On a Meteoric Stone from Simondium, Cape Colony.

(*With Plate VII, fig.* 1.)

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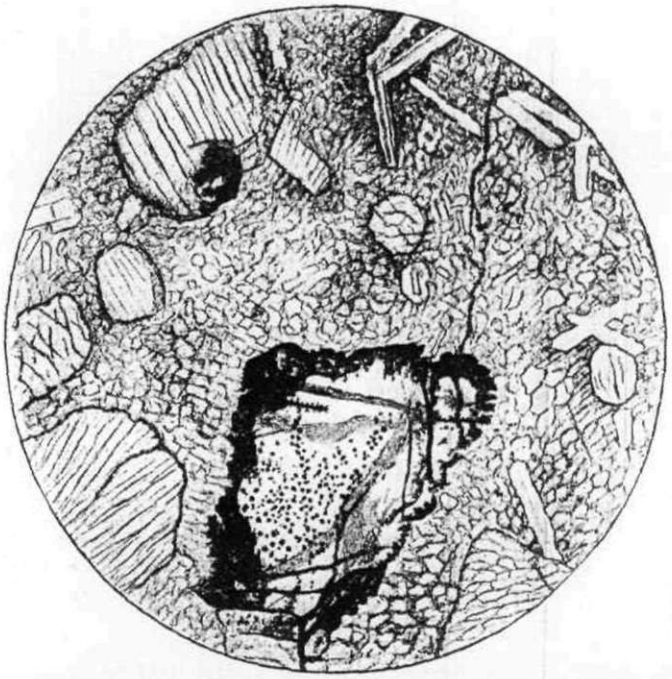
In October 1907 two mineral-specimens were sent for investigation to the Mineral Department of the British Museum by Mr. R. T. Hancock, of Cardiff, who had brought them back from South Africa. On examination they proved to contain patches of olivine and troilite and particles of nickeliferous iron, and appeared therefore to be of meteoric origin. According to Mr. Hancock two 'boulders' of similar material had been found, 100 yards apart and a foot below the surface, in gravel near Simondium Station on the Paarl to French Hoek line, Cape Colony. These 'boulders', which were as much as a foot in diameter, were broken up into small fragments by the finders, who supposed the bright particles of metallic iron exposed on the fractured surfaces to be silver. Another fragment of the meteorite was subsequently presented to the Museum Collection by Mr. Hancock, and still later three other pieces were sent by Mr. R. H. Stanley, of Paarl, one of the two prospectors who originally found the masses. According to Mr. Stanley, three 'boulders' altogether had been found in a deposit of ironstone-gravel.

In support of the meteoric origin of these masses is the fact that no basaltic rocks occur in the neighbourhood of Simondium, but only superficial deposits, such as the gravel, in which they were found, and, to the west, the slates, with intruded granites, of the Malmesbury series.

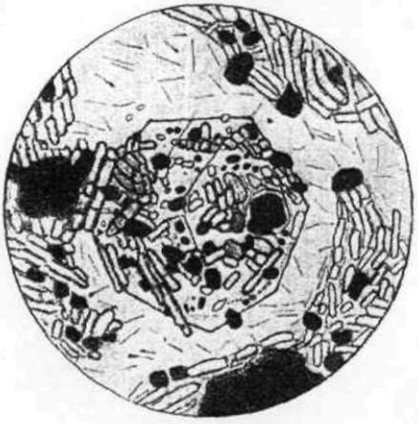
The total weight of the six fragments of the meteorite now in the British Museum Collection is 987 grams, the largest weighing 445 grams and the smallest 41 grams. All of them are much weathered and rusted on the surface, and are decomposing owing to the presence of chloride of iron. Fractured surfaces are dark grey and show sparsely distributed small particles of nickeliferous iron. All the fragments show scattered masses of olivine, one of which is more than two inches in length; one fragment contains a mass of troilite about a half-inch in length.

The meteorite belongs to the less common class of aerolites which



1.

G. T. PRIOR: METEORIC STONE FROM SIMONDIUM, CAPE COLONY.



2.

3.

G. T. PRIOR: ANALCITE-BASALT FROM RATHJORDAN, CO. LIMERICK.

show no chondritic structure and approach in characters most closely to terrestrial basalts. It consists mainly of enstatite, olivine, and felspar, with magnetite and nickel-iron, and may be referred to the howardite group of Brezina to which the Petersburg and Frankfort stones belong.

In thin slices under the microscope (Plate VII, fig. 1; magnification 30 diameters), particles of metallic iron (to a large extent oxidized), large rounded porphyritic olivines, and smaller irregular colourless enstatites are seen in a base consisting of granular and small prismatic enstatites, lath-shaped felspars, and grains of magnetite: whether any monoclinic pyroxene is present in the base is doubtful; all the grains showing definite prismatic outline which were examined gave straight extinction. The large phenocrysts of olivine show numerous small, dark brown inclusions, which for the most part are irregularly distributed, but sometimes are accumulated along parallel lines, making generally an angle of about 13° with the direction of extinction. The large sections of enstatite show well-marked, prismatic cleavage with straight extinction; they are often dense with inclusions of minute grains of magnetite, but show no traces of chondritic structure. The felspar-laths show albite- and occasionally pericline-twinning, and consist of labradorite to anorthite with symmetrical extinction about the albite twin-lamellae of over 30°. Some of the larger sections have a pinkish tinge and are crowded with dusty inclusions like the felspars in the Juvinas meteorite. The nickel-iron, as seen on a polished surface, is in small grains generally less than a millimetre in diameter and not very thickly distributed: qualitative analysis showed the presence of nickel in fair amount.

Owing to the rusted condition of the meteorite no quantitative analysis of it was attempted. A chemical analysis, however, was made of the olivine, with the following result under I:—

		I. (Simondium)		II. (Brenham Township)
SiO_2	...	39·22	...	40·70
Fe_2O_3	...	2·59	...	0·18
FeO	...	8·26	...	10·79
NiO	...	—	...	0·02
MnO	...	—	...	0·14
MgO	...	48·79	...	48·02
H_2O	...	0·47	...	—
		99·33		99·85

This analysis was made on 0·9886 gram of material, of which the specific gravity was 3·33. The numbers obtained show that the olivine is very similar in composition to the olivine in the pallasite of Brenham Township, Kiowa Co., Kansas, the analysis of which is given under II [1].

[1] L. G. Eakins, Amer. Journ. Sci., 1890, vol. xl, p. 315.