MUSIC AND GEOLOGY

Mozart and Ignaz von Born

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Ignaz von Born (1742-1791) was a distinguished 18th century geologist and a friend of Wolfgang Amadeus Mozart. He is undoubtedly unique among geologists in having had a cantata composed in his honour by one of history's greatest composers. This article is a follow-up to the one by Alan Mason in the HSG newsletter for March 1998 (pp. 39-40).

Born was probably best known in his time as a mineralogist - it was he after whom the copper-iron sulphide bornite was named (Palache et al. 1944, p. 197) - but he was also deeply interested in paleontology and was an early student of volcanism. Mozart's association with him appears to have been because both men were prominent freemasons. Born was master of the lodge Zur wahren Eintracht (True concord, or true harmony) to which the great composer Joseph Haydn also belonged. But on 24 April 1785 he was honoured at Mozart's lodge in Vienna, Zur gekrönten Hoffnung (Crowned hope), on the occasion of his investiture as a Reichsritter (Knight of the Empire) by the Austrian emperor Joseph II. For this occasion Mozart and his father Leopold were present, and to mark the celebration the former composed a cantata "Die Maurerfreude" (K. 471)(literally masons' joy) in Born's honour (Landon 1989). Later, the cantata would also be performed in honour of Mozart himself in Prague on the occasion of the first showing of his opera "La Clemenza di Tito".

The other main interest in Born for students of musical history is that according to 19th century research he is regarded as the model for the high priest Sarastro in Mozart's great opera "The Magic Flute". This was first performed in Vienna in 1791, the year of the deaths of both men.

Even in modern publications Born is variously described as Austrian, Hungarian or Czech. These peoples belonged then to the Austro-Hungarian empire, but he was a native of what is now the Czech Republic. For the first 25 years of his life he lived in Prague and the small town of Staré Sedliště in the western part of the country. In 1776 he went to Vienna to catalogue and curate the imperial geology and natural history collection (Hutchings 1976, p. 98; Wilson 1994, p. 162). He also became master of the Crowned Hope lodge (Landon 1989). Under Born it was noted for its support of science and for the furtherance of the freedom of conscience and thought (Hutchings 1976), and through it he and Mozart became friends.

During his life Born travelled extensively in, and wrote on the geology and minerals of, parts of what are now the Czech Republic, Slovakia, Hungary and Romania. He also studied fossils in the lower Paleozoic beds of Bohemia (Czech Republic)(Zittel 1901, p. 445). Born's influence as a paleontologist was described by Zittel (p. 41) as follows:

> "Ignaz von Born ----- was a learned mineralogist, and a palaeontologist of far keener insight than most of his contemporaries ----- he realised the great part that fossils were destined to play in historical geology, observing that successive assemblages of fossils gave indication of the different geographical and climatic conditions which had obtained in the same area during successive ages."

Some of Born's geological and mineralogical observations were described in

Ignaz von Born. From an engraving by J. Adam after a painting by G. Bertrand (Hutchings 1976)

The original title page of Mozart's cantata "Die Maurerfreude" composed for solo tenor, male-voice choir and orchestra, in honour of Ignaz von Born (Landon 1989)

letters to the prominent Swedish mineralogist, Professor J.J. Ferber. These were originally published in German in 1776 and later translated into English (Born 1777). Ferber was widely travelled throughout Europe and he had visited Naples in order to observe the activity of Vesuvius (Zittel 1901, p. 41). Born never travelled to Vesuvius himself, but in collaboration with Ferber and F.J. von Kinsky closely studied several Quaternary volcanic centres in western and central Bohemia. In these investigations Born and his fellow workers showed themselves in advance of contemporary thinking on the origin of these centres. They argued for their formation as the result of former volcanic activity, such as that in progress at Vesuvius during the later decades of the 18th century. In contrast, current wisdom in central Europe, and elsewhere, under the influence of A.G. Werner in Saxony, was in favour of a neptunist (water-laid) origin for igneous rocks (see Geikie 1905, Chap. 8).

Like many scientists of his time Born was a great collector of minerals, fossils and rocks. He described his own in a large publication, Lithophylacium Bornianum, which was printed in Prague in 1772 and 1775. Later he sold his collection to Charles Greville F.R.S. (1749-1809), a leading English collector of art works and natural objects, including minerals and gems (Wilson 1994, p. 75). Although Greville was particularly interested in minerals he did not study them scientifically. His main scientific interest was in horticulture, and he was one of the founders of the Royal Horticultural Society. The important Australian genus of flowering shrubs, Grevillea, was named for him by his friend Joseph Banks. In 1810, one year after his death, the whole of his collection was purchased by the British Museum for the then enormous sum of 13,727 pounds (Mr P. Tandy, Natural History Museum, London, pers. comm.). Part of the Born material was on-sold during the 1860's (Cleevely 1983, p. 61). According to Mr Tandy, only part of the Born collection was documented in an original catalogue, so that it is difficult to be sure which specimens are Born's and which are Greville's in the present holdings of the Natural History Museum.

Born's death was premature, at the age of 49 - although he was still appreciably older than his friend Mozart. He died as the result of arsenical poisoning contracted at a mine in the district of Baia Sprie (Felsöbanya) in north-western Romania. The mine was being worked by the old method of fire-setting, by which a large wood fire was lit at the mine face and the heated ore was then broken by quenching with water. Born apparently entered an adit before the poisonous vapour from the fire had cleared, and he never fully recovered from the effects of this. His death removed one of the leading European earth scientists of his time.

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The Origin of Crystallography

The founder of the science of crystallography was the Abbe Rene Hauy (1743-1822). Tradition has it that Hauy, while examining a collection at the home of a friend, dropped a specimen of calcite. Gathering the pieces together, Hauy noticed that they were all similar and resembled other calcite crystals he had seen. With an exclamation of "Tout est trouve!" - All is discovered! - he returned to his laboratory and systematically demolished all the different shapes of calcite crystals he could find in a successful effort to prove his point. No matter what the shape of the parent crystal, the broken-down pieces all had faces at the same angles ,each one being a rhombohedron. (from The Mineral Kingdom by Paul Desautels)

Hauy stated the results of his investigations in his Traite de Mineralogie (1801) -

> " Geometry has direct and inescapable relations with mineralogy in the description of crystalline forms .....A casual glance at crystals may lead to the idea that they were pure 'sports of nature' but this is simply an elegant way of declaring one's ignorance. With a thoughtful examination of them, we discover laws of arrangement. "