



# Rochester Avionic Archives Newsletter

**From the Curator,**

**This month we have acquired our 1000<sup>th</sup> item for the collection. Amazingly a treasure trove was found in the Training Department including equipment from the Buccaneer and Tornado. The Company naturally provides support for all the products it has made and we were really excited to find the Training Manuals for the Concorde Flight Control System. Meanwhile our team of five enthusiasts continue with the routine work of cataloguing all the items. Recently we acquired a set of u-matic video tapes and it has taken a lot of effort to find a machine to play them and get them converted.**

**The RAA supported the Long Service Award Dinner at Cooling Castle again in November and the guests appreciated the display of exhibits from 25 and 40 years ago. We also provided a copy of a Company Newspaper from those years to each table.**

**At a New Year party I was given a most interesting box made by the German Aircraft Research Organisation. It seems to be some sort of vibration recorder but the source has no known connection with aircraft. Such an acquisition at a party can be seen as terribly sad or exciting depending on your point of view! Another enquiry about a Gunnery Control box came from a man who says he found it in a pile of rubbish about to be sent to a fire as a clear out from a old warehouse, part cave, in Nottingham.**



**The RAA team has been strengthened to five:- Ann Jackson who was in the Company Commercial Department, Geoff Harvey who has been with me from the start and Martin Redfern both of whom worked in Airborne Display Division Engineering Dept. Paul Judson who brings invaluable skills from a career in Works Engineering and Chris Stockwell who was a Design Technology Teacher. Our links to the Royal Aeronautical Society are via Ron Twine who works in our adjoining offices.**

Chris Bartlett

## The AGE Dummy Director



AGE meant 'Aerospace Ground Equipment' to the RAA team but the box is concerned with Naval Gunnery. Elliott Bros was an important supplier of systems to control the large guns, in bearing and elevation, used on the Royal Navy ships from before the First World War and subsequently right through WWII. This work was carried out at Lewisham so this piece was almost certainly made there.

The AGE marking refers to the 'Admiralty Gunnery Establishment' which was at Teddington from 1943-1959 (According to Wikipedia). This fits nicely with the 1950 date on the box. The Magslip was the Admiralty name for Synchros. The Lampholder is clearly a later addition.

The range was obtained with an optical Rangefinder for many years (Barr & Stroud) and sometimes these were of 20ft span.

A full description will be found of the system at:-

<http://www.godfreydykes.info/Gunnery%20Directors%20Part%201.pdf>

### Apologies

In a previous edition of the Newsletter I failed to give due acknowledgement for the support and information regarding the history of the Elliott Brothers to Ron Bristow. Ron was for many years the Custodian of the Elliott Bros Archive and highly valuable Elliott Collection of early instruments, both of which are now safely held in the Museum of the History of Science of Oxford "He has published numerous articles about Elliott Brothers" *Curator*

### We now have over 1000 items in the Collection!

This overhead unit is Item 1000 It is the 2020 HUD provided through Honeywell for the Gulfstream IV and V Enhanced Visual System



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# Acquisitions



An ashtray from BOAC/Imperial Airways with the legend 'Short C Class' This was one of the Empire Flying Boats built at Short Brothers Rochester. The item is also marked '1936-1948' and has the Imperial Airways Speedbird logo. In November 1939 both Imperial and British Airways Ltd were merged into a new state-owned national carrier: British Overseas Airways Corporation (BOAC). The new carrier adopted the Speedbird logo which is still used by British Airways.



This is circuit module typical of construction techniques of the 1960's with compact blocks wired together. Repair must have been quite difficult. The module is believed to have come from the TSR2 Flight Controls. It was acquired from a man who used to acquire old electronics from the Company to strip down and sell components. In the strange way these things arise the Curator made contact with a colleague of his while out walking!

## Geoff's Giant Project

Geoff Harvey has rejoined the team and is determined to record as many products as possible that the Company has made at Rochester. He is starting by recording all the products mentioned in the Newspapers and can use various Databases we have and then it gets difficult!

### British Pathé

<http://www.britishpathe.com/>

This is a fascinating website and Terry Froggatt has sent a link to the film compilation of President Kosygin visiting Elliott Automation at Borehamwood in early 1967. (Note that the film is silent)

<http://www.britishpathe.com/record.php?id=44535>

He was there on the day, in early 1967. The Elliott bit starts about two minutes in.

The brace of computers is a 920B on the left and a 903 on the right. Then you get a shot of an opened-up 920M. Later there's a shot of an Arch 9000 "Industrial Process Control" Near the end you can spot a 920B again, and then everyone gets to touch the 920M.

These old films are truly fascinating. I especially like them cutting through various materials with the Laser (Health and Safety!!!), also the ladies knitting the core plane memory boards. There is a clip of the E5 Inertial System which was intended for commercial aircraft but was not to be a success unlike the military E3.

This website has excellent clips of the Flying Boats and Short Brothers in general. There is one of King George VI and Queen Elizabeth visiting Short Brothers in 1939. It does state Rochester Northumberland but it is definitely here and we have pictures of them at the William Elliott entrance.



*The Russian Prime Minister was obviously pleased as he held up the cuff-links presented to him by Sir Leon Bagrit, Elliott-Automation Group Chairman, on behalf of the company. Between them is Mr. Wedgwood-Benn, Minister of Technology and, on the extreme left, is Mr. T. B. M. Rybak, director and general manager of Elliott-Automation (International) Ltd.*

The picture in EFA News from 1967



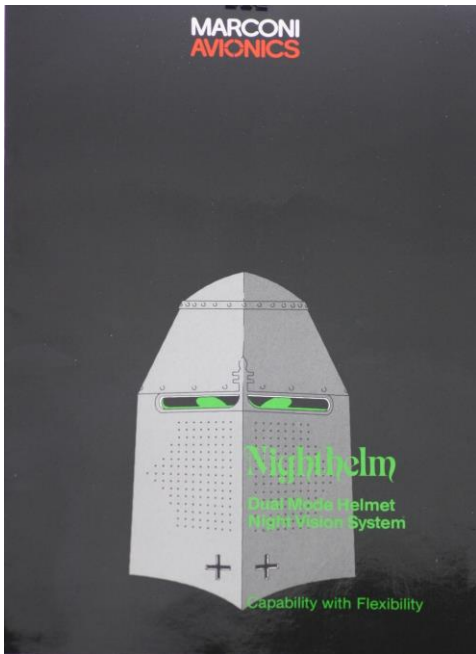
The Borehamwood entrance and the E5 I.N. Platform



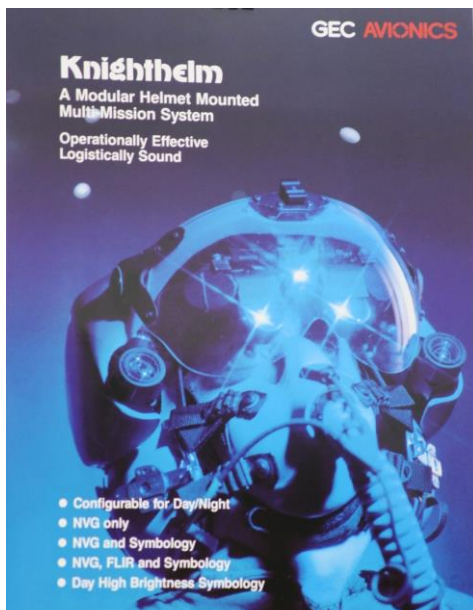
The King and Queen visit Rochester in 1939



## From the Newspapers and Brochures



Did you know that we had a Helmet system called Nighthelm as well as Knighthelm



### Mind Teaser....

An Engineer and a T.A. were walking along the Mezzanine Floor when they noticed three people approaching them.

"How old are those three?" asked the T.A. "The product of their ages is 2450, and the sum of their ages is twice your (the T.A.) age", replied the Engineer.

The T.A. thought for a moment, and then said "I can't quite work it out".

"Ah yes, I see your difficulty", replied the Engineer, "I will tell you that I am the oldest person present".

The T.A. was then able to deduce the ages of the three people.

The question you have to solve is:  
How old was the Engineer?  
Solution in next issue.

J. Parker

Do you remember the Mind Teaser above, well here is the answer sent in by Terry Froggatt

This is actually a well known conundrum and occurs with differing stories (usually a priest and a sexton) but here is how it is solved:

List all groups of three numbers which when multiplied together give 2450. Add the three numbers together and divide by 2

$$1 \times 49 \times 50 \quad 50$$

$$2 \times 25 \times 49 \quad 38$$

$$2 \times 35 \times 35 \quad 36$$

$$5 \times 10 \times 49 \quad 32$$

$$5 \times 14 \times 35 \quad 27$$

$$7 \times 7 \times 50 \quad 32$$

$$7 \times 10 \times 35 \quad 26$$

$$7 \times 14 \times 25 \quad 23$$

The ambiguous one is 32 because it's the only one that could be obtained in two ways:

$$5 + 10 + 49 = 2 \times 32 \text{ and } 7 + 7 + 50 = 2 \times 32.$$

Choose the one with the lesser largest factor, i.e., 5, 10, 49. The T.A. is 32; the ages of the three people are 5, 10 and 49. The Engineer was 50. Don't forget that the T.A. had another bit of information; he knew his own age of 32

### A little more about Sir Leon Bagrit

Leon Bagrit, was a great innovator and in May 1947 he acquired control of Elliott Bros London. He first became joint Managing Director, and not long afterwards, when Geoffrey Lee retired, sole Managing Director. A report in the press in 1967 states that in 1950 Elliotts was close to bankruptcy!

In the days after WWII conditions were not good and one employee recalls that clothes rationing was still in force and he was required to sign a document promising to surrender nine coupons in order to provide his protective clothing.

The Company Report of May 1953 certainly shows that the Company was trading at a loss from 1946 to 1950 and no Dividend was issued. The Company had in fact lost something like a quarter of a million pounds in 1946 alone.

Leon Bagrit immediately set about overhauling the company finances and seeking both new work in existing areas and new directions for growth.

The RAA has a copy of his book on 'The Age of Automation' which has some amazing predictions about computers. We have quite a number of books both historic and recent on all sorts of aircraft and equipment. We are currently trying to set up a **Library** so that employees can look at the books.



I wonder where that Trophy is now?

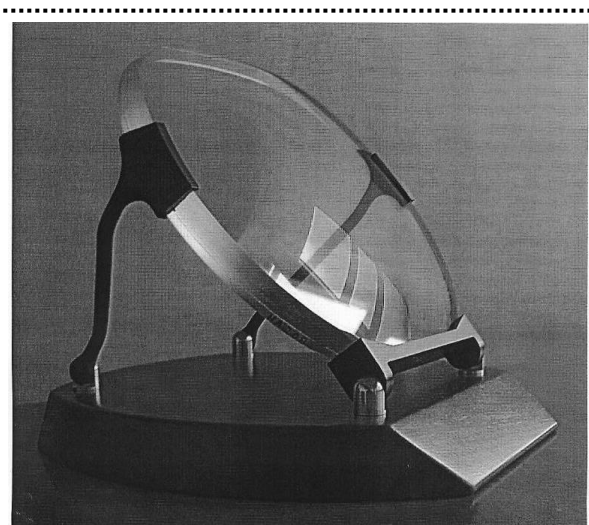
## Long Service Awards

Long Service Awards for 40 (1971) and 25 (1986) Years Service were presented at Cooling Castle last November. The RAA took a selection of equipment and some Newspapers to support the event. These are some of the key events from those years.

Year	Event
1971	<p><b>Concorde's</b> first automatic landing.</p> <p><b>Concorde</b> 001 first flew at Mach2 using the Company's Autopilot ( Event happened in November 1970 but it was only announced in 1971)</p> <p><b>Jaguar</b> S.07 prototype's first flight equipped with NAVWAS (Navigation &amp; Weapon Aiming Sub-System).</p> <p><b>ATED's Special Support Equipment</b> test equipment – new \$3 million contract to support A-7 HUD.</p> <p><b>FARL.</b> (The Research Lab ) demonstrated the first Rastergraphic display.</p> <p><b>February.</b> The Canteen began to operate in decimal money.</p> <p><b>Vought Aeronautics</b> donated the Corsair Trophy to ADD in recognition of the achievement of design, development and manufacture of the A-7 HUD.</p> <p><b>March</b> The Lynx Helicopter first flew. It uses Company Autostabiliser and Autopilot.</p> <p><b>May.</b> Elliott Flight Automation was awarded the Queen's Award to Industry for Export (this was the fourth award for export and no other company had achieved that many) In June the Company was amused to receive a Quality Report from Lockheed Georgia concerning 'errotic' (as stated) operation of the C-5 Galaxy Energy Management Computer! Elaine Lee-Frost was crowned Miss Elliott at the Featherby Road Fete. The Fete included a Dog Show and Sheep Herding!</p> <p><b>September.</b> Redundancies announced</p> <p>BEA BAC Super One-Elevens demonstrate Automatic Landings using Company Autoland.</p> <p>Elliotts announce that they will be the main contractor for the MRCA Autopilot and TV Tab Display.</p>
1986	<p><b>May.</b> The Company's Instrument Systems Division (ISD) won a further \$56 million contract from the US Department of Defense for 1600 Standard Central Air Data Computers (SCADC). ISD also received an order for 80 Air Data Computers from China.</p> <p><b>8 August.</b> The sole EAP aircraft (serial <i>ZF534</i>) first flew The Company supplied Flight Controls and HUD System</p> <p><b>December.</b> The Company's Airborne Display Division (ADD) won a \$72Million order from General Dynamics for development and production of the wide angle LANTIRN DHUD for the USAF F-16C/D aircraft.</p> <p>The Company omnidirectional air data system was selected for the EH-101 helicopter.</p> <p>GSD receive contract for 2000 Control Sensors Unit for the Sting Ray Torpedo.</p> <p>GAv selected to compete for 7J7.</p> <p>Company Aircraft Beechcraft Super King Air G-ECAV arrived.</p>



The display at Cooling Castle for the Long Service Awards in November 2011



If you ever go to Oslo stop by the British Embassy and you will see this Eurofighter Cominer displayed with a Rolls Royce Engine Fan. (They still owe me a beer for this *Curator*)



## EAP



EAP doing a low pass over the Towers in 1986

EAP stands for "Experimental Aircraft Programme and was a technology demonstrator for what was to become the Eurofighter Typhoon. The sole aircraft (serial ZF534) first flew on 8 August 1986. The EAP aircraft was retired from service on 1 May 1991, and is currently located in the display area of the Aeronautical and Automotive Engineering department of Loughborough University. It is used to show the Aeronautical Engineering students the components of a fighter jet. Its port wing has been removed at the root to effectively show both the aerofoil cross-section and some of the internal components. Several other components have been removed from the aircraft for the purpose of viewing.

The EAP is scheduled to be replaced at Loughborough by a Hawk at Easter 2012, when the EAP will be moved to the Royal Air Force Museum at Cosford. We have been asked to help locate some of the missing parts and have already found a Stick and a HUD system over and above those we hold in the RAA Collection.



The Cockpit as it at present



The pre-Paris Air Show fit

## A picture from the past



This was The Aviation Division Christmas Party at the Elstree Hotel at Borehamwood in 1955 or 1956.

**The RAA Team**  
Ann Jackson is working on the Collection photographing and cataloguing the items. She spends a lot of time putting data onto our Website.

Paul Judson and Chris Stockwell are working on the Brochure Database. They have a huge job scanning brochures and then of course these have to be put on the website.

Martin Redfern is dealing with our vast archive of Negatives. He has sorted out the descriptions and is creating a search engine.

So, what do I do! I am looking after the notes for the items on the web, managing the sub-contractors and keeping an eye on our finances. I would like to think I also control the above team but the reality is we are volunteers who work in the RAA for pleasure. Curator