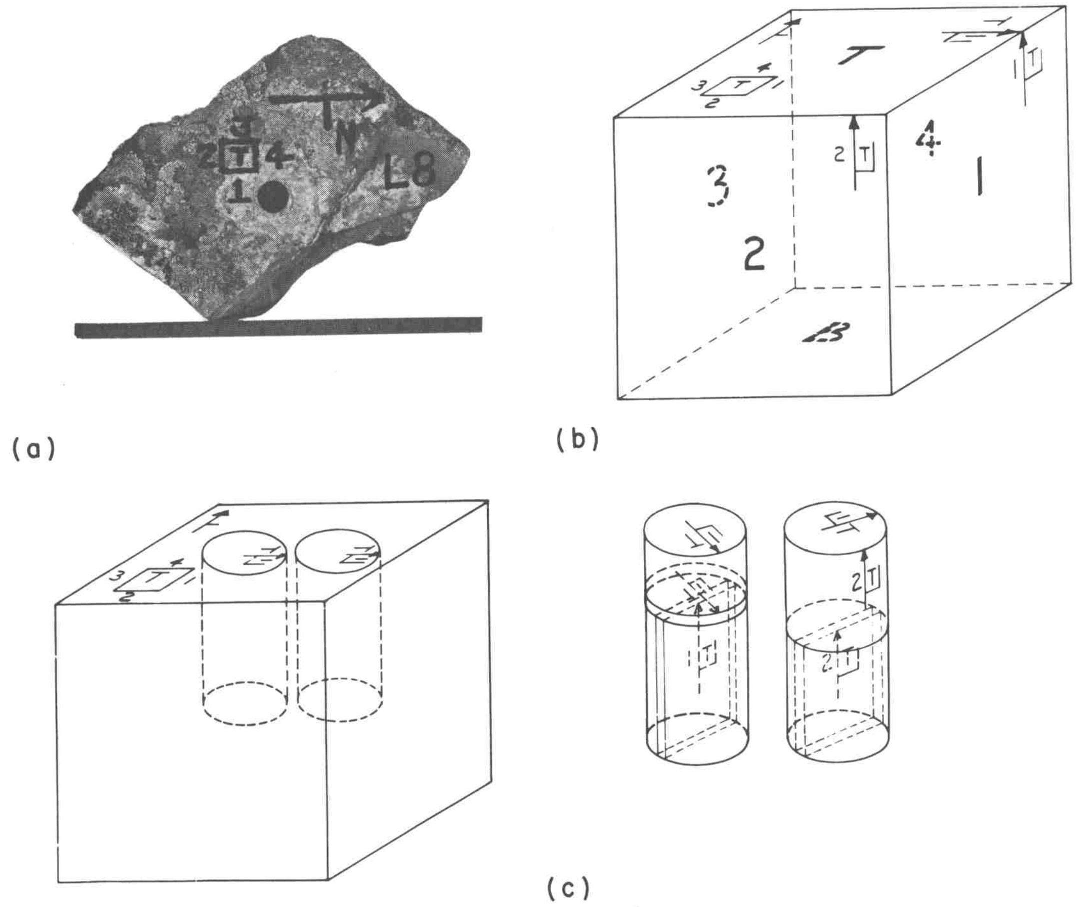

Fig. 2—Diagrams illustrating orientation convention commonly used to mark hand specimens and thin sections. (a) Hand specimen shows strike and dip directions marked on T (bedding) surface. Faces 1, 2, 3, and 4 are arranged in clockwise order with the 1 surface in the dip direction. (b) Cube shows relationships between different faces and the use of the orientation symbols. (c) Thin sections are taken from cylinders cored from the T surface of the block.

planar features inclined at high angles to the plane of a thin section at the expense of those inclined at lower angles. One can eliminate errors of this type by recognizing that they may exist and by designing a sampling plan that will eliminate or at least test for the effect.

Most measurements deal with the determination of the orientations of lines and planes in space. The choice of instrument one might use depends upon the scale of the fabric element, e.g., aerial photographs, a variety of telescopic instruments such as the theodolite and range finder, pocket transit (Brunton compass), petrographic microscope and universal stage, or the X-ray diffractometer. Detailed discussion of microscopic and X-ray measurement techniques are found in Refs. 2, 7-13, and 18-20. The accuracy of strike and dip measurements on aerial photographs varies with the topography and the scale of the photographs, but, in general, azimuths of lines can be determined to ± 3 degrees and dip angles to ± 5 degrees for angles > 60 degrees, ± 3 degrees for angles 45 to 60 degrees, and ± 1.5 degrees for angles < 45 degrees. Linear and angular measurements from telescopic instruments are very reliable (± 0.1 per cent and < ± 0.1 degree, respectively). Errors in the measurement of macroscopic fabric elements or in the marking of oriented specimens with the pocket transit can usually be held to ± 3 degrees. Universal-stage measurements of crystal optic axes are usually reliable to ± 2 degrees. Planar features can usually be located to ± 1 degree when they are inclined to the plane of the section at angles greater than 70 degrees. For inclinations of 30 to 70 degrees the error may be ± 3 degrees.*

Stereographic and Equal-area Projection

Petrofabric analysis involves spacial relationships between lines and planes and their illustration. The stereographic projection represents the surface of a sphere on a plane surface and provides an effectual means for both analytical and illustrative purposes.** Only those aspects needed to comprehend fabric orientation diagrams are reviewed here.

Consider a reference sphere cut by meridional or equatorial planes (Fig. 3), both passing through the center of the sphere. Either can serve as the reference plane of the projection, but the meridional is

---

*Recently, Kamb(21) has discussed the nature of the corrections needed in universal-stage work to compensate for differences in index of refraction between the mineral under observation and the glass hemispheres of the stage. He points out that the true corrections are negligible for cases where the ratio of the mineral refractive index to that of the hemispheres is between 0.95 and 1.05. As this condition is usually obtained by use of suitable hemispheres, refraction corrections are seldom applied to fabric data.

**See Refs. 11, 18, 22, and 23.