



# Rochester Avionic Archives Newsletter

## From the Curator.

As I write this, we are still locked out of the RAA, but there are glimmerings of change. Apart from updating the website photos (sadly we took so many at low resolution so, only 1700 to update!), I have been helping with an article which may appear in a Finnish Magazine about the Air Data Computer installed on the F-14. The RAA Museum has supplied some information and pictures.

In the Autumn, there will be a 30-minute Webinar about the RAA organised by the Aviation and Aerospace Archives AAAI organisation. Hopefully the RAA will be open to do this. So, once again this is a patchwork of a Newsletter very much produced from a suitcase of bits I had the sense to bring home, and of course the Internet. Please look after yourselves and remember that the virus has not gone away.

Chris Bartlett, Curator

## Fly-by-Light

Early on 26th June 1991, at Weeksville, North Carolina USA, the world's largest non-rigid airship flew for the first time. It was controlled by a state-of-the-art 'Fly-by-light' flight control system, developed and supplied by GEC Avionics.

The system was reported by the pilots to have performed flawlessly throughout the 2-hour flight.

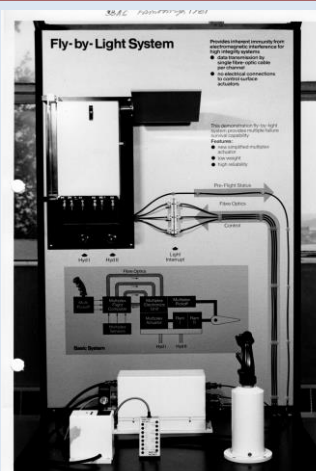
Among the support crew on the first flight was Paul Buckingham. Senior Development Engineer from TSRL.

A prototype system, developed by FARL, was previously installed on an Airship Industries Skyship 600 which flew in 1988.

Signals from potentiometers at the pilot's controls are digitised and then encoded into light pulses. These are transmitted by fibre optic cables to drive units mounted next to the actuators at each control surface. Each actuator drive unit decodes the pilot's demand signal and, after amplification, produces an input to the actuator which is proportional to the demand. Inherent in the design is a self-determination of system "health". This is achieved with a fibre optic link back to the flight-control computer determining the state of the signal line. This is presented to the pilot on a monitor in the cockpit, along with an indication of control-surface positions. Fly-by-light could have application in conventional aircraft, but the immediate benefits for airships result from the long control runs and flexible structure inherent in an airship. For an airship, whose primary role is that of airborne surveillance, a fibre optic control system can more easily cater for the powerful electromagnetic radiation from the onboard radar than can a conventional system.



-R Paul Buckingham - Trevor Hall - Dave Larner - Phil Lamb 'The Ready Brek boys'



Above is a picture of the system installed on the Airship Industries platform. Why were the TSRL team called 'The Ready-Brek boys'?

To the left is a very early prototype shown at Farnborough SBAC in 1981.

Curator: Chris Bartlett, Deputy Curator: Ann Jackson, Secretary Geoff Harvey

Tel: 01634 203321

e-mail: [info@rochesteravionicarchives.co.uk](mailto:info@rochesteravionicarchives.co.uk)

Website: [www.rochesteravionicarchives.co.uk](http://www.rochesteravionicarchives.co.uk)

## Commander Henry. Pasley-Tyler R.N. (Retd) CBE



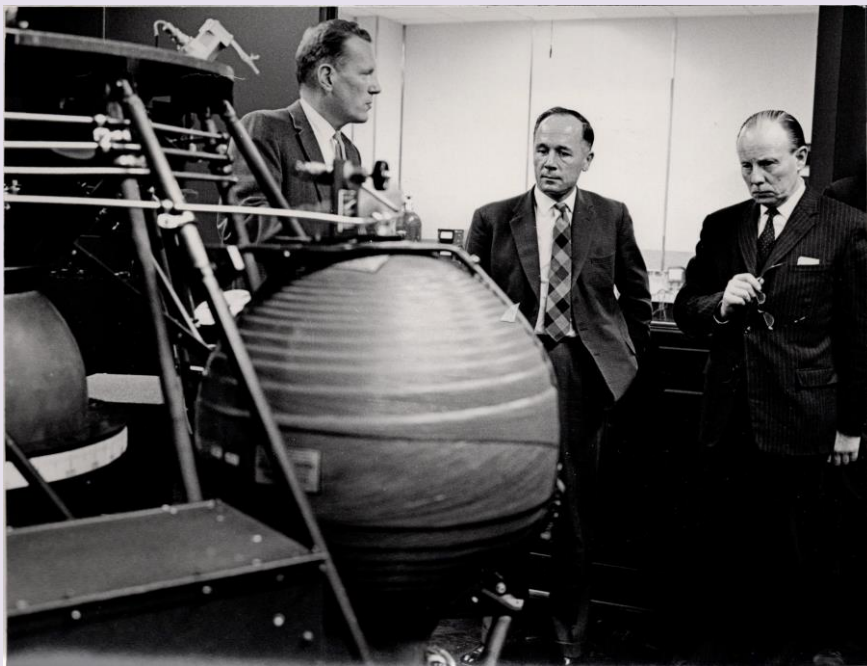
Cdr Pasley-Tyler with Prince Philip and Sir Leon Bagrit. (The time and place are not known)

Commander Henry Pasley-Tyler R.N. (Retd) CBE, (known as P-T) joined Elliott Bros. (London), Ltd in 1950 as a Joint General Manager of the Company, and in 1958 was appointed a director. Cdr. Pasley-Tyler was to prove an outspoken critic of Government policy in aviation. One of his many pointed remarks was this one made after the Company won the A-7 HUD contract:

*'It takes a devil of a lot of homework, money, dry martinis and to-ing and fro-ing across the Atlantic to win a contract like the one we've just won.'*

In April 1967 P-T commented about the difficulty of selling into the US market. He said, "You've got to do it according to their rules, procedures and contract conditions or get the hell out of it",

*'They lay down the specification, you put in your bid-and you then have to get into the undergrowth with your knives.'* He received his CBE in the 1968 Honours List for services to Export. He died in 1995 at the age of 84.



### I don't have a clue what this is all about!

This is another picture is from a Bendix-Elliott All Weather Landing Committee Meeting in October 1962. The man on the right looking very puzzled is Cdr Pasley-Tyler. The man in the middle is Frank Bevan, but I can't identify the other.



Commander Henry. Pasley-Tyler R.N. (Retd) CBE

The RAA has been advised that a few photographs of the Rochester site can be found on the Dudley Studios blog at <https://dudleystudioscollection.blogspot.com/>. These date from the early 60's

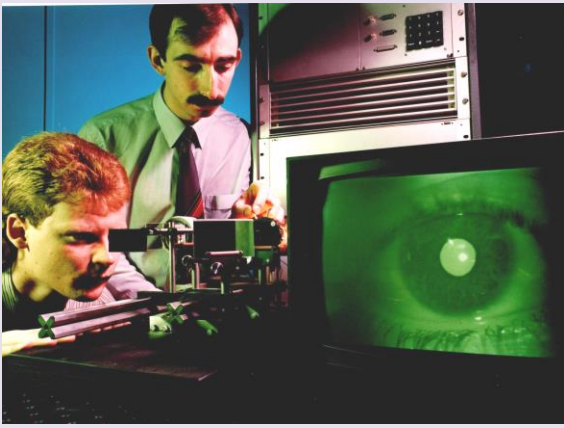
The RAA Negative Archive has similar pictures and slowly we will be putting a selection out of the 64,000 negatives on the website. I can't imagine why another photographer would have been allowed on the site to take pictures like those on Dudley Studios (although we do have a few taken by a local photographer) so perhaps we just haven't found them yet.

This example shows a meeting in one of the offices running down the south side of the main factory. Good use of the visual aids! This picture is copyright to Dudley Studios

It is nice of the website to acknowledge the RAA. (Curator)







**Pilot Eye Pointing (Eye Tracker) 1989**

A Helmet Mounted Display or Sight requires a Head Tracker system to identify the direction that the head is pointing and this in turn allows calculation and presentation of the correct symbology to overlay the real world. However, the head position does not precisely identify the point of gaze of the eyes. For many years a system of tracking the eyes has been sought and the picture here shows one such development from 1989 in the Company Research Lab FARL. A camera is being used to image the retina and thence to define the actual direction the operator is looking. The problem has always been that such systems add extra forward mass to the HMD and there are difficulties integrating such a system with the optical train

### Elliott Barometer

This is a very ornate Barometer in a Black-Forest style case but, it was not at all typical of Elliott Bros production. Possibly it was a special commission. The picture was sent to the RAA recently with a request for information. The owner believes it may be similar to the instrument that Elliotts exhibited at the Great Exhibition of 1851.

The signature suggests that the barometer dates from 1850-1853, as the style Elliott & Sons at 56 Strand was listed in trade directories only for that period. William Elliott died in 1853 and his sons Charles and Frederick continued the business as Elliott Brothers. It is believed that it was bought in Germany in 1962 and sometime later brought out to Australia.

*(I appreciate the help of Gloria Clifton, Royal Observatory Greenwich, National Maritime Museum. Curator)*



### Elliott Sextant

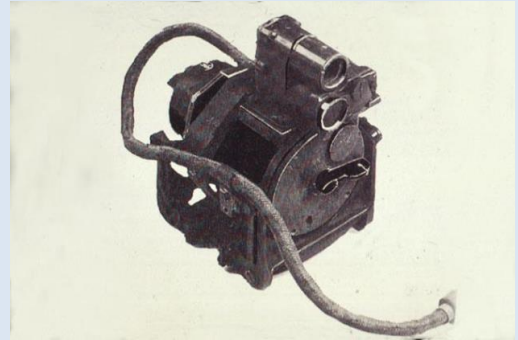


A sextant is a doubly reflecting navigation instrument that measures the angular distance between two visible objects. The primary use of a sextant is to measure the angle between an astronomical object and the horizon for the purposes of celestial navigation.

This Sextant is in the Royal Museum at Greenwich. It is contained in a square fitted wooden box with a blank brass plate on the lid, lined with green textile, and containing a trade label for George Lee and Son, Portsmouth (before 1912). There is also a Class A Kew Observatory certificate of examination, dated 1892 in the lid. This instrument was captured by the donor, then a midshipman in HMS 'Centurion', from the naval school at the Pei Yang Arsenal, near Tientsin, China, during the Boxer Rebellion in 1900. The Army and Navy Co-operative Society Ltd in London was the retailer. It is likely that they obtained their sextants from a local manufacturer like Elliott Brothers who, like the Society, were situated in the Strand, or from Henry Hughes and Son or Heath and Co.

### Gyro Gunsights

The Lewisham factory of Elliott Bros (London) Ltd made some aircraft instruments during WWII and a development contract was received for Gyro Gunsights of the type fitted to the Hurricane and Spitfire; 600 were made in total. Ferranti also went into production at their new factory at Crewe Toll. Sadly this MkI version was not a success as the pilot/gunner had to look into the narrow field folded prismatic telescopic sight at the top of the device, a drawback corrected in the later Mark II., and the installation was deemed rather dangerous in a rough landing.



### Medical Equipment Division

The Medical Equipments Division was a Division of Elliott Medical Automation Limited. A. E. Dean and Co were established in Grafton Road, Croydon in 1921. In 1954 they amalgamated with Watson and Sons (Electro-Medical) Ltd. becoming part of GEC Medical and in 1964 a controlling interest was acquired by Elliott Automation. The local office was at 97 Maidstone Road Rochester (down towards the Cathedral).

In 1966 the Royal Infirmary of Edinburgh embarked on a programme of research and development, in collaboration with Elliott Medical Automation to gain experience of the capabilities and limitations of an 8K Elliott 903 computer in the routine operation of a clinical chemistry laboratory. Generally, the Division sold X-Ray machinery and other medical equipment.

*Elliott-Automation Directory 1968*

### Vibrating Reed Frequency Meter

This Vibrating Reed Frequency Meter was made by Elliott Bros in about 1943, probably at Lewisham. It reads 26 to 30 Hz at an input of up to 30 Volts. The meter consists of a number of thin steel strips called reeds. These reeds are placed in a row alongside and close to an electromagnet. The electromagnet consists of thin laminations and a coil is wound around. The coil is connected in series with a resistance across the supply whose frequency is to be measured. (*I assume because of the scale marking AP 58134 that it was made to an Air Ministry specification. Curator*)



This instrument was supplied to the Admiralty for the Royal Naval Air Service and also to the Royal Flying Corps. It was used on the Sopwith Pup, Sopwith Strutter, Sopwith Triplane.



**Elliott Engine RPM Instrument**

### Recent deaths

I am sorry to report the recent death of Derek Bateman. Derek was the Patents Officer since 1966 here at Rochester. He retired from the Company in 1992.

Also, I have heard of the death of Pat Keast who sadly had Covid-19. Pat was in MASD for many years.