300 ppm, results that are in reasonable agreement with those obtained by us.

Martin *et al.* (1955) have drawn attention to the difference between this Peruvian glass and that found in Colombia, and is of the opinion that the Colombian glass is an obsidian whereas the Macusani glass has a composition intermediate between that of sedimentary and igneous rocks. It has been shown that the uranium content (Friedman, 1958) and the germanium content (Cohen, 1960) of Macusani glass are several times greater than those found in tektites and other forms of natural glass.

There seems, therefore, to be overwhelming evidence to support the contention that this Peruvian glass is unique, yet it is still not possible to formulate an acceptable theory about its origin.

Dept. of Mineralogy,
British Museum (Natural History),
London, S.W. 7.

C. J. Elliott
A. A. Moss

References

Cohen (A. J.) 1960. Inter. Geol. Congress, Report 21st Session, Pt. 1, p. 30 [M.A. **15**–30].
Friedman (I.), 1958. Geochimica Acta, vol. 14, p. 316 [M.A. **14**–133].
Heide (F.), 1936. Naturwiss., vol. 24, p. 281 [M.A. **6**–403].
Linck (G.), 1926. Chemie der Erde, vol. 2, p. 157 [M.A. **3**–97].
—— 1934. Centr. Min., Abt. A, p. 13 [M.A. **6**–19].
Martin (R.) and De Sitter-Koomans (C.), 1955. Leidse Geolog. Mededelingen, vol. 20, p. 151.
Preuss (E.), 1935. Chemie der Erde, vol. 9, p. 365 [M.A. **6**–103].

[*Manuscript received 24 September 1964*]

Tellurbismuth and meneghinite, two minerals new to Britain

Tellurbismuth from North Wales. For many years the bismuth telluride tetradymite (Bi_2Te_2S) has been accepted as a British species, but this status has never been satisfactorily established. It was originally thought to occur in Brandy Gill, Carrock Fell, Cumberland, though in 1858 Greg and Lettsom[1] had stated that the mineral appeared to differ much in composition from other tetradymites. The Carrock mineral was later regarded as a new species and was named grünlingite, but further investigations have shown that these specimens are not all identical and probably represent several varieties or phases of the allied mineral

joséite, with compositions near Bi_4TeS_2: none of them, so far, have proved to be tetradymite.

In 1866, Warington Smyth[2] mentioned that the gold occurring at the Clogau mine, near Dolgelley, North Wales, was accompanied by tetradymite or telluric bismuth. This occurrence of tetradymite has since been quoted and repeated, for instance, by Phillips and Louis,[3] Rudler,[4] Maclaren,[5] and Andrew,[6] as well as in some of the Memoirs and Special Reports of the Geological Survey, and in the 4th Edition of Dana's Textbook of Mineralogy, 1932, p. 412. There seems to be no record, however, of this mineral ever having had its identity checked, and only a small number of examples appear to have been preserved in collections.

For some years I have had in my possession several good specimens of this so-called 'tetradymite' from the Clogau mine that had formerly been in an old family collection, as well as a number of very similar specimens that I collected from a small dump at the adjoining Vigra mine about 30 years ago.

There are also several specimens in the Mineral Collection in the University Museum, Oxford, that formerly belonged to Dr. Hugo Müller (a Past President of this Society) and that he had labelled 'Tetradymite, Clogau'. A routine check of some of the doubtful material in this collection provided a convenient opportunity for the examination of these specimens, together with those in my own possession.

Suitable material for investigation was more readily obtainable from the old Clogau specimens in my own collection and from those collected at Vigra mine, and examination of samples showed that they are not tetradymite but are all the distinct, sulphur-free species tellurbismuth[7] (Bi_2Te_3). The powder diffraction patterns and spacings are identical with those published for tellurbismuth, and are different and distinct from those of tetradymite, joséite, and other allied minerals. With rather more difficulty small samples were obtained from two of the Oxford specimens, and examination showed that these, too, were tellurbismuth.

Tellurbismuth has not been previously recorded from any locality in the British Isles, and the results of this examination suggest that probably all the material from the Clogau and Vigra mines is tellurbismuth and not tetradymite. In the absence of confirmation it seems doubtful whether tetradymite can yet be regarded as a British species.

Meneghinite from north Devon and from Cornwall. In 1958 I examined material that I collected on two visits some twenty years ago to the small mine dumps just east of Shallowford Bridge, about 2½ miles NW. of South Molton, Devon. Most of the material is killas (slate), but there is

a reasonable amount of quartz–siderite vein material that is similar to the assemblages from low-temperature late-stage veins in north Cornwall, and elsewhere in the South Molton area.

Sulphide minerals present in the gangue include pyrite, chalcopyrite, blende, galena, bournonite, tetrahedrite, boulangerite, and the rare species meneghinite ($CuPb_{13}Sb_7S_{24}$). The best specimen of the latter shows small acicular crystals in a cavity, with lenticular crystals of siderite. The identity of the sulphides has been checked by X-ray powder photography, and the meneghinite has been confirmed by the Mineral Department of the British Museum (Natural History) where I have deposited a specimen (B.M. 1958, 218). The Geological Survey Memoir on the Metalliferous Mining Region of South-West England (1956, vol. 2, p. 760, under 'Combe') refers to what are apparently the same dumps, but I have been unable to confirm the record of mispickel, stibnite, and jamesonite.

More recently I have identified meneghinite in north Cornwall, from the Pengenna mine, St. Kew. Here the mineral is massive and compact, and not readily distinguishable from some of the jamesonite that occurs in the area. The material is fairly fresh, and may well have been taken out in the reopening of the Trewethen adit about 1943 or in a later excavation or trial.

Meneghinite has not previously been recorded from the British Isles.

Department of Mineralogy,
University Museum,
Oxford

A. W. G. KINGSBURY

[1] Manual of Mineralogy, &c., 1858, p. 381.
[2] Mining and Smelting Magazine, 1866, vol. 1, p. 359.
[3] A treatise on Ore-deposits, 1896, p. 293.
[4] Minerals of the British Islands, &c., 1905, pp. 130 and 154/5.
[5] Gold; its geological occurrence and geographical distribution, 1908, p. 129.
[6] The Dolgelly gold-belt, Geol. Mag., 1910, p. 210.
[7] Balch, 1863; the tellurobismuthite of Frondel, 1940.

[*Manuscript received 2 October 1964*]