Geol. 523 Feb. 7, 1961

RV Kirkham
Thesis Material
803909

Stibiconite – Vitaliano & Mason
① Am. 1952 pp 982
② Min. Maz. Vol. 30 1953
Sb. Oxides

valid species
senarmontite Sb_2O_3 – cubic
France * indicating Valentinite Sb_2O_3 – orth.
China & Mexico mined for Sb ore — stibiconite $(Sb_2''' Ca)_y$ $Sb_{2-x}(O, OH, H_2O)_{6-7}$ cell edge 10.26
y ≈ 2
x from 0 – 1
Pyrochlore Structure

– much isomorphous possible
– defective structures

also
B.C. & Yukon Yell. color. ① $(Pb)_y Sb_{2-x}$ $(O, OH, H_2O)_{6-7}$
S.E. Nevada Pyrite & chalcocite ② Stetefeldite $(Ag)_y Sb_{2-x}$ etc.
, Partzite
Calif. ③ $(Cu)_y Sb_{2-x}$ etc.
Cinnabar bearing gravels ④ Tripuhyite $Fe_{1-y} Sb_{1-x} (OH)_4$ Tetragonal
Trirutile Structure
only in Mexico ⑤ Bystromite $Mg_{1-y} Sb_{2-x} (O, OH)_6$ Tetragonal

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Cordierite – gems Burma
– Storm Mtn.; Norway.

Pyrophyllite – large 2V than talc + form rad agg; alteration prod. of corundum W. Coast. Van. Is.
Margarite – brittler than Zinnwaldite (Fe bearing Lepidolite – Mon – Tri & Hexag) color – gray, violet, red, yellow only plea cassiterite & rutile inclusions
Hedenbergite – rare – contact dep. New Mexico – Hanover.
Laumontite – 3 clv. pink white (got it ? stibite)
Crocidolite – high tensile strength & resistant to corrosion
Hauynite – in Sodalite Group – in Phonolites in undersilicated rks usually white, colorless, gray but also

Phil. Feb. 7/61

Arg. for Exist. in God cont.

Design in universe – in need a designer
∴ not a human mind
∴ Super " " ∴ God.

Superhuman – has complex design
∴ need another designer

We demand ~~for~~ designer of univ.

universe is purposive (not you or I necessarily)
- universe has come into being thru a purposive act
- what indication is there that the universe is purposive
- no goal visible (of universe not our goals)

Why should we believe in the existence God?
- too much of risk in not bel. in God

Feb 14/61 **Perouskite** – $CaTiO_3$ Triclinic (Pseudo-cubic)

cell content z=8

Assuming cubic						
Ca	½	½	½	①	12	coordination C.N.
Ti	0	0	0	$8 \times \frac{1}{8} = 1$	6	C.N.
O_x	½	0	0	$12 \times \frac{1}{4} = 3$	2	C.N.

Cb : Ti = 2:5 Dysanalite

↑ usually inter. cell & sp. G. & makes blact

Ca: Ce = 7:4 Knopite
prop. similar to Dysanalite

Both Cb & Ce Loparite maybe a little Ti. ∴ radioactive

Fe, Na, K, may enter in place of Ca.
Zr & Al for Ti
Ce for Ca.

$(Ca, Na, K, Ce)(Ti, Cb, Zr, Al)O_3$ – General Formula
– cell content z=8

– crystals usually cubes (& octahedrons)
– complex twins
– metallic adamantine n = 2.3
– Barth Cell edge 3.83
– Zedlitz " " 7.59–7.71 (monod.
– Dana give " "
– Murdoch (1951) doubled again 15.27–15.41 (weak line on long exposure)

– In some localities minerals are quite light colored

Ce var. Moose Creek Ice River complex
Bear Pound Mtns. Montanna
Kola Penn. in Pegs.
Lagacher See Prussia – ① basic ign. rks. & pegs.
Kaiserstühl Germany ② diss. in lms. contact of alkaline intrus.
Crestmore Calif.
Switzerland in Talc schist ③ chl. & talc schist

carry equal amts. of Cb. { Pyrochlore, Perouskite, Niocalite

Cb>Ce Quebec

Magnet Cove Arkansas

vosirus in cavities of rocks

many forms & colors

Zoisite & clinozoisite - both difficult to disting. ~~byt~~ optics but ~~distinctly~~ different in x-ray patterns

Lazulite - restricted to high grade metamorphics
- Fort Churchill & boulders in Fraser

Chloritoid - high relief; low bir.; poly. twinning; high dispersions

Pyrochlore - Iso.; poor clv. but dist.; diss. grains.
- "bag" structure like tetrahedrite (also variety name)
- large cell 10.4 (stibconite same structure)
- Bancroft (peg. quarry) assoc. zircon & apatite
  in carbonatites
  in Lst. near syenite & neph. sy. cont.
- B.C. - French Prop. - Blue River
  - Granite Creek Omineca
  - Wolverine Complex (Limey bands (Parsnip River up Nation River
  - Ice River at Lst. Contacts

Oka Quebec

Ontario R. Rec.

max. 31%

78% in Columbite - Tantalite

∴ diff. to make economic

looks like & weathers to limonite
- but has a silky lustre

Dumortierite - pleo. may be confused with tourmaline (possibly mistaken for glaucophane)

Ilvaite - "quite-a-bit" in B.C. (mistaken for tourmaline & allanite)
- ~~contact zone~~
  contact zone with Fe sulphides
  & meta. iron deposits

Triplite - moderate hardness
Phosphate in Peg.

Allanite - Ce. var of epidote (all forms & shapes & colors known)
- heavy
- ore dep. accessory min. in ign. rks.

Halloysite - does give x-ray pattern - may be 2 varieties (a hydrous variety)

Helvite - every mention of Helvite there is always fluorite (skarns)
near Deas Lake B.C. magnetite - chlor. - diss. Helvite - florite & native Bismuth
Arsenic - test will disting. it from garnet etc.
- N. Mexico

3 end members

Benitoite - Neptunite - Natrolite (& others)
- Atlin (but almost 1 locality mineral)
- $\bar{6}$2m Cyclosilicate - 1 locality mineral
- mined for gem material

Jarosite - in oxidized zones (Beaverdell 20 oz Pb & 2200 oz Ag)