GRAVITY

so as to reach its center and apply the sharpened end of the pencil at this point, the ruler will balance, although it is supported at this *point* only (Fig. 3).

A square or circular piece of board may be balanced horizontally on the point of a pencil applied at the center of one surface. But if we bore a hole half way through at this point, and thrust the pencil upward into

the hole, the piece of board can be balanced on the pencil point not only when it is horizontal but also when it is inclined (Fig. 4). If the pencil is placed at the right point, the board will remain supported and at rest in any position in which it is set. So we see that we can counteract the entire pull of gravity on a body by a single upward



BALANCED DISK

push applied at a particular point. This point is called the center of gravity.

The word *force* is used to mean either a push or a pull; and the force or pull of gravity on any particular body is called its *weight*. The use of these words, force and weight, enables us to frame the following brief definition of center of gravity.

The center of gravity of a body is that point at which its weight may be counteracted by a single upward vertical force.

4. How to Find the Center of Gravity. If the plumb bob (Fig. 1) be pulled to one side and allowed to swing to and fro like a pendulum, it comes to rest at the middle of its swing where its center of gravity is at the lowest point that it can reach. In other words, the center of gravity "seeks the lowest level."

This fact suggests a convenient means of finding the center of gravity of an irregular body. Thus, for example, if we cut from thin metal or cardboard the irregular shaped body abc (Fig. 5), and suspend it on a pin passing through a hole near its edge, as at a; and if we also hang a plumb line on the pin, the center of gravity of the body will be somewhere in

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