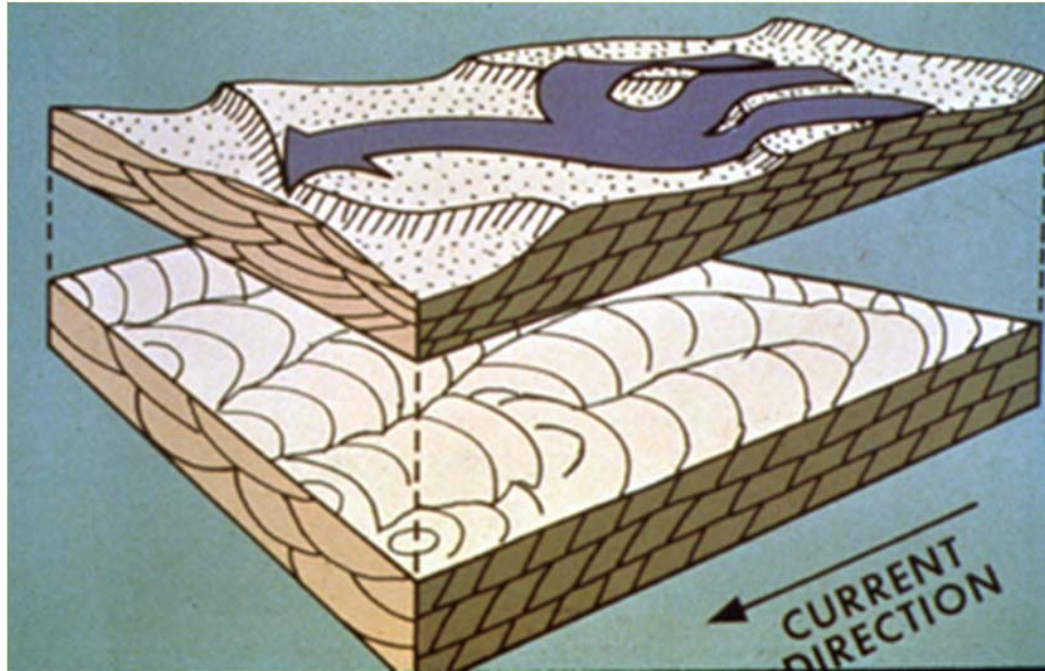


Análisis de paleocorrientes

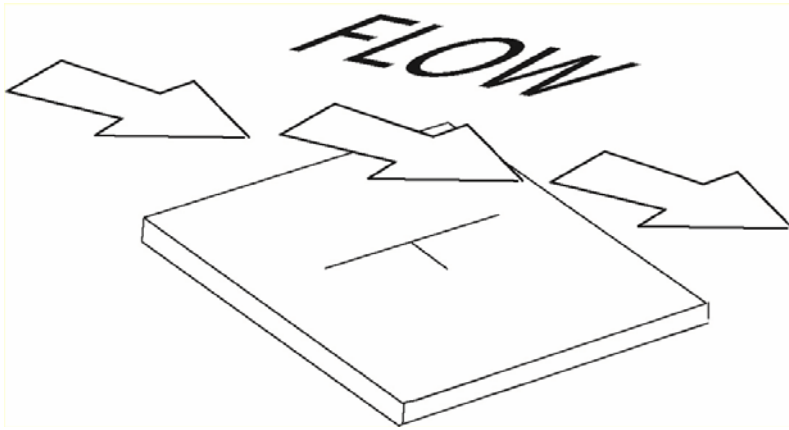


Medición de elementos orientados durante el transporte

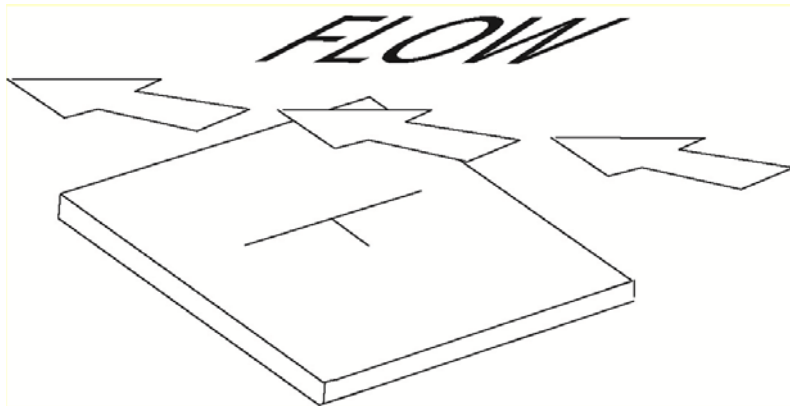
Tipo de indicadores:

- Unidireccionales planares corriente abajo o arriba (estratificación entrecruzada, imbricación de clastos)
- Unidireccionales lineales paralelos o perpendiculares al flujo (turboglifos)
- Bidireccionales planares paralelos o perpendiculares al flujo (parting)

Unidireccionales planares corriente abajo o arriba



Estratificación entrecruzada, laminación
ondulítica, etc.
Considerable dispersión
Se requieren múltiples mediciones



Imbricación de gravas.
Considerar eje de imbricación (b o a) y
tipo de transporte (fluído o denso)





Unidireccionales lineales paralelos o perpendiculares al flujo

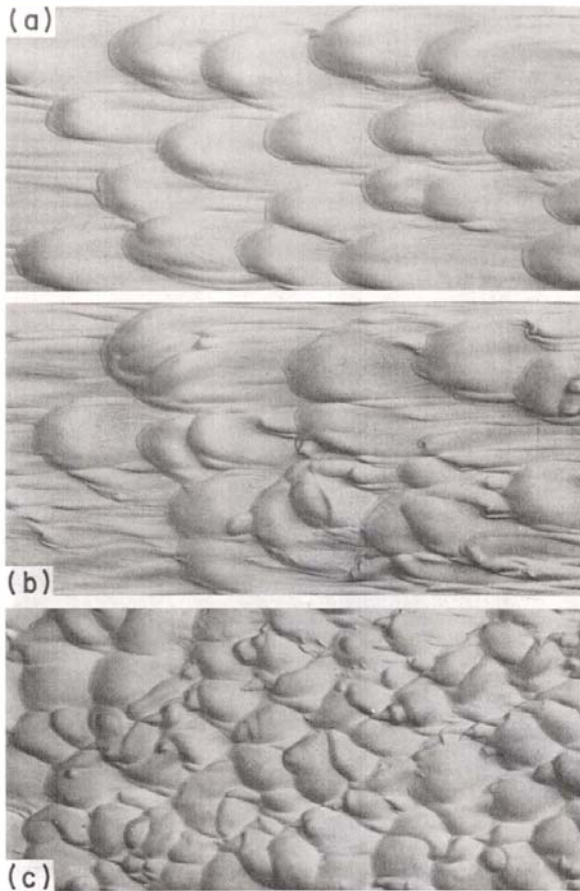


Fig. 7-22. Rubber latex moulds of flute mark assemblages made by the dissolution of a flat bed of hardened Plaster of Paris carrying random defects into a turbulent water stream. Each bed is 0.48 m long with current from left to right. a. Mean flow depth=0.054 m, mean flow velocity=0.29 m s⁻¹, duration=5.27×10³ s. b. Mean flow depth=0.060 m, mean flow velocity=0.47 m s⁻¹, duration=5.24×10³ s. c. Mean flow depth=0.156 m, mean flow velocity=0.47 m s⁻¹, duration=6.08×10³ s.

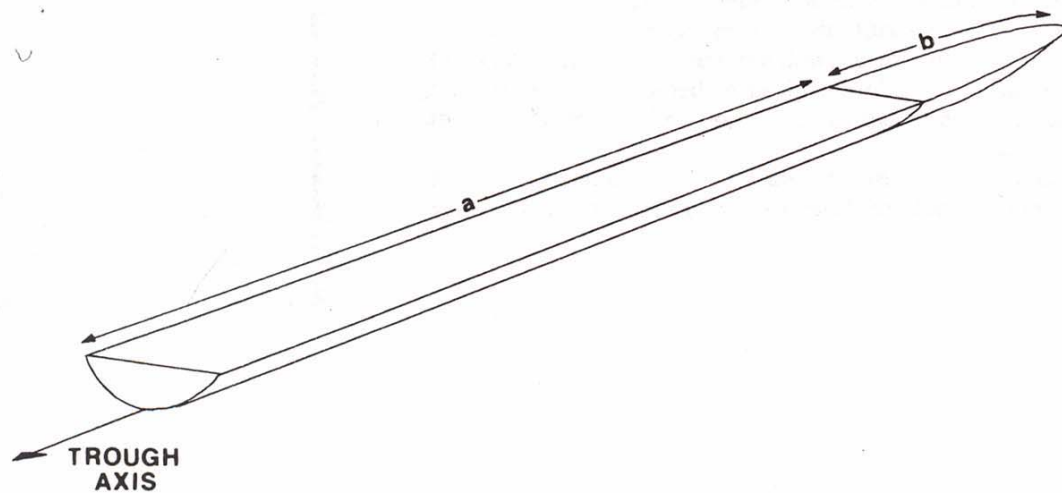
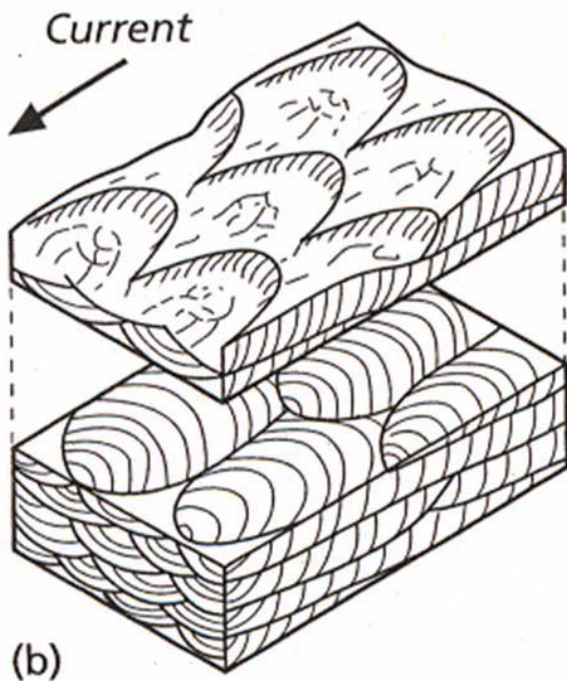


FIG. 4.—Idealized trough with cylindrical (a) and scoop-shaped (b) portions.



(b)

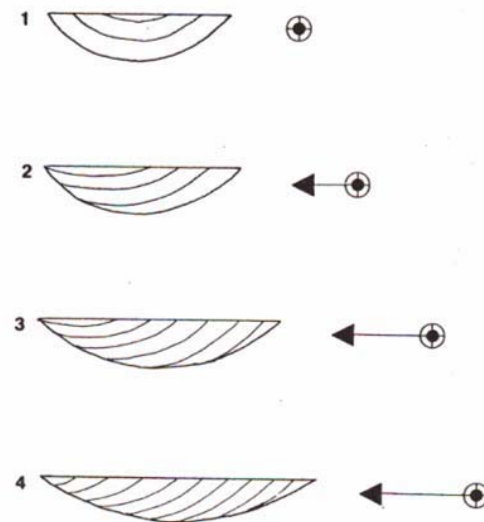
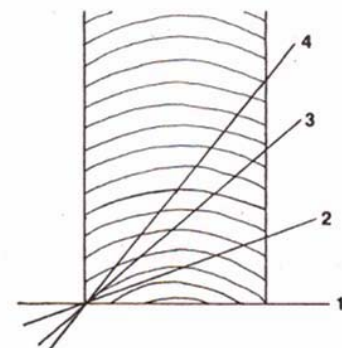
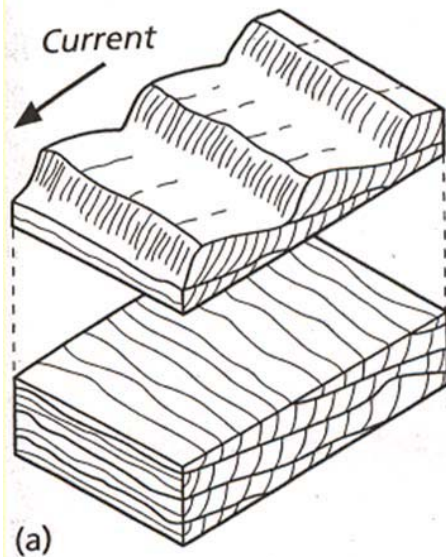


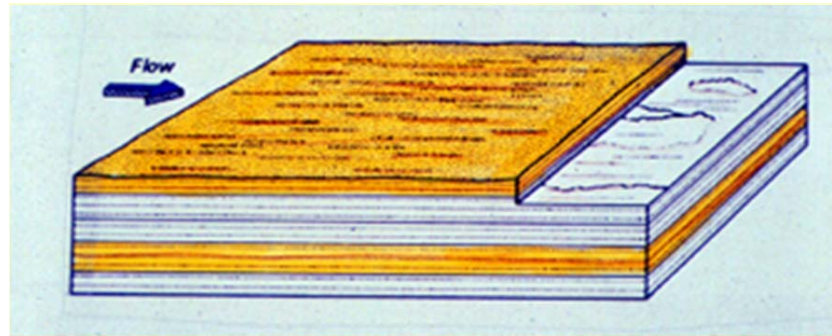
FIG. 8.—Diagram illustrating how the apparent width of trough and number of truncated foresets increases as the cut more closely approaches a longitudinal cut. Note that the traces of trough basal surfaces remain symmetrical, which prevents the determination of the paleocurrent directional component normal to the cut. Also, the relative strength of the component in the plane of the cut increases as the cut approaches a longitudinal orientation. For explanation of paleocurrent symbols, see legend in Figure 6.



Fig. 8-8. Long-crested current ripples in fine grained sand, Wells-next-the-Sea, Norfolk, England. Scale 0.5 m long nearly parallel with current from bottom toward top.



Bidireccionales planares paralelos o perpendiculares al flujo

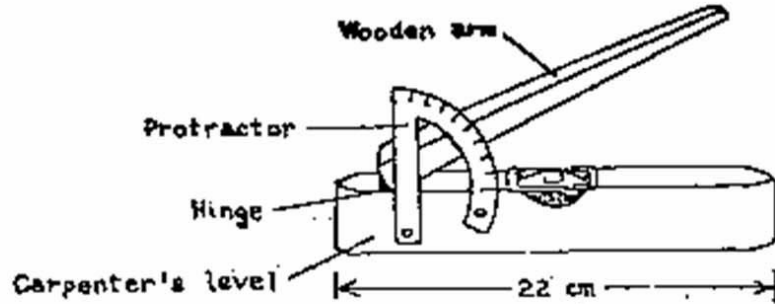




Mediciones

- En estratos no deformados:
 - Planares: medir rumbo e inclinación
 - Lineales: medir dirección
- En estratos deformados:
 - Planares: medir rumbo e inclinación del estrato y de la estructura. Restituir a la horizontal
 - Lineales: medir el ángulo entre el indicador y el rumbo del estrato, indicar si ese ángulo fue medido en el sentido de las agujas del reloj o en contra, sumar o restar ese ángulo al rumbo según corresponda, anotar dirección de hundimiento.

INSTRUMENT FOR MEASURING PITCH:



MEASURING PITCH OF SOLE MARK:

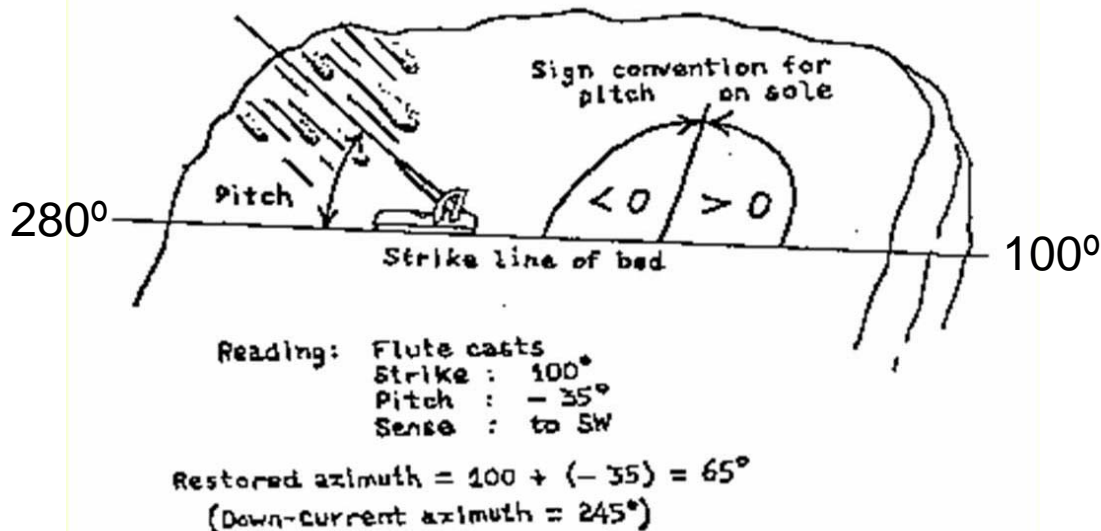


Fig. 4. Instrument and technique for measuring pitch.

Ejemplo para un turboglifo

Hunde hacia el SW

Rumbo del estrato 100°

Angulo con el rumbo 35°

Medido en dirección contraria a las agujas del reloj

$$280^\circ - 35^\circ = 245^\circ$$

El "problema" de la estratificación entrecruzada en artesas

(De Celles, et al., 1983)

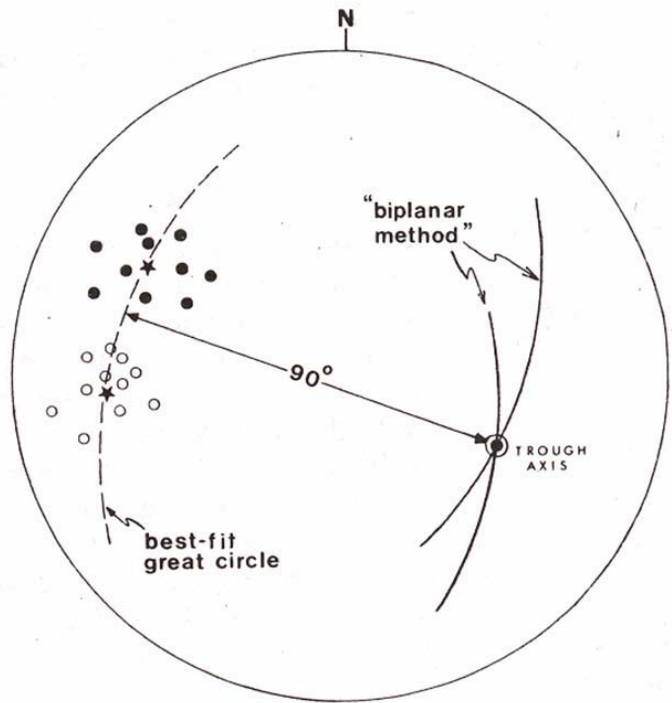


FIG. 2.—Stereoplot of trough-limb data showing clusters of right-hand (open circles) and left-hand (closed circles) poles. Average poles are indicated by stars. The intersection of the two corresponding great circles and the pole to the best-fit great circle both give the trough axis.

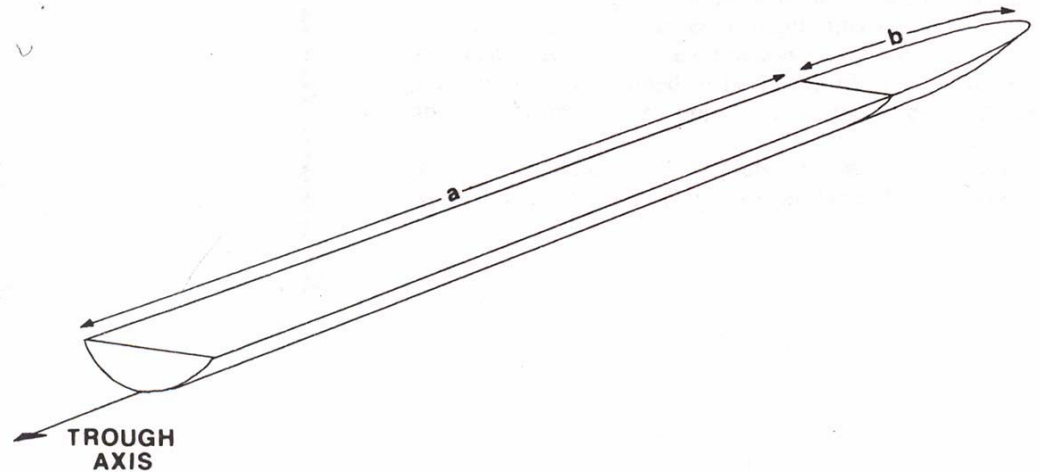


FIG. 4.—Idealized trough with cylindrical (a) and scoop-shaped (b) portions.

Orientación del corte vs orientación del eje de la artesa

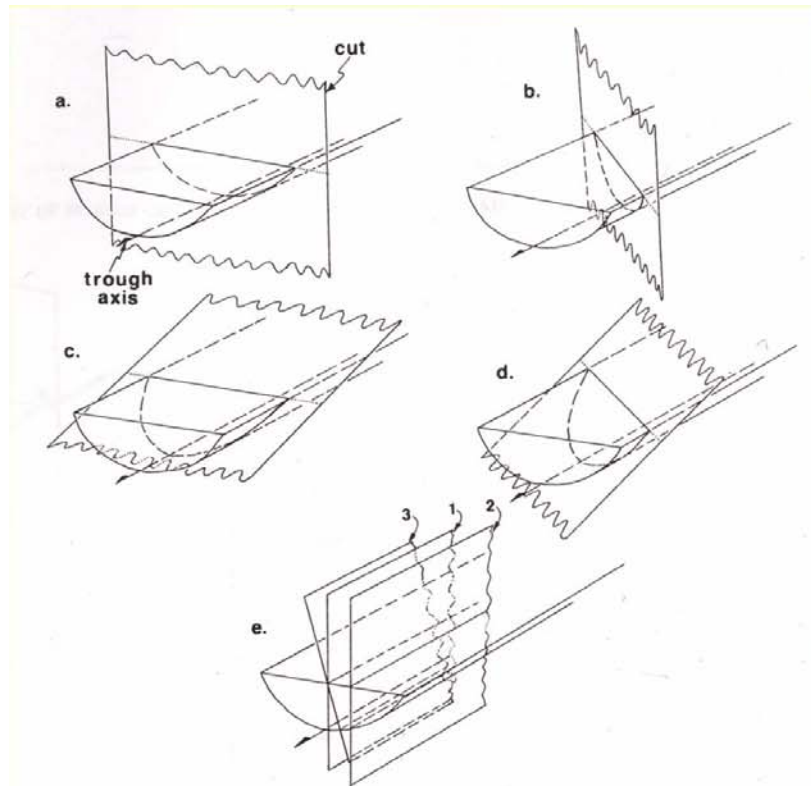


FIG. 5.—Various types of idealized planar cuts through a given trough. a) transverse-vertical, b) oblique-vertical, c) transverse-oblique, d) oblique-oblique; e) longitudinal cuts: 1) centered vertical, 2) off-centered vertical, and 3) centered nonvertical.

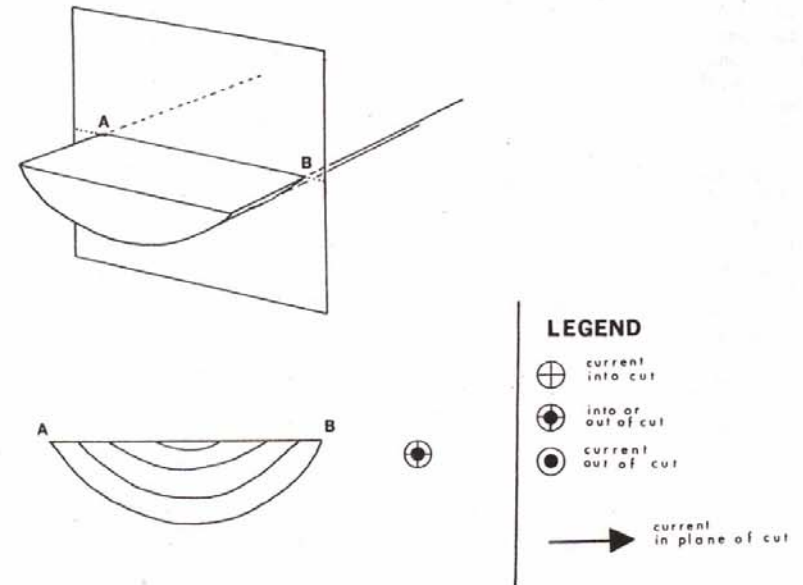


FIG. 6.—Transverse-vertical cut through a cylindrical trough, showing authentic cross section (A-B) of the trough, transverse to the trough axis. Interpretable paleocurrent component is along the axis but cannot be assigned a direction in or out of the cut. Legend of paleocurrent symbols is used in some of the ensuing figures.

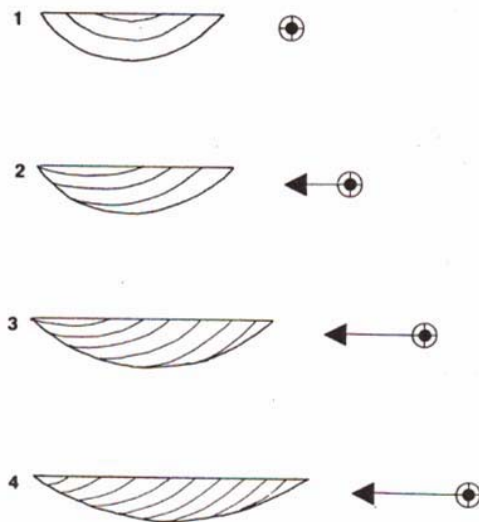
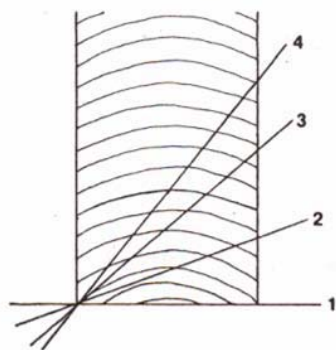


FIG. 8.—Diagram illustrating how the apparent width of trough and number of truncated foresets increases as the cut more closely approaches a longitudinal cut. Note that the traces of trough basal surfaces remain symmetrical, which prevents the determination of the paleocurrent directional component normal to the cut. Also, the relative strength of the component in the plane of the cut increases as the cut approaches a longitudinal orientation. For explanation of paleocurrent symbols, see legend in Figure 6.

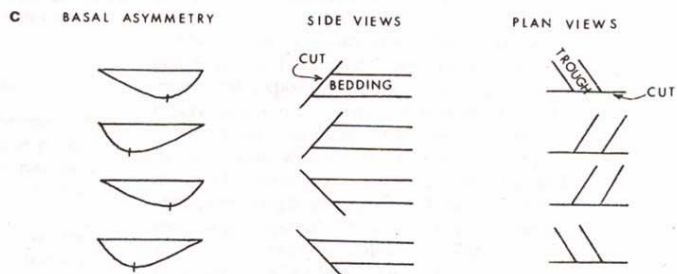
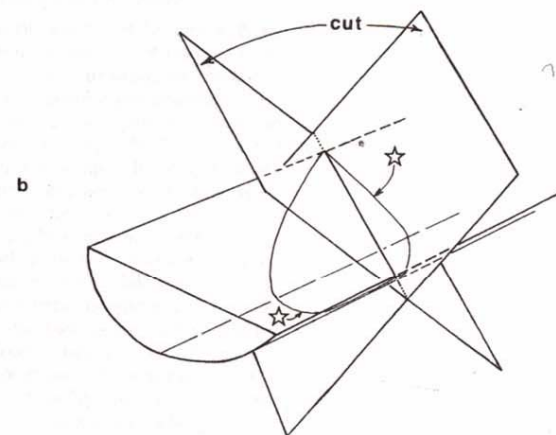
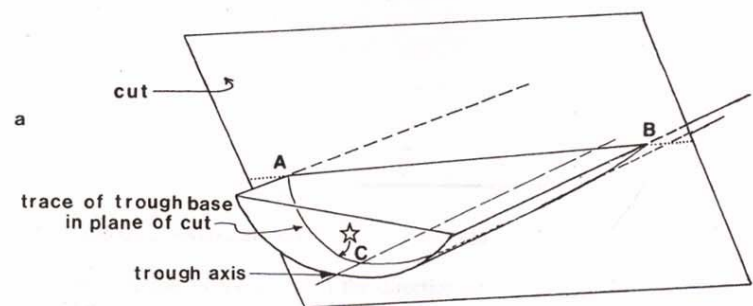


FIG. 10.—Conceptual diagram illustrating the origin of basal asymmetry in two-dimensional exposures of trough cross-stratification and how it can indicate the approximate orientation of a cylindrical trough. a) Oblique-oblique cut showing the trace of the scour base in the plane of the cut. Distance AC is shorter than distance BC, which causes the left side of the trace to appear steeper than the right side. b) Oblique-oblique cuts; stars mark steep sides of trough bases in cuts. c) Diagrams depicting the asymmetry of the traces of basal surfaces in oblique-oblique cuts; side views indicate approximate bedding/cut relationships, and plan views look down on troughs. If the basal asymmetry and bedding/cut relationships are as shown in the first two columns, the respective approximate trough orientations relative to the cut are as depicted in third column.

Infiriendo dirección de corriente
a partir de la geometría de la artesa

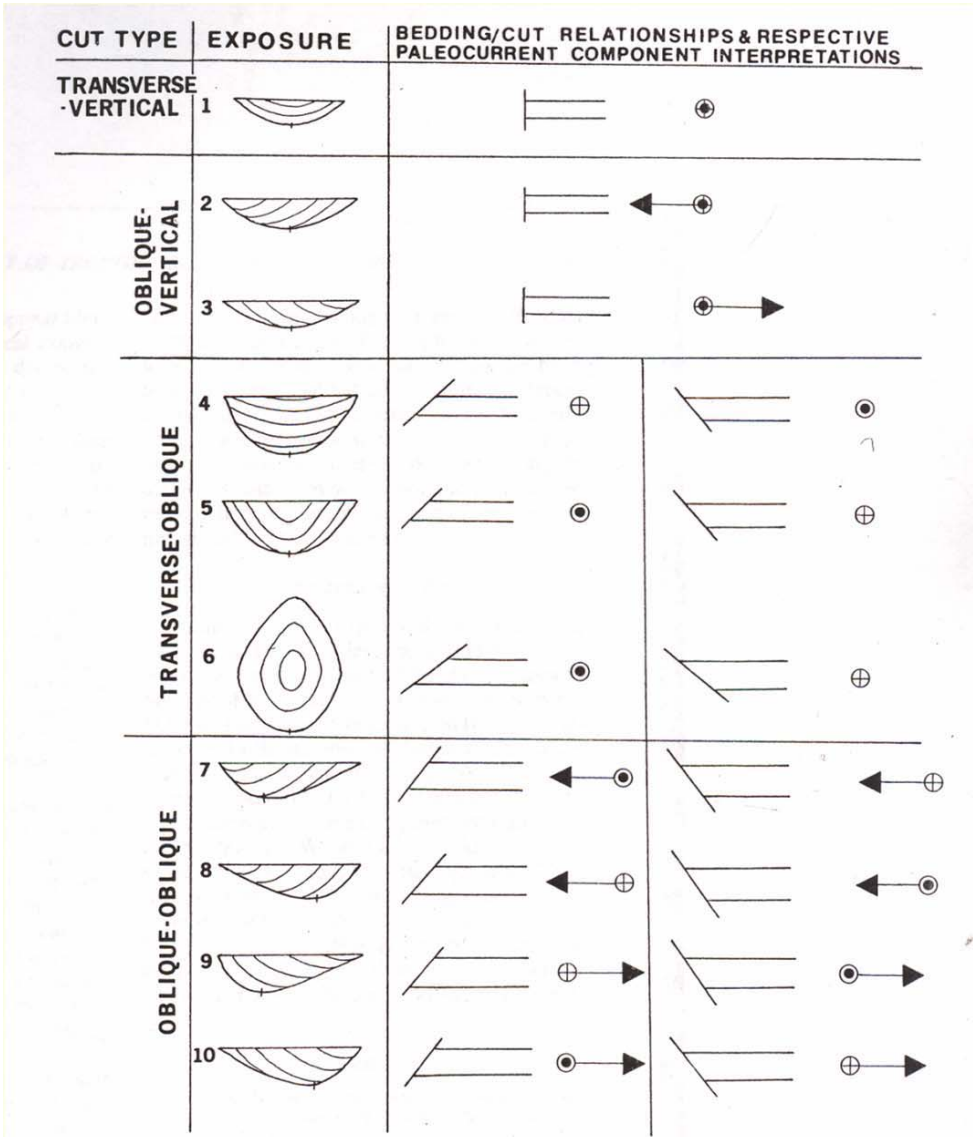


FIG. 12.—Compilation of the various types of two-dimensional exposures of trough cross-stratification. Depending on the symmetry of the basal scour surface, the dip of the foresets, and the approximate bedding/cut relationship as seen from the side, one can make the accompanying paleocurrent-direction interpretations. As an example of field interpretation, suppose that the foresets dip toward and are truncated against the shallow side of the trough. Finally, suppose the cut dips back into the bedding—that is, away from the observer. The appropriate exposure type is illustrated in row 9 under oblique-oblique exposures. The appropriate bedding/cut relationship is the second one in row 9. Beside the bedding/cut diagram is the paleocurrent-direction-component symbol (see legend in Fig. 6), which in this example indicates that the direction of paleoflow is toward the right and out of the cut. This approximate direction can then be measured (see text).

Los estudios de paleocorrientes pueden ser ampliados y/o combinados con otros tipos de estudios para la determinación de paleopendientes (paleogeografía).

Elementos texturales: ej. Tamaño máximo de las gravas

Elementos estructurales/deformación: ej. Slumps

Análisis de facies: ej. Distribución de facies de piedemonte vs fluviales; marinas costeras vs profundas, etc.