

## OUR BOOK SHELF.

*Christiaan Huygens, Traité: De iis quae liquido supernatant.* Rédigé par D. J. Korteweg. Pp. lxxxiii + 210. (Extrait des Oeuvres complètes de Christiaan Huygens. Tome xi., n.d.)

THIS treatise of about a hundred quarto pages, printed from a hitherto unpublished MS. of Huygens, forms part of the eleventh volume of the collected edition of his works which is now in progress. The accomplished editor, Prof. Korteweg, of Amsterdam, who has himself made valuable contributions to hydrodynamics and to mathematical history, has judged wisely in issuing it separately, and so rendering it accessible to a wider public.

The contents are certainly remarkable. Book i. begins by deriving the Archimedean conditions of equilibrium of floating bodies from the principle that the altitude of the centre of gravity of the whole system composed of solid and fluid must be a *minimum*; and the same principle is then applied to the question of stability for angular displacements. Owing to the manner in which the problem is stated, *stable* positions are alone the subject of investigation; the recognition of the fact that the conditions of equilibrium are equally satisfied by a *stationary* altitude of the centre of gravity, belongs to a later period. The special cases of the paraboloid of revolution, and the cone, floating with the axis vertical, are treated in some detail.

In Book ii. we find a somewhat elaborate, but not quite complete, treatment of the problem of the stability in different positions of a floating log of rectangular section; but the method followed is different, and is more closely related to Archimedean principles. Book iii. deals, on similar lines, with the problem of the floating cylinder.

This brief recital will show how great is the historical interest attaching to this tract. The interest is increased when we are told that it was a youthful essay, which the author himself condemned as fragmentary and incomplete. A note appended to the MS. reads: "Haec de corporibus solidis in liquido supernatantibus in prima adolescentia scripsi, cum nullum adhuc majoris momenti argumentum sese obtulisset. . . E primis Theorematis quaedam retineri possent, item de Cylindris. Reliqua vulcano tradenda." The student of mathematical history will be glad that this elegant, and in some respects significant, essay should have escaped the fate here threatened, and will be grateful to the editor for having now placed it beyond the reach of accident.

The volume, which is (by the way) most beautifully printed, contains a valuable introduction and commentary by Prof. Korteweg, who points out in detail the relation of Huygens's work to later developments of the theory. It includes also reprints of other MS. notes by Huygens on the same subject, with interesting facsimile reproductions of the original diagrams.

H. L.

*A Health Reader.* By Dr. C. E. Shelly and E. Stenhouse. Books i. and ii. Pp. vi + 160 and viii + 196. (London: Macmillan and Co., Ltd., 1907.) Price 1s. 6d. and 1s. 4d.

THE great importance of imparting to children, while at school, a knowledge of the broad principles of healthy living is generally recognised; and the past few years have witnessed the outcome, in response to a growing demand, of many handbooks upon elementary hygiene for school purposes. Some of these have erred on the side of attempting to explain too much, and the book, whether designed to meet the needs of the school-teacher or of the scholar, has dealt with non-essentials in an unnecessarily technical manner.

These two small works, both of which are fully illustrated, have been compiled with great discretion, for the subject-matter is that which every child should know, and it is treated in such a manner that the child, while acquiring useful information, will be interested.

The earlier book is designed for use among children of nine to ten years of age, and the later volume for pupils of from ten to twelve years of age. A noteworthy feature of both books is the omission of all technical terms. For instance, the cranium and sternum are called the brain-case and the breastbone, and the red blood corpuscles of the blood are described as "grains of red jelly"—"the oxygen-boats." Another noteworthy feature is the due appreciation shown of the importance of presenting the subject-matter in the simple manner which appeals to the child-reader. Those who are unfamiliar with the difficulty of appealing to the child of from ten to twelve years with a subject such as hygiene may judge Book ii. to be too elementary; but others will not share that view.

It is most desirable that a health reader, the information of which can (where necessary) be supplemented or explained by occasional conversational digressions, should be introduced into every school; for it is doubtless the easiest and the most effective way of teaching the subject. The works under review are exceedingly well designed to serve this purpose.

*Ptolemäus oder Kopernikus? Eine Studie über die Bewegung der Erde und über den Begriff der Bewegung.* By Dr. Karl Neisser. Pp. vi + 154. (Leipzig: J. A. Barth, 1907.) Price 3 marks.

THE author of this little book aims at showing that all motion is relative, and that the people who three hundred years ago disputed as to whether the earth moved round the sun or the sun round the earth were all equally right, and were only fighting about words. In the first chapter it is set forth with needless prolixity how all apparent phenomena produced by the motion of an observer will be the same if he is at rest, and all the surrounding objects are in motion with the same velocity in the opposite direction. The author next deals with the system of Copernicus, and points out how it could only claim to represent the planetary motions in a somewhat simpler manner, but that the relative positions of the earth and a planet were exactly the same according to the old and the new system. But everything was changed by the discovery of the proper motions of the fixed stars, which made it theoretically impossible to refer the celestial motions to a fixed origin of coordinates, while the sun's own motion through space shows that the earth cannot describe a closed curve round it. As regards the rotation of the earth, the author maintains that the deviation of a falling body towards the east and Foucault's pendulum do not absolutely prove that it is the earth and not the whole rest of the universe which is turning. Whether we say that the earth or the heavens, or both, move is thus a mere matter of taste depending on the point of view; and the two first laws of motion are incapable of proof, since there is no such thing anywhere as motion in a straight line.

The most unsatisfactory part of the author's reasoning is the way in which he lightly skims over the aberration of light in a footnote only. One might grant him that everything else he brings forward is conceivable, but the human mind is hardly capable of imagining that all stars might move in the course of a year in circles, the planes of which are parallel to each other. If aberration is not an absolute proof of the earth's annual motion, we may give up the hope of proving anything.