mann net for the speed and accuracy it affords. For this use the coordinate scale divisions should agree with those of the net. Then, the D line of the net is made to coincide with these scales, the Ny value being 0. Nz−Ny and Ny−Nx are used directly without subtraction. For minerals of high birefringence the scale divions may be multiplied.

The diagram is constructed as follows: use the approximate formula

$$\text{Tan V} = \frac{\text{Nz} - \text{Ny}}{\text{Ny} - \text{Nx}}.$$

Allow Nz−Ny to equal unity and vary the value of V from 0° to 45°; obtain values for Ny−Nx ranging from 0 to 1 and varying in a function of Tan^2. If the value of Nz−Nx is then increased in arithmetic progression, corresponding values of Ny−Nx can be obtained for any value of V.

References

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AN IMPROVED "DIAMOND" MORTAR

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While the conventional "Diamond" mortar is efficient for grinding or crushing, it is almost impossible to clean it effectively so that no particle of the material ground is left to contaminate the next grinding.

The writer designed, and first made about ten years ago, an improved mortar which is cleaned very easily. Instead of a hole in the mortar it has a projection and the grinding hole is obtained by a close fitting sleeve around the projection. The pestle is a close working fit in the upper part of the sleeve as in the conventional mortar. After grinding, the sleeve is removed and the ground up material is shaken or brushed from the top. The face of the projection, which does the grinding, is cleaned very easily, but if any material adheres to the face it may be rubbed lightly over a sheet of fine sand paper. The face of the pestle is cleaned in the same manner.

The mortar proper is made from $1\frac{3}{4}$ inch round machine steel turned to the dimensions shown in the drawing. The sleeve is $1\frac{1}{8}$ inch by 10 gauge Shelby tubing, the inside bored, or drilled and reamed, to exactly $\frac{3}{4}$ inch, and both inside edges slightly chamfered so as to allow it to fit down tight on the mortar. The pestle is made from a piece of $\frac{3}{4}$ inch round machine steel, turned as shown in the drawing. The top part may be knurled or left plain as desired.

Both pestle and mortar should be sent to a commercial heat treating house to be carburized to a depth of at least $\frac{1}{8}$ inch and hardened to 62–64 Rockwell C. It is not necessary to harden the sleeve although it may be cyanided.

After heat treating the mortar is chucked in the lathe and the diameter of the projection is ground with a tool post grinder to a tight, but re-

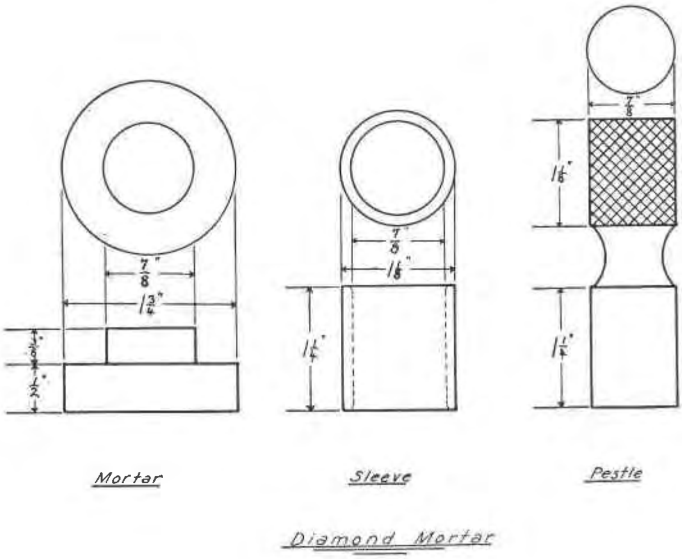

FIG. 1

movable, fit to the sleeve. The face of the projection should be ground true to the side at the same chucking. The pestle is also chucked and the diameter of the grinding end reduced about .005 inch, or a working fit in the sleeve. The face of the pestle should also be ground true with the side.

A NEW LOCALITY FOR GREENOCKITE CRYSTALS IN BOLIVIA

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Greenockite is a rare mineral in the Bolivian tin deposits. It has been described only from Llallagua by S. Gordon (1). The mineral forms coatings of minute red crystals, resembling vanadinite in colour, upon quartz, marcasite, cassiterite and on the wall rock, almost always associated with wavellite. The crystals are exceedingly minute, rarely measuring as much as 0.1 mm. They vary greatly in habit from pyramidal to thick tabular and prismatic. Cyclic twins are common. Gordon ascribes the formation of the mineral to supergene solutions. The source of the cadmium may have been from the wurtzite or sphalerite which has relaced pyrrhotite.