

Obituaries**L. F. Ball (1911-92)**

Leslie Francis Ball died on Friday 1992 November 20th, at Frimley, Surrey. He had suffered a stroke two years previously, and had been ill ever since. Leslie Ball was a well known amateur astronomer and superb astronomical artist. He is remembered for illustrations in many astronomical books, and for many contributions to lunar cartography.

Leslie Ball was born in Manchester on 1911 January 21st. His interest in astronomy started with a 'sixpenny folding opera glass', which at the time was considered to be something of a novelty as it could be used as a magnifying glass, microscope, compass and several other instruments. With this modest instrument, and armed with books from the local public library, Leslie took his first steps into what he called 'the noble science of astronomy'. His first observations were conducted from a small back yard, very much over shadowed by neighbouring buildings and trees. Leslie, like most astronomers, soon realised that he needed a bigger telescope, which he made from a cheap single lens with a diameter of about one inch. With this little telescope, he satisfied his interest for a short while. On 1927 June 29th, at the age of 16 he observed his first total solar eclipse, close to his home in Manchester. Determined to have a larger telescope, and yet still unable to buy a ready-made instrument, he visited a nearby optician who made him a 2-inch lens of 34-inch focus, for the sum of 3 shillings and sixpence, (about 17yp). A mounting was constructed from odds and ends, and the planet Jupiter was selected for testing the new telescope. For the first time he saw the four Galilean moons. From his record books, it is obvious that this telescope was much used on many astronomical objects.

In 1930, Leslie purchased a 6.5-inch Newtonian reflector and this instrument vastly improved the range of his astronomical observations. In August 1930 he had his first article and drawings published in *The Amateur Astronomer*, and in September 1931 the first of many lunar drawings were published in *English Mechanics*.

In 1931, Leslie Ball joined the British Astronomical Association, being sponsored by Robert Barker, and became a Fellow of the Royal Astronomical Society. He was one of a group of amateur astronomers who became known as 'The Circle', among whom were such as Robert Barker and William Fox. The group specialised in lunar drawings, in

particular the limb areas, and they were responsible for the production of the original magazine *The Moon*.

By now, Leslie's profession was in the insurance business. With the onset of the Second World War, he was conscripted into the Royal Army Pay Corps, and he met and married Frances Stonex, a music teacher. He was sent to India, during his service in the War, and he later enjoyed relating the story of the boat trip, the destination of which was supposed to have been secret. Leslie, however, was able to observe the stars at night, and deduce roughly where the ship was and its direction. He was duly brought before the ships captain as a suspected spy, but managed to convince them of his innocence. Even though he had no telescopes with him, Leslie took as much advantage of the more southerly skies as he could, using borrowed binoculars whenever possible.

After the War Leslie and Frances settled in Colwyn Bay in Wales, where he eventually bought an equatorial for mounting for his 10-inch telescope. Leslie and Frances' only child, Christopher, was born in 1946, and in 1952, they moved to Guildford in Surrey where Leslie worked for the Ministry of Agriculture, Fisheries and Food. In 1960 Leslie produced drawings for TV programmes such as Patrick Moores' 'The Sky at Night'. Leslie's expertise in astronomical art resulted in his being called as a technical advisor on the film *2001 - A Space Odyssey*.

After his arrival in Guildford, Leslie built an observatory in his back garden, which housed his 10-inch reflector. Eventually he sold the 10-inch and replaced it with an 8-inch Schmidt-Cassegrain telescope, as he said that he was 'getting too old to clamber around a Newtonian reflector'. With the death of his wife, in 1985, his interest in astronomy declined. It was rekindled in 1986, in time for the visit of Halley's Comet and he rejoined Guildford Astronomical Society. In 1989 he replaced the 8-inch with a 10-inch Schmidt-Cassegrain, which he used regularly until the night of his stroke in December 1990.

Astronomy has lost not only an excellent observer and artist, but also a real gentleman. Those of us who were fortunate enough to know him have lost a true friend, and his family a wonderful father and grandfather.

Brian F. L. Gordon-States

**Dr E. P. Duggan
(1912-92)**

In April of 1992 the BAA lost one of its former Secretaries, Dr Edward (Eddie) P. Duggan.

Eddie was born in South East London, not far from Greenwich, and spent the greater part of his life in that area. He won a scholarship to the local Grammar School and later went on to Kings College, London University, from which he graduated with a BSc degree.

From college he started a teaching career which was interrupted by the 1939-1945 War. During this period he served in the Royal Artillery and rose to the rank of Major. At the end of hostilities he resumed his teaching career. He obtained an MA degree and in 1955 became the Headmaster of the Quernmore School for Boys in the Bromley area of Greater London where he stayed until the end of December 1965. Having obtained his Doctorate from London University, Eddie moved on to Keele University in Staffordshire. He was initially a Research Assistant to Professor Campbell Stewart and continued until 1971 when he finished in the Institute of Education as a Senior Research Fellow. Thereafter, from 1971 until 1974 he was a Senior Research Fellow in the Statistical Unit in Sociology. After leaving Keele he did some lecturing for the Open University.

Eddie's main subjects were Mathematics and Physics but he was also very interested in engineering, which he studied at school and which became one of his hobbies. He was a keen sportsman, playing rugby and golf and particularly cricket, and was Captain of the many teams he played for. His interest in astronomy started when he was a boy but it became a serious hobby when, during the 1950s, he joined the Croydon Astronomical Society. He soon became a very popular member. In those days the Croydon meetings took place at the home of Fred and Lilian Best and after the meetings 'Duggie', as the boys called him, often stayed behind with some of the older members for some interesting, philosophical discussions. From Croydon he was introduced to the BAA. He became a Council member and served as the Papers Secretary from 1967 until 1970.

Eddie met his wife Margaret when they were still at school. They had both been given tickets for a lecture at the local library and afterwards Eddie escorted Margaret to her bus stop. ►

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BAA Out-of-London Weekend 1992, Bristol, 25-27 September

As a prelude to the Out-of-London meeting, a coach-load of BAA members, having checked into Churchill Hall at the University of Bristol, set off for British Aerospace's Filton Works. Brian Oke, Strategic Development Director, made us welcome to their Halley Building with coffee, biscuits and a rapid overview of the company. BAe Space Systems Ltd., with a turnover of around £160 million out of a total of £10 billion, employs 500 people at Bristol and as many at Stevenage. They work on launch systems, commercial and scientific satellites, still sell Skylark sounding rockets and, of course, built Giotto. They kindly allowed

Next morning, Drs Roger Moses and Mark Hempself of Bristol University's Engineering Department delivered an illustrated talk entitled 'Small Satellite Programmes'. There are a variety of ways that amateur, student and other small satellites can get into space. The US Army is doling out redundant Anti-Ballistic Missiles to worthy causes. Some small rockets (e.g. Skylark) have been upgraded to satellite launchers, but the main route is as ballast replacements on the major launch systems e.g. Ariane Structure for Auxiliary Payloads (ASAP), Get Away Special Canisters on Shuttles (GASCAN) and the Soyuz

and the speakers were Dr Patrick Moore and the President, Dr John Mason.

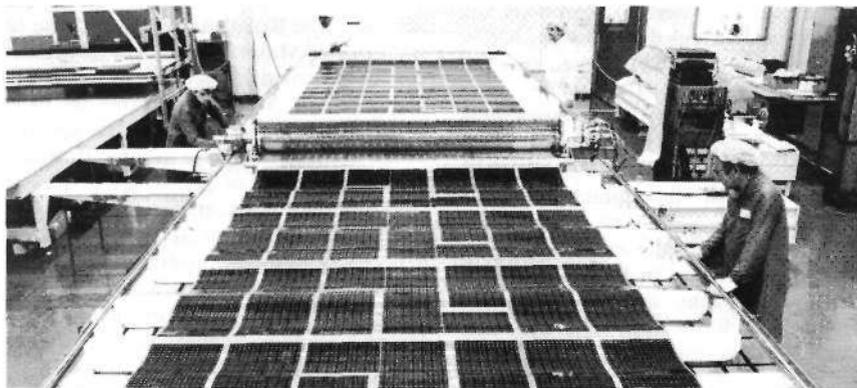
Dr Moore began with a general account of past end-of-the-world panics, covering alien invasions of the Earth, the predictions of seers such as Stoffer and Nostradamus, the effects of planetary alignments such as Porta's 'League of Planets' and the more recent 'Jupiter Effect', and Horbiger's Cosmic Ice Theory. Many end-of-the-world scares had been sparked off by comets. He described the theories of William Whiston in the 17th century, Lalande's prediction that a comet would hit the Earth in 1773, the 'Millerite' scare of the 1840s, and Velikovsky's strange ideas of the 1950s. Dr Moore ended his part of the lecture by referring to the most famous of all comets, Halley's, describing various events associated with returns of the comet throughout history.

Dr Mason then took up the story. He described the alarm caused by Halley's Comet in 1910, when it was suggested that poisonous gases in the comet's tail might envelop the Earth, the 'Doomsday' forecasts associated with Kohoutek's Comet of 1973, and the predictions tied in with the recent outburst of Halley's Comet. He then discussed the Tunguska explosion of 1908, and the possibilities for catastrophic collisions of comets and Earth-approaching asteroids with the Earth, showing examples of major impact craters on our planet. He then discussed mass extinctions and the possible effects of global eruptions of volcanic dust, depletion of the ozone layer and magnetic reversals. Various theories had been put forward to explain the extinction of the dinosaurs 65 million years ago. Many of these involved the impact of a 10-km diameter comet or asteroid with the Earth.

The Chairman thanked both speakers, and initiated a discussion during which the President and Dr Moore answered many questions from the audience. Concluding, the Chairman thanked University staff and the Bristol Astronomical Society for their assistance in arranging a very pleasant and informative evening.

On the following Sunday morning, a party visited the Bristol Exploratory, an interactive science centre and exhibition. Once inside, people were free to enjoy the Exploratory individually. Members young and not so young spent several happy hours playing at science, taking a nostalgia trip in the 'Dr Who' exhibition on display at the time, and browsing in the excellent gift and book shop.

Roger O'Brien, John Mason and Jacqueline Mitton



Work on the HST solar arrays at BAe, Bristol. (Photo: BAe)

us to tour the factory even into a clean room. We stood near the door where the higher internal air pressure would prevent 'the dirtiest things in it' (us!) from contaminating the replacement set of solar panels for the Hubble Space Telescope. In action, in late 1993, stiffening booms will unroll (rather like flexible steel rulers) from cassettes and deploy the panels. Each boom now carries a thermal shield to try to prevent flexing, when the satellite passes into or out of the Earth's shadow. The other highlight of the tour was the Polar Platform, which is a standard bus designed for launch by Ariane 4 or 5. It can carry various payloads all powered by an enormous solar array that unfolds like a concertina.

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► They became friends and kept in contact all through the years of grammar school and college, and they were married just before the outbreak of the War. They were very happily married for 53 years and spent the last 27 years living at Newcastle-under-Lyme, where Margaret is still living. They had a son, Paul, and daughter, Jill, and two grandchildren.

Rossie Atwell

Small Satellite Bay. One rather interesting looking mock-up will, apparently, be the nearest thing its builders could make to a lead brick. In principle, all of these routes into space are open to groups of amateurs.

Dr Rodney Hillier then explained 'The Birth of Stars'. In a giant gas cloud condensation can only occur, if gravity is locally greater than pressure. For a typical cloud the critical size is several hundred solar masses. If a cloud contracts, its density rises and that critical mass decreases so that parts can condense separately. Radiation escapes easily from the cloud so it does not heat up much until it is dense enough to be opaque. It can begin the process of generating enough internal heat to ignite thermonuclear reactions in the core. Passing through a T-Tauri phase, the new star reaches the main sequence and stellar adulthood. Stellar nurseries abound in a thin layer close to the plane of the Galaxy.

On the Saturday evening a public lecture was given in the Powell Lecture Theatre of the Physics Department at the University of Bristol, attended by over 200 people. Mr Gordon Taylor took the chair. The subject of the lecture was 'Comets, Catastrophes and Dinosaurs',