



EFA NEWS



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ELLIOTT-AUTOMATION IN AVIATION

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BIGGEST U.S. ORDER YET

Head-up Displays for A-7D and A-7E Corsair

ANOTHER long sales campaign paid off at the beginning of November when Ling Temco Vought's LTV Aerospace Corporation ordered Elliott head-up displays for the A-7D and A-7E Corsairs, more than 1,000 of which will ultimately be supplied to the US Air Force and Navy. This constitutes a quantity production order to make use of the development experience of the digital head-up display for ILAAS.

As far as the A-7 Corsair is concerned, the new display forms part of an integrated digital system rather similar to ILAAS, but a good deal simpler and cheaper. IBM will be providing the central digital computer and integrating the whole system. To operate in this environment, the head-up display will require, as it did in ILAAS, an electronics unit equivalent to a special-purpose digital computer.

Integrated System

Also integrated with the system will be an inertial navigator, Doppler radar, a forward-looking radar and an air data computer, these being supplied by other American manufacturers. EFA is the only non-American manufacturer.

The whole programme will be covered by purchases spaced over four American financial years and the total cost of all the systems will be in the region of \$350,000,000.

The A-7 manufacturing programme is already well under way and LTV have already delivered 145 early versions of the A-7 to the US Navy. First A-7D and A-7E will fly during next year and will ultimately form the backbone of the American light conventional attack force.

Started in Britain

Head-up display has really caught on in the US armed services now. It was, of course, started by RAE in Britain some years ago and has been standard equipment in most of the British operational aircraft that have been ordered in recent years.

EFA has been the main production source since the beginning and has now been able to profit from this experience in obtaining the American orders in competition with American companies. The American orders have stimulated considerable further development of head-up display, the results of which will in their turn be

available for further customers, civil as well as military.

EFA is profiting from the American orders to operate what could be called a reverse technology drain.

The announcement of this order, which could ultimately be worth £14m, naturally hit the national headlines. Elliotts has done it again, was the general reaction. The news was good for the company, good for exports, good for British technology and so on. Movie film was rushed to both BBC and Independent Television, both of which featured it in news programmes.

At Rochester, where the work will have to be done, celebration was brief: operations had to begin immediately. ILAAS will stand us in good stead, but the new order has far wider scope in volume and duration.

EFA Children's Christmas Party



One of the first and biggest events of EFA Christmas season was the children's party held in the main canteen on November 25. Jim Collins and many helpers organised the pantomime Cinderella, a big tea, and presents for everyone from Father Christmas for the first half of the hundreds of EFA children. The second half were entertained the following week. Above, "Bunny" Gilberthorpe as Father Christmas distributes presents. More pictures on page 3

Intense activity on Concorde Pace of Deliveries Increases

THE ILAAS and C-5A projects are not the only ones to involve high-pressure working, though they have hogged the limelight in recent months. The various Concorde programmes have been going for a good deal longer and are now in their turn reaching the final crucial stages as the first flight of the Anglo-French supersonic airliner draws inexorably nearer.

TACD, ATED and AEID have all been working at full pressure to complete the final equipment essential for the first flight and to follow-up with those needed for the second

prototype at Filton and the two preproduction aircraft.

The company aircraft are standing by day by day to fly newly completed units straight down to Toulouse. The environmental test laboratories, the TACD model shop and the engineering laboratory have been working overtime for six months. Since October many engineers have been working a 24hr shift system to clear the last snags for the essential safety of flight clearance.

Working Under Pressure

Incorporation of internal testing at a late stage in the project has kept design and test staff intensely busy but, by the time these words appear, the full complement of flight equipment for the first prototype should have been delivered.

Many EFA people already know the domestic and personal stresses of this kind of work. Now, another group is facing the challenge.



Who says microminiaturisation is not worthwhile? When computer programmer Miss Dalia Regev, Miss Israel in the Miss World competition, wanted to see a British computer, Elliott-Automation brought a 920M right to her hotel room. The vital statistics:— 35, 23, 35, 8,192 words, 18 bits each. On this occasion, the add time was considerably hotter than 18 microsec

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Pantomime and Tea with EFA



Above The children tucking in at tea get some advice from Pat Clayden, Prince's Aide, one of many EFA helpers on hand



Right Awesomely pettecoated, Ron Bushell as ugly sister Min descends into the auditorium



Above The children watching the pantomime Cinderella probably would not have recognised some of the actors in their usual appearance, below. Left to right, they are Ron Bushell, ugly sister Min; Ken Davis, Fairy Godmother and King; Ken Hyde, ugly sister Samantha; and Nick Carter, ugly sister Miranda



ATED Sings for its Supper

Began in Discord: Ended in Harmony

WHAT are described in a reliable report as the "avant garde" members of ATED were arrested and charged under Section 40 of the Army Act for being improperly dressed when they presented themselves at the Royal Engineers' Brompton Barracks, Chatham, early in Nov-

ember. They were going to a social evening in the Warrant Officers' and Sergeants' Mess with the RAF team now based with ATED. The RAF men from Central Servicing Development Establishment are living in the Army barracks.

The misunderstanding was quickly corrected and a very enjoyable evening followed. ATED and their RAF colleagues had to concede victory in darts and tips competitions with their hosts, but they claim to have recovered the overall position during the singing contest which followed. Ken Brewster reports that one copy of his choir book is missing.

TACD ANSWERS BACK

MACD Football Challenge Rebutted

IT seems that the MACD engineers' challenge to beat all comers at football, featured in the last EFA NEWS, has raised the hackles of another team.

TACD engineers have pointed out that they had already beaten the MACD engineers during last season 3 to 1. Just to confirm their superiority, they point out that a return fixture proposed for the beginning of the current season was postponed indefinitely by MACD.

Answers by the hundred

Job Questionnaires Being Analysed

HUNDREDS of questionnaires completed recently by all four-weekly paid employees are now being analysed by divisional managers and by Don Hunter, the personnel development manager. A few people have identified this as a rather sinister result of the English Electric merger, but the process of which the questionnaires form part started long before the merger became a definite possibility and is, in fact, another step in the continuing effort to make the most of company personnel in order to improve the performance of the company as a whole.

The present personnel development scheme meets an Elliott-Automation group objective, in which EFA initially took the lead. But E-A Computers, E-A Radar Systems and E-A Control Valves have already got their own programmes under way. Four-weekly paid people are featuring in the process at the moment, but it will ultimately have a bearing on virtually everyone in the group. The company is aiming at a deeper

understanding at all levels of the work required and a more accurate assessment of the efforts of individuals in achieving the company's objectives. This implies developing people to keep up with the increasing responsibility, which expansion of the company involves.

A clear understanding of each person's responsibilities and resources by that person and his superiors, is an obvious primary objective and the

questionnaire is probably one of the best methods of ensuring that these factors are clearly understood and related to the individuals concerned. Good communication is essential. The questionnaire indicates to all concerned the level of understanding of each job and identifies any anomalies which may have arisen with the passage of time.

Personnel development makes it possible to measure people's performance and to develop their skills by specific action, such as specialist training, at the right moment in their career.

PRIZEWINNERS GET TOGETHER



A combined prize-giving and party, held by the Camera, Rifle and Archery clubs in the club-house on November 21 proved so successful it may be repeated.

Standing round their various prizes on the left are, left to right, Mike Bunce, Harry Hills, Mike Foreman, Jack Ruler, Doreen Green, Denis Green, and Tim Turner.

Camera Club produced this picture and those of the children's party above and on page 1

Producing Managers

Companies like EFA have to draw a considerable proportion of their managers from technologists, and have the difficult task of training them for management at an appropriate stage in their career. Technical qualification by itself is not always enough for the many tasks in a modern electronics business.

Don Hunter, co-operating with the management, is specifically charged with co-ordinating the scheme to the ultimate benefit of all concerned. This is another facet of the steady progress towards better and more precise management in the increasingly competitive technological world.

FLIGHT OPERATIONS STEPPED UP

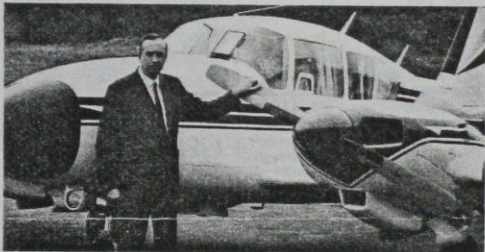
Second Full-Time Pilot Appointed

A SECOND full-time pilot has joined Arthur Southall to fly the aircraft used for company transport flying. He is Alan Humphrys, shown below with one of the two well-equipped Piper Aztecs he now flies. These aircraft have joined the Aero Commander, which was the first aircraft to be used regularly and is painted in special E-A colours.

Alan Humphrys has had a long career in flying, starting with 22 years in the Royal Air Force, during which he flew most of the operational aircraft types. He completed his RAF service as a staff instructor with the Central Flying School and followed this with two years as chief flying instructor on loan to the Lebanese Air Force, flying Hunters. After retiring from the RAF in 1962, Alan Humphrys spent four years as an instructor with the civilian College of Air Training at Hamble, training

potential airline pilots. After that, and immediately before joining EFA, he flew Britannias for two years with British Eagle. His total flying hours are between 6,000 and 7,000. EFA passengers could hardly ask for more comprehensive and appropriate experience.

The Aztecs and the Aero Commander are kept busy nowadays with almost weekly flights down to Toulouse, in south-western France, delivering components of the Concorde autopilot and flight recorder.



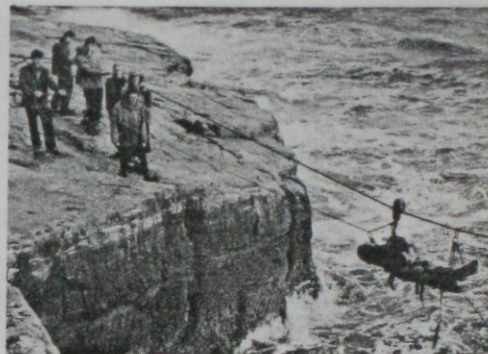
Alan Humphrys, who has joined Arthur Southall, standing beside one of the two Piper Aztecs. This aircraft has weather radar and turbosuperchargers

Nimrod Systems Delivered

On Time After Two-Year Development

EFA's work on the HS.801 Nimrod, still more usually called the maritime Comet, is not easy to discuss because of the natural constraints of security. IN Division and Airborne Computing Division have been working quietly on the production of the inertial platform and the digital navigation and attack system for two years and have now delivered their first production systems on time. Two prototype systems had already been delivered.

Paul Rayner, ACD divisional manager, claims that "the achievement is of great significance to the company, and goes a long way towards proving to the British Government and other potential customers our ability to engineer and produce advanced digital avionics systems". ACD are also responsible for the digital electronics units of the ILAAS and A-7D and E head-up displays. Being detached at Borehamwood, close to the heart of the company's computing activities, ACD tend to be overlooked as an essential element of EFA, but their work is becoming increasingly prominent.



Early stages of the cliff rescue exercise on 192ft-high Berry Head during the Outward Bound School course. A live "victim" is used

OUTWARD-BOUNDERS SAFELY HOME

Two Apprentices Complete Tough Four-week Course

FOR four weeks in October and November apprentices Peter Smith and David Boniface spent their time in the wilds of Devon and Cornwall doing things they certainly never did before and probably will never do again.

They were on a course with Outward Bound School at Holne Park, near Ashburton, Devon. Now that they are back in Rochester, they feel it

was worthwhile, but even now some of their tasks sound hair-raising. The daily routine was tough, starting each morning with a run followed by a leap into the river Dart, all before 7.30 a.m. If the Dart was too wild, a thoughtful management had a cold shower ready to take its place.

Wide Variety

The 90 or so boys were divided into patrols of 12 and, after a few days' introductory training in first aid, rope handling and so on, they embarked on canoeing expeditions ten miles down the fast-running river, potholing, a cliff rescue up 192ft-high Berry Head, rescue and first aid exercises, a three-day cross-country trek covering 70 miles with two nights in the open, a night on the moors alone, obstacle courses and a run over the Commando battle course.

In the inter-patrol competitions, Peter Smith's patrol won the morning inspections and tug o' war and his patrol was placed fifth overall. Altogether it was a hard experience of the kind which emphasises courage, leadership and determination. Peter Smith reports that it is good to look back on.

Narrow Choice

EFA sends two apprentices on Outward Bound courses each year, which gives Ernie Free a great headache in selecting the two who might best benefit.

For the more chair-borne amongst us, the Outward Bound schools offer a special one-week course with optional participation in some or all of the exercises. It might perhaps be called a crash course.

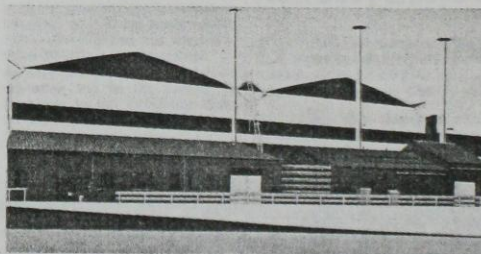
Face Lift for Main Works

External Repainting to Start Soon

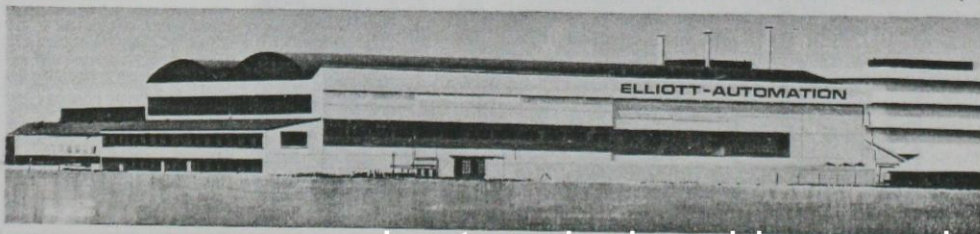
AS soon as the weather improves, the large factory buildings and works are to be repainted in a brand new colour scheme designed to harmonise the old buildings with the much newer tower blocks.

An imaginative scheme shown in these pictures has been drawn up by Peter Bell Ltd to even out the broken outlines of the hangar and its associated outbuildings and pipework with a horizontal paint scheme in dark green and white. The plans even include the planting of a row of pine trees beside the canteen buildings in order to create a landscape effect, though this detail may meet planning objections.

Contrasting vividly with the rather even horizontal colour scheme, the ladder on to the roof of the main hangar (right) will be painted orange; and one of the three metal chimneys will be painted yellow. The groups of transformers and water tanks along the side wall of the hangars will be hidden by wooden fences matching the existing hand-rail between hangars and towers. Apart from the fact that the hangars are much in



need of repainting, the new scheme will greatly improve the appearance of the factory as a whole and present a more homogeneous appearance to visitors. The painting will probably get under way in about April.



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US AIR FORCE SEES FOR ITSELF

Quality Control Representative at Rochester

Mr Richard L. Lawrence, a US Air Force Quality Control Representative, arrived at Rochester in September to effect on-the-spot quality control of EFA equipment being produced for American aircraft.

Making his first visit to Britain, Mr Lawrence has settled in Bickleigh with his wife Laura and 18 year old son Conrad. He is no stranger to Europe, having spent two years in 1959-61 on quality control in Spain. Before joining EFA he spent six years at Vandenberg Air Force Base, the Pacific Missile Range in California, engaged in quality control on missiles, re-entry vehicles and other space-age hardware.



He brings to EFA many years' experience in his work and a firm determination to see the job done thoroughly. He says he can see problems in integrating EFA capabilities with USAF requirements, but feels that manufacturing equipment presents basically the same problems in any country and any company. EFA has impressed him as a dynamic company.

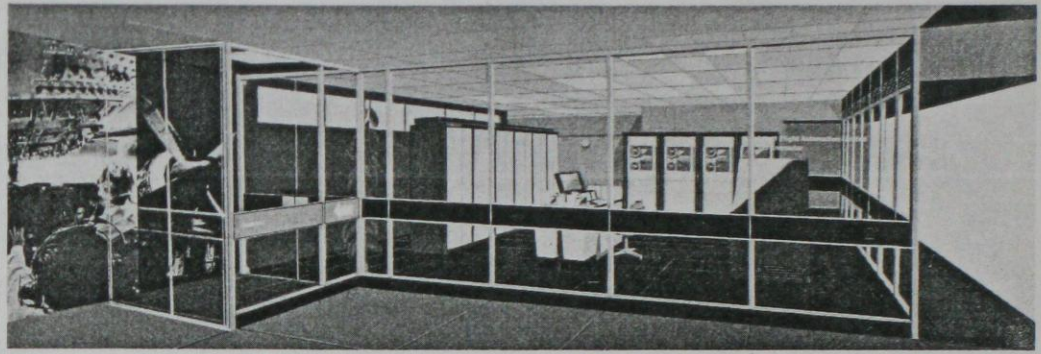
We wish him a pleasant three-year tour of duty.

ELLIOTT ARCHERS GAIN STATUS
Only Instructors in Medway Towns

FIVE Rochester people forsook pyrotechnics on Guy Fawkes day in favour of the bow and arrow. They went to the Atkins & Partners grounds at Epsom and took their instructor's exam to become the first qualified archery instructors in the Medway Towns, which greatly increases the status of the Elliott (Rochester) Archers.

Four of them are committee members. They are Jack Milner (Fuze), R. S. Bloodworth (MACD) and Mr and Mrs Green (respectively MACD and FID). Harry Pritchett (MACD), the fifth to pass the exam, is a member of Cobham Archers.

The exam is administered by the Grand National Archery Society and gives the Elliott archers a nationally recognised qualification for their instructional work. So if you want the official word, contact secretary Jack Milner.



This is how the new computer room on the mezzanine floor of Tower 3 will look. A temporary set-up for the new 503 computer is already in use

EFA GETS A SECOND COMPUTER

New Computer Complex in Tower 3

A SECOND digital computer, an Elliott 503, is now at work in EFA, joining the 803 which has been in use for several years. Already, a team under Peter Haynes (see picture) is working on the new software and programming.

To house the expanded computing complex, including the existing group of analogue machines, a brand new, glass-walled, brightly coloured, temperature-controlled office has been designed for the mezzanine floor in Tower 3 (above). Construction will start in January.

Of even greater significance is the growing use of digital computing in administration, a technique which has been under development in MACD for some three years. This work is now being extended into other divisions.

... And Administration

Overall objective is to use the sorting and printing capability of the digital computer to speed-up and improve the handling of the great quantity of information on materials and resources, and to gain quick access to technical data. Such steps are essential if EFA is to guarantee meeting ever more pressing time-scales of modern complex systems. First task, which many people in MACD have been working on for some years, is to adapt the vast amount of information on drawings, parts and specifications for computer handling. MACD has already coded 15,000 part numbers and has established 500,000 indexed headings. An additional result of the computer expansion will be the transfer of Rochester payroll calculation from the 503 at Borehamwood to the new 503 at Rochester.

For Research...

EFA has for years used computers for scientific work in connection with Concorde, C-5A, Harrier, Lightning, flight trials analysis, aircraft stability studies and similar tasks. During 1964 and 1965, the computer complex was connected by GPO land-line to Warton in order to allow immediate analysis at Rochester of flight test information. The new complex is to be linked by digital transmission line to an Elliott 503 operating at Boscombe Down for similar joint working.



Among the team already working on programmes for the new 503 computer are, left to right, Eric Gilroy, Geoffrey Relph, Winifred Boyd, Jacqueline Hutchinson and Maureen Brignell

Conger Earns Ticket to Eire

Noel Beby Enjoys Guinness Contest Win

DURING last summer Noel Beby (AEID), one of EFA's group of eight sea fishing enthusiasts, hooked a record conger eel. It turned out to be 6ft 2½in long and weigh 44lb—officially verified by social secretary Jim Collins and a local fishing club.

The conger went through various adventures before it was finally cut up and eaten, but it also turned out

to be the largest conger caught within four miles of land during the season and earned Noel Beby a week's free fishing holiday in Eire, courtesy of Guinness, *Angling Creel* magazine and the Irish Tourist Board.

Fisherman's Delight

Noel spent a week during September at Dingle, in south-west Eire, with about 30 other winners in a country-wide regional competition for various types of fish. With all found and an unlimited supply of Guinness and Harp, Noel spent the week fishing for all kinds of fish, from boats and shore, sometimes off the Blasket Islands, most westerly point in Europe. It was an angler's dream, with unlimited fish, expert advice at hand and a free choice of catches. An incidental result: some photographs taken during the week turned out so well that Guinness are going to use them in next year's advertising and at the Boat Show in January.



Noel Beby (AEID) helps to land a big tope off the Blasket Islands during his week-long fishing holiday in Western Eire