

In another experiment, water was used at the temperature of the room and placed in a tumbler to within one fourth of an inch from the top. The vial was again carefully introduced, so that it just sank to the bottom. The tumbler was then placed under the receiver of an air pump and enough air exhausted to cause the vial to float. Upon allowing the air to slowly reënter the receiver, the vial lowered slightly but did not sink, being

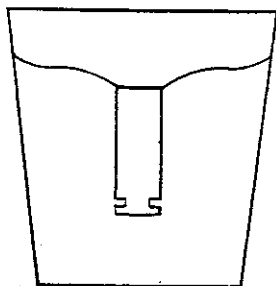


FIG. 1.

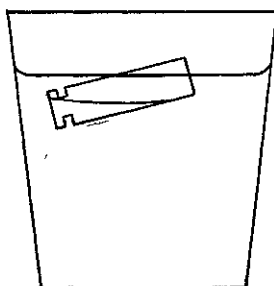


FIG. 2.

supported by the surface tension of the water. The surface of the water took the shape shown in Fig. 1. After giving the receiver a slight jar with the hand, the vial sank to the bottom. The air was again exhausted, but this time the pumping was carried on until the vial took the position shown in Fig. 2 and two small bubbles of air escaped from it. Upon allowing the air to slowly reënter the receiver, the vial slowly assumed a vertical position, lowered to the same position as in the previous experiment, and then suddenly sank to the bottom.

A SIMPLE REFLECTING GALVANOMETER.

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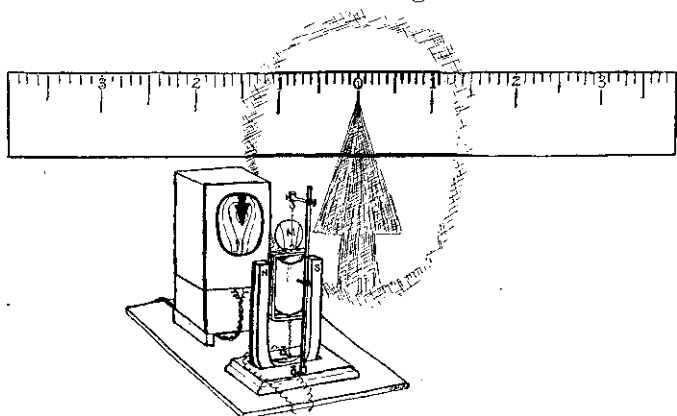
The reflecting galvanometer shown in the illustration embodies one or two ideas that turn the usual complicated instrument into a very simple machine.

After testing apertures of different sizes and shapes with lenses of various diameters and focal lengths, I found that the illumination and definition of the index-spot were so poor that I tried the arrangement as illustrated.

First, the little half inch plane mirror on the coil was removed and in its place was mounted, by a simple clamp of bent wire, the inch and a half *concave* glass mirror, M. Then a large opening

with an inverted arrow point for an index was placed in front of the light. The light was adjusted in a moment so that it and the scale were at conjugate foci of the mirror. A large and fairly clear cut image of the pointer fell on the scale, as shown.

The scale which I have is six feet long with its smallest divisions



an inch apart and is mounted about eight feet from the galvanometer. The lamp is not more than six inches from the mirror. Even though the heavier mirror retards the coil somewhat, a common six-inch bar magnet, when inserted in a small coil, gives a throw of three or four inches; and by repeated insertions, properly timed, the index can be made to pass the whole length of the scale.

The parts need not be permanently mounted. The lamp and galvanometer may be placed on the lecture table and by simply tilting the mirror slightly backward the index may be thrown on a scale drawn on the blackboard in the rear of the table. In practice, of course, a light-screen is placed back of the galvanometer.

The economy of space, the absence of lenses, the plentiful illumination, and the ease of adjustment, make the instrument a very satisfactory piece of apparatus.

THE "WALKING" CURE.

Doctors are of one mind in advocating walking as one of the best means of keeping the human machine in good working order, and one of New York's foremost medical authorities went as far as to say, in a lecture to young men studying for the profession, that if every adult could be persuaded to make a conscientious habit of walking five miles every day, there would be such a prompt and general improvement in health that doctors would soon have to be looking for other ways of making a living. —*Physical Culture for May.*