

SHORTER NOTICES.

The Human Worth of Rigorous Thinking. By CASSIUS J. KEYSER. Columbia University Press, 1916. 8vo, vii+314 pp. \$1.75.

THESE essays and addresses of Professor Keyser are collected together in one volume as the result of fifteen years' consideration of various phases of mathematics, particularly of its significance as a branch of human knowledge. Everyone who has heard or read the different articles already knows that the author sees things with a poet's eye, and hears the strains of subtle music that emanate from this highest ether of the reason. The closing sentence of his book, and of the lecture widely delivered on mathematics, finds the deep-centered source of not only mathematics but also of science in the "joyous mood of the eternal Being" and both are considered to be a "sublimated form of play, the austere and lofty analogue of the kitten playing with the entangled skein or of the eaglet sporting with the mountain winds." For him "mathematics is but the ideal to which all thinking, by an inevitable process and law of the human spirit, constantly aspires." Consequently to challenge the value of mathematics as a study worthy of humanity is to challenge the worth of all thinking. Its significance to man is beyond measure, for "Transcending the flux of the sensuous universe, there exists a stable world of pure thought, a divinely ordered world of ideas, accessible to man, free from the mad dance of time, infinite and eternal." Its teaching may be so humanized that it will become a delight and a pleasure to all students, for "mathematics is precisely the ideal handling of the problems of life, and the central ideas of the science, the great concepts about which its stately doctrines have been built up, are precisely the chief ideas with which life must always deal, and which, as it tumbles and rolls about them through time and space, give it its interests and problems, and its order and rationality." The first three and the last two addresses of the collection are devoted primarily to considerations of the sort we have just mentioned.

There are four essays dealing with such fundamentals of thought as the figure and dimensions of the universe, hyper-space, infinity, and the existence of the hypercosmic. Two