

This part of the work is interesting and valuable, showing, as it does in detail, the different kinds of ceramics and wherein that difference consists, a branch of the art which has been neglected by amateurs generally and for whose enlightenment this part of the work will be specially valuable.

The second part deals with the history of ceramics. Its primary divisions are by the different kinds of pottery: mat, varnished, enamelled, fine, and ends with porcelain. Within the purview of each of these chapters, geographic subdivisions are made and the ceramics of the respective countries described. The processes of manufacture are not touched upon in the second part.

THOMAS WILSON.

A Short History of Freethought, Ancient and Modern. By JOHN M. ROBERTSON. London, Swan Sonnenschein & Co., Ltd.; New York, The Macmillan Co. 1899. Pp. xv + 447.

Those who know Mr. Robertson mainly for that perfervid, not to say intemperate, though able book, 'Buckle and his Critics,' will likely enough be swift to shun this new work. Its title and Mr. Robertson's previous performance certainly give ground for summary suppositions as to the contents of the 'Short History.' It ought, therefore, to be said at once that our author contrives to keep his balance here, for the most part, and has produced a book which is well worth reading and studying. Of course, like the majority of self styled 'freethinkers,' he is not nearly so fundamental as he supposes, and still occupies a standpoint which, though fashionable and influential more than a century ago, does little to further 'freethought' to-day, and much to discredit it. Nevertheless, he does attempt to maintain a scientific attitude, and, on the whole, he does not allow preconceptions to run away with him completely. This at least is something to be thankful for. His careful citations, too, are much to be commended, even although he often contrives to cite as authorities some curiously lop-sided performances.

The book covers an enormous range. This is due to the definition of 'freethought' proposed in the introduction and faithfully upheld

throughout. "For practical purpose, then, 'freethought' may be defined as a conscious reaction against some phase or phases of conventional or traditional doctrine in religion—on the one hand, a claim to think freely, in the sense not of disregard for logic, but of special loyalty to it, on problems to which the past course of things has given a great intellectual and practical importance; on the other hand, the actual practice of such thinking (5)."

Following out this definition, the work consists of sixteen chapters; these deal with primitive 'freethinking,' with 'freethought' in the ancient religions, in Israel, in Greece and Rome, in early Christianity, in Islam, in the Middle Ages, the Renaissance and the Reformation. Thence the author passes to modern 'freethought'; deals with the English deistic movement, Cartesianism, and the conditions preceding the French Revolution; takes a peep at the United States, and then, in a long chapter, the most interesting of all, discusses the 'culture forces' of the nineteenth century. The conclusion is a brief, and inadequate (in the sense of being sadly out of perspective), review of the present state of thought in the nations. Considering the range covered, and the extent to which secondary authorities are necessarily relied upon, the author's management of his material is deserving of the highest praise. It would be a good thing were the average 'orthodox' to peruse the book carefully—nay, to have it beside them. It might open their eyes to not a little which, as matters now stand, they seem never to fathom.

Naturally, in so extended a study Mr. Robertson has his lapses, and it is interesting to note that these accumulate precisely in the period which he knows best—the modern. Bias here plays its unavoidable part. Of Voltaire we are told that his 'sheer influence on the general intelligence of the world has never been equalled by any one man's writing' (338). On p. 344 we are informed that Rousseau, 'though not an anti-Christian propagandist, is distinctly on the side of Deism'; on p. 354, when another purpose is on hand, we are surprised to learn that he was 'devoutly theistic.' The 'Critique of Pure Reason' is said to be 'definitely anti-religious' (388), a statement sufficiently extra-

ordinary, but outdone a little later, when we learn that the modern movement 'back to Kant' was one of religious compromise! On the other hand, Mr. Robertson has some excellent things. His view of the English deistic movement, as against Mr. Leslie Stephen, is thoroughly sound; similarly his summary of the defects of 'higher criticism' (407) is full of point; while here and there we meet with illuminating remarks, such as that it is 'the tendency of every warlike period to develop emotional rather than reflective life' (409); and that 'the abstention of later specialists from all direct application of their knowledge to religious and ethical issues is simply the condition of their economic existence as members of university staffs' (408). As one looks around upon professorial philosophy, is not this all too true?

Taking the author at his own word, and remembering the limits distinctly laid down in the preface, the book is an excellent one, and it ought to find its way into many hands. It will startle the smug obscurantist, and will afford the free man—who is much more common than Mr. Robertson thinks—many cues to follow up in further reflection. If the author would put his eighteenth century rationalism behind his back, he might produce a definitive history, not of free thought—for all *thinking* is free by the nature of the case—but of man's gradual rise to a more fully reasonable explanation of himself and his environment.

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SCIENTIFIC JOURNALS AND ARTICLES.

THE *American Journal of Science* for July contains the following articles:

Velocity of Electric Waves in Air; by G. V. MACLEAN.

Spiral Fulgurite from Wisconsin; by W. H. HOBBS.

Chemical Composition of Parasite and a new occurrence of it in Ravalli Co., Montana; by S. L. PENFIELD and C. H. WARREN.

Estimation of Iron in the Ferric State by Reduction with Sodium Thiosulphate and Titration with Iodine; by J. T. NORTON, JR.

Mouth of Grand River; by E. H. MUDGE.

Electrical Measurements; by H. A. ROWLAND and T. D. PENNIMAN.

Reflection of Hertzian Waves at the Ends of Parallel Wires; by LEE DEFORREST.

IN a thesis entitled 'An Experimental Study of the Corrosion of Iron under various Conditions' accepted for the degree of Bachelor of Science in Electrical Engineering, in the University of Wisconsin, Mr. Carl Hambuechen shows that whether an iron surface which has been subjected to corrosive influences has a uniform corrosion, local pittings or corrosion along definite lines or curves is dependent upon the physical and chemical character of the iron. The conclusion is drawn that a study of such corroded surfaces, which may be produced quickly by electrolytic means, may give considerable insight into the properties of iron. The main part of the thesis deals with an investigation of the energy expended when iron is subjected to strain, part of the energy being expended in heating the iron, but the greater part being stored in the metal and manifesting itself in an increased tendency to corrosion and a higher electromotive force of contact between the iron and an electrolyte. Measurement of this increase of electromotive force while the iron was subjected to increasing stresses showed that a curve giving relation between stress and electromotive force is obtainable; this curve being similar to the stress-strain diagram, and each curve showing clearly the point of elastic limit. The fact that a metal under stress has a greater chemical activity will afford an explanation of many peculiar cases of corrosion, such, for example, as the peculiar appearance of hardened steel which has been subjected to electrolytic corrosion.

IN an article on Russian Museums, Mr. F. A. Bather thus discusses the question as to whether or not museums should send out collections for study: "The occasional loss of a specimen is nothing as compared with the increased value of a properly worked-out collection. If a museum is unable for any reason to send out collections to specialists, then it must have a large and properly paid staff. It is the business of a museum to encourage culture and to be a headquarters of intellectual activity in its various departments. A slight experience serves to show that the museums which prosper