



FIG. 1  
PLUMB LINE

is dropped it falls vertically; and that when it is suspended on a string, the string is stretched in a vertical direction. Because of this, every carpenter and brickmason uses his plumb line (Fig. 1) to guide him in erecting vertical walls, or door and window frames. This fact is described by saying that *the force of gravity acts in a vertical line.*

**3. Center of Gravity.** If we wish to prevent a ruler from falling to the floor, we must counteract the pull of gravity on it by an equal upward push. If this is done by laying it on the table or by holding it in the hand, it is supported at a large number of different points. But the ruler may be upheld in a horizontal position by balancing it on the edge of a knife (Fig. 2). It is then supported at only a few

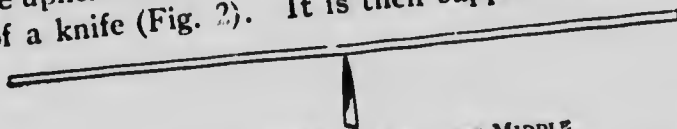


FIG. 2 THE KNIFE EDGE IS IN THE MIDDLE

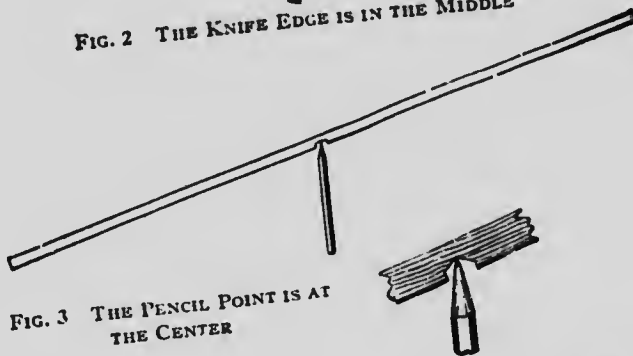


FIG. 3 THE PENCIL POINT IS AT THE CENTER

points along a single line. When it is so balanced, the knife edge is found to be at its middle: just half of the ruler is on each side of the blade, i. e. the two halves are symmetrically placed with reference to it. Thus we can counteract the pull of gravity on the whole stick by applying a support that presses upward against it along a single line at its middle. But we can do more than this. If we bore a small hole in the ruler