

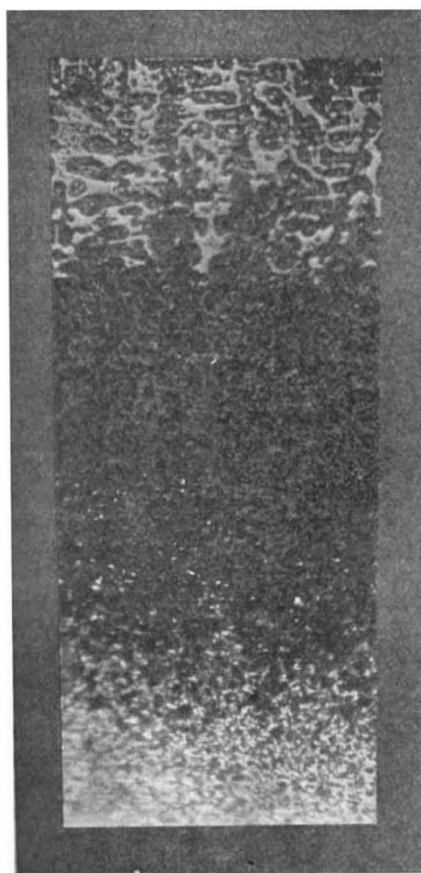
RECENT RESEARCHES ON CAST IRON.<sup>1</sup>

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 HNO<sub>3</sub>.

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

<sup>1</sup> "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,

has already received the patronage of the universities and leading scientific societies both at home and abroad, which will be represented by delegates. The programme of papers already contains contributions from the best known authorities on the history and ethnology of the vast region over which its operations extend. It may be hoped that the many persons interested in prehistoric America will assist in the work of the Congress, and that collectors will contribute specimens of antiquities to the exhibition which will be organised in connection with it.

In view of the approaching Congress, Mr. Harlan J. Smith, superintendent of the Archaeological and Ethnological branch of the Geological Survey of Canada, appeals for the aid of trained field-workers in the exploration of the vast number of prehistoric sites in various parts of the Dominion. In one township in Ontario a casual investigation disclosed no fewer than thirty ancient sites, and on the seacoast the kitchen middens are of great extent and interest. Canada at present cannot supply a sufficient staff of trained workers to carry on this survey, and the scheme suggests a promise of interesting scientific work in which some of the younger anthropologists trained in our university schools may be inclined to cooperate.

PROF. EDWARD DIVERS, F.R.S.

WE regret having to record the death of Prof. Edward Divers, F.R.S., which occurred on April 8. Born in London on November 27, 1837, he was educated at the City of London School, at the Royal College of Chemistry, and at Queen's College, Galway. In 1870 he was appointed lecturer on medical jurisprudence at the Middlesex Hospital Medical School, and in 1873 he went to Japan as professor of chemistry in the College of Engineering of the Imperial University at Tokyo, of which he became principal in 1882. He remained in Japan until 1899, when he was made emeritus professor and received the Order of the Sacred Treasure, in addition to that of the Rising Sun, which had been previously conferred upon him.

During the whole period of his active professorship, Dr. Divers alone and in collaboration with a succession of his Japanese students, Shimosé, Shimidzu, Haga, Kawakita, Nakamura, Ogawa, and Hada, was a prolific contributor to chemical science—hyponitrites, the constitution of fulminates, the quantitative separation of tellurium and selenium, the production of hydrosulphides, the constitution of sulphazotised salts, the red sulphur of Japan, hydrocarbon from Japanese petroleum, the composition of Japanese birdlime, the economical preparation of hydroxylamine sulphate, and many other subjects were dealt with in papers published in the *Journal of the Chemical Society* and the *Philosophical Transactions*. In 1893 he was elected a Fellow of the Royal Society.

On his return to England, Professor Divers did not cease his activity. He was a Vice-President of the Chemical Society and of the Institute of

Chemistry, President of the Chemical section of the British Association, President of the Society of Chemical Industry, and at the time of his death was still serving as the representative of the last-named society on the governing body of the Imperial College of Science and Technology, whilst as late as last year he contributed to the Society of Chemical Industry a lengthy paper on "A modification of Raschig's theory of the Lead-Chamber process."

Prof. Divers married in 1865 Margaret Theresa Fitzgerald, daughter of D. G. Fitzgerald, of Mayfield, Co. Cork, by whom he had one son and two daughters. His son died in early life, and he lost his wife in 1897, shortly before his return from Japan, but his two daughters survive him. A man of fine physique, and, until within the last few months, of splendid health, he appeared to suffer only from defective sight, largely the result of a laboratory explosion, which practically destroyed the sight of his right eye. This accident happened in 1885, but he did not allow it seriously to interfere with his work, though it was painful to others to watch him read or write with the book or paper held within a few inches of his eyes. In public he always felt the disability of being unable to recognise acquaintances that were more than a few feet distant, and this naturally gave him an appearance of reserve. But in small gatherings and among intimate friends he was a delightful companion, genial and humorous, especially pleased to talk about Japan and the Japanese, for everything connected with which he was always most enthusiastically appreciative, ever ready to discuss a chemical problem, and, to the last, keenly interested in chemical progress.

Prof. Divers leaves behind him in England and Japan a host of friends who will long mourn the loss of a very sterling character. He was buried at Brookwood on Thursday last, April 11, and though, in consequence of the Easter holidays, many of his friends were away from home, the Royal Society, the Chemical Society, the Society of Chemical Industry, the Institute of Chemical Industry, and the Institute of Brewing were all represented at his funeral and the memorial service. In addition to the members of his family, the following were present, viz.:—Sir Wm. Tilden, Prof. Emerson Reynolds, Prof. Gowland, Prof. Mondy, Prof. Hodgkinson, Dr. Rudolph Messel, Messrs. Tyrer, Reid, Hemingway, Grant Hooper, Coste, Baker, Cresswell, Pilcher, Carr, and others.

NOTES.

THE appalling disaster to the *Titanic* on Monday morning, by which more than 1300 of the passengers and crew have lost their lives, has brought several scientific subjects into prominence. Such subjects are: the dynamic effects of a mass of 50,000 tons moving at a speed of about 15 knots, the conditions of stability of a vessel built upon the watertight bulk-head system when an extensive injury has been