# A NOTE ON BREAKING GLASS KNIVES*

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In cutting thin sections of dense tissue such as bone, much depends on the integrity of the glass knife edge. The method of breaking the glass by first scoring it into strips has certain limitations. These strips have irregular edges be-
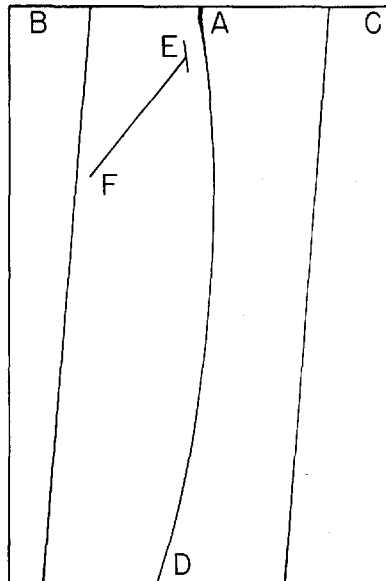
TEXT-FIG. 1. Plan of piece of plate glass.

cause they break along the strain lines introduced by the glass cutter and it follows that the cutting edge of the knife will also be irregular. The strips can be made without scoring the glass along the line which will form the clearance facet. A clean break is still a matter of chance as plate glass has a very non-

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uniform consistency, but with practice and a little patience knife edges of high quality can be obtained.

Method

Pieces of clean $\frac{1}{4}$ inch plate glass about 8 by 5 inches are selected (Text-fig. 1). The surface is scored with a glass cutter for about $\frac{1}{4}$ inch at A. The tip of the cutter handle is placed under A as a fulcrum and the corners B, C pressed firmly with the palm of each hand. With practice the glass will break in a slight curve from A to D. This break is then inspected by observing on it the re-

TEXT-FIG. 2. Reflection of a paper clip on the clearance facet of a glass knife made as described (upper) and made by the usual method (lower). The knife edges are at the right.

flection of a straight line such as a vertical window edge. If the reflection is true allowing for the curvature of A-D the edge is satisfactory. The two pieces of glass are then scored with the cutter to make two strips about 8 by $1\frac{1}{2}$ inches in size. These strips are cut into knives as follows:

A line is scored along E-F at an angle of approximately 50° (or as desired) to the tangent to the curve A-D. This line should start about $\frac{1}{4}$ inch from the curve. A small line is scored at the end of E-F and parallel to A-D. This helps to lessen the curving of one end of the cutting edge. The tip of a length of $\frac{1}{8}$ inch pyrex glass rod is brought to white heat and applied to the line E-F about $\frac{1}{2}$ inch below E to break the glass along that line. If this break is clean the

procedure is repeated at a suitable distance away from *E-F* to form the next edge. If the break is not a clean one this line is scored closer to *E-F*. This gives more usable knives per length of glass than when a series of lines is scored first.

In Text-fig. 2 two glass knives are shown with the reflection of a paper clip in the clearance facet. The upper knife made by the method described has a smooth facet resulting in a clear reflection. The lower one shows the irregularity in this surface when the knife is made in the usual manner.