

GREECE

FRIZINGTON (see also LAMPUGH) Comb.

DRAMA

Greece.

F. Gross Priv Comm 4/79 Epidote, termin.

xls $\rightarrow$ 2 cm (v) weather out of a
minophre band at/near a mine
at Drama & are found in a
gully below

KOZANI

N. Greece.

MA 81-1801

x/s in
village,

Idocrase well-formed 3mm
u'mafic rocks ~~near~~ of Rodiani
nr. Kozani city, N. Greece.

LAURIUM, ^{Attika} nr Athens, Greece (I)
= LAVRION

Miers (1929) Adamite in zine crusts, at the Zn mines, "which have furnished a number of interesting Zn minerals".

MA (1923-5), 185. H. Ungemach. Adamite, single $\frac{1}{2}$ mm clear yellow xls together with usual sheaves, on a spec. of cellular smithsonite from Laurion.

MA (1923-5), 281. A. Lacroix. Beudantite occurs at L. as masses consisting of confused sub-parallel aggs of minute modified rhombohedra. An intimate assoc of beudantite with scorodite in cavs of a quartzose rock prob. = "lossenite".

MA 3 359. Azurite, xlog.

MA 5 49 E. Dittler & R. Koechlin glaucocerinite new min. from Laurium
distinct from zincaluminite (also ex L.), $Zn_{13}Al_8Cu_7(SO_4)_2O_{30} \cdot 34H_2O$
Sky-blue waxy masses with smithsonite, adamite & gypsum.
V. Soft, resembling a blue wax. The small nodules radially
fibrous & concentric banded, & often white inside. sg. 2.749.

C. Palache MM (1934) 23, 573. From lead slags, laurionite; paralaurionite,
& fiedlerite, (xlog). All Pb oxychlorides.

FA Bannister (1934) MM 23 587. From sea-water on slag heaps of ancient
workings; laurionite; paralaurionite; fiedlerite & penfieldite.
"Matlockite" not confirmed, none on "authentic specs!"

MA 7 259 TFW Barth: Annabergite ('cabrerite'), (xlog).

LAURIUM, nr. Athens, Greece, (II)

MA 8/181 S.G. Gordon. Penfieldite (anal) $\rightarrow \text{Pb}(\text{OH})_2 \cdot 3\text{PbO}_2$.

MA 10/17 Phosgenite (X-ray) ✓

MA 11/125 P. Kokkoros. Ktenasite, ? $3(\text{Cu}, \text{Zn})\text{O} \cdot \text{SO}_3 \cdot 4\text{H}_2\text{O}$, new mineral, small (1mm) blue green xls (miclin plates on (001)) assoc. w. smithsonite, glaucozerinite, & serpentine, from Kamarea, Laurion.

MA 11/281. α -pyrrhotite, feebly magnetic. ($\text{FeS}_{1.105}$)

MA 11/456 R.M. Pearl. Opt & X-rays. "Lossenite" xls are of scorodite coated with bendandite.

MA 12 95 P. Kokkoros. Mixite $\text{Cu}_{12}\text{Bi}(\text{AsO}_4)_6(\text{OH})_9 \cdot 9\text{H}_2\text{O}$,
emerald-green needles ($1\frac{1}{2}\text{mm} \times 1-5\mu$) with olivenerite
from Kamareza.

MA 12 331 P.K. Antlerite, minute ($70 \times 20\mu$) short-prismatic from
Kamareza - x-ray show may be identical with "arnimité"

MA 12 329 P.K & K. Vassiliadis. Hydrocerussite, small hexag. scales
in ancient lead-slags.

p 792. A single specimen only known! $\text{Pb}_3(\text{AsO}_4)_3$.

DII 60 Georgiadesite. 63 Laurionite with, eg. anglesite,
cerussite etc in slags exposed to sea action
Mines worked by Athenians in Pericles' time
for Pb & Ag. Ore, mainly galena, smelted

LAURIUM, nr. Athens, Greece (III)

on sea shore, slags dumped in sea. Paralauros and
penfieldite, fiedlerite.

D, II 179 Smithsonite, "abundantly, in a variety
of colours"

250 Burichalcite. 271 Hydrocerussite

258 Phosgenite. 579 Cyanotrichite

268 Azurite. 749 Cabrerite

580 Zincalumite ^{thin hex. plates} assoc with smithsonite,
serpentine etc at the Zn mines of L.

589 "Kamarezeite" ? $\text{Cu}_3\text{SO}_4(\text{OH})_4 \cdot 6\text{H}_2\text{O}$. Kamareza, near L.

? species "needs verification"

[= brochantite, Amer Min. (1965) 1450]

III

D₇ II 866 Adamite "a notable occurrence at the ancient Zn
mines... filling drusy cavities in cellular smithsonite."
1002 Bendamtite "in clusters of pure xls, with
scorodite".

MA 7 259 Cabrerite
MA 7 219 Annabergite [= cabrerite]
MA 7 181 Penfieldite
MA 7 147 Ancient mines...
MA 3 359 Azurite

... Ancient mines at Ergastiria and
Thoriko (Porto Mandri).

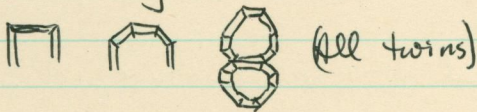
LAURIUM, Athens, Greece (IV)

MM 23 574, 595: "Matlockite" not confirmed

Laurionite -o'rh:



Paralaur. - m'cl but ψ -o'rh. Tabular, rectang or wedge.
"xls easily bent about the direction of the brachy axis."



Fiedlerite



Benfieldite. Long needles, hexag. prisms. sometimes tapering

Lacroix & De Schuelten Bull Soc Min et Crust 79 (1908)

Lead slags: In the N, at coast at Jaskalio and Vryssakia,
poor in Si, & Fe rich.

In the S, along the length of the coast of
Sunion, Ligrenia & Panormo, more Si, Ca rich,
less Fe.

Those we studied for Pb sec's are from the bay of Vryssakia
which have big xls in their druses. Less good in
the southern area.

Best in blocks formed from a mixture of lead, wood
charcoal, & a small proportion of slag - the xls are
smaller but more abundant than in the siliceous
gangues.

Litharge nodules are rich in xlied
Pb sec'y mins.

Mineral associations are v. characteristic:

LAURIUM, Athens (V)

penfield. always assoc with fieldite alone in geodes on blocks elsewhere rich in laurionite.

Laurionite is assoc w. ceruss & phosgenite, very rarely with anglesite & georgeadesite (!).

Paralaurionite is always with laurionite, and is later.

Best ceruss, with aragonite in geodes coated [? lined] with hydrocerussite.

Hydrocerussite. mainly in corrosion cavities in blocks of litharge; only in a small no. of specimens. Nacreous hex plates. Rarely on siliceous slag.

Anglesite, v. rare, xls v. complex

Georgiadesite - 1 specimen, in cavs. of a very vitreous slag, including charcoal, & impreg w. xls of laurionite, with a little fiedlerite & matlockite. It is last mineral to xlose.

The xls, devoid of cleavages, attain 3mm - white to brownish-yellow, resinous lustre. Like flat hexag prisms, ^{much} striated || to the sides. (O'rhic)



Prob: 167 In slags on beach at Orm. Ay. Nicolaos
 - aragonite, cerussite, phosgenite. 1 xl. hexag
 plate (prob. leadhillite) ? laurionite (v. rare)
 (or hydrocerussite) anglesite

Larion, Greece (VI)

(Unspecified)

"Larion"

(1956) (In greek)

gold, ankerite, ~~azurite~~ azurite, haematite,
aurichalate, calcite, nat. silver, arsenopy.

$\text{Ca}_3\text{Fe}_4(\text{OH})_3(\text{AsO}_4)_3$; pyrolusite, baryte;

willemitte; galena; NiAsS ~~[pyrochroite]~~ [gersdorffite]

nat S; calamine; cerussite; cinnabar;

conchoidal; malachite; massicot.

LAURIUM, Attika, Greece (VII)

Schnorrer-Köhler, G., Aufschluss (1980) 31 153-155
(MA 81-4767)

Mendipite on slags, closely ass. w.
paralaurionite, kleixite.

Schnorrer-Köhler, G., Standfuss K, & Standfuss, L.
Aufschluss (1981) 32 165-9; (MA 81-4768)

Nealite impl. on georgiadeseite in small
cav. in slag, often ass. w. laurionite, phosgenite,
Cotunnite, tiny groups of radial c. less x's;
heliophyllite $Pb_6As_2Cl_4O_4$ & its polymorph
ecdemite; calumetite, tiny blue spheroidal

aggreg., lanarkite. (MA 78-3717)

Hochleitner R Lapis (1981) 6 [4] 9-40

List of Laurium minerals; SEM photos.

PJ Dunne & RC Rouse, Min. Record (1980) 11 [5] 299-301
(MA 81-3243) Nealite, orange, $Pb_4 Fe (AsO_4)_2 Cl_4$
new mineral, in slags.

W Kohlberger Min Rec (1976) 7 [3] 114-125
"Minerals of the Laurium Mts, Attica, Greece"

G. Raade et al MM (1985) 583-590 glaucozerinite,
woodwardite, aurechalcite

Aylaki, Larrion, Greece.

Avlaki

"Larr" (1956) :- Rhodochrosite

Bievi (??) Larrion, Greece

"L" (1956). Pyromorphite.

Billia, Larrion, Greed.

"L" (1956). Nat. Cu.

Dimoliaki, Larion, Greece
Dhemoliaki

BM Smithsonite

Dogavi, Larion, Greece

"L" (1956) :- Scorodite.

Kamargiza, Lavrion, Greece. (I)

BM. "Calamine", azurite; calcite; cuprite;
gypsum; serpentine; aurichalcite;
Brookite;

Adamite; atacamite; hemimorphite;
serpentine;

L (1956)

Higginsite $\text{CaCu}(\text{OH})\text{AsO}_4$; $(\text{Fe}, \text{Zn})\text{SO}_4 \cdot 7\text{H}_2\text{O}$
 $\text{Zn}_3\text{Al}_2(\text{OH})_6\text{SO}_4 \cdot 7\text{H}_2\text{O}$ (Pseudo-zincaluminite) Adamite,
Mimetite; olivenite; ~~scorodite~~ scorodite, Nat. Cu.
Symplectite, hydrazincite; greenockite;
glaucozerine; euchroite; hemimorphite;

Kamane⁵¹⁷za, Larion, Greece (II)

L¹¹ (1956) Cabriote, Ktenasite, cuprite,
lavendulan; Mixite; ~~brochantite~~ Bi;
 2PbSO_4 $6\text{Fe}(\text{OH})_3$ $\text{As}_2\text{O}_5 \cdot 27\text{H}_2\text{O}$; bismutite;
brochantite, buratite;

KAMAREZA, Lavrion, Greece (III)

~~LAURION, Athens, Greece (IV)~~

RSWB /67 Kamareza area:

(a) Adit on S side of road ca 1 km before Kamareza - and small dump on other side of road, assoc. with the adit. Vg. cabrerite some v.v. pale (? hoernesite); with aragonite, smithsonite; calcite; etc. A cavern in adit lined with magnificent "flos-ferri". Dolomitic matrix.

(b) Cave-like adit across valley due N of above adit. Azurite; olivine; malachite; mimetite; yellow xls. "conichalcite II"
Duftite; IR cupre austinite

(TMS coll. vq serpentine here) (VI)

(c) Dumps to ~~the~~ E of Kamareza village.
Azurite; malachite; smithsonite; austinites
adamite; cuproadamite; conichalcite (I, II)
?aureichalcite; pendantite (IR) ^{yellow powdery}, on
adamite; natrojarosite xls (IR)

(d) Dumps in e to W of Kamareza village.
Adamite; cuproadamite; smithsonite;

(IR) serpentine with spangolite (x-ray, BM);
cu-fraipontite (new? BM x-ray); aragonite;
smithsonite; agardite; mimetite; cuproadamite

~~(b) Dufite (IR); Fluorite; cord?~~
more likely
(b)

KAMAR^(E)IZA, Lavrion, Greece, (IV)

RSWB, 8/72 Locs as RSWB/67 rechecked.

(a) Adit is $1\frac{1}{2}$ km W of Kamareza road junction at Lavrion. Minerals as before.

(b) Little found in "gozzan caves", but dumps just outside (to E side) gave excellent micro-cabrerites with ~~superadamite~~ ~~sphalerite~~ cuproaustinite (IR) spheres; yellow mimetite (IR) on ironstone; conichalcite (IR) bright green glob. with calcite, white radiating blobs (IR) on goethite/gozzan

(c) Dumps to E of Kamareza village along dump-tracks; - "Dumps A": vg adamite,

Mokhriza, Lavrion, Greece.

"Lavrion" (1956). Rhodochroete

Plakhas, Laurion, Greece.

Plaka

Laurium (1956) Wulfenite

RSWB 17/8/72 Working mine at Plaka.

Taken to a level being worked
in a cindery limonite gozzan
with galena veins altering to
good xls cerussite, excellent red to
orange wulfenite - bevelled plates
to $\frac{1}{2}$ cm; micro orange xls phosphatic
mimetite (IR:- P/P+As $\approx$ 40 mole %), traces
powdery yellow massicot

Sounion, Lavrion, Greece.

BM "Sumium mine, Lavrion" - hydrozincite

"Laurium" (1956) Cuprite; fluorite; nat. Cu;

Verzekho, Lavrion, Greece.

"Laurium" (1956) Atacamite; cabrerite

Vryssakia, Lavrion, Greece

BM. "Bryssakia" - laurionite.

— Vryssaki - Tourkolimano. Laurionite etc etc
in in

VERMION

Greece.

T. Marcopoulos & M. Economou Am Min (1981)
66 1020-21. ~ 50 km W of Thessaloniki

Theophras(t)ite, new, Ni(OH)_2 , green,
trig. in magnetite-chromite ore
w. idocrase, Ni-serpentine, chloride,
calcite.

XANTHI, NE Greece.

CRUSA nr. Xanthi - marble quarry.
w. v.g. Pyrite xls.

MM(1982)46 337-40. N of Xanthi are zones of contact metam. betw. calcareous & ign rocks. In one such zone, "very close" to GORGONA village, a suite of Mn minerals incl. rhodonite (incl. xls $\rightarrow$ 0.8cm) (Ca-poor). w. qtz, spessartine & black stains