errors arising from original measurement and, for microscopic elements, from the collection of the hand specimen and the preparation of oriented thin sections. Small plotting errors included, this may be as large as ± 5 degrees, is usually ± 3 degrees, and with extreme care can be held to ± 1 degree.

Several techniques are used to contour diagrams in order to emphasize the orientation pattern. In general the contour lines are based on the number of points per unit area of the net, and the contour levels are selected with respect to the concentrations exhibited by the population of data points. A sufficiently accurate and rapid method, particularly suited to diagrams containing less than 200 points, is used by the author (Fig. 7). A contouring tool (Fig. 7(a)) for a 20-cm diagram is constructed with two circles scribed 20 cm apart. Each circle has a diameter of 2 cm so that its area is 1 per cent of the area of the diagram. Tapered holes are drilled at the center of each circle to accommodate a pencil point, and a slit is milled along the central portion of the tool to permit free rotation and translation about a pin through the center of the diagram.

To generate a contour line based, for example, on 3 points per 1 per cent area, the 1 per cent circle of the tool is placed on the diagram such that 2 points are <u>within</u> and 1 point is <u>on</u> the circle (Fig. 7(d)). The tool is then moved (pencil in contact with the paper through the center hole) such that 1 point is always on the circle and 2 are within. As new points are encountered by the circle, old ones are left behind. This is continued until the contour line is closed. Thus wherever one places the 1 per cent circle on or within the closed 3-point contour line, the circle will always be observed to contain <u>at least</u> 3 points. Points at the periphery are handled as illustrated in Fig. 7(e). The contour is expressed in terms of the percentages of the total number of points per 1 per cent area.

In practice, the contour line about 1 point is generated with a compass. In fact, the compass can be used throughout the procedure by drawing a 1 per cent circle about each point on the diagram and noting the areas of overlap.[26,27] Thus where two circles overlap, a 2 point per 1 per cent area is defined; and where three circles overlap, a 3

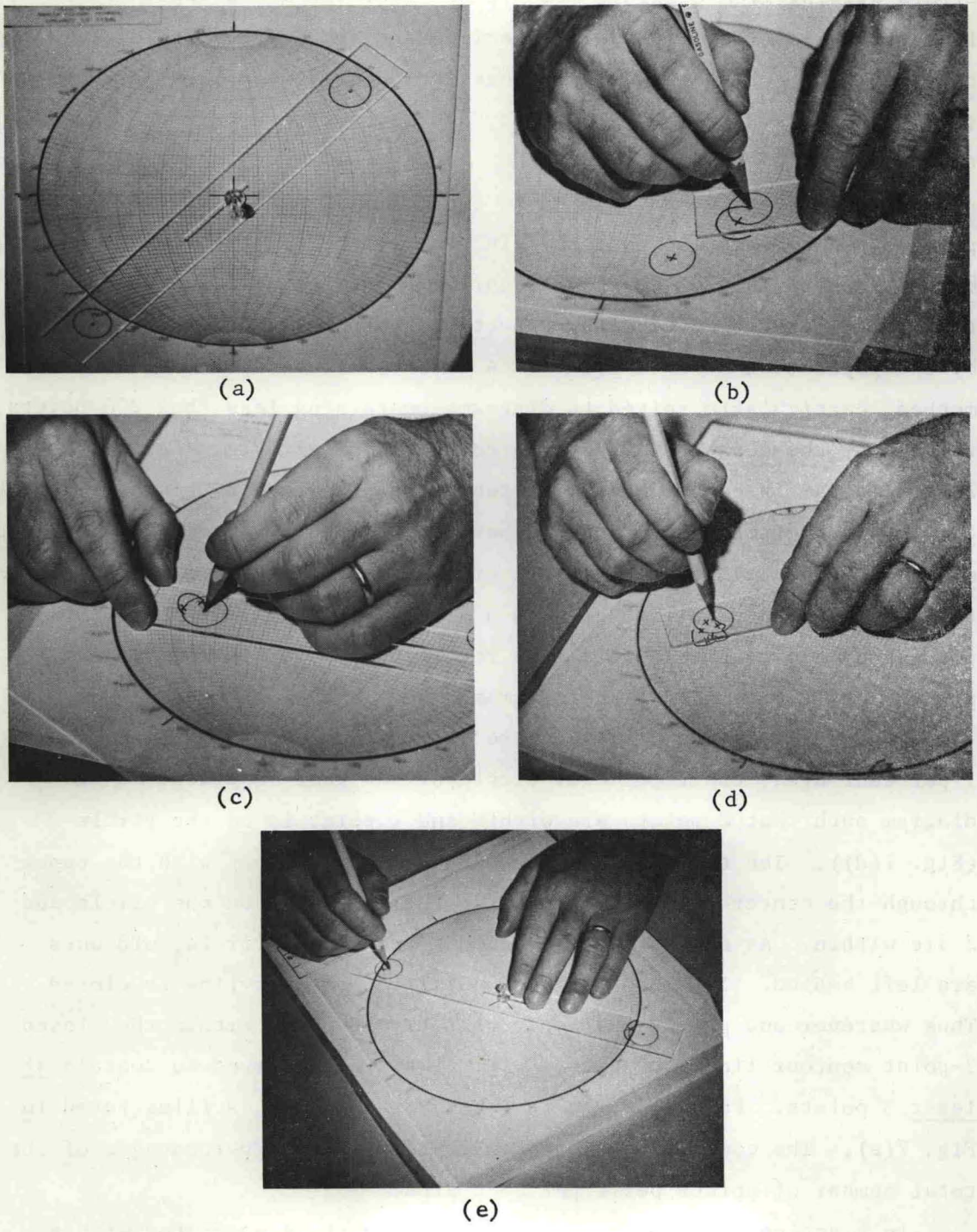

Fig. 7—Photographs illustrating a method for contouring points plotted in equal-area projection. Shown are (a) the contouring tool; (b, c, d) the method used to contour 1, 2, and 3 points per 1 per cent area, respectively; and (e) the procedure used to contour 2 points which lie on opposite sides of the diagram.