



# Rochester Avionic Archives Newsletter

## From the Curator

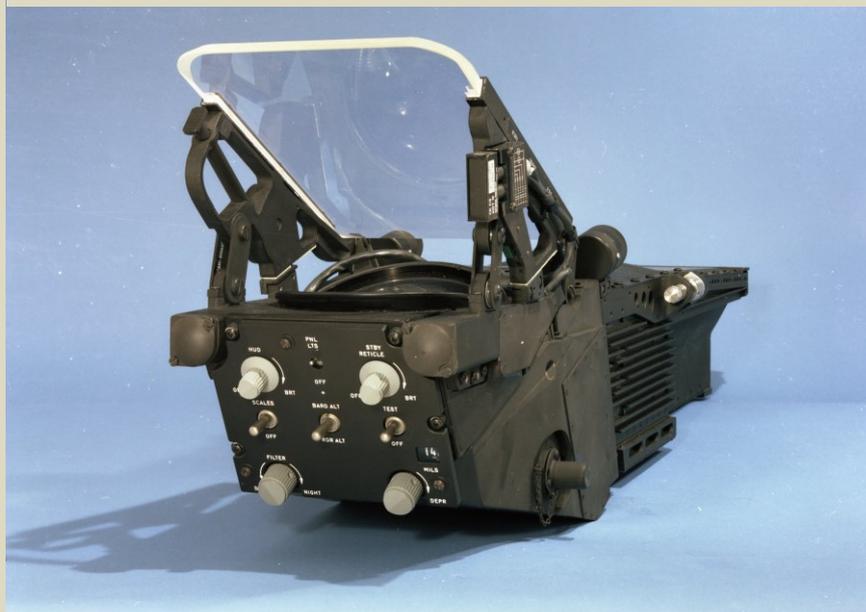
Recently I visited the Lewisham Archives where I found a small but interesting amount of papers and pictures about the Lewisham site of Elliott Bros. There is nothing to see of the Company in Lewisham today although there are still people living in the area who worked there.

The RAA has now received an early Christmas present of an A-7 Pilot's Display Unit from the Company office in Fort Worth. This is a major acquisition for our collection and I have explained why below.

Christmas is fast approaching so on behalf of the RAA Team I wish you a Happy Christmas and a peaceful New Year

*Chris Bartlett* Curator

### The A-7 Head Up Display



Elliott's first approach to the US market stemmed from the time in the late 60's when the UK was busily buying F-4, C-130 and the F-111 as a replacement for TSR-2. This gave a period of relaxation of the 'Buy America Act' allowing a window of opportunity for sales into the US. Without the benefit of the dollar offset agreement sales of British defence equipment into the USA would be virtually impossible. Foreign firms faced a 20-30% import duty and because of the Buy-American Act prices had to be at least a third below the nearest American bid. Both these requirements were waived for jointly approved items up to a total of \$325m as part of the deal under which Britain was to buy 50 F-111 aircraft. At last a chink was opened up in the previously highly protected US defence equipment market. UK firms were now allowed to bid but, as someone said, "A UK company needs a knockout win just to achieve a draw". There was little business coming to Elliotts from the MoD so the Company was determined to get into the US market.

The A-7 HUD was the breakthrough into the U.S. market and was the start of a golden era for HUD's; 2534 of this design were made and build rates exceeded 30 a month at one time. The substantial throughput saw a large increase in the size of the Production Department and also the Environmental Test Area. In August 1974 the 1,000th Head Up Display for the A-7 was handed over to LTV and a number of silver model replicas of the HUD were made in the Company Model Shop. In 1982 the 2,000th delivery was celebrated.

The A-7 Corsair PDU finally acquired from the BAE Systems Fort Worth Office thanks to Dave Caney



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## Long Service Association Dinner

At this event in October the RAA had put some memorabilia on the tables from the Elliott Long Service Association Dinner held in 1936. The list of attendees had few women and notably they were all 'Miss'. The question was what happened to the women when they married?

Until the 1960s a married woman took her husband's name, promised to 'obey' him and, unless she had independent income or property in her own name, became economically and financially dependent on him. Feminists felt that women started life being dependent on their father and then became dependent on their husband. Many professions were closed to women, through custom, men's resistance (which took many forms) and women's lack of education. Some occupations, for example factory work, clerical work, teaching in some local authorities and service industry jobs, introduced a 'marriage bar'. This meant either that married women were prevented from working in these occupations or that once a woman became (or 'fell') pregnant, she had to give up her work. The marriage bar had been introduced in selected occupations during the years between the First and Second World War due to the economic depression and high male unemployment. It was justified in part by the belief that a woman would not be able to combine work and domestic life, even though historically working-class women had always had to do so to support their families. We assume that Elliott Bros still used the 'Marriage bar'



### SPEEDOMETER SCORES.

When Wm. Sharpe, chauffeur to Col. Sir Augustus Fitzgeorge, C.B., was summoned at Kingston last week for driving at a speed of 28 miles an hour, the police constables who timed and stopped the car had to admit that the maximum hand of the speed indicator only pointed to 19 miles an hour. A representative of Messrs. Elliott Brothers, the makers of the instrument, attended and testified that the speedometer had been tested and found to register correctly. In the face of this the Bench thought there was a doubt in the case to which the defendant was entitled and dismissed the charge.

—The Automotor Journal. June 12th, 1909.



## The mystery of the missing car aerial

Mr. H. Moore, Security and Safety Officer, is happy to report that the car radio aerial reported stolen from Dick Barttrop's car has been recovered intact.

The mystery was solved by an unscientific member of the staff who knew how to raise and lower car aerials of this type.

Dick Barttrop now knows what the small cylindrical key on his key ring is for.

Dick Barttrop was the Chief Scientist of Elliott Flight Automation at Rochester and this article is from EFA News

### The Divisions

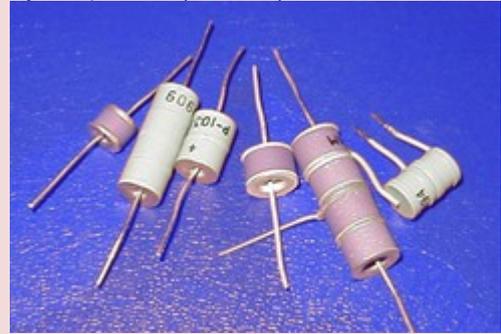
Elliott Flight Automation Ltd had its Head Office at Rochester in 1968 and was operating twelve Divisions and a number of Departments. Each group had a Divisional Code which was used in the product Part Numbers; for example Airborne Display Division items were prefixed with '229-'.  
Divisions were constantly being reorganised and renamed, sometimes splitting apart and on other occasions being grouped together. The Departments such as the Panel and Sheet Metal Department had no obvious 'Divisional Code' a few years later.

There were a few other Elliott sites in the North Kent area which have long been forgotten such as Londex at Sydenham who were specialists on control equipment, the Quality Control Division and Elliott Marine Automation Ltd at Greenwich and Baldwin Fluid Power Ltd at Dartford and of course the big group at Lewisham Elliott Bros (London) Ltd was a huge organisation.

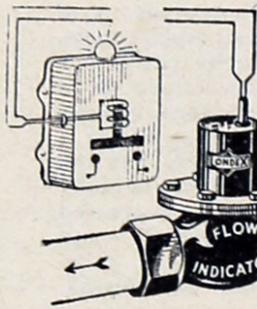
### Miss D.H.Mutton

Miss Mutton was listed in 1968 as Elliott Brothers (London) Ltd Information Officer at Rochester.

My only involvement with her was in the mid 70's. I had ordered some Spark Gaps from a company and some of these were like buttons or cylinders, with two leads (I have no idea now what I wanted them for) The package duly arrived but with no Company markings, just a plain envelope with these devices which could be clearly felt inside, Miss Mutton decided that this must be a letter bomb so it was taken up to the Flying School area and 'blown up'. I was quite surprised to get a strong ticking-off from her for requesting such devices, but my colleague at the supplier was even more astonished to get a verbal telling-off by telephone! (Curator)



## LONDEX REMOTE FLOW INDICATOR



If Flow ceases:

- (1) Motor tripped automatically.
- (2) Visual signal

Ask for leaflet  
102/MEE

## LONDEX · LTD

MANUFACTURERS OF RELAYS

ANERLEY WORKS 207 ANERLEY ROAD · LONDON S·E·20 PHONE SYDENHAM R248/D



**The Elliott stand at Wembley in 1924.**  
The British Empire Exhibition was opened on St George's Day, 23 April 1924, by King Edward V and Queen Mary at the Empire Stadium.

## Swift and Swallow

Swift and Swallow made gears, automatic scales and hydraulic pumps at Rochester Airport, but also did work on aircraft parts during WWII. Leon Bagrit was the Director, and Swift and Swallow and Elliott Bros were merged under his control in 1947.

It would seem that Swift and Swallow were not immune to business difficulties as an article in MEA News notes 'Bob Black on his retirement said "Those early days at Swift and Swallow were full of excitement and trauma. One Friday the heads of the firm had to go out and sell two scales before any wages could be paid and there was a time when, in one day, 58 Inspectors were discharged"' MARCONI AVIONICS NEWS Iss. 33 1981

### The 'Engraver'

Mrs Vera Bocking, well known as an 'engraver' retired from active service in the Company. At the time of her retirement she was in the Inspection Department of CMS.

An employee for almost 28 years she came to the Company from British Oil and Cake Mills when that company closed down at Strood following disastrous floods. She was taught engraving and her first jobs were to engrave the serial numbers on scales in the Swift and Swallow Company. When the aircraft work was introduced, she continued to engrave nameplates for all units and became widely known. She continued in this capacity for 25 years.

### The 'Foreman'

When in 1972 Bob Black — Foreman of the Stove Enamelling Department (Paint Shop) — finally retired, a chapter in the history of Elliott Bros was closed. Bob started his career with Short Bros. whose reputation for training was of the highest. Indeed, the traditions of the founding of the firm on the principle of "meticulous care and skill in manufacture" was, by precept and example, instilled into all those trained there. He worked on the first all metal plane, and spent a few days at Halton RAF Camp, before being returned home as unsuitable due to an eye defect. Trained as a Coach Painter, he spent a number of years at Bedford before returning to Rochester to organize stove enamelling on scales, slicers and cake mixers at Swift & Swallow.

## Lloyd Flatt

Lloyd Flatt was born in Cookeville, Tenn., and attended Tennessee Tech University and the GM School of Design. He founded Astro-Tec, an aerospace manufacturer's representative firm in 1961. Lloyd had been a NASA employee at the start of the great space programmes and had become involved in sub-contract administration, a very critical occupation since NASA did not have either the in-house or out-of-house resources to execute these vast programmes themselves. Lloyd accurately foresaw that many of the sub contractors who were drawn into the Saturn/Apollo programmes were quite new to the game and needed educating and strengthening in order to be able to meet the stringent performance success requirements of US contracts in the space and aviation sectors. Lockheed considered that potential overseas contractors needed similar assistance and advised Ron Howard of Elliotts to find a local representative, which resolved itself into Ron being introduced to Lloyd C. Flatt by the UK consulate in Atlanta.

In 1966, Mr. Flatt began representing Elliott Brothers in the United States and rapidly became a most valuable member of our marketing organisation and remained so until he retired in the mid 1990s. His advice and counsel on the relative importance and differences between existing UK design and engineering practices and the much tougher needs of the US market was a key element which helped the company to join the ranks of successful US contractors, rising to a place in the top ten US Defense System Electronic contractors by 1992.

Lloyd died in January 2008 and his huge wine collection was auctioned at Sotheby's in 2010 and netted over \$1.2M.

In part from Simon Lavingtons book 'Moving Targets'

Cockpit instruments as used by R.F.C. aircraft  
(Gifts by courtesy of Elliott Bros. Avionics)



1912

1962



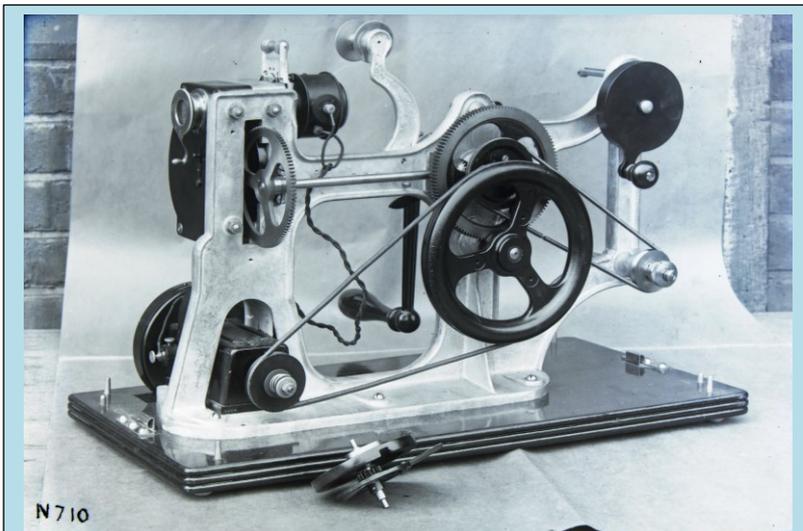
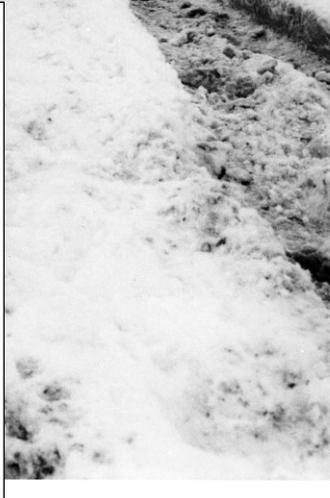
Complete air data system as used in military aircraft today  
ELLIOTT HAVE MANUFACTURED AIRCRAFT INSTRUMENTS AND EQUIPMENT SINCE THE BEGINNING OF MILITARY AVIATION

The advertisement above is from 'Flight' in 1970



Lloyd Flatt

**Something to look forward to!  
Snow at the site in 1987**



This picture of a primitive Film Projector, made by Elliott Bros, was found at the Lewisham Archives

**Sadly we record the death of Chris Stockwell who gave of his time and enthusiasm to the RAA Team for some years.**



**Contract from  
Newsletter 24**

A Contract signing at the Ministry of Defence in 1980 with Jack Pateman for the Company.

Thanks to Alan Briggs for telling us about this picture (See below)

'Looking at the well-fitted 'uniform' Chairman Mao suit this could possibly be the Head of Delegation from CATIEC (China Aerospace Technology Import/Export Corporation). From memory, it was the late 70's for contracts for Air Data kit with the Peoples Republic of China or maybe earlier than that for Spey engine instruments. ISD inherited the instruments from the old AEID and the Air Data from FID. I think the ADC was for the PRC7 or 8 fighter.

For Air Data the Chinese built a replica of the ISD shop floor which they had measured and photographed in detail, although I remember being told by Pat Case from Production Engineering that the wiring was a bit 'iffy' when inspected on a liaison visit. They built the 'shop floor' in the factory that made gas meters for the PRC in Chengdu if I remember rightly.'

**Supporting other Museums**

We have recently shipped some VC10 Flight Path Deviation Indicator parts to a Museum at Manchester for installation in a dummy cockpit.

The Buccaneer optics is still held for shipment awaiting an Export Licence for shipping to South Africa to the SAAF Museum.

## From The Collection



### Data Entry Unit (RAA Cat. No C0230, C0231)

Mission planning was carried out with the aid of paper maps, but modern military aircraft have sophisticated navigation and attack systems and film or digital map displays. An aircraft's mission is planned on the ground at a workstation and a data loading device, a non-volatile memory cartridge, is employed to download the mission information from the mission planning workstation and transfer it to the aircraft systems. Apart from the route and waypoints information on threats, Radio/Nav settings, Weapons settings, terrain and flight profile are just some of the information a pilot might need for a successful mission.

Although it cannot be verified at present, it is likely that these units were made by Powerplant Systems Division.

**C0230:** This is the Tornado cockpit Data Entry Unit which has a drawer for the Transfer Data Module (TDM) (C0231, C0559) data cartridge and provides the interface to the aircraft systems. The drawer for the TDM has 12 round glass-windowed photo-transistors, interspersed with photo-diodes to form a 12-bit electro-optical data interface that is more rugged than normal mechanical electrical connectors. This interface structure can be seen more clearly on the TDM.

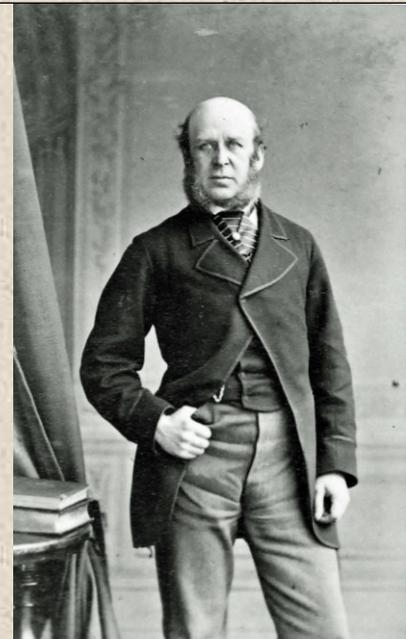
This unit is missing its door/cartridge latch. Andy Clifton of BAE Systems has commented that the Division responsible was ISD, though the original design was done at the Nailsea plant before it was closed down. The year of manufacture was circa 1996 and he was the Project Leader of this programme.

## A bit of detective work!

The RAA has had pictures of the Elliott brothers for some time but another glass plate was found at the Lewisham Archives with the brothers Charles and Frederick together with an unknown lady and a gentleman. Hidden at the bottom of the picture of Frederick Elliott is 'Negretti' and 'Crystal Palace'. Negretti and Zambra was a company that produced scientific and optical instruments and also operated a photographic studio based in London. Henry Negretti (1818–1879) and Joseph Zambra (1822–1897) formed a partnership in 1850, thereby founding the firm which would eventually be appointed opticians and scientific instrument makers to Her Majesty Queen Victoria, Prince Albert and King Edward VII, the Royal Observatory and the British Admiralty. (Both Negretti and Zambra were born in Italy.)

When the Crystal Palace was re-erected in Sydenham in 1854, Negretti and Zambra became the official photographers of the Crystal Palace Company, so I conclude that this photograph was taken after 1854.

Sadly the National Portrait Gallery have no records of Negretti and Zambra but have provided another source to investigate. The photographers mostly took pictures of scenes or buildings so this may have been a favour to Frederick because of his similar business interests. (Curator)



Frederick Elliott



Faint detail at the bottom of the negative