QD905
.Le

CRYSTALS OF CHRYSOBERYL

FROM THE

BOROUGH OF MANHATTAN

NEW YORK CITY

1. A CRYSTAL OF CHRYSOBERYL FROM EIGHTY-EIGHTH ST. AND AMSTERDAM AV. Revised Edition.
2. A CRYSTAL OF CHRYSOBERYL FROM NINETY-THIRD ST. AND RIVERSIDE PARK.

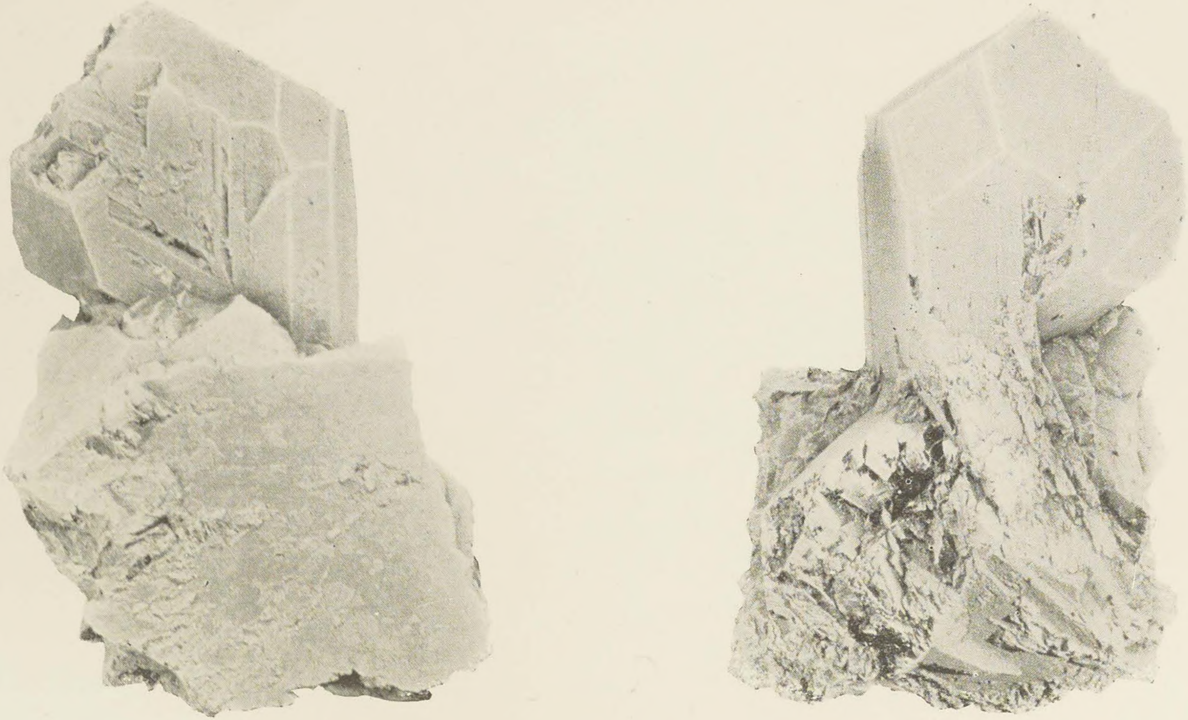
RUTGERS UNIVERSITY
LIBRARY

BY
WALLACE GOOLD LEVISON, S.B.

Fellow of the New York Academy of Sciences; Ex-President of the Departments of Mineralogy and Microscopy, and Secretary of the Department of Geology of the Brooklyn Institute

* * *

NEW YORK
PUBLISHED BY THE AUTHOR
OCT. 15, 1901



1

2

A TWIN CRYSTAL OF CHRYSOBERYL.

Enlarged about 4½ Diameters.

From the Borough of Manhattan, New York

JSL
00019621

Rare Book World

CRYSTALS OF CHRYSOBERYL

FROM THE

BOROUGH OF MANHATTAN, NEW YORK CITY.

By Wallace Goold Levison, S.B.

1. A CRYSTAL OF CHRYSOBERYL

From Eighty-Eighth Street and Amsterdam Avenue.[1]

The accompanying illustrations[2] present opposite sides of a twin crystal of chrysoberyl found during a hasty examination of an excavation on the north side of Eighty-eighth Street, near to and east of Amsterdam Avenue, Borough of Manhattan, New York City, on June 16, 1893.

The excavation was rather extensive as it apparently included several cellars and was chiefly blasted from solid gneiss rock. It was well advanced but at one end the usual inclined plane for hauling up material was still in use. At the top of this incline, near the sidewalk, a large mass of coarse granite or pegmatite, weighing perhaps a ton, which had been removed from the excavation, was placed so as to keep the carts safely away from the excavated side. On top of it I found the crystal of chrysoberyl embedded, and detached it in a piece of the matrix by means of a convenient stone. Later the piece of matrix, which had been split, parted unequally and left the crystal attached to the smaller piece. From this other portions have been carefully removed to further relieve the crystal, which does not appear to have been materially damaged. Its irregularities are chiefly natural and due to the penetration of the matrix The small piece of matrix to which the crystal is attached consists chiefly of quartz, with some oligoclase. There are fragments of other crystals of chrysoberyl near the point of attachment, showing that it was one of a group of several crystals.

Where the faces of the crystal were in contact with the matrix, the latter is covered more or less with thin irregular patches of infiltrated pyrite. The flat surface on the matrix still attached to the crystal is also covered with patches of pyrite, seen in the illustration, showing that it was probably in contact with a face of a larger crystal,

The *a* faces of the crystal are deeply striated. A nearly perfect raised cast of the striations upon the *a* faces is conspicuous upon

---

[1] Revised edition, Oct. 15, 1901. Authors are requested to cite this edition.

[2] Direct photo enlargements.

[3] The crystal was exhibited at a meeting of the New York Mineralogical Club. Nov 9th 1894

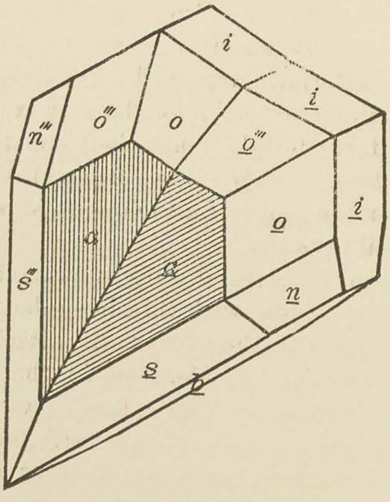
the side of a cavity in the larger separate piece of the quartz matrix, from which these faces of the crystal were detached. The cast is more or less covered with a film of bright pyrite. Such parts of the cast as are missing still adhere within the striations upon the crystal.

The rock in which the crystal occurred is a coarse aggregation of quartz, feldspar and mica, such as often occurs associated with the gneiss of New York. In the excavation there was a well-defined vein having a strike about east of north and west of south, but not exactly determined, which continued across the lot on the south side of Eighty-eighth Street. It was about two feet wide where it was cut across on the date mentioned, and appeared to consist chiefly of muscovite in rather large plates, containing microscopic inclusions.

The following day I searched over the locality with working implements but found no other chrysoberyl. An amateur collector likewise engaged said he had previously obtained there specimens of a green mineral he supposed to be epidote.

The following drawing and measurements of the crystal were made for me by A. J. Moses, E.M., Ph.D., Professor of Mineralogy, Columbia University, New York.

The crystal is essentially of the heart shaped type with prominent pyramid *o* (111) described by Cathrein[1] as occurring at the emerald mines of Tokowaia, and is composed of two individuals with the usual twinning plane ρ (031). It is not tabular, the dimensions in the direction of the axes $\breve{a}\ \bar{b}\ c'$, being approximately 8x10x14 mm.



Drawn from the side of the crystal shown in figure 2.

---

[1] Zeit fur Kryst. 6,259, especially Fig. 4.

The observed forms were :

Domes and pinacoids. *a* (100) striated and yielding double images, *b* (010) dull, and *i* (011) large but very dull.

Pyramids. 0 (111) bright and prominent on both individuals. *n* (121) small and yielding only a shimmer. *x* (515) doubtful, yielding a faint image between *o* and *o'''*, but as *o* and *o'''* nearly coincide, it may be *n'''* of the second individual, which has essentially the same position.

Prisms. *s* (120) bright and prominent and *m* (110) occurring only in the deep striations on the faces *a*.

The measured angles are sufficiently close to determine the forms, but are injured by the many dull faces and the difficulty of maintaining the rather heavy crystal and attached quartz in position.

Angle.	Measured.	Calculated.	Error.
oo'''	40°11'	40°7'	+ 4'
ba	90°4'	90°	+ 4'
bo	70°01'	69°56'	+ 5'
bn	53°58'	53°51	+ 7'
bs	46°52'	46°46'	+ 6'
bm	64°57'	64°50'	+ 7'
bi	60°16'	59°53	+ 23'
os	39°47'	39°57'	— 10'
ox	16°03'	15°53'	+ 10'

The specific gravity, determined from a few fragments of the adjacent crystals = 3·84.

The color of the crystal is a light yellowish green resembling the chrysoberyl of Haddam, Conn., and Petersdorf, Moravia. A fragment of an adjacent crystal is more yellow. Its material is quite transparent, but the general transparency of the crystal is impaired by numerous (cleavage ?) fissures in several directions, somewhat orderly in arrangement.

Where some of these intersect the faces of the crystal, they appear under the microscope opened out slightly, as though by solution, thus forming crevices with somewhat eroded and discolored edges or containing traces of intruded matrix material, which seems to indicate that these fractures were due to pressure of the matrix. The surface of a few dull faces resembles etched glass.

In one previous instance chrysoberyl appears to have been found in orthoclase near High Bridge, New York City, in the gneiss of Manhattan Island,[1] which is remarkable for the number of mineral species it has afforded.

The crystal herein described appears to me, however, of special interest as indicating an addition to the few known localities for notable specimens of this rare mineral.

---

[1] Chamberlin (B. B.), "The Minerals of N. Y. County, with complete list to date." Trans. N. Y. Acad. of Sci., Vol. VII., pp. 211–235, May 7th, 1888. Niven (Wm.), Chrysoberyl on Orthoclase, High Bridge, N. Y., first found on the Island. In a list of 86 specimens of N. Y. Island minerals No. 322 of the catalogue of Wm. Niven's 18th sale of minerals, N. Y., June 29, 1888. See also "List of Recent Mineralogical Discoveries in N. Y. City," *Exchanger's Monthly*, p. 4, July, 1888. Hidden, (W. E.), "Mineralogical Notes: 1, Xenotime from N. Y. City," *Am. Jour. Sci.*, Series 3, Vol. XXXVI., p. 1, Nov. 1888.

2. A CRYSTAL OF CHRYSOBERYL

FROM 93D STREET AND RIVERSIDE PARK.

ON August 11th, 1901, I examined a locality at 93d Street and Riverside Park, where extensive quarrying was in progress to remove a mass of gneiss rising about thirty feet, more or less, above the street level and extending southerly almost to 92d Street and northerly to 94th Street. At one point between 92d and 93d streets it had attained a height of fifty-one feet. Much of it had been removed at that date, and both north of 93d Street and south of 92d Street cellars were then being excavated.

The gneiss was traversed by a few conspicuous seams (one about 50 c.m. thick) of white gneiss, the color being due to white feldspar and pale green mica, of which it chiefly consisted, and by narrow veins and numerous lenticular occurrences of quartz, about 20 c.m. in thickness, occasionally penetrated by contiguous masses of oligoclase. The quartz is much cracked or composed of small fragments cemented together and associated with some mica and feldspar. Its resemblance to the matrix of the crystal of chrysoberyl previously described,[1] led me to anticipate finding chrysoberyl at this locality. On August 14th I visited it but found only the usual minute garnets and an occasional poor specimen of black or green tourmaline in the gneiss. On August 31st, when I again visited the locality, Mr. F. L. Smith, who accompanied me to photograph it for me, picked up among the fragments lying in front of the cliff between 92d and 93d streets an interesting specimen which appears to be chrysoberyl. Desiring at least an additional fragment suitable for analysis, I have made several later but fruitless visits to the locality.

The specimen thus obtained consists of six parts of a large broken tabular crystal, about 8 mm. thick upon the accessible edges, but which may be thicker in the middle, all somewhat separated and dislocated and buried in quartz of the character above described, which also fills the spaces between them. Altogether they do not complete the crystal, some parts having evidently been lost with the adjacent matrix. One piece is 23 x 25 c.m., and may possibly show the full width of the crystal. A second is 20 x 23 c.m. A third 7 x 8 c.m. A fourth 8 x 13 c.m., all more or less irregular in shape. The remaining two are small fragments, one being in a cavity which shows it to have been much larger.

The broad *a* faces of the four principal parts and a few additional faces

---

[1] Levison (W. G.), "A Crystal of Chrysoberyl," N. Y., July 15, 1901. *The Mineral Collector*, Aug. 1, 1901. Moses (A. J.), *American Journal of Science*, Vol XII., p. 104, Aug. 1, 1901.

shown by the two larger parts are all brilliant and the natural edges generally sharp, but no close measurements have yet been made. The *a* faces are faintly striated lengthwise. The color is a fine yellow green. The material is quite transparent, but its general transparency, as in the case of the crystal previously described, is impaired by intersecting groups of cleavage fissures, somewhat orderly in disposition, and evidently resulting from pressure of the matrix. Hardness about 8.5. Specific gravity obtained from two small fragments detached from two of the small parts and combined = 3.87. The blowpipe reactions correspond with those given for chrysoberyl by Dana.[1]

The matrix is very interesting as the crystal of chrysoberyl buried in the quartz is contiguous to a mass of oligoclase, from which several blades of blue kyanite penetrate near it into the quartz. The oligoclase in turn adjoins a mass of garnet of an attractive bright red color, suggestive of magnesian garnet, in small irregular fragments separated slightly by similar quartz, and where the mass of garnet is in contact with the quartz matrix of the chrysoberyl, it separates somewhat easily, disclosing on the surface a few large crystals of garnet of like color, presenting excellent faces but of little thickness. One of these faces is 25 mm. in diameter. It would seem that the chrysoberyl was probably part of an occasional occurrence which had previously been chiefly removed.

---

[1] "System of Mineralogy," p. 230. N. Y., 1892,

0