

## NOTES AND NEWS

### VIRGINIA STAUROLITES AS GEMS

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In Virginia well over a quarter of a century ago people began wearing staurolite crystals as watch charms, and pendants for necklaces. This custom has grown until at the present time nearly every town in the state has one or more places where the staurolites are for sale, some of which are genuine and some artificial. During the summers of 1922 and 1923, the writer visited the better localities for collecting in Henry and Patrick Counties, Virginia. In the summer of 1916 a collection was made at Ducktown, Tennessee, and in 1917 a collection in Fannin County, Georgia. Being somewhat familiar with the mineral in its occurrence, and after seeing so many on the market, and some of the ways they are prepared, the purpose of this brief article is to call attention to the Virginia localities, and some of the ways the artificial stone is made and sold. Practically all of the so-called staurolites sold as gems are of the right angle pattern. In Henry and Patrick Counties this form of twinning is rare compared to others, and since the cross of about 90 degrees is sold almost exclusively, the writer offers an explanation.

The main locality in Virginia extends from near the city of Lynchburg southwestwardly into North Carolina, the better portion for collecting being in Henry and Patrick Counties. This belt lies in the portion of Virginia known as the Piedmont province, one of the natural divisions of the state. Its extent in Virginia is approximately 60 miles with a maximum width of about 10 miles in the vicinity of Sanville, near the Patrick-Henry County line.

The rock series in which the staurolites occur is known as the Wissahickon schist according to the latest issue of the state geological map, and on the older map as the crystalline schists and gneisses. The staurolite-bearing schist is a light to dark gray color, composed of tabular minerals for the matrix with the staurolites scattered through the rock. The schist weathers and becomes colored by hydrous iron oxides, leaving the crystals upon and within the soil, where they may be collected in large numbers. Collecting from the fresh rock is slow and difficult as the schist adheres to the crystals, and removing it with a knife or file, the staurolites generally break. The crystals show various degrees of weathering, and practically all of them contain small cavities.

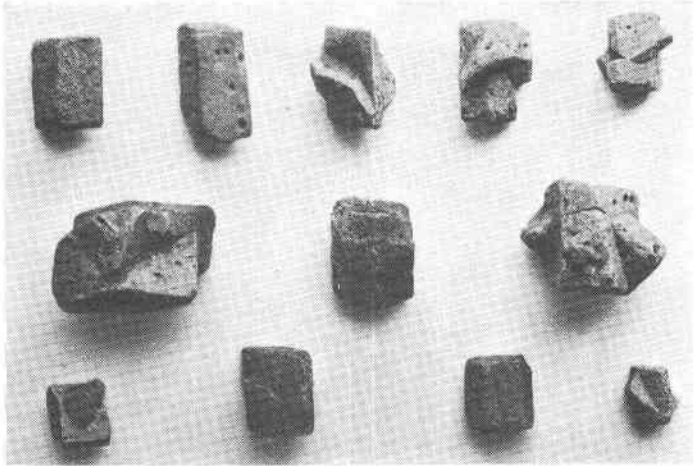


FIG. 1. Crystals of staurolite weathered from the staurolitic schist, Henry and Patrick Counties, Virginia. (Reduced  $\frac{1}{3}$ .)

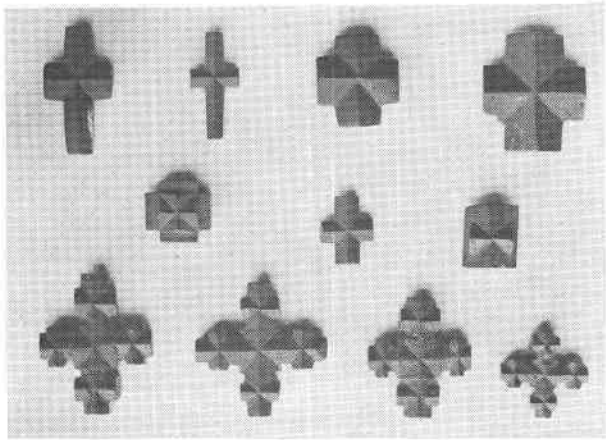


FIG. 2. Staurolites or Fairy Stones as sold on the market; upper row and the middle specimen of the middle row may be made from the natural crystals; bottom row are artificial. (Reduced  $\frac{1}{3}$ .)

The crystals occur as simple prisms and in some of the known forms of twinning, but rarely with good terminations. The simple or untwinned crystals occur in subordinate numbers compared to the twinned forms. The majority of specimens collected are twinned on the pyramid, the individuals penetrating each other at an angle of approximately 60 degrees. Quite a few twinned forms occur in which the twinning is on the plane  $x(032)$ , thus making a cross of almost 90 degrees.<sup>1</sup> Very few good specimens, known as triplets, were found; these result from combined twinning on the  $x(032)$  and  $z(232)$  planes. No crystals twinning on the prism or after the hemimorphic pattern were noted. Specimens twinning on the pyramid  $z(232)$  are commonly known as the "Cross of St. Andrew," and those on the brachydome  $x(032)$  as the "Roman Cross." The latter pattern is the favorite one for use as gems, and the large numbers on the market compared with their relative scarcity naturally leads the collector to a suspicion.

In regard to the staurolites found on the market, it is quite possible that many of these of the simple Roman pattern are genuine, having been filed and smoothed from the natural twinned specimens. Such specimens are shown in Fig. 2 in the upper row. Many, however, are purely artificial, as the end specimens of the middle row and the bottom row in Fig. 2. On finding some of the natives making such specimens as shown on the bottom row of Fig. 2 leads any one to doubt all of the very smooth specimens.

The artificial crosses are cut from a talcose schist of a gray color and of a hardness ranging from about  $2\frac{1}{2}$  to 3. Thin and narrow band saws fitted on modified grooves of sewing machine pulleys, are used to cut the crosses into rough form; the finishing is done by flat files. The final step is to soak the cross in linseed or some other oil, which gives a dark brown color resembling the color of a natural staurolite when carried in a pocket for some time. Even the compound crosses have been taken seriously by some mineralogists, but the straw which broke the camel's back was that some of the natives produced a staurolite cut after the pattern of a swastika.

The descriptive matter used in advertising these gems is most ludicrous. These "fairy stones" are reputed to bring good fortune, hence their other common name, "lucky stones." Their origin is

<sup>1</sup> The writer wishes to express appreciation to his colleague, Dr. Arthur A. Pegau in checking the twinning of the crystals.

attributed to the crystallized tears shed at the time of the crucifixion, or to stars falling from Heaven on this occasion. In mounting the gems jewelers often place a gold tip on one prong, sometimes on opposite prongs, and frequently on all prongs. The natural crystals on weathering develop small cavities, and this serves to identify them at times, though holes are bored into the artificial stones to make them look genuine. Some of the advertisements venture statements that this gem is found only in Virginia, and if the reference is made only for the artificial ones, such a statement may be sustained. Even some popular articles have advertised the Virginia staurolites and probably were sincere in so doing. Most all texts on mineralogy now make mention of Patrick County, Virginia, but very few mention Henry County, and the latter is really better in many respects for good collecting.

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#### UNUSUAL CRYSTAL HABIT OF CASSITERITE

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The writer is indebted to Mr. A. J. Haley of Pulacayo, Bolivia, for the loan of a crystal group ( $3'' \times 2'' \times 1''$ ) of cassiterite which shows very unusual crystal habit. The specimen is from Araca, Bolivia. As a whole it is reddish brown in appearance, due to a coating of iron oxides on portions of the prism faces and between the crystals. A few small iron stained crystals of quartz are in the group. The individual cassiterite crystals, on an average, are about 2 to 4 millimeters square and 6 to 12 millimeters long. They are brownish yellow in color and translucent.

The unusual features about them are that only first order prisms and first order unit pyramids occur, and that the prism faces are about 2 to 3 times as long as they are wide. All the prism faces are peculiarly furrowed parallel to the elongation, suggesting curved vicinal faces with very large intercepts along the  $\epsilon$  axis. The curving is convex with respect to the nearest prism edges resulting in divergence of the furrows toward the ends of the prism. No doubly terminated crystals or twins, can be found in the group. Measurements on the well developed pyramids show angles  $111 \wedge \bar{1}\bar{1}\bar{1} = 87^{\circ}02'$ . Therefore  $111 \wedge 110 = 46^{\circ}29'$ , which approaches very closely the theoretical value of  $46^{\circ}27'$ .