



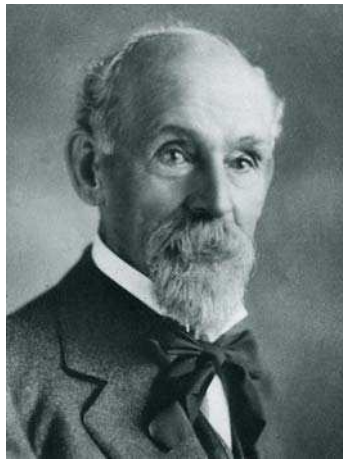
John Brashear and the BAA

The British Astronomical Association was founded in 1890, officially on October 1, though it was not until the first General Meeting on October 24 that the name was finally established and the first Council elected. Among those who joined before the end of that year – the Original Members – was the instrument maker John A. Brashear, of Pittsburgh, Pennsylvania.

In 1888 Brashear had toured the British Isles and Europe. He seems to have been particularly impressed with British amateur astronomers, and immediately he joined the Association he presented a diffraction grating prepared at his own works and ruled on the engine designed by Henry A. Rowland, professor of physics at Johns Hopkins University, Baltimore. Brashear prepared the plates for these gratings, which were made of speculum metal¹ (an alloy of copper and tin) because much finer lines could be produced than could be engraved on glass.

The engine was at first designed to rule about 43,000 lines per inch, but Rowland afterwards determined that better results could be obtained with 14,438 lines per inch, which he defined as his standard. 'The success of the ruling engine', Brashear wrote later, 'depended on the geometrical perfection of the surfaces of the speculum-metal plates to be polished. They required not only a very high polish, but a very accurate surface; say, no error of one fifth of a light wave, or approximately, one two-hundred-thousandth of an inch.'² Over many years, Brashear was the sole supplier of the finished plane and concave gratings, which were 'sought by every physical laboratory in the world.'

During Brashear's second visit to Britain in 1892 he spoke at the Association's meeting on



John Alfred Brashear (1840–1920).

April 27.³ Later, he described the Association as an organisation which had in its membership:

'...many amateurs who loved astronomy, but who worked at regular vocations, some of which were of menial character, but if they had done good work in adding to the sum of knowledge in the beautiful science of astronomy, they were honoured and received as kindly as if they were the greatest moguls of the country. I think that scientific men respect the work of enthusiastic amateurs, if that work is done in a conscientious, careful manner.'⁴

From 1890 to 1936 the Brashear grating was used successively by John Evershed, Walter Maunder, and Charles Butler. In 1952 it was placed on loan to another Member, but a few years later he disappeared and the grating was written off as lost. Then, in 2004 I received a letter from that same Member, informing me that he wanted to return the grating and that he would be moving to Cyprus at the end of that week. So I immediately travelled to the south coast and recovered it.

It measures 36×36 mm with a ruled area 29×21 mm, and is inscribed: 'Ruled on Rowland's Engine. Johns Hopkins University, Baltimore, Md. U.S.A. 1890. Plate prepared at the Astronomical and Physical Instruments Works of J.A. Brashear, Allegheny, Pa., U.S.A., and presented by him to the British Astronomical Association. 14,438 lines to one in. 568 lines to mm. A.E. Decemb. 10, 1890.' This grating – later designated BAA Instrument no. 1 – is not only an early example of a new technology; it is a tangi-

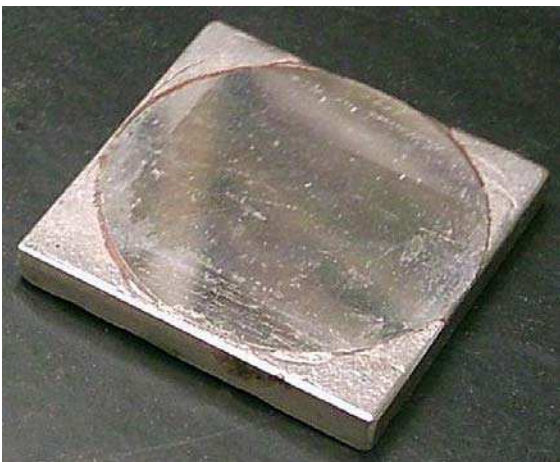
ble record of international recognition of the Association immediately it was founded. Historically, it is the Association's most important and valuable instrument.

In the early years of the Association there was no intention of forming an instrument collection, and the instruments were not numbered until several years later.⁵ Only two other instruments by Brashear have been presented: no. 64, a 3½-inch refractor presented by the family of H. P. Thompson in 1937; and no. 209, a 5-inch object-glass presented by D. Cassels Brown in 1959. The object-glass was lost within a few years, while the refractor was loaned to a school in Lancaster in 1946 and disappeared several years later.

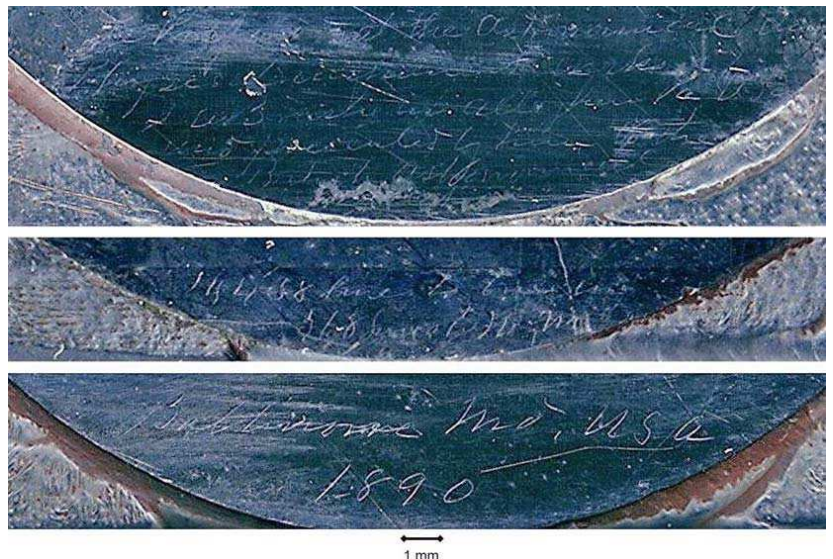
In 1985, however, Denis Buczynski found the refractor and rescued it from that same school. It had not been used for many years and required restoration, so Denis therefore retained stewardship of it until a decision could be made concerning its future. We discussed this on several occasions, and following his suggestion we eventually decided that it would be ideal if it were to find a home with a dedicated specialist, and that I should propose to Council that it be presented to Bart Fried, founder and President of the Antique Telescope Society.

This organisation is based in New York and has an international membership which acts as a link between numerous enthusiasts, researchers, collectors, and users of classic telescopes, and presentation of the Brashear telescope offered a welcome opportunity for developing international relations. After Council agreed to this proposal in January I wrote to Bart to inform him of the decision, to which he replied: 'What can I say but that I accept! It's very kind and you can be sure that it will be well cared for and definitely used.'

Bart had already arranged to visit Denis during his travels around England and Scotland in March, and with Council's support I therefore asked Denis to act on my behalf (as Curator of Instruments) as representative of the Association by formally presenting the instrument to Bart during his visit. This short ceremony took place at Denis's home on March 20 (the day of



The Brashear-Rowland grating: BAA instrument no.1.



The inscription on three sides of the upper face of the grating.



the solar eclipse). A few days later I showed the Brashear grating to Bart when I met with him at Richard McKim's home, where we spent a very pleasant and enjoyable few hours.

Bart has since sent a letter of appreciation addressed to the President, Officers, and Members of the British Astronomical Association:

'This is an especially prized gift, because I have been researching the life and work of Dr Brashear since 1985 and I collect Brashear memorabilia. Fortunately, this telescope has suffered minimally over the years. The optics are in good shape, and it will be a labor of love to restore it to its original condition. More importantly, it will be used. There are very few remaining of this particular model refractor, but a notable example is now on display at the South Carolina State Museum, in the Robert Ariail Collection. That one will be a good example to help with the restoration of 'The BAA Brashear'. Uncle John, as Brashear was commonly known around Pittsburgh, was a good friend of the BAA, and he gave the Association a gift of a small presentation Rowland-Brashear diffraction grating – one of the products that earned him fame with astronomers throughout the world. It is still in your collection, and Bob Marriott proudly showed it to me during my visit. So I give my heartfelt Thank You to my friends in the British Astronomical Association, for the wonderful hospitality given during my visit and for the very kind gift of the Brashear telescope.'

Brashear's factory, built in 1886, was an important building in the history of Pittsburgh and was listed in the National Register of Historic Places. In March, however, one of the walls collapsed and the building was considered unsafe. During the demolition, a sealed brass box was discovered in the foundations. This time capsule, opened on March 24, was found to contain several dozen letters, documents, photographs, and other memorabilia.

Bart Fried has since examined this collection, which includes a letter from Sir Howard Grubb to Brashear, congratulating him on the establishment of his factory, stating that he was pleased



Bart Fried (left) receives the Brashear refractor from Denis Buczynski on 2015 March 20. (Frame from a video recording by David Storey & Glyn Marsh.)

to sponsor Brashear's membership of the Association (Grubb served on the first BAA Council), and suggesting that they might find common ground to work together on projects – a mark of international cooperation and friendship.

With the remarkable coincidence of this unexpected find, it seems appropriate that 125 years after Brashear's gift to the Association, one of his instruments should return home.

R. A. Marriott, Curator of Instruments

Notes and references

- 1 Speculum metal was used for telescope mirrors from the time of Newton's telescope until the advent of silver-on-glass mirrors in the mid-nineteenth century. The gratings were expen-

sive, so few amateurs could afford them. In 1898, Thomas Thorp – a member of the Association – announced his invention of the replica grating, consisting of a cast produced from a thin solution of celluloid in amyl acetate. Thorp designed various instruments, including telescopes and spectroscopic equipment, and also invented and designed the first coin-slot gas meters.

- 2 W. L. Scaife (ed.), *John A. Brashear: The Autobiography of a Man who Loved the Stars*. New York: The American Society of Mechanical Engineers, 1924, p.75
- 3 'Report of the Meeting of the Association held April 27, 1892', *J. Brit. Astron. Assoc.*, **2**, 319–321 (1892)
- 4 Scaife (ed.), *op.cit.*, p. 120
- 5 R. A. Marriott, 'The BAA observatories and the origins of the instrument collection', *J. Brit. Astron. Assoc.*, **117**, 309–313 (2007)

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