metamorphic facies to the next. Recrystallization of the ores during progressive regional metamorphism has resulted in changes in mineralogy, fabric, and grain size. Deformational effects vary from zero, through a brittle fracturing of the sulphides, to a thorough plastic "Durchbewegung" of the whole ore mass.

At higher grades of metamorphism, mobilization of certain mineral components may produce irregular pegmatitic-looking bodies of vein quartz and ore minerals either within the massive ores or in their immediate country rocks.

HEMIHEDRITE. A NEW MINERAL FROM ARIZONA

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Hemihedrite is a new species discovered at the Florence Lead–Silver Mine in Pinal County, Arizona. A second locality is the Pack Rat claim near Wickenburg, Maricopa County, Arizona.

Hemihedrite is named in allusion to its morphology. Crystals exhibit triclinic hemihedral symmetry with $\alpha = 120°1'$, $\beta = 91°40'$, $\gamma = 55°55'$, $a:b:c = .8345:1:.9360$. Four twin laws have been found. The refringence is $n_\alpha = 2.105$, $n_\beta = 2.32$, $n_\gamma = 2.65$; optically $(-)$ with $2V_{calc.} = 85°$. Dispersion is strong and unsymmetric.

Crystals are orange to almost black and have a saffron yellow streak. The Mohs hardness is 3 and the specific gravity is 6.42 (meas.) and 6.32 (calc.).

Unit cell data are as follows: $P1$: $a = 9.497 \pm .001$ Å, $b = 11.443 \pm .002$ Å, $c = 10.841 \pm .002$ Å; $\alpha = 120°30'$, $\beta = 92°6'$, $\gamma = 55°50'$. The reduced cell is $a' = 9.954$ Å, $b' = 10.841$ Å, $c' = 9.497$ Å; $\alpha' = 92°6'$, $\beta' = 107°58'$, $\gamma' = 123°16'$. Transformation (morphology to reduced cell) is $1\bar{1}0/001/\bar{1}00$.

Chemical analyses by atomic absorption ion specific electrode and x-ray fluorescence suggest the composition $ZnPb_5(CrO_4)_3F_4O$ with $Z = 2$. The infrared spectrum indicates (CrO_4^{--}).

Hemihedrite forms in the oxide zone of lead-bearing veins. Associated minerals may include the following: cerussite, phoenicochroite, vauquelinite, willemite, and wulfenite.

A COMPUTER PROGRAM CONCERNED WITH STATISTICS OF ROCK FABRICS

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An ellipsoid whose axes represent the principal moments of inertia of a sheaf of non-directed axes (homopolar directions) passing through a common origin, can represent the distribution of a set of observed directions such as lineations, normals to foliation planes, c-axes in a quartzite, etc. The shortest ellipsoid axis X_1 is normal to the plane of an equatorial, or girdle-like concentration; the longest axis X_3 is the direction of maximum density of concentration. The length of the intermediate axis X_2 relative to X_1 and X_3 can of course be used to distinguish between the two kinds of concentration, axial and equatorial. The lengths of these three axes can be used to estimate statistical significances of the two kinds of concentration.

Dimroth and Bingham independently derived similar ellipsoids, but different statistical criteria for evaluation of confidence that can be placed upon (a) the directions, and (b) the magnitudes of these axes, used as a means for measuring concentration tendencies in the original data.

A FORTRAN IV program has been used to determine the ellipsoid and to attempt practical evaluations according to Dimroth's and to Bingham's criteria, using sets of observed data, and of the same data mixed with "noise" consisting of randomly directed lines whose distribution is uniform over the whole sphere (or hemisphere).