Yoshioka copper mine, the Handa silver mine and several other mines which are still being operated successfully in our day.

The author notes the wonderful mineral wealth of Japan, the coal deposits in Hokkaido and Kiushu, the antimony in Shikoku and Kiushu, and the gold, silver, copper and iron of these and other provinces. In the order of production copper occupies the first rank, next come gold and silver, followed by coal, antimony, manganese and sulfur. The methods of working employed in the mines at present, and all the most important details relating to them, are given at great length and very satisfactorily. The processes of smelting and refining are treated of in an equally thoro way, and the statistics of the production down to 1890 or a little later are also presented.

Especially valuable are the data regarding deposits, and the careful characterization of the particular qualities of the coal and the minerals extracted.

## TEXAS, LANCASTER COUNTY, PENNSYLVANIA

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This locality, which includes two townships, is a relict of the days when precise statement of the source of a mineral was considered an unnecessary refinement. The district, named from New Texas, a small village in Fulton township, lies along the Pennsylvania-Maryland line between the Susquehanna River and Octoraro Creek, and may be reached from Conowingo on the Pennsylvania Railroad (Columbia and Port Deposit Branch) on the west, or from Sylmar on the Penna. R. R. (P. W. & B. R. R., Maryland Division) on the east. All the localities lie in the northern part of the Havre de Grace quadrangle, and will be referred to below in ninth-coördinate symbols.

The rocks of the region comprise an igneous complex overlain by mica-schists.[1] All these rocks have been intruded by a fine grained gray granitic gneiss, and pegmatite. From south to north the igneous rocks appear in the order: granodiorite, gabbro, norite, and meta-peridotite and meta-pyroxenite (serpentine, etc.), possibly representing a section of a batholithic mass which had undergone differentiation *in situ*. The mineral

[1] The Maryland geology has been described by F. Bascom: *Maryland Geological Survey, Cecil County*, 83–148, 1902.

localities occur chiefly in the serpentine area along the state line, which contains deposits of chromite, and albite pegmatites.

The writer will begin the trip at Philadelphia, leaving Broad Street Station (Penna. R. R.), for Havre de Grace, Md. (2 hrs. ride). Here a change of trains is made to the Columbia and Port Deposit branch. This is along the Susquehanna River, filled with numerous picturesque islands. At Port Deposit the train passes large quarries in granodiorite, to be succeeded by cuts in gabbro just before reaching Conowingo.

From the station the way lies up the gorge of Conowingo Creek past whitewashed boulders of norite. Just north of Oakwood, the norite passes into serpentine, which underlies an area characterized by the natives as "the Barrens"; which is truly descriptive of the stretches covered with scrub pines, cedars, and oaks, often entangled with a luxurious growth of green briars.

A side excursion may be here made to Wiant's spar quarry, on Conowingo Creek, 1.2 kilometer (¾ mile) northeast of Pilot, Md. (H. de G. 1642). The rock is an albite pegmatite, intrusive in serpentine. At the margins of the pegmatite are contact zones of brown vermiculite, green actinolite, and talc. Green radiations of actinolite occur in the white albite, representing magnesian material that had been assimilated by the pegmatite in its intrusion. Druses of minute albite crystals are abundant, and rarely minute highly modified beryl crystals. Other quarries in albite are located on a small run, 1 km. west of Rock Springs cross-roads (H. de G. 1636)[2]; 1 km. southeast of the cross-roads (2428); and 3 km. northeast of the cross-roads, just west of the Octoraro (2522).

Just before reaching the Rock Springs cross-roads, masses of chalcedony and drusy quartz, due to weathering of the serpentine, will be noticed in the road cut (H. de G. 2441).

The Line Pit (Low's mine) is situated on the Pennsylvania-Maryland line, about 1.2 km. (¾ mile) northwest of Rock Springs cross-roads, and but a hundred meters north of the Pleasant Grove road (H. de G. 1632). In 1918 the mines were reopened for a short period, and again in 1920. It produced the fine williamsite and kammererite which graced the older collections. The orebody is a roughly cylindrical mass with the

[1] Probably the source of the albite described by Silliman, *Am. J. Sci.* [2], **8**, 389, 1849.

diameters 1.2 by 2.1 meters, pitching to a depth of over 80 meters at an angle of 60°. This cylindrical mass is sheathed by a zone of jade like williamsite from a few cm. to 5 dm. in thickness, beyond which lies typical green and brown serpentine. Williamsite also forms thick veins thru chromite, which frequently contains partings of purplish kammererite. Magnesite was quite common at a depth of 60 meters, forming thick veins cutting more or less horizontally across the orebody and the serpentine; which circumstance throws some doubt on the belief that magnesite is a product of surface solutions, causing the pendulum of modern paragenetic thought to swing still further and include even magnesite in the category of minerals produced by hydrothermal solutions. All these minerals may be found on the dumps.

Two other old chrome mines lie 1 km. northeast (Red Pit, H. de G. 2178), and 1.2 km. northeast (Jenkins' mine, H. de G. 2184) of the Line Pit. Of interest from a genetic point of view is an old iron mine in the woods about ½ km. northwest of the Red pit (H. de G. 2171.9). In this case a segregation of magnetite occurred instead of chromite. Large masses of the mineral may be found on the dump.

Rock Springs run rises in the vicinity of these mines, and flowing northward empties into Carter's run, near the confluence of this stream and Conowingo Creek. The run takes its name from several springs about 2.5 km. (1.5 m.) north of Rock Springs cross-roads, which lies in Maryland. Near this point a branch enters the main run, the bed and banks of which is the old locality for chalcedony, moss-agate, and drusy quartz[1] (H. de. G. 2149).

A small run empties into Conowingo Creek, about 1 km. west of the Line Pit, or 1.5 km. southeast of Pleasant Grove. In the woods at the foot of the hill just south of this point (H. de. G. 1388), boulders of granite gneiss contain xenoliths of talc enclosing bright green, radiating crystals of actinolite, quite resembling specimens from the Zillerthal.[2]

The Boice farm, the famous locality of the pyrite crystals occurring in symmetrical combinations of cube, octahedron and pyritohedron, has been variously given by writers as north, one

[1] George W. Carpenter, *Am. J. Sci.*, **10**, 224, 1825.

[2] First listed by Carpenter (*Am. J. Sci.*, **14**, 10, 1828) as "green compressed crystals of actinolite in talc, on Joel Jackson's farm." This is distinct from the mineral listed by Dana, (1850, 655), as "green tourmaline in talc;" the exact locality of which is, however, unknown.

mile west, one mile northwest, and one mile west by south to Texas. The old name of the farm has been long forgotten by the inhabitants of the vicinity. The locality of the pyrite crystals is about 1.8 km. (1.2 m.) north of Pleasant Grove, jusf east of the Wakefield road, or 1.5 km. west by south of Texas (Lyles P. O.) (H. de G. 1315.3). The crystals occur in a field near the contact of the serpentine and the mica schists, being found in both these rocks, but especially developed in a talcose schist which probably occurs at the boundary of the two rocks. The best specimens occur in the latter rock. Numerous boulders of the rocks are found in the field, filled with symmetrical cavities from which pyrite crystals have been weathered, or with the crystals themselves which have assumed a brown coating of limonite. As noted above the mica schists and the serpentines have been invaded by later dikes of a fine grained grayish granite, finely exposed in the railroad cuts along the Susquehanna. This rock frequently contains pyrite, while crystals are quite common in the mica schists. The crystals of the Boice farm locality probably were deposited by solutions arising from the intrusive along the contact of the serpentine and the mica schists.

About ½ km. southeast of the pyrite locality are the old magnesite pits (H. de G. 1316.8), mentioned in the Second Geological Survey reports.

Turning eastward, our last objective is Wood's chrome mine: the source of all that is magnificent in brucite. From Pleasant Grove the road leads back to Rock Springs cross-roads. The Wrightsdale road is taken for 0.9 km. (½ mile) to the state line, where the road to the east is taken. In a hollow just southwest of the Wrightsdale fork, and distant about 2 km. from that village lies Tyson Reynold's mine (H. de G. 2247). Just beyond the next cross-roads, Little Britain township is entered. The road from here on has been closed to general traffic, but it will be found to be quite passable on foot. The way lies along Octoraro Creek, past excellent exposures of contorted mica schists. At the end of the road, a trail along the north bank of the creek may be followed until the mine is reached.

Wood's mine lies within the ox-bow of the Octoraro, about 1.2 km. southwest of Lee's Mill, and about 8 km. (5 miles) northwest of Rising Sun, Md., or Sylmar, Pa., the nearest railroad points (H. de G. 2248). The main pit was worked to a depth

of 230 meters, but is now filled with water. Enormous dumps extend to the westward of the pit, consisting chiefly of green serpentine, which has become brown on the surface on weathering. The locality is as barren of specimens today as it was prolific of fine brucite, genthite, zaratite, and hydromagnesite in 1857. The orebody was described[1] as having been "300 feet long in its greatest extension, with a width of 10 to 35 feet, dipping 40 to 60° to a depth of 720 feet." The strike was nearly east and west on the surface, and nearly north and south on the lower levels. Ocasionally veins of chromite extended into the walls.

A smaller mine (Carter's mine), was situated about ½ km. to the east, just west of the Wood farm house (H. de G. 2349).

## PROCEEDINGS OF SOCIETIES

### PHILADELPHIA MINERALOGICAL SOCIETY

*Academy of Natural Sciences of Philadelphia, May 12, 1921*

A stated meeting of the Philadelphia Mineralogical Society was held on the above date with the president, Dr. Hawkins, in the chair. Seventeen members and visitors were present.

Mr. George L. English gave a delightful talk on "Mineral Collecting a Generation Ago." An account was given of Clarence Bement and his Sunday School class attended by Jefferis, Leidy, Vaux, Hancock, Willcox, Kunz, and other prominent mineralogists. Personal recollections were given of Egleston, Tyson, Rand, Genth, Koenig, Roth, and Hidden. Mr. English then described his early mineralogical experiences in North Carolina, western United States, Greece, Italy, and Elba. Mr. George Vaux, Jr., and Mr. Charles Toothaker contributed some reminiscences of Dr. Leidy. The president expressed the thanks of the society to the speaker for his most interesting talk.

Mr. John Frankenfield was appointed secretary pro tem during the absence of the secretary in South America. A collection of Delaware County minerals presented by the late Thomas Harvey, and a Goldschmidt two-circle goniometer were exhibited. The secretary called attention to the fact that $h_0$ of the 1920 model of this goniometer can be very rapidly made 0°, thus saving considerable time in calculations. The telescope is set about 70° from the collimator and permanently clamped. A reflecting surface such as the small mirror coming with the apparatus is mounted parallel to the vertical circle, V, and carefully centered, so that the signal remains on the cross-hairs upon rotation of V. The horizontal circle is then turned to 0°, and clamped. The two screws that clamp the horizontal bar (carrying the vertical circle) to the bed are loosened, and this bar is swung, independent of the horizontal circle, until the signal is again at the cross-hairs. The screws are now tightened, and $h_0 = 0°$.

SAMUEL G. GORDON, *Secretary.*

[1] William Glenn: *Second Geol. Survey Pa. Rept.* C3, Lancaster County, 192, 1880.