Gaildunningite $Hg^{2+}_3[NHg^{2+}_2]_{18}(Cl, I)_{24}$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As complex parallel intergrowths of fibrous to acicular crystals elongated along [001] to 0.1 mm, in matted nests lining vugs.

Physical Properties: *Cleavage*: Very good on {100} and {010}, good on {001}. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = ~3 D(Meas.) = n.d. D(calc.) = 8.22 Nonfluorescent.

Optical Properties: Transparent. *Color*: Yellow to orange to darker orange-red, gray in reflected light with strong yellow-orange internal reflections. *Streak*: Orange. *Luster*: Vitreous to adamantine. *Optical Class*: By analogy to comancheite, n = 1.78-1.79. Minor bireflectance. Non-pleochroic.

Cell Data: *Space Group: Amam*. a = 26.381(6) b = 45.59(1) c = 6.684(1) Z = 4

X-Ray Diffraction Pattern: Clear Creek mine, San Benito Co., California, USA.
2.853 (100), 2.776 (100), 2.745 (100), 5.717 (50), 5.965 (40), 5.018 (40), 1.673 (40)

Chemistry:

	(1)
Hg	76.87
I	12.55
Cl	3.79
Br	0.56
S	0.18
N	[2.45]
O	[0.28]
H	[0.02]
Total	96.70

(1) Clear Creek mine, New Idria mining district, San Benito Co., California, USA; average electron microprobe and Raman spectroscopic analyses, N, O, and H derived from the crystal structure, OH^- added for electroneutrality; corresponds to $Hg^{2+}_{39.44}N_{18}[Cl_{11.00}I_{10.18}(OH)_{1.81}Br_{0.73}S_{0.58}]_{\Sigma=24.30}$.

Occurrence: In a tectonically emplaced section of oceanic crust, the metamorphism of which released Hg-bearing fluids that migrated along fractures within silicified serpentinite and produced the mercury mineralization.

Association: Quartz, an undescribed (Hg-N)-bearing mineral (CCUK-18).

Distribution: At the Clear Creek mine, New Idria mining district, San Benito Co., California, USA.

Name: Honors *Gail* E. *Dunning* (b. 1937), a prominent field-collector from the New Idria mining district who has discovered many new mercury-bearing minerals.

Type Material: Department of Natural History, Royal Ontario Museum, Toronto, Ontario, Canada (M58523) and the Natural History Museum, London, England (BM 2018,100).

References: (1) Cooper, M.A., F.C. Hawthorne, A.C. Roberts, C.J. Stanley, J. Spratt, and A.G. Christy (2019) Gaildunningite, ideally $Hg^{2+}_3[NHg^{2+}_2]_{18}(Cl,I)_{24}$, a new mineral from the Clear Creek mine, San Benito County, California, USA: Description and crystal structure. Can. Mineral., 57, 295-310.