

gasys seem not to have developed Ritualistic tendencies; but they have advanced notions concerning ornament, bright colours look especially well on a brown skin, and possibly before long a Malagasy bishop may appear in full Ritualistic fig, evolved out of his inner consciousness. If so, may we be there to see.

We have only been able to touch here and there on the many interesting subjects discussed by Mr. Sibree. This book is a most valuable addition to knowledge and very entertaining. It contains several full-page illustrations (not all new) and two maps.

CLAUSIUS'S "MECHANICAL THEORY OF HEAT"

The Mechanical Theory of Heat. By R. Clausius. Translated by W. R. Browne, M.A. (London: Macmillan and Co.)

THIS translation satisfies a real want of a tolerably large class of students of science. It furnishes in a volume of reasonable size a clear and readable account of a subject, an acquaintance with which has until lately been only obtainable by an English reader at the cost of a great deal of research through the transactions and memoirs of various societies. The name of its author furnishes a sufficient guarantee of the accuracy of the substance matter of the book, treating as it does of a subject specially his own. The method of treatment leaves hardly anything to be desired, even from the point of view of a student previously ignorant of the subject. The reader is nowhere perplexed by uncouth symbols or analytical operations beyond those which are familiar to all acquainted with the principles of the differential and integral calculus. At the same time, and perhaps partly in consequence of this avoidance of complicated analysis, the reader is never allowed to lose sight of the essential meaning of the symbols employed. Some of the chapters in the book will furnish a valuable exercise in the meaning and value of partial differential coefficients, even to a student who is not specially interested in the physical questions discussed. The same remark applies to some of the explanations given in the mathematical introduction, on the nature of the integral of a total differential in the case when the condition of being an exact differential is not fulfilled, explanations originally inserted, as the author tells us, in consequence of objections made to his theory by Prof. Decher.

Any one wishing to gain a general acquaintance, thorough as far as it goes, with the subject, can scarcely do so with the expenditure of less time and labour than are required for the perusal of this book. As a mathematical study the book may replace some of the luxuriant growths of modern geometry and analysis with great advantage to the brains of the student.

The translation is admirably done. It is hardly possible in reading it to recognise any traces of foreign idiom. Occasionally we find some little confusion of phraseology, probably arising from loose translation; as on page 210, where a rather curious description is given of the ordinary process of changing the independent variables from x, y , to ξ, η , and this process is apparently

referred to, a little lower down, as an "artifice." It is a pity, too, and a little surprising, considering the array of scientific talent mentioned in the preface as having been applied to the correction of first proofs, that the book should be disfigured by so many misprints. Not to speak of great uncertainty as to the insertion or omission of a comma between the two variables inside a bracket after a functional symbol, and the sign \times between two factors of a product, there are many serious errors. Thus, for instance, on page 69 we have "volumes" for "values;" on pages 117 and 124 we have the sign $+$ for \times ; on page 187 we have dT for T . In equations (19) and (20) of page 190 we have $\frac{dQ}{dT}$

written instead of $\frac{dQ}{dP}$, and the error is repeated twice lower down on the same page. The figure of the steam-engine on page 237, described as an "imaginary one," certainly strikes one as decidedly imaginary. The insertion of a few valves in the figure at suitable places would render it more satisfactory, at any rate to an unimaginative reader. It may be hoped that these blemishes will be removed when a second edition is reached of what, in spite of them, is an exceedingly valuable addition to our English mathematical literature. W. S. A.

OUR BOOK SHELF

Noxious and Beneficial Insects of the State of Illinois. Third Annual Report. By Cyrus Thomas, State Entomologist. Pp. 1-212. 8vo. (Springfield, 1879)

IF we might be permitted to propose another title for this book, we would suggest that of "An Essay towards a Monograph of North American Aphides." But we fancy such a title would be too much opposed to that borne on the cover. We fear the Report is too profound to be of service to agriculturists and horticulturists, otherwise than on the same grounds that an intelligent mother of a family is enabled, from the study of a medical dictionary (intended for the use of the profession only), to diagnose the symptoms of measles, croup, and other ills that infantine humanity is heir to. We might make the same objection to the titles of a multitude of American scientific publications. The axiom that "the end justifies the means" scarcely needs being called into requisition in a notice of this Report; yet some uncertainty exists in our mind as to the end aimed at. Does it consist in enabling unscientific, but intelligent, farmers and horticulturists to identify their plant-lice foes? or is it intended as a prominent contribution towards a knowledge of these insects, to be made use of by scientific workers principally? We do not attempt to solve the problem, but prefer to regard the Report more especially in the last-named light.

Looking, then, at the scientific side of the question, we see here a most valuable contribution to a natural history of American Aphides, and in some respects we think it would have been better had the author not been hampered with the necessity of producing a popular report at the same time. It is impossible to give an analysis of the author's views on the many vexed questions in the life-cycles of these noxious atoms. Much of the introductory remarks on habits has been of necessity (and advisedly) compiled, and the suggestions as to dimorphism (p. 31) have, we think, been somewhat fully anticipated; still there remain some very potent suggestions made by Dr. Thomas; not the least of which is in what form those species that appear habitually to attack *annual* plants only, pass the winter months?