contains approximately twice as much CaO as the Bastnäs material. Thus, it might be expected that the hypothetical CaO-free cerite would have a rhombohedral lattice with $c \sim 18$–19 Å; the doubled c-axis of the primitive cell becomes more clearly developed as the lime content of the cerite increases. The effect of this lime content may be further studied by examination of the minerals lessingite and beckelite, which can be regarded chemically as lime-rich members of the cerite series. It is found that these two minerals have a structure different from that of cerite. Their diffraction patterns are very similar to each other and to that of the phosphorus-bearing mineral britholite, and indicate a structure dimensionally comparable with apatite. For a hexagonal cell, the dimensions are $a \sim 9.7$ Å, $c \sim 7.1$ Å, with probable space group $P6_3$ or $P6_3/m$. An idealized formula (Ca, Ln $\cdots)_2$ (Si, Al, P) (O, OH, F$)_5$ is proposed for this series. Marked biaxial properties observed in some specimens suggest that the structure may be truly orthorhombic, with only a very close dimensional approximation to a hexagonal cell.

A full account of the work on these minerals, together with data for stillwellite, an unrelated silicate of the rare earths with boron, will be given in a paper to be published elsewhere.

The specimen of cerite from Mountain Pass, California, was kindly provided by Miss Jewell J. Glass (U. S. Geological Survey).

REFERENCES

Glass, Jewell J., Evans, Howard T., Carron, M. K., and Rose, Harry (1956). Cerite from Mountain Pass, San Bernardino County, California: *Am. Mineral.*, **41**, 665.

Goddard, Edwin N., and Glass, Jewell J. (1940), Deposits of radio-active cerite near Jamestown, Colorado: *Am. Mineral.*, **25**, 381–404.

LINEATION PROTRACTOR*

Lynn McIntosh and Melvin E. Hanes, *U. S. Geological Survey, Washington 25, D. C.*

A practical transparent protractor that is simple and easy to use has been designed to show relationships between lineation and the containing s-plane. The instrument consists of a standard 180° protractor to which has been added s-plane dip curves and a movable plunge indicator arm. The values for plotting the s-plane dip curves were derived from the formulas given in a paper by Ingerson and Tuttle (1943).

The protractor makes possible a quick solution of any one of the 4 variables when 3 are known. For example, in practice the strike and dip

* Publication authorized by the Director, U. S. Geological Survey.

of the s-plane and the trend (bearing) of lineation can be measured directly in the field; the plunge (the angle from the horizontal measured in the vertical plane) may then be obtained from the protractor. Other combinations of three directly measured factors may, of course, be used, depending on individual circumstances.

Figure 1 illustrates the instrument set for a lineation trend of 40° from

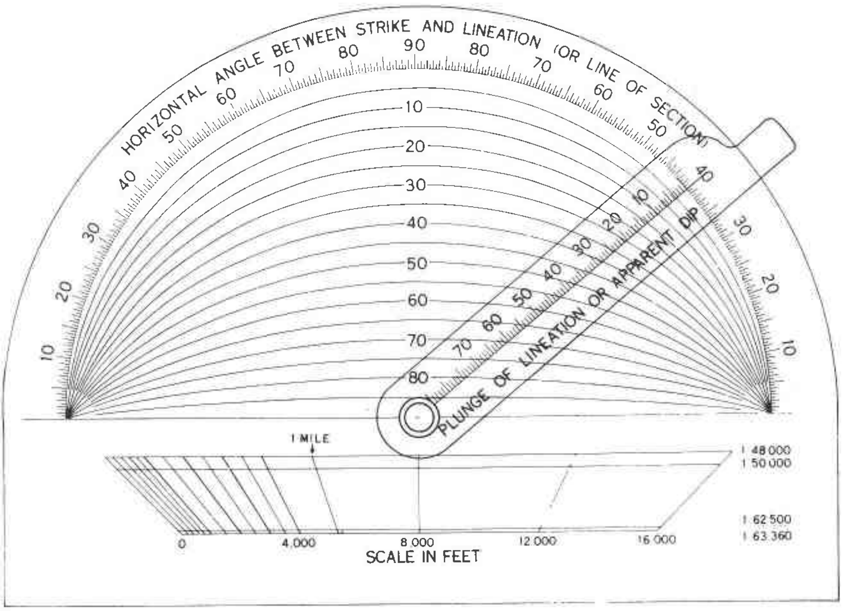

FIG. 1. Lineation protractor.

the strike of the containing s-plane. For this setting the lineation plunge is 48° ± for an s-plane that has a dip of 60°.

In constructing geologic cross sections, the protractor also may be used for finding apparent dip from true dip by considering the scale for horizontal angles to be equivalent to the angle between the strike and the line of the section. The apparent dip is then found on the indicator arm where it intersects the true dip curve. In this respect the lineation protractor is somewhat similar to the Wentworth (1917) dip protractor, the Wright (1916) geological protractor, and charts of other workers, but is easier to use than the earlier models.

The lineation protractor has been designed in two models—one for field use as shown in Fig. 1, and a larger size for office use by manuscript editors, compilers, and cartographers. Both models also contain a scale diagram in feet for the commoner mapping scales. No plans have been made to produce the device in quantity for use outside the Geological Survey.

References

Ingerson, Earl, and Tuttle, O. F. (1943), A graph for determining angle and direction of pitch of lineation in the field: *Am. Mineral.*, **28**, 209–210.

Wentworth, C. K. (1917), A proposed dip protractor: *Jour. Geology*, **25**, 489–491.

Wright, F. E. (1916), A geological protractor: *Wash. Acad. Sci. Jour.*, **6**, 5–7.

Annual Meeting

The thirty-eighth annual meeting of the Mineralogical Society of America will be held in Atlantic City, New Jersey, Monday through Wednesday, November 4–6, 1957. Detailed notices will be mailed to all members.

Abstracts of papers to be presented at the annual meeting must be received by the Secretary on or before July 15, 1957. Abstract blanks may be obtained from the Secretary

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Nominations of Officers for 1958

President: George E. Goodspeed, University of Washington, Seattle 5, Washington.
Vice-President: Ralph E. Grim, University of Illinois, Urbana, Illinois.
Secretary: C. S. Hurlbut, Jr., Harvard University, Cambridge, Massachusetts.
Treasurer: Earl Ingerson, U. S. Geological Survey, Washington, D. C.
Editor: Lewis S. Ramsdell, University of Michigan, Ann Arbor, Michigan.
Councilors (1958–1960): Richard H. Jahns, California Institute of Technology, Pasadena, California.
Charles Milton, U. S. Geological Survey, Washington, D. C.

The 7th Annual Convention of the Gulf Coast Association of Geological Societies will be held at the Roosevelt Hotel, New Orleans, Louisiana, on November 6–8, 1957.

The Sixth National Clay Conference will be held at the University of California in Berkeley, August 19–23.

The five-day program will include a field trip, two full sessions devoted to clay genesis, one to clay-liquid systems, and one to general subjects.

For information and enrollment write to the Dept. of Conferences and Special Activities, University of California Extension, Berkeley 4, California.