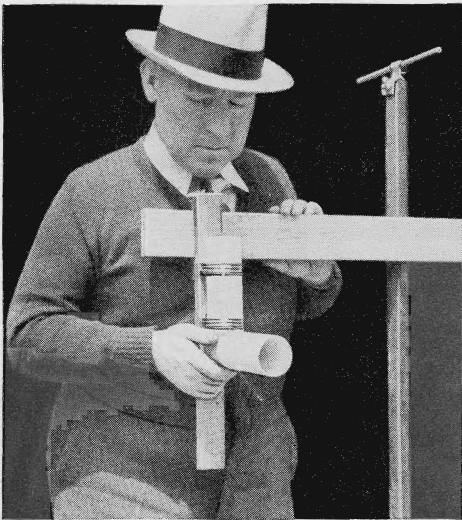
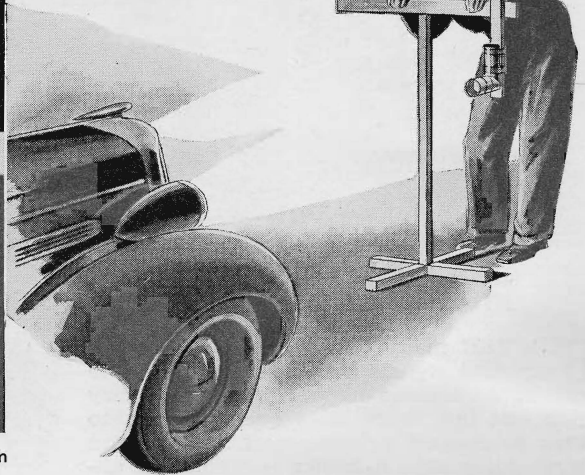


Headlight Tester for Car Owners



The "photometer" shows the center of the beam

Sighting on the center of a car hood to line up the unit for a headlight test



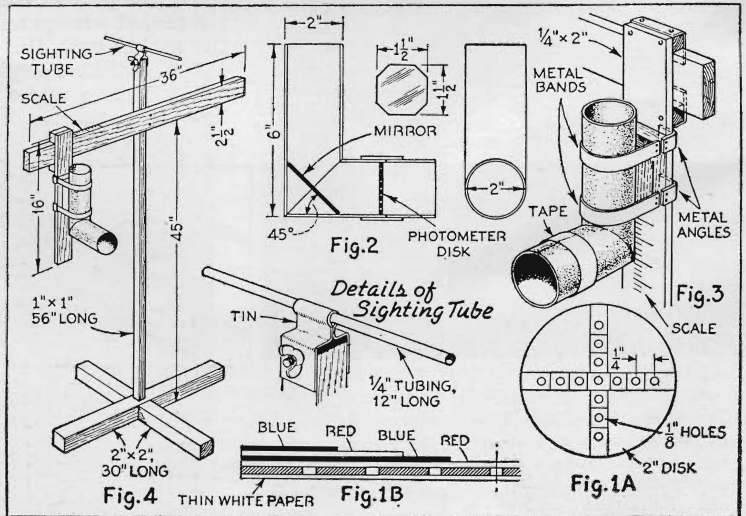
YOU can adjust the aim of your car's headlights accurately with this easily made, inexpensive tester. The heart of the unit is a homemade "photometer" which tells you when it is in the center of a headlight beam by the intensity of the light that penetrates it. Knowing the proper setting for your lights, all you do is line the device up 6' in front of your car, "get a bead" through the sighting tube on the car's center line, take readings, and proceed with the necessary lamp adjustments.

The photometer is made from a 2" disk of cardboard. Draw diameters on the disk, intersecting at right angles. With a paper punch or drill, make a $\frac{1}{8}$ " hole in the center and at $\frac{1}{4}$ " intervals along each line as in Fig. 1A. Now lay strips of red transparent cellulose to cover all the holes. Next, as indicated in Fig. 1B, lay strips of similar blue material so the outer three holes in each line are covered. Cover the two outer holes with another layer of red, and finally the outside holes in each

line with still another layer of blue cellulose.

Cement a disk of thin white paper over the entire back of the photometer. Hold it against a strong light and mark the paper covering each "window," starting with "1" for the center hole, "2" for the four adjacent holes, and so on. Mark the figures so that they all can be read without having to turn the disk.

Glue together at (Continued on page 200)



Follow the details shown in this drawing carefully in constructing the tester

Homemade Headlight Tester for Motorists

(Continued from page 198)

right angles 3" and 6" lengths of mailing tube of 2" diameter (Fig. 2). Cut the corners from a 1½" square pocket mirror and slip it down into the joint of the unit so that it is at an angle of exactly 45 degrees. Fasten it in place with glue and small pieces of wood. Glue the photometer to the end of the shorter tube—paper side toward the rear and numbers upside down.

The standard (Fig. 4) should be made next. Use well-seasoned hard wood that will not warp. If your headlights are wider apart than 36", make the crosspiece longer, accordingly. "Square up" everything, and make the fittings snug and the joints strong.

The vertical and horizontal slides should be provided, as indicated, with markings ¼" apart, above and below and to the right and left of zero. The limits of these markings will be determined by the motor-vehicle laws of the state, which usually allow certain tolerances in the variation of the headlight-beam center.

The slide with the photometer unit attached is now slipped on one arm of the stand. By sighting on the center of the motor hood, you can quickly center the tester, and by swinging the sight vertically, you can set the tester at right angles to this center line.

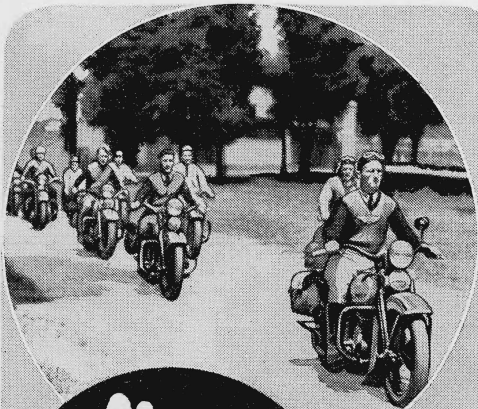
With the tester 6' from the lamps, slide the photometer from side to side within the beam of one headlight. You will see the horizontally numbered windows on the photometer disk light up and go out. The center of the beam is located when the windows on either side of the numeral "1" are equally lighted. As a rule, the beam center should not vary more than 1" either side of the lamp center at a distance of 6'.

Sliding the photometer vertically will locate the vertical center of the beam. In most states, the law requires that this be not more than 36" high at 6', with tolerance between 35" and 36¼".

With the photometer slide mounted on the other side of the cross arm, the other headlight can be tested.

Fixing Windshield Wiper

IF YOUR windshield wiper is of the vacuum-powered type and does not work properly, one of the first places to look for trouble is in the rubber-hose connections. The simplest way to do this is to remove each one, hold one end closed, and blow cigarette smoke into the other end. Leaks will show up immediately.



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