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A SIMPLE AND INEXPENSIVE LAMINOGRAPH
FOR USE IN NEUROSURGERY

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Laminography has great value in the visualization of the 3rd and 4th cerebral ventricular systems and, to a lesser extent, certain sinus, skull and cervical spine areas. Nevertheless, the majority of neurosurgeons have failed to include a laminograph in their diagnostic armamentarium because of the false belief that such machines are both expensive and complicated. In an effort to dispel this illusion, a brief description of an easily constructed, hand-operated laminograph is described and illustrated. Such a model was built in the local machine shop of the x-ray and neurosurgical departments of the McCaw General Army Hospital at a total cost of $225.00. A similar power-driven machine is now manufactured by the Franklin X-ray Company, Philadelphia (Fig. 2). No claim for originality is made for the described model, as similar machines have been variously described and more frequently constructed throughout Great Britain and the United States during the past ten years.1,2,3,4,5

Construction can be carried out easily by any machinist and consists of a straight steel rod which connects the x-ray tube arm to the movable Bucky diaphragm. This rod passes through a fulcrum or point of axis of rotation which is attached to the x-ray table. Both the rod and fulcrum are held in place by thumb screws and are quickly removable. The height above the x-ray table of this axis of rotation can be varied manually by turning a worm screw. As a result, the manual moving of the tube arm in one direction causes the film to move in the opposite direction so that all objects in one selected plane will occupy the same position, thereby putting objects in all other planes out of focus. The arm is pushed sufficiently slowly to cause an approximate 4-second exposure when the tube describes a 60 to 90 degree arc over the area being x-rayed.

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A line drawing (Fig. 1) is shown presenting the details of construction, as well as comparative illustrations of the 3rd and 4th cerebral ventricular systems with and without the use of the laminograph (Figs. 3 and 4).

Fig. 1. Line drawing of manually operated laminograph, adaptable to any standard x-ray table.

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Fig. 2. Model similar to writer's, made by Franklin X-ray Co. Left, front view. Right, back view.

Figs. 3 and 4. Pneumoencephalograms of normal 3rd and 4th cerebral ventricles. Left, without use of laminograph. Right, with use of laminograph.