

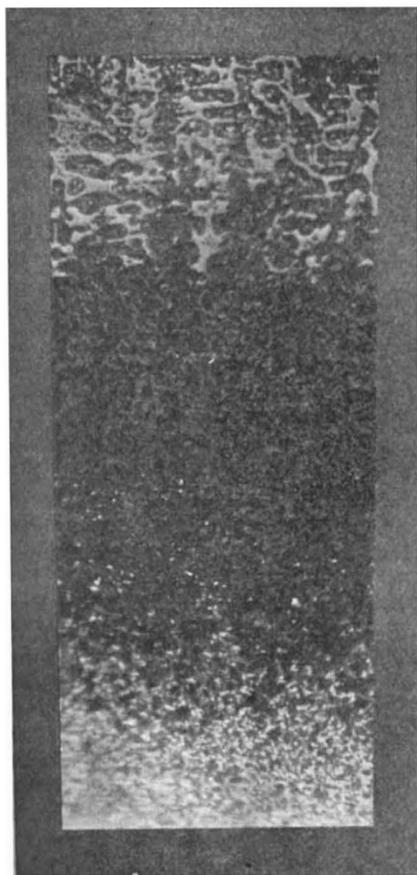
RECENT RESEARCHES ON CAST IRON.¹

THE volume before us is an able work, containing much original matter, in which an attempt is made with considerable success to reconcile the theory of the physical chemist with the practice of the scientific metallurgist. The author is obviously impressed with the broad reality of the iron-carbon equilibrium diagram. No doubt this has some value, but its teachings are very limited from a practical point of view. For instance, the area usually marked in such diagrams "martensite," instead of "hardenite," gives no indication that steel quenched at the

original and interesting photo-micrographs. It is clear that the author's experiments in the higher ranges of the iron-carbon diagram have led him to the conclusion, long held by many steel metallurgists, that the carbon at high temperatures is in solution as carbide, and not in the free state. A section is devoted to a consideration of the "growth" of cast iron.

The appendices contain a well-expressed series of definitions and a useful set of typical analyses of cast and malleable cast irons. All makers of such products should study this excellent book.

A figure showing micrographically the stages of decarburisation of white iron is here reproduced (Fig. 1). Another figure (Fig. 2) reproduces an excellent photo-micrograph (lent to the author by Wüst) of a 1.76 per cent. carbon steel quenched from 1130° C.



Cementite-pearlite structure of white iron: combined carbon per cent., 3.00.

Carbon equal to slightly supersaturated steel.

Saturation 0.80 to 0.90 per cent.

Pearlite with ferrite increasing.

Skin of ferrite.

FIG. 1.—Stages of decarburisation of white iron by iron ore. Magnified 150 diameters. Etched HNO₃.

lower end of the range is good, and at the upper end worthless, a matter of some little importance to the steel maker.

The influences of various ordinary elements on cast iron, viz., silicon, manganese, sulphur, and phosphorus, are very well dealt with. The influence of more rarely present elements, such as vanadium, chromium, titanium, is also considered.

In his treatment of malleable cast iron, the author, as one of our ablest authorities on the subject, is naturally at home, and publishes many

¹ "Cast Iron in the Light of Recent Research." By W. H. Hatfield. Pp. xiii+249. (London: Charles Griffin and Co., Ltd., 1912.) Price 10s. 6d. net.



Magnified 200 diameters.

In view of the experimental facts contained in the advance copy of a paper to be read at the Iron and Steel Institute in May, 1912, the author's views on the influence of allotropy on the hardening of steel will require revision in any future edition.

J. O. ARNOLD.

THE INTERNATIONAL CONGRESS OF AMERICANISTS.

THE eighteenth session of the International Congress of Americanists will be held in London, with Sir C. R. Markham as President, from May 27 to June 1 of the present year, at the Imperial Institute, South Kensington. The object of the Congress is to promote scientific inquiry into the history of both Americas and of their inhabitants. It will be divided into six sections—Palæoanthropology, Physical Anthropology, Linguistics, Ethnology and Archæology, General Ethnology, and Colonial History. This meeting, which has been organised under the invitation of the Royal Anthropological Institute,