

*Das Perpetuum Mobile.* By F. ICHAK. Bändchen 462 of the series: *Aus Natur und Geisteswelt.* Leipzig, Teubner, 1914. 104 pp. Price M. 1.25

THE question of perpetual motion has interested mankind for many centuries. The author says: "We see before us an almost endless series of attempts of different sorts which have one thing in common—a negative result. But mankind does not let itself be convinced of the impossibility of the undertaking by these unnumbered failures: here the wish is mightier than the judgment."

This little book does not claim to be an exhaustive treatise on the subject, but does cover the field remarkably well in such short space. This is largely due to the systematic arrangement of the material. Perpetual motion is discussed under three heads: first, that perpetual motion which depends upon the creation of energy by some device, and this is what is usually meant by perpetual motion; second, that which does not create energy but transforms it from one form to another in some cycle; and third, that motion which is not perpetual but of indefinite length, like the motion of the radium clock. The first of these is the oldest and has been the goal of the greatest number of perpetual motion seekers. The efforts to make a device for the creation of energy which could be utilized in doing work are discussed under several types, such as mechanical, magnetic, hydraulic perpetual motion, etc. Type machines and machines which have attracted unusual attention are described in detail and often illustrated. The effect of learning and the development of science upon the efforts at finding such a machine are discussed as well as the reaction of these experiments on science. With the theory of the conservation of energy came the attempts to secure perpetual motion of the second sort mentioned. The perpetual motion machines of the third sort, or apparent perpetual motion machines, like the radium clock or the radiometer, do not create energy but have it furnished from nature, and while the supply is very great it is not inexhaustible. The author closes with a section on perpetual motion in the future, in which among other things is mentioned the possibility of getting around the difficulties of the conservation of energy by a new theory concerning energy. There is also a prophecy, likely to be fulfilled, that we shall always have the perpetual motion seekers with us.

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