A simplification of the Rosiwal method of micrometric analysis.

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Johannsen [1] has recently described an areal method of micrometric analysis, based on the use of a planimeter in conjunction with a drawing apparatus. It is claimed that this method results in some increase of accuracy, a considerable saving in time, and—most important of all—eliminates all the eye-strain due to continuous reading of a micrometer.

It is the purpose of this communication to describe a similar method whereby the ordinary Rosiwal routine can be modified to increase the speed and eliminate eye-strain.

Let the drawing apparatus be attached to a microscope, conveniently fitted with either a sliding bar or some simple form of mechanical stage, and adjusted as usual so that the scale is uniform in all parts of the field. Let two lines be drawn at right angles on a strip of Bristol-board pinned to the drawing-board, and let these lines be adjusted so that their image coincides with the ocular cross-wires. Also prepare a series of paper strips twenty inches long by three-eighths of an inch wide; and label the strips according to the minerals present—one or more for each mineral.

Now suppose that there be a number of minerals $A, B, C \ldots$ to be measured. The slide is traversed along the horizontal cross-wire, and the first crystal of A in the first traverse is made to touch the intersection of the cross-wires as in fig. 1 a. Place the paper strip, labelled 'A', also at the intersection of the cross-wires as in fig. 1 a, and tick off on the strip the portion 0–1 of the mineral A intercepted by the horizontal cross-wire.

Secondly, as in fig. 1 b, move the strip so that the last intercept 1 coincides with the intersection of the cross-wires, and bring the next crystal of A into the same position, and mark off the new intercept 1–2.

[1] A. Johannsen, Journ. Geol. Chicago, 1919, vol. 27, pp. 276–285.

Drawing-pins, or rough wire clips, can be arranged so as to guide the slips and enable the drawing-board to be manipulated with one hand.

The process may be continued until all the crystals of *A* in the first traverse have been measured. Return over the same traverse measuring the mineral *B* on strips labelled '*B*'; repeat the traverse for *C*, and so on, until the measurement of all minerals along the first traverse is complete. Finally, cover all the slide with the horizontal traverses, and repeat with the vertical if necessary.

Now it will be noted that the mineral intercepts are integrated mechanically as the work proceeds, and to determine the total for each mineral it is only necessary to count the strips used for it, and measure up the amount used of any incompleted strip. The sum of all the strips used for the slide gives the total length measured.

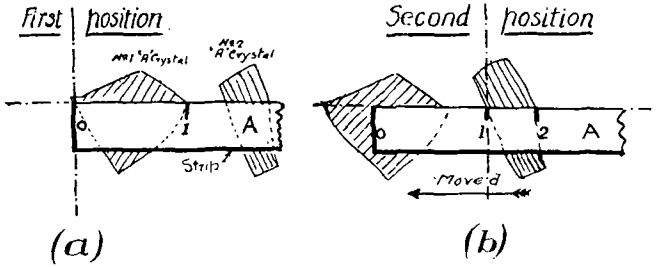

FIG. 1.

(*a*) Method of recording length of first crystal of *A* intercepted.
(*b*) Intercept of second crystal of *A* recorded and added to the first intercept.

It will, therefore, be seen that time is saved, and eye-strain eliminated in the reading and recording of micrometer observations. Further time is also saved in totalling the intercepts and reducing the observations.

It should be mentioned that all minerals can be measured together if, instead of strips, lines a quarter of an inch apart are ruled on tracing-paper—one line per mineral. This may be most convenient if a mechanical stage is not fitted, but in cases where this is available it is much quicker and less confusing to measure according to the routine described above.

If a drawing apparatus is used for any purpose when the nicols are crossed, a selenite-plate, or Klein's quartz-plate, giving the sensitive violet will be found most helpful in allowing a greater illumination of the microscopic image.

Comparing the areal and the linear methods, I have found the former better and quicker for coarse-grained rocks, and the latter for medium- to fine-grained rocks. With regard to speed there is probably little to choose in either method as modified by the use of drawing apparatus.