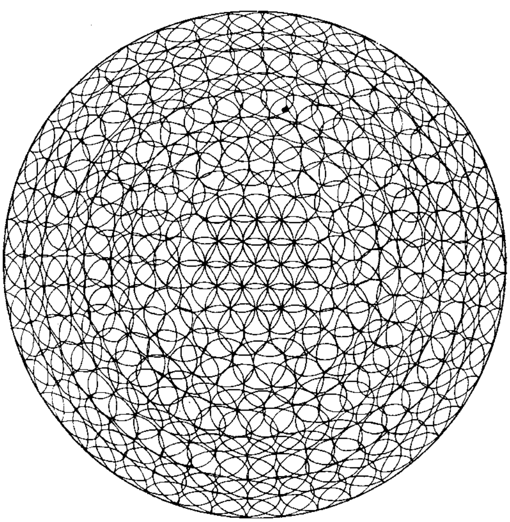
NOTISER

A METHOD OF COUNTING OUT PETROFABRIC DIAGRAMS

The counting out petrofabric diagrams as described in the literature is carried out by means of a celluloid counter with circular holes representing 1, 1,5 or 2 per cent of the area of the circle of projection. The present writer has found it more convenient to construct a net of circles with the percentage wanted, with the distance between the centres equal to the radius of the circles. The diagram, with the projection points plotted on a tracing paper, is placed upon this net, and is covered by a second sheet of tracing paper. The numbers of points falling within each of the circles of the net can then easily be counted and are marked by corresponding figures on the upper paper. In this way the counting out of a diagram will be easier as well as more impersonal than by using a celluloid counter.

Petrofabric diagrams are plotted in an equal area projection (the Lambert projection of cartography) by use of the so called Schmidt net, and are counted out by circles as described above. This method has been criticized by Mellis[1] on the ground that the concentration in a given point of the hemisphere correctly should be measured by the number of plots falling within a spherical circle with its centre in the point. The plane circles generally used represent spherical circles only in the centre of the projection, in the peripheral parts they represent (somewhat deformed)



[1] Otto Mellis: Gefügediagramme in stereographischer Projektion. Min.-petr. Mitt, *53*, p. 330, 1942.

ellipses on the hemisphere with the longer axes in a meridional direction. Due to this circumstance some distortion of the diagram will take place. To avoid this, Mellis proposes to represent petrofabric diagrams in the stereographic projection, in which a circle on the sphere is represented by circles in the plane projection. In the stereographic projection a diagram can correctly be counted out by circles, the radii of which, with a given percentage, increase with the distance from the centre of the projection.

There are two chief objections to the use of the stereographic projection for petrofabric diagrams. Firstly, the equal area projection has already been used for a great number of published diagrams, and secondly the stereographic projection has the disadvantage of representing equal angular distances on the sphere by greatly varying linear distances in the projection. The paper of Mellis has therefore occasioned the author to construct the net here reproduced for the counting out of petrofabric diagrams in the equal area projection, by the use of spherical circles with radius 8°,1, representing 1 per cent of the hemisphere.[1] As is seen from the figure the sphercial circles are represented by (somewhat deformed) ellipses, the difference between the axes of which increases with the distance from the centre of the projection. Within a distance of 25° from the centre the difference between the axes is less than one milimetre on a net with a radius of 10 cm, and here circles may be used without any appreciable error. Similar nets might be constructed with 1,5 per cent circles, and with 2 per cent circles, with radii of 10°,0 and 11°,5, respectively, and with circles with a radius of 5° for the constructive counting out of diagrams proposed by Mellis (*l. c.*).

By devoting some time and care every one may construct similar nets for his own use, to get fine results, however, exactness in construction as well as skill in drawing is needed. If the method here suggested should meet with general approval, it would be desirable that some firm or institution undertake the construction of the nets, which might then be reproduced and distributed for sale. The present writer is well aware, that the orientation of minerals in rocks is not a finely adjusted process so that the errors resulting from the commonly used methods are far from being serious. Yet, the use of correct methods will give satisfaction to the workers in this field, and uniformity in methods will be of importance to this branch of science as a whole.

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[1] The area of a spherical calotte (a spherical circle with radius φ) is given by $2\pi R^2 (1 - \cos\varphi)$, where R is the radius of the sphere. $1 - \cos\varphi$ is thus the area of the spherical circle in proportion to the area of the hemisphere.