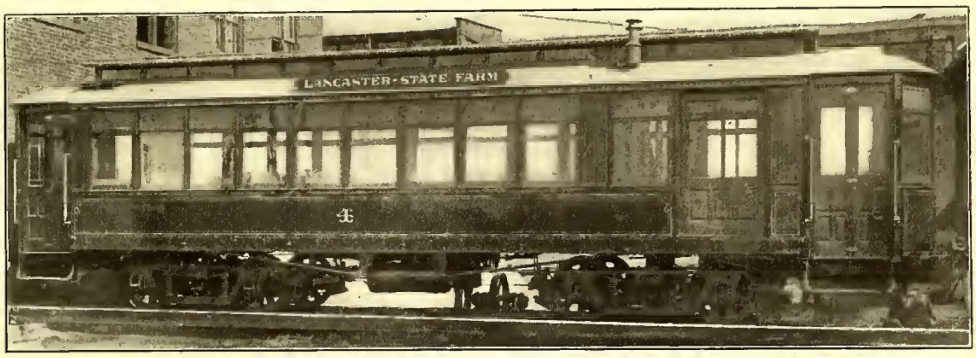
the usual method of light radiation. That the manufacturer has succeeded in developing this type will be evident from an examination of the light curves shown herewith. The curves as numbered represent the following types, which were tested by the Lamp Testing Bureau, of New York, and show total candle-power at 90 degs.

Curve No. 1 is for a 16-cp double-carbon lamp (5.1 cp); curve No. 2, 16-cp oval anchored lamp (7.1 cp); curve No. 3, 16-cp double round-coil lamp (10.5 cp); curve No. 4, 16-cp flattened double-coil lamp (13 cp), and curve No. 5, 16-cp "downward light lamp" (16 cp).

The tipless bulb avoids a great deal of breakage and helps to make the lamp especially serviceable when necessary to examine machinery details or seek for objects in obscure corners.

COMBINATION CAR FOR COLUMBUS, OHIO

The car shown in the accompanying illustrations is one which the American Car Company, of St. Louis, recently sent to the Fairfield County Traction Company, of Columbus, Ohio. It is mounted on the American Car Company's No. 14 M. C. B. type of trucks, and intended for high-speed service. Single platform steps are used at either end of the car, and platforms dropped low to bring these steps about 18 ins. from the rail-heads. Substantial vestibules have folding doors and sashes that drop into pockets. The side windows have two sashes, the upper being stationary and the lower arranged to drop into pockets which extend to the bottom of the double sills, the sills being spaced apart for this purpose. The sills are 2¾ ins. x 7¾ ins. each, with sill plates ⅝ in. x 8 ins. The center sills are composed of 7-in. I-beams. The vestibules, as well as the car sides, are sheathed with tongued and grooved poplar boards. Heavy under-trusses are anchored at the bolsters; platform knees are reinforced with angle-iron, and angle-iron bumpers protect and strengthen the platform. The seats are of spring cane with reversible backs, nine to each side, giving a seating capacity of thirty-six. The seats are 34 ins. long, leaving the aisle 25 ins. wide. The baggage compartment is 8 ft. 7 ins. long, and has sliding doors at both sides.



EXTERIOR OF COMBINATION CAR

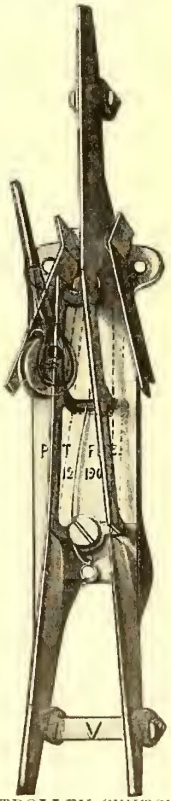
INTERIOR OF COMBINATION CAR, SHOWING SEATING COMPARTMENT

The general dimensions are as follows: Length over end panels, 34 ft.; over crown pieces, 44 ft.; from panel over crown piece, 5 ft.; width over sills, including sheathing, 8 ft. 3 ins.; from center to center of posts, 2 ft. 8 ins.; end sills, 4¾ ins. x 7¾ ins.; thickness of corner posts, 3¾ ins., and of side posts, 3¼ ins. The interior is finished in cherry natural color with similar ceilings. The wheel base of the trucks is 6 ft., and 33-in. wheels are used. The car has a four-motor equipment of 38 hp.

TROLLEY SWITCH

A simple and durable trolley switch which, it is claimed, will not cause the trolley wheel to leave the wire, has been developed by the Cornell-Easton Company, of Syracuse, N. Y. The manufacturer says that many severe tests have demonstrated that this contrivance works with the same reliability under any weather and speed conditions. The device is shown in the accompanying illustration, and consists of but two main parts, a top plate and a movable switch section, both of bronze.

The top plate, or support, the stationary rails at the end of the top plate and the flanges on either side of the top plate, are in one piece. The tops of the stationary rails from the top plate are grooved diagonally to their ends to receive the trolley wire. These stationary rails are also provided with one set of ears, used to fasten the trolley wire. The main trolley wire is placed in the single stationary rail and passed over the top of the top plate and out of one of the two stationary rails. The stub, or short wire, which is used over one side of the ground track, is placed into the groove of the other stationary rail. After this wire has been firmly secured the small piece may be left on top of the top plate. As the top plate is made solid and the flanges on either side extend 1⅝ ins., no rain or sleet can get into the movable switch section to freeze it up or otherwise impair its efficiency.



TROLLEY SWITCH

The movable switch section is composed of two rails placed between the stationary rails and fastened to the top plate at one end by one pivot bolt and to a small movable plate at the other end. This small movable plate is provided with a tongue working in a groove in the top of the single stationary rail, thus making it impossible for the movable switch section at this end to drop