It is certainly a remarkable object, as on a comparison with the list of meteorites recorded in Great Britain, published in the British Museum Guide to Meteorites, there is only one given of greater weight, that fell at Wold Cottage in Yorkshire in 1795.

The outer coating, which varies from a very thin film to nearly 2 mm. in thickness, presents a very finely-pitted surface, with evidence of a tendency to show lines of movement, as though the heated skin was being pushed backwards from the direction of motion. The portions which had become fused showed a dark glazed or shiny surface, this evidently being the forward end, and the portion to which the heat from the compressed air in front of it was most effective. The appearance of the pittings suggest that the heating of the surface was the means of liberating some portions of the structure of the mass, and that these would provide what is seen as the trail of the meteor after it has passed in its flight through the air, being the continued glow of the heated emissions by combination with the oxygen in the air.

There is evidence that some portions of the surface

Appley Bridge Aerolite, October 13, 1914.

had only come into contact with the air during the later portion of its traverse. These regions have all the appearance of flakes of the outer skin having been broken away, a slight tarnishing of the pyrites, if at a distance from the edge of the fracture or slight fusing when close to the general outer coating, indicating a removal of portions of outer layers of the mass.

This is quite in keeping with the assumption that the fragments were split off at the time of the apparent burst in the air, at about twenty miles' altitude, as from that position the speed of the meteor would be so much reduced by the compressional friction, that it would be losing more heat than gaining.

The fractured surface on an inspection appeared to be made up of a glittering mass of white and yellow points in a grey setting. These proved to be chiefly pyrites, and their presence accounted for the apparent great weight according to the size. The specific gravity of the mass determined from a fragment was 3.33, and is in accord with what would be

expected from the mineralogical contents. A magnetic examination of the mass as a whole gave no appreciable effect, although a search amongst the dust which accumulated from the rubbing of the two pieces, indicated portions of magnetic nature though small in amount which proved to be metallic iron.

The pyritic material contains nickel as well as iron, portions being crystalline, the olivine being of a pale yellowish-green colour, whilst the enstatite is whitish or grey.

The proportions of the minerals worked out on the basis of the composition and solubility are approximately:—

Pyritic and metallic matter	...	...	5.07
Enstatite	...	...	31.5
Olivine	...	...	63.43

The analysis which has been made by Mr. E. L. Rhead indicate the presence of the following in order of amount:—

Silica	...	SiC ₂	Phosphorus	...	P
Magnesia	...	MgO	Soda potash		
Iron...	...	Fe	Chlorine		
Alumina	...	Al ₂ O ₃	Lime, etc.		
Sulphur	...	S	With oxygen in combina-		
Nickel	...	Ni	tion		

The accompanying illustration shows the front view of the aerolite with the thumb marks.

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11 Upper Lloyd Street, Moss Side, Manchester,
December 27, 1914.

A Suggested Definition of Magnetic "Permanence."

FROM time to time accounts appear of experiments on new kinds of steel which have been undertaken with the object of determining the most suitable material from which to construct a permanent magnet. Experiments of my own on this subject, made a good many years ago, led me to think that it would be an advantage if precision could be given to the term "permanence" in magnetism, and inasmuch as a high coercive force is the principal factor in the preservation of the magnetism in a magnet the measure of *permanence*, I think, might be taken as the *coercive force per unit of residual magnetic intensity*. Thus the inclination of the intensity-field curve as it falls from residual to zero intensity indicates what the permanence of the magnet may be expected to be.

According to this definition the permanence of soft iron is about 0.0024. Recent experiments by Miss Margaret Moir (*Phil. Mag.*, November, 1914) on chrome steel give the high permanence of 0.165, or, if the calculation is made from final residual magnetism after shocks and changes of temperature, of 0.201. These examples show a range of permanence from 0.0024 to 0.201, in the ratio of 1 to 84, but it is not unlikely that these limits may be exceeded.

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EUROPEAN AERODYNAMICAL LABORATORIES.¹

IN the summer of 1913 Prof. Zahm and Lieutenant Hunsaker, of the United States, visited the European aerodynamical laboratories in order to study apparatus and methods in use, before finally deciding on the details of the material to be

¹ Report on European Aeronautical Laboratories. By Dr. A. F. Zahm. Smithsonian Miscellaneous Collections, vol. lxii., No. 3. (Washington: Smithsonian Institution, 1914.)