A Simple Photographic Spectrometer.

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Photographic spectrometers of several different types can be purchased from instrument makers. Attachments to convert ordinary prism spectrometers into photographic spectrometers can also be found upon the market. It is the purpose of this article to describe a method of constructing a simple photographic attachment for a prism spectrometer that can be constructed at slight expense in any well equipped laboratory.

Figure one shows a diagram of the camera attachment. The dimensions have to do with the one I have constructed, and would need to be modified to meet the conditions of available material. That is, the length and diam-

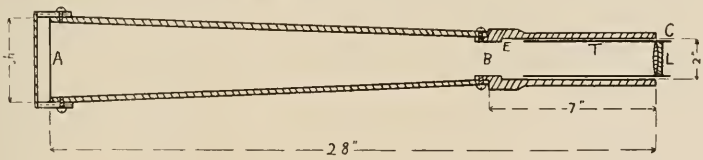

Fig 1

eter of the camera tube is determined by the focal length and diameter of the objective lense used. The figure is largely self explanatory. The section of the tube from C to B is constructed from a piece of wood 3x3x7 inches. A hole is bored lengthwise through this piece. From C to E this hole is 2 inches in diameter, and in order to shut out the stray light from around the focusing tube the remainder of the distance from E to B is 1¾ inches. A brass tube T, 2 inches in diameter is carefully fitted into the hole in this piece so that it can be slipped freely inward or outward for focusing purposes. At the outer end of this tube a 1¾-inch, 28 inches focal length, achromatic lense L is mounted. The tube from B to A is a tapering box, 2½ inches square at B and 4 inches square at A. This section is constructed from ⅜-inch lumber, the joints being carefully glued and reënforced by screws to make the box

light tight. At A an attachment is arranged to hold a ground glass for focusing purposes, and a common camera plate holder for making the exposures.

The camera tube is mounted on a common prism spectrometer in place of the telescope as shown in Fig 2. The collimator slit, prism, and light source to be studied are adjusted in the usual way. When all adjustments, together

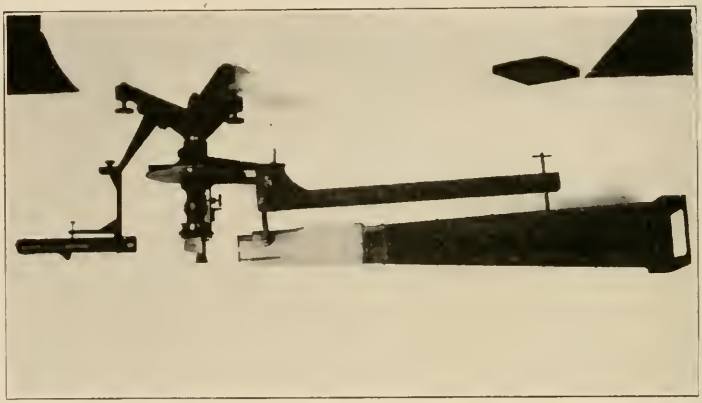

Fig. 2.

with focusing the objective lense of the camera, have been made, a clearly defined spectrum image, including the Fraunhofer lines, may be seen upon the ground glass. In the usual procedure a plate holder containing an unexposed plate may be substituted for the ground glass and the exposure made.

The instrument constructed in our laboratory has proven to be very successful for student work.