickness of limestone.

The other place where manganese ore was obtained is southwest of the entrance, at the end of the track. Here a solution-widened joint running S. 30° W. is displayed in both the roof and the floor. The manganese ore was obtained from an area 20 by 50 feet through a vertical distance of 8 feet on the roof and walls.

The manganese ore noted both in the cave and on the surface, where some of it had been placed, is porous and consists of psilomelane, wad, and some pyrolusite. Some of it contains much calcium carbonate because it was obtained from oxide-bearing limestone that had become porous in places through the complete and partial removal of the calcium carbonate. Although manganese carbonate has not been noted by the writer in the Enos-Lindsey Cave, the oxide-bearing limestone if followed away from the walls of the cave will doubtless be found to grade into carbonate-bearing limestone, just as the course of mining showed it to do in and near the cave at the Manganese Cave mine, 1 mile to the northeast, at Penters Bluff station.

ST. CLAIR MARBLE CO.'S PROSPECT

A prospect on the property of the St. Clair Marble Co. is on the southwest point of a hill above the company's quarry, which is alongside the Missouri Pacific Railroad, 2½ miles southeast of Guion. The quarry has been opened in the top of the Plattin limestone, in the Kimmswick limestone, and in the lower part of the Fernvale limestone. The higher beds of the Fernvale and also the St. Clair limestone are exposed on the steep slope above the quarry. The boundary between the St. Clair and Fernvale limestones is not clearly shown, and the Cason shale normally lying between them may be absent; if it is present, it does not exceed a foot in thickness.

The prospecting that had been done prior to the time of visit, April 11, 1935, consisted in stripping some of the topmost part of the Fernvale limestone. A horizontal lens of mottled white and brown carbonates of manganese, 8 inches in thickness and 5 feet or more in length, lies about 1 foot below the top of the limestone. The surficial portions of the carbonate lens have been changed to the oxide psilomelane.

WILLIAMSON PROSPECT

The Williamson prospect is on the J. W. Williamson property, 2½ miles southeast of Guion and a quarter of a mile north-northwest of

the St. Clair Marble Co.'s quarry. T
stones are exposed nearby.

A little blasting had been done in t
the south point of a hill. The mangan
lens lying at the top of the Fernvale
full thickness shown, but the portion
thick and in the other 27 inches. Bet
inches in thickness. The ore body w
the top portion of the limestone. T
white, gray, and brown carbonates a
psilomelane. A sample consisting of
to show on analysis 40 percent of man

Loose masses of oxide ore, as well as
are reported to have been found along
Fernvale limestone for a quarter of
the openings.

ALEX. FULKS

A prospect on land owned by Alex
the southeast side of Dry Creek, in the
south of the White River and about
siderable work has been done here rec
no manganese ore has been shipped.
pits and cuts that extend along both
tance of about 750 feet. Limestone le
and on the surface. The lowest limes
Fernvale limestone, but above it there
liferous St. Clair limestone, and abov
brown crinoidal limestone, which is t
the Boone chert. The slopes above t
with chert debris.

The two largest openings are cuts
northeast side of the hollow. They l
of the St. Joe limestone. The face o
well the occurrence of the manganes
nizable mineral is an oxide, probably p
lar masses in a 2-inch zone for 25 feet
fine particles in irregular areas especi
limestone below the 2-inch zone. Be
are 8 inches of red shaly limestone (a
(below), which are presumably the ba
The face of the cut to the southeast s
brown limestone like that in the nortl
fragments of the limestone blasted
from the formation of a surficial co