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DIRECTORY OF ARIZONA MINERALS

(Compiled from the United States Geological Survey Reports and Other Sources).

ALABASTER (anhydrous gypsum.) Occurs in Superstition Mountains; near Pueblo Viego; near Sulphur Springs; in La Gila Range and elsewhere.

ANDRADITE. *See* Garnet.

ANGLESITE (sulphate of lead). Tombstone district, Cochise County; Gila County, at Lost Gulch Mine, near Globe; Mohave County, in Mineral Park;; Pima County, in Mammouth Mine, Schulty; Yavapai County, in ores of Bradshaw Mountains; Yuma County, in Castle Dome district; common in silver veins.

ANTIMONY ORES. *See* Jamesonite and Stibnite.

ARGENTITE (silver glance). Mohave County, in pre-Cambrian granite gneiss in Chloride, Mineral Park, and Stockton Hill districts; Pinal County, at Silver King; Santa Cruz County, at Montezuma and Empress of India mines, Tyndall district; Yavapai County, in ores of Bradshaw Mountains.

ARSENOPYRITE (mispickel, arsenical pyrite). Mohave County in pre-Cambrian granite gneiss in Chloride and Mineral Park districts; Minnesota-Connor, Windy Point, and Queen Bee mines; carries gold and silver; not mined for arsenic. Yavapai County, in veins of Bradshaw Mountains; carries gold and some silver at McCabe mine.

ASBESTOS (chrysotile). Coconino County, associated with serpentine in limestone at Grand View and Bass Camp, Grand Canyon. Gila County, fine specimen found on Ash Creek, 35 miles northeast of Globe, and in massive serpentine at a location 20 miles west of Globe.

AZURITE (hyrdous carbonate of copper). Cochise County, was abundant at Copper Queen mine, Bisbee district. The finest specimens of Azurite in many museums have come from this mine. Gila and Pinal Counties, rare in Globe district. Greenlee County, large masses in Longfellow, Manganese Blue and Shannon mines. Yavapai County, in ores of Bradshaw Mountains.

AZURMALACHITE (carbonate of copper). Cochise County, blue azurite and green malachite, an ornamental stone in copper mines of Bisbee district. Mohave County, as impregnation of porphyry at John Kay mine, Mineral Park.

BISMUTH. *See* Tetradymite.

BORNITE (peacock ore). Cochise County, small quantity in quartz veins in Whetstone Mountains. Mohave County, at Altata and Pinkham mines, Chloride district. Santo Cruz County, small quantity at Line Boy prospect, near Duquesne. Yavapai County, common in copper veins; in ores of Bradshaw Mountains carries free gold.

BROCHANTITE (oxide of copper). Cochise County, small quantities often associated with malachite in Bisbee district; also with cuprite in Copper Queen and in Calumet and Arizona mines. Greenlee County, common with malachite in Clifton-Morenci district; mined at Shannon, Metcalf, Copper Mountain, and Montezuma mines. Yavapai County, United Verde mine, Jerome.

BROWN IRON ORE. *See* Limonite.

CARNOTITE (ore of uranium). Navajo Reservation.

CEMENT MATERIAL. Occurs in many places, as at Flagstaff, and near Phoenix. Utilized at Roosevelt Dam.

CELESTITE (strontium carbonate). Maricopa County, occurs at Gila Bend.

CERARGYRITE (horn silver, chloride of silver). Mohave County, in pre-Cambrian granite gneiss in Chloride, Cerbat, and Stockton Hill districts; mined at Distaff mine, Chloride district. Gila County, Black Warrior district. Santa Cruz County, Tyndall district. Yavapai County, Bradshaw Mountain district; common in silver mines. Commonwealth mine, Pearce, Cochise County.

CERUSSITE (lead carbonate). Cochise County, impure sandy form in Hendricks Gulch, Bisbee district. Gila County, Red Cloud mine. Greenlee County, mined for gold values at Hormeyer mine, Morenci. Mohave County, in Mineral Park district; Tyler mine. Pima County, in Greaterville placer deposits; silver and gold values. Pinal County, Haley claims, 2½ miles east of Ray. Santa Cruz County, Morning and Flux mines.

CHALCANTHITE (blue vitrol or bluestone). Greenlee County, small quantities mined at Copper Mountain, Clifton-Morenci district. Yavapai County, considerable quantity formerly in United Verde mine, Jerome district.

CHALCEDONY. Greenlee County, in limestone in Clifton-Morenci district; also loose on Shannon Mountain. Mohave County, gray, purplish and white on western slope of River Range, and also localities. Santa Cruz County, Grosvenor Hills. *See also* Chrysoprase.

CHALCOCITE (copper glance). Common below oxidized zone in most copper mines of the State. Cochise County, formerly most important sulphide near Bisbee; in Copper Queen, Calumet, Arizona, and other mines, but chalcopyrite has succeeded it at greater depth; abundant in massive form in Shattuck mine, Bisbee. Gila and Pinal Counties, the essential constituent of the disseminated ores in schist and porphyry at Ray and Miami; in the Old Dominion mine, near Globe; with bornite forms rich ore of Queen mine at Superior. Greenlee County, principal copper mineral in Clifton district; in Ryerson and other mines. Mohave County, in Chloride district. Pima County, occurs in Cobriza mine, Cababi district. Yavapai County, in copper-silver veins of Bradshaw Mountains. Yuma County, in prospects at Cinnebar, 8 miles southwest of Quartzite.

CHALCOPYRITE (Copper pyrites). Found in nearly all of the copper mines of the State. Cochise County, in massive form in Bisbee district; mined at Copper Queen, Calumet & Arizona, and other mines. Gila and Pinal Counties, abundant with specularite in Gibson mine as vein in schist, Globe district. With pyrite in veinlets and in disseminated form in so-called "primary ore" of mines at Miami and Ray. Greenlee County, small proportion in copper ore bodies in Clifton-Morenci district. Mohave County, primary ore of Chloride district, in Pay Roll and Redemption mines; primary ore, Mineral Park district, in Keystone, Windy Point, and other mines; Cerbat district, in Cerbat and Alpha mines; Stockton Hill district in Banner Group and Treasure Hill mines; Helvetia and Silver Bell districts. Pima County, important copper ore at Old Boot, Leader and Ridley mines; occurs also in quartz veins at McCleary prospects, 10 miles south-southwest of Helvetia. Santa Cruz County, in Tyndall district at American Boy mine. Yavapai County, in ores of Bradshaw Mountains and United Verde mine, Jerome district; auriferous and argentiferous.

CHRYSOCOLLA (silicate of copper). Cochise County, Bisbee district, Calumet & Arizona mines, 3 miles north of Dragoon; not abundant. Coconino County, in sandstone of White Mesa of Navajo Indian Reservation. Gila and Pinal Counties, formerly a more important ore than at present; in Globe district, abundant in Live Oak, Keystone, Black Warrior, Geneva, and Black Copper mines. Graham County, common, but not important, in Clifton-Morenci district. Yavapai County, in Bradshaw Mountain district, common in outcrops of copper veins; not important.

CHRYSOLITE. *See* Olivine.

CHRYSOPRASE (blue-green chalcedony). Gila County, "blue chrysoprase", at Live Oak and Keystone mines, near Miami. Mohave County, true chrysoprase on west slope of River Range.

CHRYSOTILE. *See* Asbestos.

CINNABAR (sulphide of mercury). Gila County, reported at Rye. Yavapai County, reported at Skull Valley. Yuma County, sparsely distributed in veins at Cinnebar, 14 miles from Ehrenberg; has been mined on small scale.

CLAY (brick). Cochise County, clay made into common and front brick at Benson, Douglas, and Naco; Coconino County, at Williams and Flagstaff; Maricopa County, at Alhambra and Tampa; Navajo County, small quantity dug at Snowflake; Pima County, at Tucson; Pinal County, at Florence; Santa Cruz County, at Nogales; Yavapai County, at Mayer and near Prescott.

CLAY (china). *See* Kaolin.

CLAY (fire, graphitic). Cochise County, mined in Whetstone Mountains, near Benson; burns white; used for lining converters; also used for manufacture of pressed brick.

COAL (bituminous). Pinal County, Deer Creek field, at the eastern end of the county, 35 miles southeast of Globe, and east of Winkelman; area 30 square miles; two workable beds, 24 to 30 inches; block, coking.

COAL (sub-bituminous). Apache, Coconino, and Navajo Counties, Black Mesa field, in Moqui and Navajo Indian reservations; area approximately 5,920 square miles; coal in two main groups of beds appears to be in thin benches alternating with layers of shale and bone.

COPPER (native). Cochise County, Bisbee district, with cuprite in Calumet & Arizona, Copper Queen, and other mines. Gila and Pinal Counties, Globe district, in quartzite, Old Dominion mine. Greenlee County, with other copper ores in Metcalf mines, Clifton-Morenci district, not important. Yavapai County, in ores of Bradshaw Mountains district; not important.

COPPER MINERALS. Ores of copper are of chief importance in the following districts: Cochise County, Courtland, Dragoon, Huachuca, Johnson, and Warren (Bisbee). Coconino County, Francis, Grand Canyon, and Jacobs Lake. Gila County, Black Warrior, Christmas, Globe, Lost Gulch, Miami, and Pinto Creek. Graham and Greenlee Counties, Bunker Hill, Clark, Greenlee (Metcalf), Morenci, and Lone Star. Maricopa County, San Domingo. Mohave County, Bentley and Hualpai. Pima

County, Ajo, Amole, Helvetia, Old Baldy, Pima, Rincon, Santa Rosa, and Silver Bell. Pinal County, Bunker Hill, Mineral Creek, Mineral Hill, Pioneer, and Vekol. Santa Cruz County, Patagonia and Washington. Yavapai County, Agua Fria, Black Hills, Copper Basin, and White Picacho. Yuma County, Harcuvar, Planet, Plomosa, Swansea, and Vicksburg. *See* Azurite, Azurmalachite, Bornite, Bournonite, Brochantite, Chalcanthite, Chalcotite, Chalcopyrite, Chrysocolla, Covellite, Cuprite, Malachite, Melaconite, Stromeyrite, Tenorite, and Tetrahedrite.

CORONADITE (manganite of lead). Greenlee County, Clifton-Morenci district, fairly abundant near Coronada vein, three-quarters of a mile west of Horseshoe; stated to contain some gold; has been mined.

COVELLITE (indigo copper, blue copper). Greenlee County, rare in Clifton-Morenci district; in Ryerson and Montezuma mines.

CROCOITE (chromate of lead, red lead). Maricopa County, in some of the mines of the Vulture district; Pinal County, Mammoth mines; occasionally met in other lead ores.

CUPRITE (red oxide of copper). Cochise County, abundant and important ore of Bisbee district; in Calumet & Arizona, and Copper Queen mines. Gila and Pinal Counties, in Continental and Buffalo mines, Globe district. Greenlee County, in Clifton, Morenci and Metcalf mines. Yavapai County, Bradshaw Mountains district; not important.

DESCLOIZITE (vanadate of lead). Cochise County, Lucky Cuss mine, Tombstone, Castle Dome district; Mammoth mine in Catalina Mountains, and Old Yuma mine in Tucson Mountains. Pinal County, Dripping Springs Range, 4 miles east of Kelvin, with vanadinite and wulfenite.

DUFRENOSYITE (arsenical lead ore). Mohave County, associated with other ores of lead, zinc, and silver; mined when argentiferous; Mineral Park.

DYSCRASITE (antimonide of silver). Associated with other ores of lead and silver.

EMBOLITE (chlorobromide of silver). Cochise County, especially abundant in Pearce district; occasionally found with other silver ores.

FLUORSPAR (fluorite). Cochise County, small quantity in quartz veins, 4 miles north of Dragoon; has been mined. Mohave County, gangue mineral of Black Mountain. Yavapai County, gangue mineral of Bradshaw Mountains district. Yuma County, Castle Dome district. Pima County, Silver Bell district, occurs in green cubes with barite, galena and chalcopyrite.

FREIESLEBENITE (antimonial sulphide of silver). Yuma County, mined at Castle Dome; small quantities shipped. With other argentiferous ores.

GADOLINITE (silicate of glucinum, iron, the rare yttrium earths, cerium). Mohave County, in pegmatite 20 miles south of Hackberry.

GALENA (sulphide of lead). Invariably argentiferous and sometimes slightly auriferous. Gila and Pinal Counties, sparingly in Globe and Ray districts. Greenlee County, in Metcalf ores of Clifton-Morenci district, gold bearing (?) in Copper King mine, carries considerable silver in Stevens group. Mohave County, Chloride district; mined at Tennessee, Elkhart, Hercules, and other mines; principal ore of Mineral Park district; mined at Tyler, Lady Bug, and Queen Bee mines; Cerbat district, Idaho and Alexander mines; Stockton Hill district. Pima County, Mammoth mine, argentiferous; Ridley mine, near Helvetia. Yavapai County, common silver mineral of Bradshaw Mountain district; also gold values; Senator and other mines. Also occurs in Cochise, Santa Cruz and Yuma counties.

GARNET (silicate of calcium and aluminum). Greenlee County, large masses on western slope of Modoc Point at Morenci, and on top of Shannon Mountain at Metcalf; massive garnet occurs in many of the mining districts; as yellowish to dark brown andradite at Clifton. Yavapai County, common in schists of Bradshaw Mountains. Navajo Reservation, gem pyrope ("Arizona ruby") in extreme northern part of the state, and with peridot 10 miles north of Fort Defiance.

GLAUBERITE (sulphate of soda and lime). Yavapai County, associated with thenardite, halite, and mirabilite, Verde Valley.

GOLD (lode). Principal producers are Cochise County, Warren and Tombstone districts. Mohave County, San Francisco district; Yavapai County, Big Bug, Martinez, Tiger, and Verde districts; Yuma County, Kofa district.

GOLD (placer). Pima, Yavapai, and Yuma Counties are the largest producers. Other counties yielding appreciable quantities are Cochise, Coconino, Gila, Greenlee, and Santa Cruz. Dredges have been erected on the Lynch Creek in the Walker district, Yavapai County, and in French Gulch, a small tributary of Hassayampa River. Other important placers are in Pima County at Greaterville; Yavapai County, at Canada del Oro, Catalina Mountains, and Weaver placers.

GRANITE. Quarried in Cochise County, at Lee Station; Gila County, at Globe; and Maricopa County, at Phoenix; building and monuments.

GRANITE (quartz diorite). Gila County, Pinal Range, not used. Yavapai County, Bradshaw Mountains; would make handsome building stone; not used.

GRAPHITE. Pure graphite has not been found. *See* Clay, graphitic.

GYPSUM. Cochise County, quarried at Douglas. Greenlee County, Clifton-Morenci district. Navajo County, used for manufacture of plaster in Fort Apache Reservation, Woodruff, and Snowflake. Pima County, occurs in Santa Rita Mountains, Sierrita Mountains, and Santa Catalina Mountains; quarried near Tucson. Cochise and Pinal Counties, used in manufacture of plaster in San Pedro Valley. Yavapai County, Verde Valley, associated with thernadite, glauberite and allied minerals.

HALITE (common salt). Gila County, occurs in headquarters of Salt River and in Tonto Basin. Yavapai County, occurs in Verde Valley, associated with glauberite, gypsum, mirabilite, and thenardite; used to a small extent for cattle; too impure for table use.

HEMATITE (red oxide of iron). Occurs in gossan of copper deposits at many localities; in Santa Cruz County, at Pluto, Isabella, and other claims; in Yuma County, at Palmer and Wharton claim. Occurs as contact mineral in Cochise County in magnetite on croppings of Black Diamond copper mine, Dragoon, Greenlee County, Clifton-Morenci, district; and at Manganese Blue mine. Gila County, mined with copper ores in Globe district.

HEMATITE (micaceous). Yavapai County, reported from Willcox and Briggs.

HEMATITE (specular). Gila County, with chalcopyrite in Old Dominion, Superior & Boston, Gibson, and other mines of Globe district. Mohave County, common in Black Mountain and Cerbat Range, Chloride district. Pinal County, occurs near Mammoth. Santa Cruz County, at Line Boy, near Duquesne.

HUBNERITE (ore of tungsten). Cochise County, in veins and placer deposits near Dragoon; the placers are mined. Pima County, in quartz veins cutting granite at Arivaca; mined.

IRON MINERALS. *See* Arsenopyrite, Hemitite, Limonite, Magnetite, Pyrite, and Pyrrhotite.

JAMESONITE(sulphur 19.7, antimony 29.5, lead 50.8). Yavapai County, in ores of Bradshaw Mountains; carries free gold.

JASPER (impure quartz). Mohave and Yuma Counties, brilliant red, orange to yellow, with chalcedony in petrofied forests. Mohave County, dark red and brown on west slope of River Range 20 miles west of Mineral Park.

KAOLIN (china clay). Gila County, occurs at Globe. Greenlee County, not uncommon at Copper Queen, Morenci and Metcalf, Clifton-Morenci district; as veinlets in quartz in Humboldt, Ryerson, and other mines; mined at Longfellow for converter lining. Pinal County, in Vekol mines.

LEAD MINERALS. *See* Angelesite, Cerusite, Coronadite, Crocoite, Dufrenoysite, Galena, Jamesonite, Leadhillite, and Pyromorphite, Ores of lead are of chief importance in the following districts: Cochise County, California (Paradise); Graham County, Aravaipa; Mohave County, Cedar Valley and Stockton Hill; Pima County, Empire; Yuma County, Castle Dome and Silver.

LEADHILLITE (carbono-sulphate of lead). Pinal County, rare; occurs with other lead ores at Schultz.

LIMESTONE. Cochise County, quarried for building or lime at Lee Station. Coconini County, at Flagstaff. Gila Ciunty, quarried during construction of dam at Roosevelt. Greenlee County, gray Modoc limestone quarried at Morenci. Yavapai County, at Wekon.

LIMONITE (brown hematite, brown iron ore). Cochise County, Copper Queen mine at Bisbee. Gila and Pinal Counties, mined for contained copper in Old Dominion mine, Globe district. Greenlee County, abundant in Clifton-Morenci district, valuable as flux. Mohave County, in ores of Black Mountains and Cerbat Range, Chloride district. Pima County, coating quartz veins at McCleary prospects near Helvetia. Yavapai County, in ores of Bradshaw Mountains.

MAGNETITE (magnetic iron ore). Cochise County, Black Diamond mine, Dragoon Range. Greenlee County, Clifton-Morenci district; mined for flux in Manganese Blue and Arizona Central mines. Yavapai County, in ores of Bradshaw Mountains; carries free gold.

MALACHITE (green carbonate of copper). Cochise County, mined at Bisbee, Copper Queen, and other mines; wonderfully beautiful specimens have been obtained from the Copper Queen mine and placed in various museums. Greenlee County, common in irregular deposits in limestone in Clifton-Morenci district;

mined at Detroit, Manganese Blue, Longfellow, and Standard mines. Gila and Pinal Counties, abundant in Globe district; associated with copper ores, but not itself an important ore constituent. Mohave County, in granite gneiss, Mineral Park district. Yavapai County, in ores of Bradshow Mountains.

MANGANESE. Cochise County, manganese oxide abundant in oxidized ores of certain mines of the Tombstone district. Ore mined for silver in these mines is principally pryolusite and wad, with some psilomelane. *See also* Coronadite, Psilomelane, Pyrolusite, and Wad.

MARBLE. Cochise County, medium-grained crystalline, pure white with pinkish tones, beautiful color, suitable for decorative unrposes near Fort Bowie; white, pinkish or grayish white, also gray, dove-colored, or blue, handsome decorative marble near Emigrant Canyon; coarsely crystalline, granular white, excellent building stone near Whitetail Canyon. Pima County, black marble in Tucson Mountains. Pinal County, white statutary marble at northern end of Catalina Mountains, near Condon mine. Yavapai County, light green to white, weathering producing yellow and red banding, near Mayer, Bradshaw Mountains, deposit ¾ mile by ½ mile, maximum thickness 25 feet, decorative stone; has been quarried; little shipped; onyx marble.

MELACONITE (black oxide of copper). Of common occurrence in many mines with other ores of copper.

MICA. *See* Muscovite.

MINERAL PAINT. Hematite near Parker on California side of river; also in Yuma County, 30 miles northeast from Quartzite, and at Bouse's well.

MIRABILITE (soluble sulphate of soda). Yavapai County, associated with thenardite, glauberite, and halite, Verde Valley.

MOLYBDENUM. *See* Molybdenite and Wulfenite.

MOLYBDENITE (molybdenum disulphide). Gila County, in disseminated ores at Miami. Greenlee County, in copper ores of Clifton-Morenci district. Mohave County, primary ore of Chloride district in granite-gneiss; with copper in Hualpai Mountains, Maynard district. Pima County, in Madera Canyon, 10 miles southwest of Helvetia; in limestone and quartz at Leader and Ridley mines, Helvetia; in workable quantities only at Leader mine; with copper ores at Vail. Pinal County, in ores at Ray and Kelvin mines as original mineral. Santa Cruz County sparingly in granite at Providencia Canyon, 5 miles west of Washington; also at Duquesne and San Antonio Canyon.

MUSCOVITE (mica.) Several deposits, none developed, value unknown. Occurs in Coconino County, on north side of Grand Canyon, and in Maricopa County, White Horse Tank Mountains, southwest of Phoenix. Yuma County in Mohawks.

OBSIDIAN. Occurs in regions of Tertiary volcanic rocks; small quantities cut for jewelry.

OLIVINE (chrysolite, Job's tears). Apache County, beautiful green, yellowish-green, brownish-green, and brown gems are found, 10 miles north of Fort Defiance, in the Navajo Indian Reservation; in Gila County in basaltic rocks near Rice, in the San Carlos Indian Reservation. Coconino County, San Francisco Mountains.

ONYX MARBLE (Mexican onyx). The most important locality in Arizona is Yavapai County, about 26 miles from Prescott. Occurs also in Maricopa County, at Cave Creek, 45 miles north of Phoenix. Pima County, at Greaterville, Kirkland Valley, and Oak Creek; Yavapai County, at Big Bug Creek.

OPAL (cacholong, and hyalite). Pinal County, Pickett Post; Yavapai County, several localities.

PLATINUM. Yavapai County, occurs in black sands near Columbia.

POLYBASITE (sulphide of silver and antimony). Pinal County, fine specimens were found at Silver King mine; occasionally with other argentiferous ores.

PROUSTITE (light ruby silver). Occurs with other argentiferous ores at many places.

PSILOMELANE (manganese ore). Cochise County, with pyrolusite and wad in Carboniferous limestone at Tombstone; mined for silver contents.

PYRARGYRITE (ruby silver). Mohave County, secondary ore of Chloride, Mineral Park and Cerbat districts; large quantities were found in upper levels of Stockton Hill district; mined at Minnesota-Connor, Golden Star, and Paymaster mines. Yavapai County, in silver ores of Bradshaw Mountains.

PYRITE (iron sulphide). Common and widely distributed, generally in close association with copper sulphides. Cochise County, with copper ore of Bisbee, Copper Queen, Calumet & Arizona, and other mines. Gila and Pinal Counties, abundant in unenriched parts of nearly all copper deposits near Globe, Miami, and Ray. Greenlee County, unimportant ore of Clifton-Morenci district; large masses in Joy, Ryerson, Morenci, and other mines.

Mohave County, primary ore of Chloride, Mineral Park, and Cerbat districts; mined at Tennessee, Schuykill, Keystone, Windy Point, Vanderbilt, and Idaho mines; carries gold values. Pima County, important ore in Mammoth mine; also in Leader and Ridley mines. Santa Cruz County, in granite at Providencia Canyon, 5 miles west of Washington; also at Duqesne. Yavapai County, in ores of Bradshaw Mountains, carries free gold; also with chalcopyrite and sphalerite mined at United Verde mine, Jerome district, for copper, gold, and silver.

PYROLUSITE (black oxide of manganese). Cochise County, at Tombstone, mined for silver content only; formerly used for flux. Yavapai County, secondary mineral in ores of Bradshaw Mountains; unimportant; not mined.

PYROMORPHITE (phosphate of lead). Occasionally found with other lead ores; occurs in Yuma County, at Iber-Plumosa mine, Bouse; reported in Pima County, at Cerro-Colorado mine, and in Santa Cruz County, at Constitution mine.

PYROPE. *See* Garnet.

PYRROHITE (magnetic pyrite). Yavapai County, in ores of Bradshaw Mountains; mined for gold values.

QUARTZ. Cochise County, gold bearing; formerly mined at Easter Sunday mine, for use as converter lining.

QUARTZITE (firmly compact quartz grains). Greenlee County; quarried for converter lining, near Metcalf, Clifton-Morenci district.

SALT. *See* Halite.

SAND. Widespread and abundant; reported dug for building in Cochise County, 18 miles west of Douglas, and in Mohave County, at Yucca.

SANDSTONE. Excellent quality in great abundance in many places; as red, brown, so-called blue, and white sandstone of good quality, in Grand Canyon region. Quarried for rough building at Kirkland, Yavapai County, 2½ miles northwest of Prescott, and for flagging and rubble in Cochise County, at Douglas.

SCHEELITE (ore of Tungsten). Cochise County, small quantity in quartz veins cutting granite about 4 miles north of Dragoon. Pinal County, mined for gold and silver content at Maudina Mine, Old Hat district, Santa Catalina Mountains. Santa Cruz County, small quantity mined as tungsten ore with wolframite, 7½miles north of Nogales.

SERPENTINE (hydrous silicate of magnesium). Greenlee County, pure yellow, translucent, west of Morenci; dark green with magnetite, at Thompson mine.

SILVER. Large quantities produced generally with various proportions of gold, copper and lead, at the following places: Cochise County, Tombstone, Herchell, Bunker Hill, Royal Guard, Calumet & Arizona, and Copper Queen mines. Gila County, Old Dominion, Arizona-Commercial, Warrior, Keystone, Globe Consolidated, and other mines. Greenlee County, Detroit, Arizona-Copper, Shannon, Silver King, Gold Bar, Capote, Silver Bonanza, and other mines. Mohave County, Grand Gulch, Bentley district; Gold Road and Tom Reed, San Francisco district; Banner, Champion, and Tennessee, Wallapai district. Pima County, Pima and Silver Bell districts. Yavapai County, Big Bug, Martinez, Tiger, Verde, and Walker districts. Small quantities of silver are produced in Pinal, Santa Cruz, and Yuma Counties. *See also* Argentite, Cerargyrite, Dyscrasite, Embolite, Freieslebenite, Polybasite, Pyrargyrite, and Stromeyerite.

SILVER (native). Native silver in beautiful specimens has been found in Gila County in a placer 12 miles north of Globe; in Pinal County, at Silver King mine; in Yavapai County, at McMillanville, at the Tiger mine; and in other counties.

SLATE. Maricopa County, fair grade of roofing slate, bluish gray, 6½ miles north of Phoenix; undeveloped.

SMITHSONITE (zinc carbonite). Greenlee County, in Shannon Mountain, Clifton-Morenci district; unimportant.

SPECULARITE. *See* Hematite.

SPHALERITE (zinc blend). Cochise County, Tombstone district; Greenlee County, accompanies copper ores in Clifton-Morenci district. Mohave County, occurs in Chloride district, Tennessee and Towne mines; Mineral Park district, Keystone mine; Cerbat district, Vanderbilt and Flores mines; Stockton Hill, Union Pass, and Golconda districts. Pima County, occurs with silver ores at Mammoth and many other mines and with copper ores at Ridley mine. Pinal County, Globe district, Bobtail mine, on north side of Mineral Creek. Santa Cruz County, occurs at many mines; shipped from the Patagonia district. Yavapai County, common in Bradshaw Mountains district; carries free gold at Crown King and other mines, and gold and silver at United Verde mine, Jerome district.

STIBNITE (sulphide of antimony). Mohave County, in Cerbat district, at Vanderbilt mine. Yavapai County, common in silver veins; in ores of Bradshaw Mountains carries free gold; mined.

STROMEYERITE (sulphide of iron and silver). Pinal County, Silver King mine, with other cupriferous and argentiferous ores.

TENORITE (black oxide of copper). Cochise County, unimportant copper ore; occurs in Lowell and Copper Queen mines, Bisbee and elsewhere.

TETRADYMITE (telluride of bismuth). Yavapai County, small quantity in Montgomery mine, at Minnehaha, and near Bradshaw City.

TETRAHEDRITE (gray copper). Pinal County, Heintzelman and Silver King mines. Santa Cruz County, Tyndall district, Alta mine, Treasure Vault mine, and others. Yavapai County, in ores of Bradshaw Mountains district; also in copper-silver veins.

THENARDITE (verde salt). Yavapai County, Verde Valley, 3 miles southwest of Old Camp Verde, occurs in large beds with rock salt glauberite, and mirabilite.

TUNGSTEN MINERALS. *See* Hubernite, Scheelite, and Wolframite.

TURQUOISE. Cochise County, near Gleason; has been mined at Turquoise Mountain. Maricopa County, occurs 12 miles east of Morristown. Mohave County, several mines worked near Mineral Park yield large quantities of gem material.

VANADINITE (chloro-vandate of lead). Occurs at numerous places associated with lead ore: Cochise County, near Fairbanks; Gila County, Globe district, at Lockwood claim, Clark & Stewart claims near Old Dominion mine. Pima County, Old Yuma mine, 14 miles northwest of Tucson; Pinal County, Mammoth mine at Schultz, Royal Dane claim, 7 miles southwest of Oracle, Black Prince mine, Pioneer district, and at Kelvin. Yavapai County, near Silver Belt mine, Big Bug district; Yuma County, Red Cloud mine.

VANADIUM ORES. *See* Descloizite, Vanadinite, and Volborthite.

VERDE SALT. *See* Thenardite.

VOLBORTHITE (vandate of copper). Occasionally met with in other copper and lead ores.

WAD (manganese ore). Cochise County, occurs at Tombstone; mined for silver content only.

WILLEMITE (silicate of zinc). Greenlee County, small grayish crystals in Modoc open cut on Modoc Mountain, Clifton-Morenci district.

WOLFRAMITE (tungstate of iron and manganese). Cochise County, Whestone Mountains, 12 miles south of Benson. Maricopa County, Cave Creek, 30 miles north of Phoenix; Mohave County, 80 miles southeast of Kingman in Aquarius Mountains, mines 17 miles east of Yucca; Pima County, with gold and quartz in Arivaca district; Santa Cruz County, 7 miles north of Nogales; Yavapai County, Tip Top mine, Bradshaw Mountains.

WOOD (silicified). Apache County, large quantities obtained at Adamana and cut for ornamental purposes.

WULFENITE (molybdate of lead). Occasionally found with other lead ores; nearly always present with silver ore of Tombstone, Cochise County, in small quantity; occurs also in Gila County, at Troy; Pima County, Old Yuma mine, 14 miles northwest of Tucson; Pinal County, Mammoth mine, Schultz; Yavapai County, Bradshaw Mountains; Yuma County, at Castle Dome.

ZINC. Principal production of zinc in the State is in Mohave County; small quantity in Santa Cruz. *See also* Smithsonite, Sphalerite, and Willemite.