

National Association for the Prevention of Tuberculosis. The trumpet-call is short, but its clear notes should inspire confidence in the ranks of the small army now fighting against ignorance and disease.

G.

*Weather Instruments and How to Use Them.* By D. W. Horner. Pp. 48. (London: Witherby and Co., 1910.) Price 6d. net.

THIS handy little work is intended chiefly for amateurs, but it includes descriptions of instruments required for a "second-order" station, while difficulties which the author thinks are apt to "scare off" novices are avoided. It contains much that is interesting and useful, but its reading leaves us with the impression that persons wishing to take up the subject seriously might at once turn to the handbooks and instructions issued by recognised authorities. Some instruments and methods not suitable for second-order stations are also included, and, naturally in so small a work, no tables are given. Under air-pressure the necessity of using accurate barometers is pointed out. Reference is also made to the so-called Fitz-Roy barometer, which, like the Gladstone bag, is, we believe, only a trade name; as it is easily read, it may, however, be useful to the ordinary individual, who merely uses the barometer as a "weather glass."

*Willing's Press Guide and Advertisers' Directory and Handbook, 1911.* Pp. xiv+457. (London: James Willing, Jun., Ltd.) Price 1s.

THIS is the thirty-eighth year in which this concise and comprehensive index to the Press of the United Kingdom has appeared. The volume also contains a list of the principal colonial and foreign journals and a variety of general information.

*Field and Colliery Surveying. A Primer Designed for the Use of Students of Surveying and Colliery Manager Aspirants.* By T. A. O'Donahue. Pp. xii+263. (London: Macmillan and Co., Ltd., 1911.) Price 3s. 6d.

A REVISED and enlarged edition of this book was published in 1909, under the title, "Colliery Surveying." The opportunity has been taken with this new issue to make further additions and to change the title so as to direct attention to the prominence given in the work to field surveying.

*Solutions of the Examples in an Elementary Treatise on Conic Sections by the Methods of Coordinate Geometry.* By Charles Smith. Pp. iv+377. (London: Macmillan and Co., Ltd., 1910.) Price 10s. 6d.

THE master of Sidney Sussex College, Cambridge, here provides a "key" to the examples in the new edition of his "Treatise on Conic Sections by the Methods of Coordinate Geometry," published recently.

*La Metallographie appliquée aux produits Siderurgiques.* By U. Savoia. Pp. x+218. (Paris: Gauthier-Villars, 1911.) Price 3.50 francs.

THIS is a French translation from the Italian, and as the English equivalent has already been noticed in NATURE (December 15, 1910, p. 202) nothing further need be said, except that the work of rendering into French seems to have been carefully done, and that there are altogether ninety-four illustrations in the text.

*Key to Hall and Stevens's School Arithmetic. Part II.* By L. W. Grenville. Pp. 174. (London: Macmillan and Co., Ltd., 1910.) Price 6s.

BUSY teachers, and students working alone, will welcome these well-arranged solutions to the examples in the second part of Messrs. Hall and Stevens's "School Arithmetic."

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## LETTERS TO THE EDITOR.

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## The Inheritance of Acquired Characters.

IN his very friendly notice of my little book, Prof. Meldola has invited readers of NATURE to furnish an explanation of the source of a very "pregnant" passage—the only one dealing with the subject in question—in the "Origin of Species." Sir W. T. Thiselton-Dyer has clearly shown that the problem must certainly have been in Darwin's mind at least four years before the writing of the "Origin," when he was absorbed in the reading of the great work of Alph. de Candolle, and afterwards while writing the "Variations of Animals and Plants."

But, thanks to that important work, "The Foundations of the Origin of Species"—by the publication of which Dr. Francis Darwin has placed all students of the history of science under such deep obligations—I think it is possible to trace the actual "genealogy" of the passage, and to detect its origin, at a far earlier period.

In the pencil-written sketch of 1842 there occurs the following sentence in the equivalent position to the passage in question:—

"Most of these slight variations tend to become hereditary" ("Foundations," p. 1).

It is true that this sentence was erased by Darwin, but that this erasure was only due to the fact that he considered it unessential in the very brief outline of the theory of natural selection which he then "permitted" himself to make is, I think, proved by the circumstance that the statement appears in the enlarged and carefully written draft of 1844 in the following terms:—

"Most organic beings in a state of nature vary exceedingly little: I put out of the case variations (as stunted plants, &c., and sea-shells in brackish water) which are directly the effect of external agencies and which we do not know are in the breed or are hereditary" ("Foundations," p. 81).

The italics are Darwin's own. The context, I think, proves that "little" in this passage, like "slight" in the earlier one, refers to the *individual* variations, and not to their *accumulated result*.

In the first edition of the "Origin," and in all subsequent editions, as Sir W. T. Thiselton-Dyer points out, the statement runs:—

"Some authors use the term 'variation' in a technical sense, as implying a modification directly due to the physical conditions of life; and 'variations' in this sense are supposed not to be inherited"; he then goes on to refer to dwarfed shells, &c.

Now to realise what was at the back of Darwin's mind in writing these several passages, I think we must go back to the great controversy at the beginning of last century between Cuvier and his followers and the adherents of poor old Lamarck. The position taken up by the anti-evolutionists was that, while they admitted the transmission by inheritance of *small* variations, they stoutly denied that great changes in structure and habit, such as were required by Lamarck's theory, could be so transmitted.

Lyell, when he first read Lamarck's great work in 1827, was greatly fascinated by it, and down to 1830, and some time after that, became convinced (as his letters to Sedgwick, Whewell, and Herschel show) of the truth of the doctrine of organic evolution. But, as was the case with Darwin, a few years later, his ideas on the subject underwent many vacillations. He paid frequent, and sometimes prolonged, visits to Paris, where Cuvier showed him much kindness, inviting him to his receptions. Lyell, then still young and an ardent admirer of Cuvier's palaeontological work, could not fail to be impressed by the arguments of the distinguished Paris circle, and we especially find that their studies of the Egyptian mummified animals and of the anatomy of the races of dogs had a very strong influence on his mind. Thus it came about that in 1832, when he wrote the second