The geophysicists are not in complete agreement as to whether or not intrusive igneous activity may be accompanied by a gaseous phase. Morey[104] believes that "critical phenomena are never shown by the saturated solutions formed by the cooling magma. . . ." As far as the pegmatites are concerned the field evidence favors Morey's view, for effective replacement necessitates the presence of solutions to carry away the dissolved material.

(To be continued)

[104] Morey, G. W., Relation of crystallization to the water content and vapor pressure of water in a cooling magma: *Jour. Geol.*, **32**, p. 295, 1924.

A SECOND STONY METEORITE FROM NEBRASKA

H. H. Nininger, *Denver, Colorado.*

In December 1930 the Colorado Museum of Natural History received from Mr. E. W. Black of North Loup, Nebraska, a small sample of a stony meteorite which was said to have been found near Cotesfield, Nebraska, about two years previously. This location at once aroused our interest for the reason that only one aerolite had previously been recorded from that state, namely the Culbertson stone which location is 140 miles southwest of Cotesfield.

The nature of the Cotesfield stone had not been suspected by the finder at first, but its peculiar shape and weight had aroused his curiosity so that he preserved it among some Indian relics which had been the object of his search at the time the stone was found.

The aerolite was purchased by the museum and at the time of its arrival it was complete just as when found, except for the small sample which had been detached and sent in for our examination. Its weight was 2 lbs. 9 oz. or 1160 grams. This stone possessed one very striking characteristic as to form which at once impressed the observer. Its base was almost a perfect plane (Fig. 1), due apparently to the splitting of a larger mass along a cleavage plane, the nature of which it was thought could be determined by cutting the specimen.

The remaining features of its form can best be described by referring to the figures. The entire surface, excepting the base, was coated with a thin fusion crust which was badly discolored by a brown oxide. The base appeared to have been only briefly exposed to the heat of friction after the fracture for no evidence of fusion could be found upon it, save only a very slight ridge which seemed to result from a small amount of fused matter creeping over its

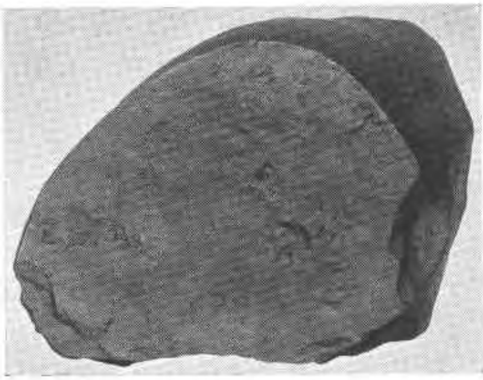

FIG. 1. A basal view of aerolite showing almost plane surface which appears to have been exposed by a break shortly before landing.

edge. About half of the surface of the specimen was quite strongly pitted in the manner common to stony meteorites, while one side

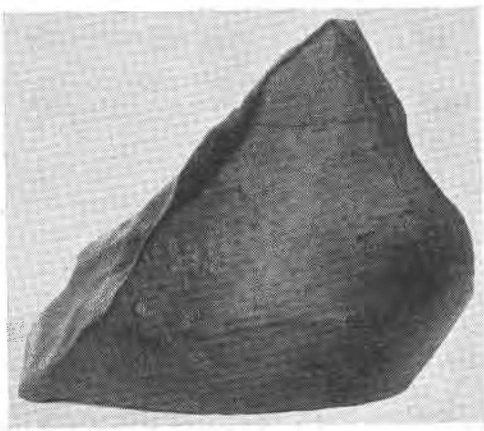

FIG. 2. View of aerolite showing primary fusion crust.

completely lacked these pits and appeared to be the remains of a former spheroidal mass. Here too, the crust appeared to be a bit thicker than in other places.

A cast was made of the specimen after which several thin slices were cut from it. Cutting proved the stone to have a compact texture and revealed a rather sparce sprinkling of metallic grains of varying size, ranging from microscopic to as much as 4 mm. in their greatest diameter. A more generous supply of sulphide grains were observed which were somewhat smaller than the metallic particles.

The stony matrix appears dark brown for the most part with irregular patches of a much lighter color; but oxidation has evidently progressed too far for any definite conclusions as to the original coloration. There seem to be evident traces of an abundantly chondritic structure but the staining from the oxides makes their study under a hand lens unsatisfactory.

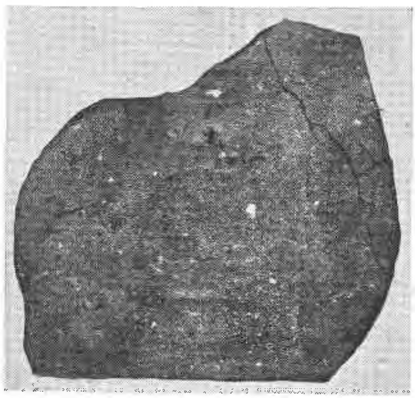

FIG. 3. A slice of Cotesfield aerolite. The white spots represent nickel-iron grains.

The most conspicuous feature of the polished slice is its veining. Broad black lines traverse several of the slices in succession reaching a maximum width of 1.7 mm. These wide portions are, however, frequently interrupted by sections which are very narrow so that the vein may seem to end bluntly.

Examinations of the cut sections did not answer satisfactorily the question as to the cause of the almost perfect parting which resulted in the present base of the aerolite; but if one assumes the existence of one of the larger veins occupying that plane, then this would nicely explain such a break. However, in no observed case did a vein follow so direct a course over such a large area as that represented by the basal cleavage surface. But since there is a noticeable tendency for the veins to run parallel to this basal plane it may perhaps be reasonably conjectured that the break was occasioned by such a vein.

No petrographic analysis has yet been made and such an analysis will be very difficult by reason of the degree to which oxidation has advanced.

The meteorite shall be known as Cotesfield, the location of which is Lat. 41°, 20′ N.; Long. 98°, 40′ W. The largest mass is in the collection of the Colorado Museum of Natural History.

A TEPHROITE CRYSTAL FROM FRANKLIN FURNACE, NEW JERSEY

Waldemar T. Schaller, *Washington, D. C.*

An excellent clear pink tephroite crystal, several millimeters long, on typical material from this locality, was measured at the request of the late Col. Washington A. Roebling. The crystal was very brilliant and showed seventeen forms, of which four are new.

The forms noted, with their measured and calculated angles, are shown in the table below. The four faces of the unit pyramid gave excellent reflections and as the crystal was readily adjusted accurately in polar position, the axial ratio was calculated from these measurements, which were:

	°	′		°	′
ϕ	65	13	ρ	54	34
	65	13		54	32
	65	16		54	30
	65	11		54	34

The average values for the axial ratio, calculated from these angles, gives:

$$a = 0.4616 \qquad c = 0.5885 \qquad p_0 = 1.2748$$

The measurements of the other forms, which gave fairly good reflections, gave values very close to those derived from the measurements of the unit pyramid, as can be seen by comparing the measured and calculated angles. The axial ratio obtained is in close agreement with previously determined values, which are here given: