

Reviews and Notices.

Zeitschrift für Krystallographie, &c., Zweiter Band. Zweiter Heft.

MEMOIRS:—ON THE CRYSTALLOGRAPHIC SYSTEM OF HARMOTOME.—
By H. Baumhauer.—After some futile attempts at etching with hydrofluoric acid, the author's attention was once more directed to this mineral by Streng's memoir on chabasite, for both possess in common pinnate striations on certain planes with a tendency to form cross-macles. Sections were cut from small crystals of Harmotome from Andreasberg, at right angles to the vertical prismatic axis (*i.e.* to the re-entering angles), and examined in parallel polarised light. These crosses showed different colours in their different parts, mostly red and green, and were in principle divided into eight fields; the order of the colours of which stood in close relation to the direction of the external striations. These and other optical properties appear to be due to anomalous states of structure and tension in connection with the striations and macing, and do not favour Descloiseaux's view that this mineral crystallises in the oblique system; while the minute study of the striations, in particular the fact that the seams formed by the striations on (100) are never continued on either (111) or (010), inclines the author to retain it in the prismatic system.

ETCH EXPERIMENTS ON QUARTZ CRYSTALS, by the same.—On exposure to fused potassium hydrate several new planes are formed, especially a trapezohedron and a dihexagonal prism. The etch figures produced on R make these planes appear as limiting forms of trapezohedrons; and on the same set of planes etch figures belonging to individuals of opposite optical rotation were never found, therefore on a terminally developed crystal are only found rhombohedrons and trapezohedrons which correspond to one and the same kind of rotation. On the prismatic faces, however, are found parts belonging to individuals of different rotation.

ADAMINE CRYSTALS FROM LAURIUM (BELGIUM), by H. Laspeyres.—The small prismatic vitreous transparent crystals, 1-4 mm. long, of this hydrated arseniate of zinc, contain a little copper and traces of iron, but no phosphoric acid; they occur in two distinct crystallographic types.

Type I.—Colourless, prismatic after the macrodiagonal axis (Descloiseaux' position), and implanted on crystals of calamine. Planes only developed in the zones of the macrodiagonal and vertical axes, similar to the adamine from Chanarcillo in Chili. Cleavage perfect after (101).

Type II.—Green, on brown arseniosiderite, prismatic after the vertical axis; planes mostly in the zones of the vertical and brachy axes, similar to those of Cap Garonne. Cleavage after (101) not perceptible.

The measurements, which differ somewhat from those of Descloiseaux on the adamine of Chanarcillo, give—

For Type I.— $a : b : c = 0.995849 : 1 : 0.717583$

For Type II.— $a : b : c = 0.995849 : 1 : 0.684793$

As the quantity of the mineral is not sufficient for an analysis, it can only be presumed that the diversity in the length of the vertical axes is due to an isomorphous admixture of copper (in the form of olivenite) in the second type.

Observed forms:

(100) (410) (210) (530) (110) (350) (120) (010) (101) (011) (001).

MINERALOGICAL NOTES, by C. Urba.—“Fricseite, a new mineral analogous to Sternbergite,” In Joachimsthal, Bohemia, on reniform marcasites associated with argentopyrite and dolomite, occur small rectangular table, of a dark pinchbeck brown colour, and with perfect basal cleavage.

Forms: (001) (010) (301) (102). Twins after (110) as in sternbergite. Horizontal zone deeply striated.

$a : b : c = 0.5969 : 1 : 0.7352$

Analysis:—S	37.59
Ag	29.25
Fe	33.16
		100.00

Corresponding to the empirical formula:—

$\text{Ag}_6 \text{Fe}_{13} \text{S}_{20}$
 $G = 4.217 \quad . \quad H. \text{ about } 2.$

“CERUSSITE FROM RODNA IN TRANSYLVANIA.”—Associated with pyrite, sphalerite, and galenite occur small brown crystals of cerussite, stretched in the direction of the brachy axis, and generally twinned after (110).

Observed forms:

(100) (010) (012) (011) (021) (110) (130) (111)

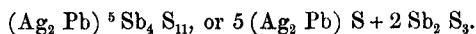
The hemimorphous development is peculiar: (010) is very broad on one side, and quite narrow on the other; the domatic planes are narrow on the former and broad on the latter side. The planes of (021) and (011) are generally only developed on the side where (010) is broad.

“ANALYSES OF DIAPHORITE AND FREISSLIBENITE.”—The sp. gr. of these dimorphous substances is alike, viz.: 6.04 at 15° C (mean of 6 determinations).

Analyses:—A. Freieslebenite (oblique) from Hiendelaencina.
B. Diaphorite (prismatic) from Pzibram.

	A	B
Ag	23.31	23.53
Pb	31.38	31.42
Cu	0.13	—
Sb	25.64	25.92
S	18.90	18.51
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	99.36	99.38

Which correspond to the formula:—



A MICROSCOPICAL EXAMINATION OF TURQUOIS, by H. Bücking.—With a view to test the genuineness of the so-called “Persian” turquoise of commerce, sections were made of this mineral from the Megara Valley, near Sinai, Nichabur in Persia, Moses Well in Arabia, Steine in Silesia, and Oelsnitz in Saxony, and compared with the above.

They all showed perfectly analogous appearances; in transmitted light they were transparent and colourless, or slightly yellow, with interspersed whitish altered particles; in polarised light the turquoise appears as a very fine grained homogenous mass of double refracting particles. The pigment seems uniformly dilute. Almost all turquoises are intersected by minute veins of limonite, and some contain also small concretions of chalcidony. The nature of the pigment was elucidated by heating sections to redness; they turned green, then black, and lastly brown. From this it is probable that the blue colour is due to a phosphate of copper, which is decomposed by heat to brown cupric oxide.

The “Persian” turquoise is therefore not an artificial production, but from its similarity to that of Nichabur, probably identical with it.

“CRYSTALLOGRAPHIC OBSERVATIONS ON COPPER FROM LAKE SUPERIOR.”—“*Mineralogische Mittheilungen*, von G. vom Rath.”—Enclosed in a cavity of arborescent copper was a crystal with the forms: $\infty 0$, $1^{\text{st}} 0 \frac{1}{2}$. The latter form is new. On the same piece were also crystals exhibiting an interesting superposition (“Fortwachsung”) of the above combination on a primary crystal of the form $\infty 0 \frac{1}{2}$.

“ON UNUSUAL AND ANOMALOUS PLANES ON GARNET FROM THE PFITSCHTHAL IN TYROL.”—Associated with chlorite and diopside are a mass of small garnets—about 1 mm—of such complicated build that the elucidation of each crystal becomes a study in itself. The principle form is the unsymmetrically developed $\infty 0$; $2 0 2$, $\infty 0 \infty$ and 0 also appear; the two latter and all the other forms possess a more or less anomalous position and development, and the facets appear unsymmetrically or singly; many of them give symbols with extremely high indices or almost irrational intersections. The new forms which could be determined were :

$$\frac{5}{2} 0 \frac{5}{2}, 7 0 \frac{7}{4}, \infty 0 \frac{5}{2}, \infty 0 \frac{5}{3}, \infty 0 \frac{5}{3}, 2 0 \frac{4}{3}.$$

A peculiarly rich crystal showed the forms :

$$\infty 0, \infty 0 2, \infty 0 \frac{5}{2}, \infty 0 6, 2 0 2, 3 0 3, 2 0, \text{ and a doubtful } \frac{19}{10} 0 \frac{6}{5}.$$

This study seems again to show that the law of rational indices can and does suffer exceptions.

“ON A PSEUDOMORPHOUS TWIN OF CALCITE FROM BRAZIL.”—In a cavity of chalcedony are situated two large crystals of the form R3, twinned after the law twinning plane— $\frac{1}{2}$ R, composition plane the perpendicular to it. The substance of the crystals is a fine grained dark brown or black quartz, which exhibits traces of the original mineral having been built up of concentric layers or shells.

ABSTRACTS, &c.—UNUSUAL FORM OF HALITE, by E. Bertrand.—Crystals from the soda lakes of Egypt showed O, alone or in combination with $\infty 0$ and $\infty 0 \infty$.

CINNABAR FROM CALIFORNIA, by E. Bertrand.—Acicular crystals of the form ∞R , $\frac{4}{3} R$, associated with quartz and black metacinnabarite are found at Redington Mine, Lake Co.

ON THE FORM AND TWINNING OF LEUCOPHANE, by E. Bertrand. (*Proceed. of the Cryst. Soc., London.—Phil. Mag., 1877.*)—Sections cut parallel to the plane of cleavage show two systems of rings belonging to two different crystals, the planes of the optic axes bisecting at right angles. This twinned structure is sometimes externally apparent and points to a prismatic hemihedral or oblique crystallisation.

In an appendix Prof. Groth gives the results of his investigations of Bertrand's crystals and sections; and of some crystals from the Museum of Christiania. He finds that leucophane crystallises in the oblique system, and that the crystals are made up of four individuals twinned after two different laws, analogous to those of harmotome.

The observed forms are :—

$C = (010)$ plane of cleavage and symmetry.

$a = (100)$

$c = (001)$

$p = (110)$

$o = (\bar{1}11)$

$y = (\bar{1}21)$

$x = (012)$

$h = (\bar{1}01)$ twinning plane.

$a : b : c = 1.061 : 1 : 1.054.$

$\beta = 90^\circ 0'$

Leucophane is found on the small Island of Loven in the Langesundfjord, Norway, in coarse grained felspathic veins, associated with felspar, ægirine, elæolite, magnetite, mosandrite, &c.

ON MOLYBDENITE FROM BIELLESE, PIEMONTE, by A. Cossa.—(*R. Acc. d. Lincei. Transunti, vol. i, Ser. 3 a, 1877, Roma.*)

THE MERCURIAL ORES OF TUSCANY, by A. D'Achiardi.—(*Atti. d. Soc. Tosc. di. Scienze Nat., vol. iii, fasc. 1° Pisa., 1877.*)

C. O. T.

Zeitschrift für Krystallographie, &c.—Zweiter Band. Drittes Heft.

MEMOIRS:—ON THE TELLURIDES OF TRANSYLVANIA, by A. Schrauf. A valuable monograph of much interest to the crystallographer. Being but ill adapted for abstraction we restrict ourselves to simply drawing attention to its contents.

The minerals described, of which the collections of the Vienna University possess rich suites, are the following: Sylvanite (oblique), Krennerite (prismatic), Nagyagite (oblique), "Tellursilberglanz" (hessite, petzite), tesseral, Ag₂Te and "Tellursilberblende," a new mineral, oblique and of the composition Ag₄Te, which the author has named Stützite.

The morphological properties of these species are widely and critically investigated, and older results compared with the more recent ones of the author. The crystallographic elements are deduced from more reliable measurements, many new forms described, and the isomorphic relations to other minerals discussed.

ON THE OPTICAL PROPERTIES AND THE CRYSTALLOGRAPHIC FORM OF TRIDYMIT, by A. von Lasaulx.—Our views regarding this curious mineral suffer a considerable change by two contemporaneous researches, which both arrive at identical results. The examination of larger crystals

especially those from Mount Tardree, near Antrim, and from the Monti isolati, near Padua, shows that tridymite crystallises, not in the hexagonal system as supposed by its original discoverer G. vom Rath, but in the anorthic system with a hexagonal pseudosymmetry. M. Schuster (*Tschermak's Mineralog. u. pet. Mitt. I, p. 71.*) sums up his crystallographic and optical examination with the words: "Tridymite crystallises in the triclinic system, and it is only in consequence of often repeated twinning that forms are produced which in their external outline and also in their angles closely resemble hexagonal forms." In the present lengthy memoir we find the following resumé: "Tridymite does not belong to the hexagonal but to the anorthic system of crystallisation. Its forms are closely related to the prismatic system (with a prismatic angle of near 60°), as is demonstrated by the position of the axes of optic elasticity. The apparently hexagonal plates aretwins, compounded in a similar manner as the twins of the oblique micas or of the prismatic minerals of the aragonite group, viz.: twinning planea prismatic face, but also after the law of vom Rath: twinning plane the face of a pyramid lying in the zone of a prismatic edge. Lamellæ, after the second law are often interposed in the hexagonal plates without alteration of the external appearance, and are then only recognisable by optical means."

The author holds it probable that Maskelyne's asmanite is identical with tridymite.

In this paper a method, described by Sorby (*Min. Mag. I, p. 194*) for determining the refractive indices, was made use of. As here stated it was originated as early as 1767 by Duke Mich. Ferd. de Chaulnes (*Mem. de l'Academie, 1767 and 1768*).

ON NORWEGIAN MINERALS, by W. C. Brögger.—"THE CRYSTALLOGRAPHIC SYSTEM OF MOSANDRITE."—Crystals found enclosed in leucophane at Loven are sufficiently well developed to show that this mineral crystallises in the oblique system, with the elements:

$$a:b:c=1.0811:1:0.8135$$

$$\beta=71^\circ 24\frac{1}{2}'$$

Observed forms: (110) (210) (100) (010) (111) (101.) Cleavage after (100). Twins with (100) as twinning plane. In a section cut from a transparent crystal parallel to the plane of symmetry the inclination of one of the axes of optic elasticity to the vertical was $21\frac{1}{2}^\circ$. Pleochroism very pronounced light yellow and dark orange-red.

Crystals enclosed in felspar without terminal development, as they are generally found in collections, show a combination of different prisms which do not occur on those in leucophane.

“THE CRYSTALLOGRAPHIC SYSTEM OF ASTROPHYLLITE.” *ibid*—The mineral is from Loven, where it occurs associated with a large number of rare and interesting minerals in one of the coarse grained veins of the augitic syenite. It is generally enclosed in leucophane, felspar, and other minerals, and the crystals possess a typical development which differs with the enclosing matrix. Those here described all belong to the second type of Nordenskiöld and were found imbedded in leucophane.

After a minute goniometrical and optical examination the author refers them to the anorthic system, and shows that Bücking's deductions (*Min. Mag. I, p. 264*) were erroneous on account of the limited material at his disposal.

The elements and principal forms are :

$$a:b:c=0.2268:1:0.2908$$

$$\alpha=86^{\circ} 7' 57'' \quad \beta=90^{\circ} 26' 40'' \quad \gamma=89^{\circ} 44' 24''$$

($\bar{3}\bar{3}2$) ($3\bar{3}2$) ($\bar{1}11$) ($1\bar{1}1$) ($7\bar{7}8$) ($\bar{7}78$) ($\bar{3}34$) ($\bar{3}\bar{3}4$) ($0\bar{2}1$) (021) (010) (001)
Cleavage after (001).

The optical properties vary considerably in different crystals and pieces cleft from the same crystal, thus the angle of optic axes is $114^{\circ} 37\frac{1}{2}'$ — $123^{\circ} 28'$.

The older researches on this mineral by Weibye, Scheerer, Nordenskiöld, and others are only in part and with difficulty comparable with this one.

On the systematic position of astrophyllite nothing definite can as yet be decided, as it agrees as little physically with the micas as it does chemically with the augite group.

“ON A NEW OCCURRENCE OF THOMSONITE.”—In small cavities of altered elæolite from Loven are found fine acicular crystals of this mineral. The elements deduced from good measurements are :

$$a:b:c=0.9925:1:1.0095$$

Observed forms: (110) (100) (010) (012) (0.1.48) (101).

Plane of optic axes parallel to the base as in the thomsonite from Kaden, acute bisectrix normal to (010). Angle of optic axes could not be determined in such minute crystals.

Shephards' ozarkite from the elæolite of the Ozark Mts., Arkansas, appears from its analogous mode of occurrence to be indeed a massive variety of thomsonite, as already pointed out by Smith and Brush.

C. O. T.

ON PHOSGENITE FROM MONTE PONI, IN SARDINIA, by U. Hansel.—The large, clear, and well-developed crystals from this locality possess the same elements and forms as those from Gibbs, and described by v. Kokscharow,

LEIDYITE, A NEW SILICATE OF THE ZEOLITE GROUP, AND THE MINERALS ASSOCIATED WITH IT, by G. A. Koenig.—The new mineral, associated with heulandite, forms warty incrustations and small stalactites on grossularite and zoisite in a quartz vein, of the gneiss of Leiperville, Crum Creek, Delaware Co., Pa. It is probably crystalline, slightly harder than talc, of grass and olive-green colour, resinous lustre and white glossy streak. Fuses with active intumescence to yellowish green glass; gives off water and turns brown in matrass. Easily soluble and gelatinising in cold HCl; insoluble after being heated to redness.

Analysis:—

SiO ₂	51·41
Al ₂ O ₃	16·82
FeO	8·50
CaO	3·15
MgO	3·07
H ₂ O	17·08

100·03

Named after the comparative anatomist, Prof. Leidy, of Philadelphia. Analyses of the associated minerals are also given.

ABSTRACTS, &c.—J. Krenner (Pesth).—On silver ores from Felsöbanya, apatite from Armonis, cerussite from Rodna, and cinnabar from Mernyik.

Th. Hjortdahl.—Analyses of anorthite, olivine and saussurite (*Nyt. Mag. for Naturv. Kristiania, xxvii, 4*).

A. E. Nordenskiöld.—Mineralogical contributions. (*Geol. För. Förhandl., iii, No. 12, p. 376*.)

New minerals from Longban.—Atopite, monimolite, ecdemite, hydrocerussite, hyalotakite, ganomalite, jacobsite.

S. R. Paikull.—Mineralogical contributions (*l. c. p. 350*.)—Analyses of eucrasite, microtephroite, manganous serpentine.

C. Hintze (Strasburg).—On cuproferous vitriol (pisanite) from Massa Marittima in Tuscany; on greenovite from Zermatt.

Th. Engelmann.—On the dolomite of the Binnenthal and its minerals, compared with that of Campolongo (*Inaug. Dissertation. Bern., 1877*.)

E. Ludwig.—Mineral Analyses (*Tschermak's mineralog. Mitth., 1877, p. 265*.) Analyses of plagioclase, scapolite, leonhardite, glauconite, chondrodite, sahlite, tetrahedrite.

F. Becke.—On the crystallographic form of cassiterite (*l. c. p. 244*.)

A. Sadebeck.—On the crystallographic form of struvite (*l. c. p. 113*.)

J. Lehmann.—The pyrogenous quartz in the lavas of the nether Rhine (*Verhandl. d. naturhist. Ver. d. preuss. Rheinl. u. Westph.*, 1877, 34, p. 203.)

C. O. T.

URANOTILE (*Imper. Geol. Institut. Vienna*, Report, May 31, 1878.)—The blue fluor-spar of Welsendorf in Bavaria, of which great quantities are used in Austria as a flux for the iron-ore smelted in the "high-furnaces," is associated with velvet-like agglomerations of delicate, yellow, acicular crystals, which have been recognised by E. Borzizky as containing Uranium; and he proposes for this new mineral the specific name "Uranotile."

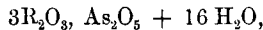
T. R. J.

GRAPHIC GRANITE has recently been found by Mr. Frank Johnson, at Huel Agar, in a burrow about a quarter of a mile east of the account house. This is the first time that graphic granite has been found in Cornwall. Mr. Johnson has also found well developed chialstolite slate at East Carn Brea Mine, Redruth, where it had not been observed previously.

J. H. C.

LISKEARDITE (N. S. Maskelyne, *Nature*, Aug. 15, 1878.)—This mineral is white, with a slight blue or greenish-blue tint, and occurs in thin layers of uniform fibrous structure lining hollows in quartz and other minerals; associated with pyrites, copper-pyrites, chlorite, mispickel, scorodite, &c.

Dr. Flight's analysis agrees with the following formula :



the R_2O_3 representing alumina with a notable amount of ferric oxide. The tint seems to be due to about one per cent. of copper, and a small amount of sulphate is also present. It may be regarded as an arsenical *Evansite*.

J. H. C.

The Hensbarrow Granite District and the China Clay Trade, a geological description and a trade history, by J. H. COLLINS, F.G.S.* The following review appeared in the *Mining Journal* of Sept. 21, 1878. "We are indebted to Mr. J. H. Collins for the only full and adequate account of the system of china-clay working which we possess, and this will be found contained in his newly-issued work, 'The Hensbarrow Granite District.' . . . It is admirably written and well illustrated, and puts the reader in

* Truro: Lake & Lake, 1878, with five plates and a map. 2/6.

possession of the greatest body of facts that has ever been accumulated in connexion with the china-clay industry, now, unfortunately, like everything else in the west, so much depressed.

“The work is as practical as it is scientific, and in every way worthy of its author.”

The following is an outline of its contents.

PART I.—*General Description*.—Situation; form, spurs, outliers; elevation; main valleys; mineralogical description, joints, quarry granite, altered granite, overburden, slads, giant granite, mica veins.

PART II.—*The China Clay and Stone Industries*.—Bibliography, ancient mode of working, present modes of working, uses, cost of production, debris, preparation of felspar, suggested improvements.

PART III.—*Nature and origin of China Clay and China Stone*.—Mineralogical composition, mechanical analysis, chemical analysis, deposits of china clay, occurrence of schorl.

PART IV.—*Metallic Minerals*.—*Tin*, Carclaze Mine, Beam Mine, Hallow, St. Dennis Consols, Wheal Mary, Rocks Mine, Goonbarrow Mine, Rock Hill, Stenna Gwynn, Tin Hill, North Bunny, Bunny, Chytane, Cornubia, Cregan Rocks, Tin Streams; *Iron*—Ruby, Hallow, Lanlivery: *Copper*, *Lead*, and *Silver*, *Manganese*.

PART V.—*Summary and Statistics*.—Geological changes, exports, List of rocks and minerals, conclusion.

BARCENITE (J. W. Mallet, *Am. Jour. Sci.*, October, 1878).—This is a heavy black mineral of columnar structure, occurring with Livingstonite at Huitzucó, Guerrero, Mexico. It is described as brittle, fracture tolerably even, $H=5.5$, sp. gr. 5.343, dull, earthy to resinous or pitchy, opaque, dark-grey or nearly black streak, ash-grey or slightly greenish; B B de-cripitates slightly, turns white or nearly so, fusible with difficulty on thin edges; in RF gives off white fumes and colours flame greenish-blue. In matrass yields water and metallic mercury, with a black sublimate. In borax O F a clear colorless glass, which becomes turbid in R F.

Insol. in HCl or HNO₃ even when concentrated and boiling. The following is the analysis (by Mr. R. J. Santos)—

Sulphur	2.82
Mercury	20.75
Calcium	3.88
Antimony	50.11
Oxygen (by difference)	17.61
Water, constitutional, .. 3.50	} 4.73
,, lost below 120°C.. 1.23	
Silica10
	100.00

The mineral is apparently a mixture of mercuric sulphide, antimonious acid and an antimonate of calcium, mercury, and triad antimony, "corresponding to a normal antimonate M_2O, Sb_2O_5 or $M'SbO_3$. It differs noticeably from all the natural antimonates hitherto described in that these are strongly basic while the mineral now described contains a surplus of the electro-negative antimony as antimonious acid over and above the amount necessary to form a normal antimonate with the electro-positive metals present."

J. H. C.

DAUBREELITE (J. Lawrence Smith, *Am. Journ. Sci.*, October, 1878)—This new meteoric mineral has recently been further examined by Mr. Smith with the following results. It is obtained by breaking up the meteorites containing it, and dissolving out the troilite by HCl or HF, which has no action on the daubréelite. Fragments of iron are separated by a magnet. It consists of shining black fragments, more or less scaly in structure, not unlike fine particles of molybdenite, fracture uneven, except in one direction, where there appears to be a cleavage. It is brittle, infus. BB, but losing its lustre; slightly magnetic after treatment in RF. With borax slowly soluble, giving intense green bead when cold, dissolves slowly and completely in HNO_3 when heated. No separation of free sulphur. Composition—

Sulphur	42.69
Chromium	35.91
Iron	20.10

98.70 Sp. gr. 5.01

It is very evident from the above proportions that this mineral is a sulphide corresponding in atomic constitution to the well-known oxide $FeO Cr_2 O_3$, Daubréelite being $FeS Cr_2 S_3$. It occurs in the "Bucher" meteoric irons of Cohahuila, Toluca, Mexico; Seirer, Tennessee; and Cranbourne, Australia.

J. H. C.

SILAONITE (J. W. Mallet, *Chem. News.*, Oct. 18, 1878). This newly described "mineral" from Guanajuato is found by M. Bruns to be a mixture and not a true species.

HULLITE (*Quart. Journ. Sci.*, October, 1878).—This mineral was described by Mr. E. T. Hardman, F.C.S., at the British Association Meeting at Dublin. It occurs in abundance at Carnmoney Hill, near Belfast, in basalt. It is velvet black, brittle, waxy to dull; $H=2$, very slightly affected by acids; "appears on the whole to belong to the ferruginous

chlorite group. Its most remarkable characteristics are its low specific gravity and its resistance to the blowpipe, both curious points considering the large quantity of iron it contains." In composition it somewhat resembles delessite, but differs from it in colour, hardness, streak, and specific gravity. No analysis is given in the *Quarterly Journal of Science*

J. H. C.

Obituary.

MEMBERS of the Mineralogical Society will have heard with deep regret of the sudden death of Prof. Robert Harkness. He was present at the meeting of this Society held in London, July 4th, and read a paper on Cotterite, and all who were present will remember the genial and jocular manner in which he met the critical remarks of some of the members present. He was elected member of the Council of the Society at the Dublin meeting, in August last.

He died suddenly at the Imperial Hotel, Dublin, on the 5th of October, 1878.

The following brief memoir appeared in "Nature" of the 10th inst. :—

"ANOTHER of the captains in the phalanx of British geologists has dropped from the ranks. Robert Harkness died suddenly in Dublin on Saturday last. He had been ailing for some time, and the disease from which he suffered—an affection of the heart—had gained ground so much this year that he lately felt himself compelled to resign the chair of geology at Cork. It was the expectation of his friends that, released from duties which he had so long conscientiously performed, he might yet enjoy some years of comparative health in the quiet retirement of his Cumberland home, to which he used to return with such pleasure every summer. But this was not to be. He has fallen just as he had himself brought the public labours of his life to a close.

It is now some five-and-thirty years since the name of this able geologist first appeared as a writer on his favourite science. During this long period he had explored, on foot, the geology of large districts in the north of England, in Scotland, and in various parts of Ireland. The reports of the British Association and the *Quarterly Journal* of the Geological Society bear witness to his industry and to the painstaking minuteness of his method of investigation. To him we owe our earliest exact information regarding the correlatives of the reptiliferous sandstones of Dumfriesshire and Cumberland. It was his patient labours continued year after year over ground most difficult to unravel, that led the way to