



# Rochester Avionic Archives Newsletter

*From the Curator.*

*I am still learning about the early history of Elliott Bros in aviation and it is clear that the Company was already supplying instruments to the pioneering aviators as long ago as 1910. This must make the Company one of the select group of British companies trading for over 100 years in this business. The note about the local roads, on Page 2, shows what you can learn from looking at the names of the streets. By the way the plan for the all-weather runway at Rochester has been dropped but other improvements are still planned.*

*Chris Bartlett*

**Curator**

## A bit more about Elliott's early aircraft products.

In the last Newsletter (No. 26) the front page showed some early Elliott flight instruments and just after WWI Alec Ogilvie, a London based Consultant, produced a report addressing the best aircraft instruments of the time. It is interesting to see that Elliott Bros was well represented:

### **Flying Instruments**

a) Air Speed Indicators to RAF Specification Mk Iva.

Standard pitot-static heads by Elliott Brothers, Central Buildings, London.

### **Engine Instruments**

a) Revolution Indicator.

Electrical Type and all gear boxes and drives by Elliott Brothers.

b) Fuel Tank Gauges.

Electrical by Elliott Brothers.

On December 18th, 1910, T.O.M. Sopwith won the Baron de Forrest prize of £4,000 for the longest flight from England to the Continent, flying from Eastchurch to Tirlemont, Belgium, in three hours, a distance of 161 miles.

Elliott's received praise from Sopwith:

*"I should like you to know how essential your revolution indicator has been to my flying. I would not be without it for anything. I practically 'drive on it' the whole time, as well as do my engine tests with it. During my flight to Belgium, it worked magnificently, never giving a moments trouble and showing a perfectly steady reading."*

He could not write a similar letter to his compass maker as his compass card never stopped rotating during the flight and was the reason he ended in Belgium. (*Ed. Where was he trying to get to?*)

### **Engine Speed Instruments for the Vulcan**

Each engine on the Vulcan, had an Elliot Mk 11 tacho generator fitted which developed 30ac at a frequency proportional to engine speed. The indicators were of a synchronous motor type which drove a pointer mechanism through a magnetic drag assembly. The Indicators had a Part No.Type 3D 160 and Ref No. 6A/3251 and would have been made in about 1961 by Elliott Bros. (London) Ltd

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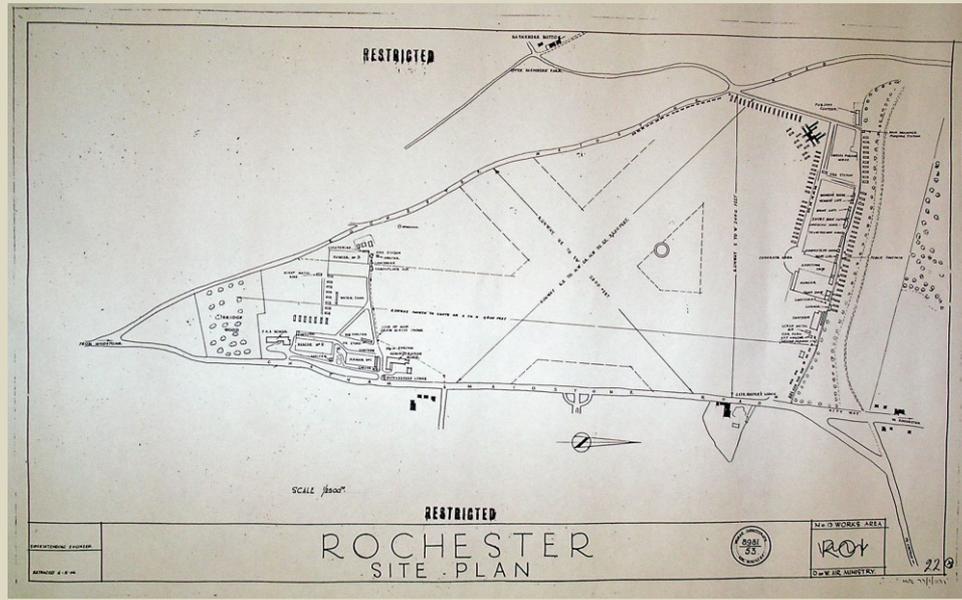
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## The streets where we live!

The site of the Rochester factory of BAE Systems is closely associated with Rochester Airport and some of the roads nearby bear names associated with the business of aviation.



**Marconi Way.** This is the entrance road to the site from the Maidstone Road right at the North end of the Horsted roundabout. City Way seems to have been called Dark Lane and led towards Rochester via a Smallpox Hospital where the later Greyhound race track used to be. The road curves sharply, in front of the new Fire Station up to the BAE Systems Security Post. The original entrance to the site was further South up the Maidstone Road probably where the Emergency Gate is now. Some of you may recall the Lightning Gate Guardian was located by this gate.

The road was built around the time that Short Bros began building Stirling Bombers at the site to give them an additional take-off run.

The road did not have a name, it would seem, until about 1999 when it was called 'Marconi Way'. At the time, the Company was Marconi Electronic Systems, but at the end of that year the merger with British Aerospace took place to create BAE Systems so this was a very short-lived title for the road.

**Pilot's View and Elliotts Way.** These names have been given to streets within the new Horsted Park development of houses built on the site of the Medway College, backing onto Fort Horsted. Pilot's View is the entrance road to the estate and Elliotts Way is further East and captures the many years that the Company was known as Elliott Bros. Local people still called it that even when the Elliott name was no longer emblazoned on the Main Hangar.

**Laker Road.** This road runs along the West side ( M2 Motorway side) of the Airport parallel with the Rochester Road and is a service road for the many light industries along the airport perimeter. Freddie Laker was an apprentice with Short Bros sometime during the 1930's and, of course, is best known for founding Laker Airways in 1966. He gave a talk to the Medway RAeS at the site in 1977.



Sir Freddie Laker with a DC-10.  
Source  
(<https://en.wikipedia.org/w/index.php?curid=49345161> )

**Lankester Parker Road.** This is a short road from Laker Road to the Rochester Road and is a tribute to John Lankester Parker OBE FRAeS Hon. MSLAE (1896 – 1965) who was Chief Test Pilot for Short Brothers from 1918 until his retirement in 1945. In 1943 he became a Director of Short and Harland, Belfast, resigning from the Board of Short Brothers and Harland in 1958.

**Pubs.** The nearest pub to the site is called the 'Tiger Moth' and this was, and probably still is, the venue for many of the Company and employee 'rites of passage'. As mentioned in earlier Newsletters there is the 'Concorde' at Rainham and the 'Canopus' (see Newsletter No. 9) was in the area too.

## Jets at Rochester Airport.

In 1956 the first jet, a Gloster Meteor, landed at Rochester Airport from West Malling. Five years later an English Electric Canberra also arrived from West Malling. Apparently the Canberra was placed in the Main 40' Hanger where over the next two years it underwent a complete overhaul and installation of a new ventral fuel tank.

In the 1950's Short Bros manufactured Canberras in their Belfast factory and established a repair facility at Rochester primarily for the Short Sturgeon. The repair of the Canberra does seem to have been a unique job. When it came to take-off, the main runway had to be extended and the Canberra loaded with only just enough fuel to get to Southend!

It is possible that the aircraft was Canberra PR9 XH171/8746M which was built by Shorts in Belfast in 1960, but in Mar 1962 went to Shorts for modifications which were completed in October 1963. This aircraft is currently at the RAF Museum in Cosford.



A Gloster Meteor



An English Electric Canberra

## The Longfield Spitfire.

Seen in New Barn, Longfield, Kent in the front garden of a large house is a full size Spitfire Mk5 with a windsock and RAF flag made by GateGuards(UK) Ltd in Cornwall <https://www.gateguardsuk.com/> The owner is a lifelong devotee of Robert Stanford Tuck the WWII RAF fighter ace.

There is a large scale model of Concorde in the back garden and possibly another three-quarter scale model Spitfire, too. By the way, the replica in the front garden has a rotating prop and replica sounds!



## CO<sub>2</sub>.

Elliott Bros had a thriving business in equipment for the analysis of flue and exhaust gases which allowed fuel usage to be optimised in practically every industry. Boiler panel installations were supplied for public and private plants, power stations including Greenwich and Battersea, colliery boiler houses, and smaller installations including diesel engines and tool hardening plants.

CO<sub>2</sub> gas analysis equipment was fitted in the boiler rooms of the liners Queen Mary, Queen Elizabeth, and Mauretania.



Electrical thermometers and CO<sub>2</sub> meters were fitted on fruit farms for the efficient winter storage of fruit. On refrigerated ships, electrical thermometers and CO<sub>2</sub> meters were employed extensively. Most importantly in brewing, CO<sub>2</sub> meters were applied in new methods of malting.

## Last time it rained!

The Rochester site suffered some serious damage in the torrential rain on the 29<sup>th</sup> May. The most visible area affected was the Main Reception where the storm drain flooded the area and a temporary portacabin had to be found. Fortunately all the Museum items in Reception were safe and it gives the opportunity for a new layout of Reception.

## Racing Car Helmet.

In 1992, the Company's Technology Systems Research Laboratory (TSRL) designed and manufactured a Helmet Mounted Display (HMD) which was supplied to Frazer-Nash Technology, of Leatherhead, for experimental trials on Formula One Racing cars. The HMD allows the driver to continuously monitor vehicle performance during the race without diverting his gaze from the outside scene at any time. The display shows crucial vehicle information such as revs per minute and gear selected, plus a variety of potential fault indicators such as temperature, pressures, fuel status and the approach of the rev limit. The immediacy of the display which remains available to the driver's eye wherever he points his head, combined with the simplicity of data presentation, maximises driver performance and efficiency.

The system uses a custom made high brightness light emitting diode (LED) display which is relayed to the eye via an optical combiner eyepiece. The complete equipment is fitted to the driver's helmet with a small bracket and is offset to the driver's normal direction of gaze.

The system was used during the 1992 World Championship Grand Prix season by the Team Lotus Formula One racing drivers; Mika Hakkinen and Johnny Herbert. Sadly Team Lotus had a very poor season.



The Team Lotus Formula One car. Inset is a poor picture of the HMD and to the upper right is the miniature eyepiece which is mounted inside the driver's helmet at the lower rim of the vizor aperture. (Courtesy of Team Lotus).



## Qinetic Clamshell Helmet.

The use of carbon-fibre in structures such as racing car bodies was well known and this led to a collaborative programme between the Company and McLaren. This clamshell helmet shell was produced under a programme called Helmet Integrated Light Development (HILDA) to evaluate the suitability of the carbon-fibre material and the clamshell design was chosen to see if it would give a design that would fit to the head better with less movement. The clamshell helmet was fabricated by Qinetic, around 2003, but the concept was not pursued..

*(Ed My visits to McLaren's space-age site were amazing)*



## Susan Elliott.

When Frederick Elliott died in 1873 he left the business to his wife Susan. Charles Elliott died in 1877 and Susan Elliott established a joint partnership with Willoughby Smith who was an electrical engineer particularly well known for his work on the first trans-Atlantic cable. Through his development of telegraphy apparatus, Willoughby Smith had already been a customer of the electrical instrument firm of Elliott Brothers of St Martin's Lane, Westminster, for many years. However, since neither Susan Elliott nor Willoughby Smith took an active part in running the business, a Mr Charles Becker became Managing Partner and the Elliott Journal states that Mr William Oliver Smith, one of the sons of Willoughby Smith, joined the company.

It is possible that the picture on the left is of Susan Elliott. It was taken at The Crystal Palace, around 1860 to 1880, when she visited the Exhibition with her husband.