

ART. XXXVIII.—*The Elm Creek Aërolite*; by KENNETH S. HOWARD.

ANOTHER aërolite from Kansas has just been obtained by Ward's Natural Science Establishment, of Rochester, N. Y. It is of especial interest as having been found near Admire, Lyon County, where the Admire pallasite was found in 1902.

1



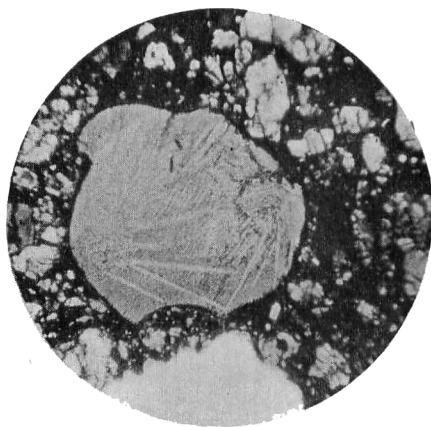
The Elm Creek Aërolite.

About May 10, 1906, J. R. Waters ploughed up the meteorite some three miles N.N.E. of Admire. It was buried about eight inches deep in a field that up to that time had never been cultivated to any depth. Mr. Waters also says that "it was on a slope where the soil would wash off of it instead of burying it up deeper." The exterior of the stone exhibits considerable oxidation, so that it has evidently lain in the ground for a number of years. There have been so many aërolites

found in Kansas that at first there was a question as to whether this one constituted a distinct fall or if it were merely one of a shower. An examination of a polished surface, however, showed that it is entirely different from other Kansas stones.

Elm Creek, a branch of the Marais des Cygnes river, flows about three-fourths of a mile from where the stone was found, and as one meteorite has already been named after Admire this one will be called the Elm Creek aërolite.

2



Micro-section. $\times 45$

By W. Harold Tomlinson, Germantown, Pa.

Its weight is 7075 grams. It measures approximately $22\text{cm} \times 19\text{cm} \times 12\text{cm}$, its general shape being shown in the accompanying photograph. As will be seen the stone is highly oriented, the pittings radiating from a point shown in the photograph as being a little below the center. Any markings that may have been on the reverse side have been obliterated by oxidation. The stone is very firm and excepting where a few small chips have scaled off shows no signs of fracture.

Dr. Geo. P. Merrill of the National Museum has made a microscopic examination of the aërolite and describes it as follows: "The stone on a polished surface is of a dark gray, nearly black color, thickly studded with metallic iron and with numerous indistinct chondrules which break in large part with the groundmass. Under the microscope the silicate portion is found to consist essentially of olivine and enstatite with a twinned monoclinic pyroxene. The olivine occurs in the usual clear, colorless forms quite free from enclosures; in minute

fragments and splinters and in chondrules of the barred and porphyritic type common to meteorites. A part of the porphyritic forms show a base of yellowish glass, while others seem holocrystalline. Occasional forms are met with in which the entire chondrule is composed of a single individual, in which case the central portion is clear and colorless, while the borders are of a light smoky-brown color and show a fibrous structure. All portions are, however, optically a unit.

"The enstatites like the olivines occur in scattered fragmental particles and in chondrules, the latter of the common cryptocrystalline and radiate type, and in porphyritic forms. In the latter the crystal outlines are at times very well developed. The cryptocrystalline forms are often remarkably spherical, or at least circular in outline in the section. As such they rarely polarize as a single individual, but as is commonly the case the field breaks up into sectors, as the stage is revolved between crossed Nicols. It is of course possible that not all of these cryptocrystalline forms are of enstatite; some may be of augite or possibly olivine. An optical determination is impossible, and the determination is based on their resemblance to others which have been tested chemically.

"The monoclinic pyroxene is of interest on account of the beautifully developed polysynthetic twinning which it presents when either in chondrules or in fragments in the groundmass. In this respect it would seem to be fully comparable with the meteorite of Renazzo, Italy, as figured by Tschermak on Plate 15 of his *Mikroskopische Beschaffenheit der Meteoriten*. Crystal outlines are rare and the mineral is a trifle less limpid than the enstatite. A prismatic cleavage is fairly well developed. No feldspars or other silicates than those mentioned were detected.

"The most striking feature of the stone is the spherical perfection of many of the chondrules and the perfection of the twinning in the pyroxene. As a whole the stone is plainly fragmental—is composed of a moderately firm mass of angular fragments in which are imbedded the chondrules. I am disposed to class it with those of Allegan, Michigan, San Emigdio, California, and Warrenton, Missouri. This, following Brezina, would throw it in the group of Oransite (CeO), from which it differs only in its firm character. I confess, however, that I fail to see the necessity of attempting to name rocks according to their degree of compactness or friability."