

BOOK REVIEWS

On growth and form. By D'Arcy W. Thompson. Cambridge University Press; New York, Macmillan, 1942. 1116 pp. \$12.50.

It is a rare privilege to write a review of a new edition of a book which has already taken its place as one of the great classics of science. *On growth and form* by D'Arcy Thompson in this new edition is much as it was in the first. Its fundamental ideas have been very little revised, but a wealth of new material has been added, expanding it from 793 to 1116 pages.

To summarize its contents would be a very difficult matter. It is almost an encyclopedia of all the relations that have ever been discussed between mathematics and organic form. Among the subjects treated are: the form of the cell, tissues, concretions produced by living things, shells, horns, and teeth; from the dynamic point of view, growth and the relation between form and mechanical efficiency; and such perennial favorites of the geometrician as the form of the bee's cell and the arrangement of leaves.

For the most part the mathematics used in the book is elementary. Thompson makes no pretensions, but says he is using the tools he has, leaving it to better equipped workmen to carry on the work. Professor Archibald¹ in a review of the first edition deals more competently than I could with the mathematics. The general point of view seems more important than the mathematics itself. In fact the author frequently talks more about mathematics than in its language. He states his purpose in the introductory chapter (p. 14): "to correlate with mathematical statement and physical law certain of the simpler outward phenomena of organic growth and structure or form, while all the while regarding the organism, *ex hypothesi*, as a material and mechanical configuration." And in the Epilogue he concludes (p. 1096) "My task is finished if I have been able to show that a certain mathematical aspect of morphology, to which as yet the morphologist gives little heed, is interwoven with his problems, complementary to his descriptive task, and helpful, nay essential, to his proper study and comprehension of Growth and Form."

Various biologists have placed very different estimates on the value of the book. Professor Sinnott,² in his review, has been exceedingly generous and attributes to it a wide and important influence. Professor McClung³ on the other hand has stated that its influence is slight. In

¹ R. C. Archibald, Bull. Amer. Math. Soc. vol. 24 (1918) p. 403.

² E. W. Sinnott, Quarterly Review of Biology vol. 18 (1943) p. 64.

³ C. E. McClung, Science N. S. vol. 96 (1942) p. 471.