



Rochester Avionic Archives Newsletter

From the Curator.

At last the big shipment from Australia has arrived comprising some 276Kgs of the late Ron Howard's memorabilia. We have 16 boxes of assorted documents and some wonderful old 'scientific instruments' to assess before we meet with his family to decide where the items should be placed.

As we recently celebrated the anniversary of D Day, I have added a note about the role that Elliotts equipment played on that day. Rochester did not exist as a site then but Lewisham was a very busy site although not a trace can be found today.

Your Company has a history going back to the earliest days of flight and Flight Magazine records that we were supplying Air Speed Indicators in 1912.

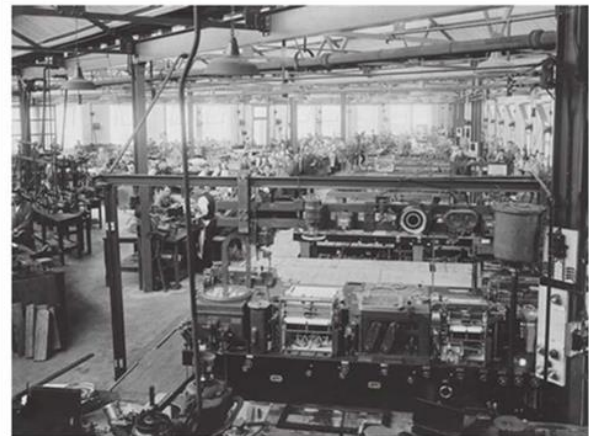
Sadly I note that Sir Kenneth Warren died on the 29th June. He was the first Divisional Manager of the Airborne Displays Division at Rochester from 1963 to 1967.

Chris Bartlett

Curator

Naval Systems

The Lewisham site of Elliott Bros made Naval gunnery tables, which were mechanical analogue computers. They were manufactured until after the Second World War and a special 'bombproof' Admiralty building was constructed for this work. On larger ships, these 'tables' took the form of massive mechanical analogue calculators, weighing several tonnes, in which range and elevation of surface targets were set up on hand-wheels. The Fire Control Table (FCT) then 'computed' the necessary settings for each gun, based upon own ship's course and speed, enemy ship's estimated course and speed, and predetermined wind and ballistics information. The resulting gun bearings and elevations were communicated to the gun crews. HMS Belfast was one of the larger warships in the invasion fleet in Normandy and it used the Elliott Analogue Fire Control Table The AFCT MK 1 was fitted to HMS Nelson and Rodney in the early 1920s, while battleships Warspite, Valiant, and Queen Elizabeth, and the battlecruiser Renown, received Mk VII tables in the late 1930s. Battleships of the King George V class received a Mk IX table, while Vanguard received the final variant, the Mk X. Elliott's factory at Lewisham had been manufacturing fire-control equipment for the Royal Navy since just before the First World War and it did transfer to Rochester briefly after WWII.



The photograph above, taken in the 1920s, shows an Admiralty Fire Control Table (AFCT) being tested in the foreground.

The picture below is of the Fire Control Table in HMS Belfast.



A few more Firsts for the Company

Elliotts supplied the first UK Underwater Ship's Log and the first Gyrocompass.

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Explosives at work



Dick Collinson with the FARL team and the Carriage Clock in 1978.

Dick Collinson was the manager of the Flight Automation Research Lab. which was for many years located in New Road in Chatham. In 1978 he received the traditional Clock on achieving 25 years' service with the Company.

The story is that the clock went wrong so it was sent off for repair and returned to the Main Factory. A young man was sent to collect a package without knowing the contents and the parcel started ticking on the way back. The 'bomb' was taken off by the site security and suitably destroyed!

Around the same time the Editor was working on solid-state Spark Gaps and some samples duly arrived in a plain envelope. The doughty Miss Mutton of the Post Room naturally felt the envelope with its flat disks and protruding wires was a letter bomb. As before this was 'blown up' at the end of the airfield with both your Editor and the supplier getting the rough end of her tongue.

More real ordnance

In common with many airfields Rochester had pipe mine explosives laid beneath the runways to be used to deny the airfield to an enemy landing in WWII. They were not removed until well after the War. Who remembers the hand grenades being detonated in the Playing Field to the North of the Towers?

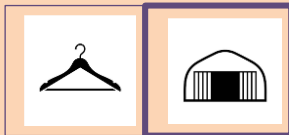
Feedback

Hangers and Hangars

'Thanks for the latest Newsletter which I enjoyed until I got to the piece about the "hanger"! It was drummed into me Air Force types that a "hanger" is for hanging your uniform on and a "hangar" is a place to put aircraft in, a common mistake but surely not in an aviation themed newsletter.

*Cheers
Robert Pountney'*

Rather embarrassing Ed!



Why was the Tornado originally called the Panther?

I don't know the answer to this question on the last Newsletter. I can only quote the following:

It is perhaps of interest to note that the 1969 Collaboration Agreement identified the aircraft as 'the Panther (or such other name as may be agreed by the Participants) multi role combat weapon system'.

It was not until early 1976 that the name Tornado was formally introduced.

'Panavia Panther' had a nice sound; there was an American Grumman F-9F 'Panther' in the 50s and the first Pink Panther film was released in 1963. *(Not that either fact really explains the change! Ed)*

Names to faces.

The names of the Computing Division staff shown in Newsletter 30 are: Front Row L-R: Charles Owen (of the Circuits Division), RC Robbins, W S (Bill) Elliott, Harry Carpenter, Mr Moffatt (administration), Mrs Cox (secretary). Middle Row: Laurence Clarke, Andrew St Johnston, Johnnie Cane, Jock Gerrard, Berwick Stallworthy, Norman Muchmore, John Halsey. Back Row: Tom Ludlow, Garnet Edmunds, Mr Anderson, Bob Cudmore, Jim Barrow, Peter Atkinson, Len Thomas, Stu Ellis, Bert Calver and John Bunt.

The Rochester Hangars

We have no further update on this investigation, but Chris Dardry from our team has been working hard with the Medway Archives & Local Studies Centre to discover their story.

Return of the Badge

A chance in a million saved a badge dropped in a local Woolworth store a while ago. A stranger must have picked it up and popped it into a letter box, because in due course it tumbled out of a mail bag onto a GPO sorting office table. The GPO inspector watching the sorting picked the badge up, recognised the Elliott markings and handed it to his wife. She, by extraordinary coincidence, was temporarily working as secretary to Cdr Fenn-Clark, head of EFA documents security and master of the badge system. So, the badge was very quickly returned to a surprised owner.

EFA News May 1968

Air Speed Indicators

One of the most important pieces of information that a Pilot needs is the air speed. The first reliable air speed indicator was a U-tube manometer called the Velometer, designed and patented by Frank Short at the Royal Aircraft Factory (then known as the R.A.F.) at Farnborough in 1912. Connection to a pitot-static head on a wing strut allowed the measuring element to be well away from the slipstream, while the indicator could be placed in front of the pilot. The Velometer was manufactured by Casella and Elliott Brothers and was often supplied to military aircraft on a standard instrument panel.

Flight magazine of September 1912 described the Velometer as: *'The upright scale on the left hand, calibrated in miles per hour and operating through a pressure device of the liquid type, is connected to a " Pitot" tube, the latter, on BE2, being fitted on a strut between the main planes. The "Pitot" tube consists of two tubes placed side by side, one having its open-end pointing forwards, while the other has an orifice at the side into which the wind cannot blow. Both are connected to the indicator, the effect of the second tube being to correct the reading of the first by differentiating between the pressure due to velocity and that due to the static condition of the atmosphere.'*

Such instruments were not always fitted and the following year 'Flight' commented: '

Air speed meters are already on the market and there is no excuse whatever for not fitting them. The pilots of the Royal Aircraft Factory carry out all their experimental flying by the aid of an air speed meter and they would never think seriously of flying a machine without one. The instrument in question which was designed at the R A F.—but which is not therefore necessarily useless, in spite of popular prejudice against factory products—is manufactured and sold by the well-known instrument makers, Messrs. Elliott Bros.



Elliott Bros Velometer Indicator

Westminster Party

"Each year Elliott Brothers (London), Ltd., hold a party for their friends in the supply industries and they make a point of choosing a different and interesting venue on each occasion.

This year, by courtesy of Capt. G. R. Chetwynd, M.P., they were able to use the Members' dining room of the House of Commons, where the 250-odd guests assembled, and were taken for conducted tours of the Palace of Westminster. The Minister of Supply, Mr. Reginald Maudling, looked in on the party, which was attended by—it would be no exaggeration to say—more designers and test pilots than we remember seeing together at one time on any occasion other than the S.B.A.C. Show.

Elliott Brothers, whose H.Q. are at Lewisham, London, S.E.13, are designers and manufacturers of aircraft flight-control equipment and special-purpose instrumentation.

Flight 27th April 1956



Transmitting unit of an aerodrome windspeed- and direction-indicating apparatus by Elliott Bros. (London) Ltd.

Nov 3rd, 1938 Flight.

The EFA Truck

Seen in the Company Goods Inwards. No, the E.F.A. on the side does not mean it was a barrow for Eurofighter but it is a really old Elliott Flight Automation truck.

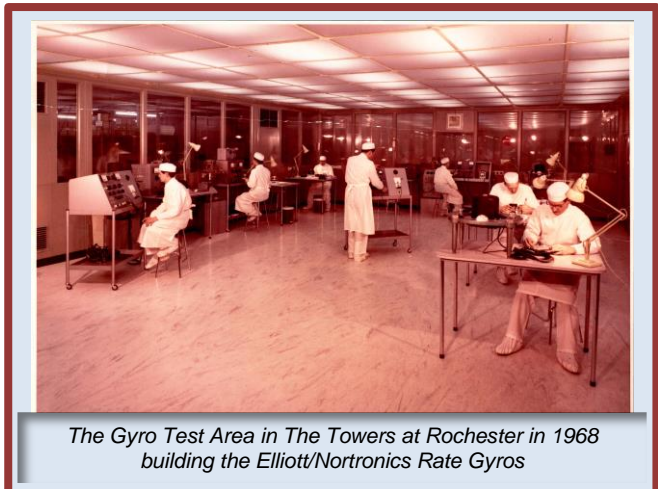
On the 5 April 1968 Royal Air Force Hawker Hunter pilot Alan Pollock performed unauthorised low flying over several London landmarks and then flew through the span of Tower Bridge on the Thames.

Good job that he had Elliott instruments! Ed

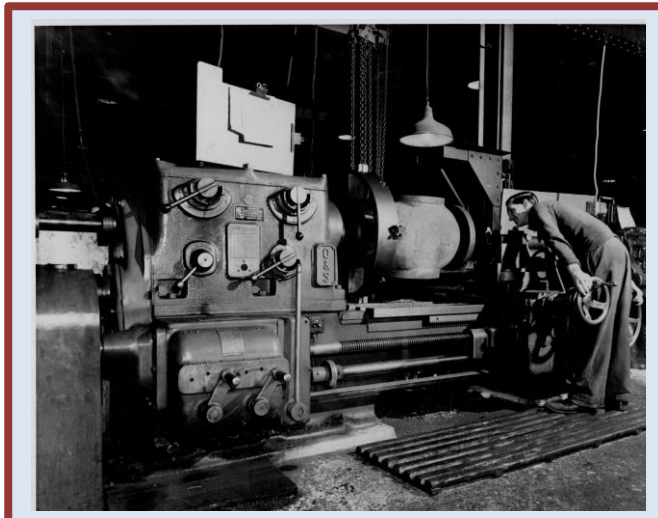




A Galvanometer made by Elliott Bros (London) collected by the late Ron Howard and part of the material recently arrived from Australia.



The Gyro Test Area in The Towers at Rochester in 1968 building the Elliott/Nortronics Rate Gyros



One of the giant Turning Machines for Oil Control Valves in the factory in the 60s

Equipment for the C-5A Galaxy



Elliotts provided three systems for the C-5A Galaxy; the Air Data System, the Undercarriage Alignment Control and the Energy Management Analogue Computer (EMAC): involving the products of three different EFA divisions, FED, TACD and MAC.



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The Air Data Computer (ADC) is an essential avionics component found in modern aircraft. This computer, rather than individual instruments, can determine the calibrated airspeed, Mach number, altitude, and altitude trend data from an aircraft's pitot-static system.

Undercarriage alignment is quite an involved task. The C-5A has four main undercarriage legs, each carrying six wheels. The Elliott control allows the pilot to swivel the main and nosewheel legs together so that the giant aircraft can land in a cross-wind without correcting the drift. Immediately after touchdown, the system automatically swivels the legs to realign the fuselage with the runway, but the pilot can at the same time steer the aircraft. While taxiing, the rear main legs have to swivel to prevent the wheels being scrubbed sideways. A fully loaded C-5A weighs 380 tons and each main leg is carrying something like the weight of a loaded BAC One-Eleven on rough ground.

The EMAC system calculates for the crew at any time during the flight how far the aircraft can fly, on four or three engines, and at what height and Mach number it will achieve best range or endurance. It will also show the effect of changing height and speed. The C-5A has a maximum fuel capacity of 49,000 US gallons, weighing more than 159tons, and can fly for a maximum 7,200 nautical miles.