

Managing Director's Report



Marconi Avionics has now grown to such a size that it has become increasingly difficult to keep all the members of the staff in touch with what is going on in the Company as a whole. This annual review has been prepared along similar lines to that of the GEC annual report in an attempt to overcome this problem and hopefully to give our staff a better insight into the operations of the Company and its successes and failures. I hope that we can, through this review, open the hangar doors a little so that more people may see what goes on inside.

Whilst there is no way in which we can be entirely isolated from the factors which affect other elements of British industry, such as the high value of the pound and the cuts in government expenditure, we have nevertheless been able to withstand these pressures better than most. We have a substantial export business which depends not only on getting the price right but, to an even greater extent, on having a technological product which is better than the rest of the world can offer. By this means, we have been able to obtain prices for our products in export markets which have usually enabled us to offset the effect of the high value of the pound.

Each year we spend very large sums of money on basic research and on the development of new products which we are able to sell on a worldwide basis against fierce competition, particularly from the United States and France.

In addition to the development of new products we also need to pay great attention to the means of designing and manufacturing such products. Each year the Company spends about £13m to provide new and better equipment for design and manufacturing purposes and, of course, on the buildings in which to house them. As a result of this we have been able to maintain and improve our productivity and this is also of primary importance in enabling us to compete in world markets.

The electronics business has changed in a most remarkable way over the past twenty years or so, from being an industry in which there was a relatively low capital investment to one in which it is becoming very high. To give one or two examples, there are now areas of design which are only possible with the aid of sophisticated computer-aided design equipment. Such equipments can readily cost £½m each. Equally, in order to test our products before they leave the factory, extensive automatic test equipments are needed and one of these can easily cost £¼m. Fortunately, as part of the successful GEC group, we have enjoyed relatively easy access to the sums of money that are involved in enabling us to stay in the forefront of technology.

The other major resource which we have is ourselves—the members of the Company, with our various skills. In the past five years we have increased our total strength by something like 50%. Even this increase has not really been sufficient to enable us to keep pace with the requirements of our customers and our ability to sell, and as a result we have had difficulties and complaints from our customers. To try to improve the situation, we have recruited a number of graduate engineers from as far afield as Australia and are employing them in this country. They have formed a most welcome and valuable addition to the company.

The decline in the country's economic circumstances lately has resulted in greater supplies of labour becoming available to us and I believe that we shall shortly find ourselves in a situation where we can at last meet all the requirements placed upon us. This in turn will enable us to go out to other parts of the world, to try and secure more orders, so as to continue our growth and to ensure, to the best of our ability, safe and satisfying jobs for all our employees.

J.E. Pateman

J.E. Pateman CBE
Managing Director
Marconi Avionics Limited

(illustrated opposite)
Some of our premises

Cover picture:-
Part of the team at a Rochester site.
Their cooperation is gratefully acknowledged.

19th December 1980

Rochester Establishment

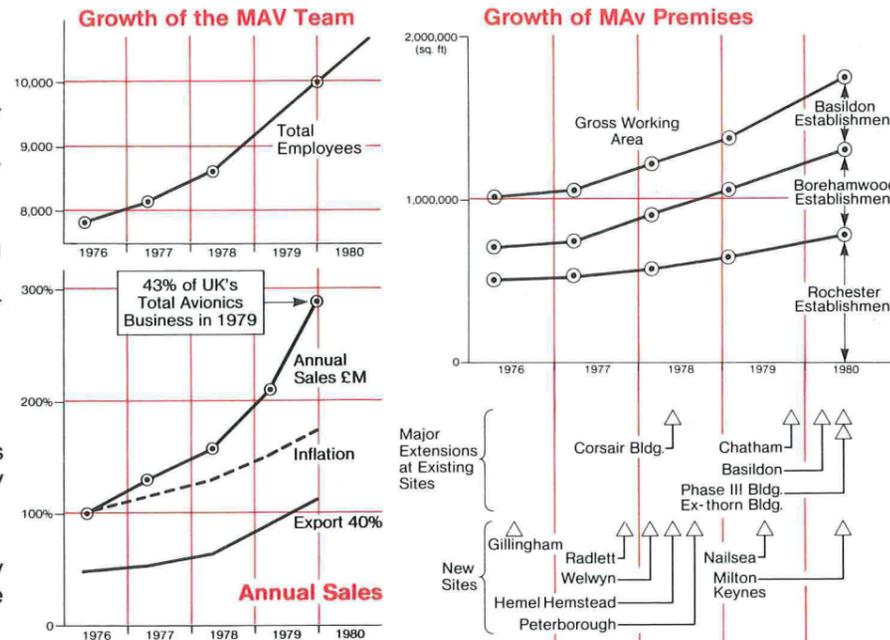
- covers Rochester and Nailsea

5 years of real progress

Growth, in real terms, of the Company's output, for home and export customers, has brought an expansion in the number of jobs created and has enabled substantial investment to be made in new equipment and facilities. By opening seven new factories during that period, and by substantial expansion at existing sites, gross floor space has risen by 80%, to meet current needs and to provide for future development.

Career development in MAv involves substantial investment in training and re-training. Over 10% of the entire company (equivalent to two Divisions) is undergoing some form of training at any instant.

By applying skills effectively, MAv is successful in supplying high-technology systems and equipment for some of the toughest markets in the world and is currently responsible for 10% of the entire exports of GEC, Britain's biggest engineering company.

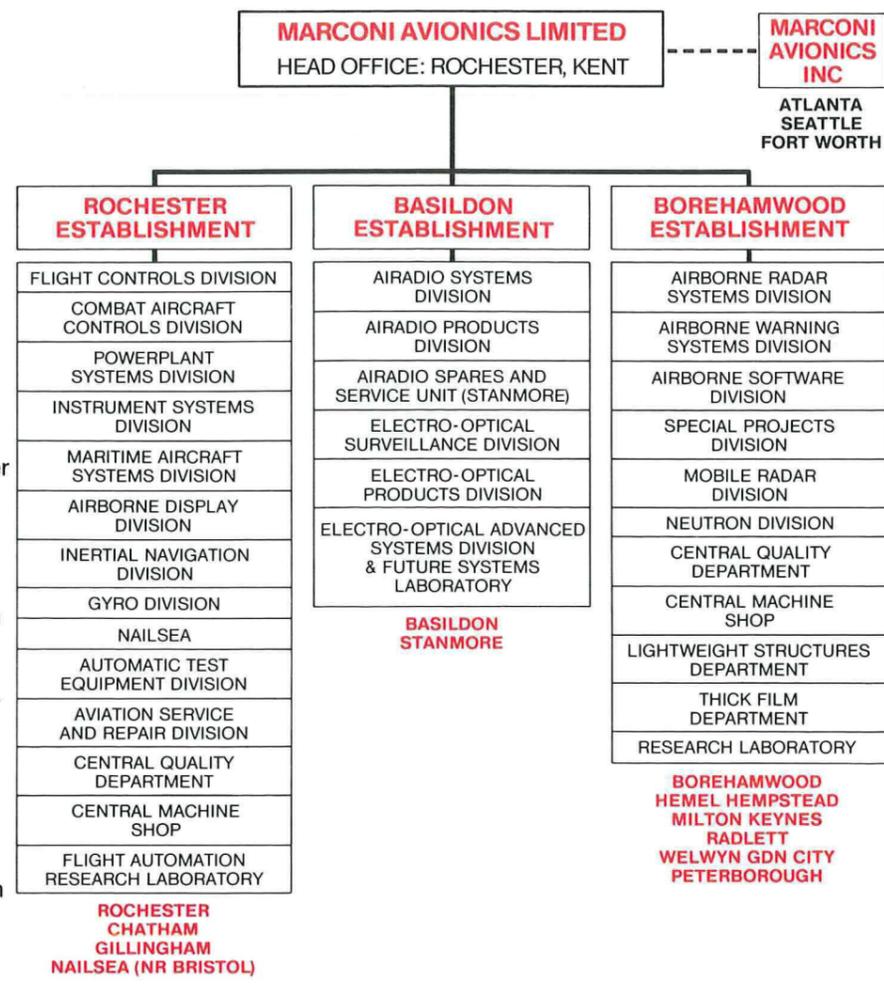


Successful Teamwork

MAv conducts its business within Divisions, each of which acts as an autonomous team, with the resources and skills needed to meet its customers' requirements. For administrative and geographical reasons, Divisions are grouped under Establishments, covering a number of sites.

Some members of the corporate team are:

Chairman	Dr. B.J. O'Kane CBE
Managing Director	Mr. J.E. Pateman CBE
Assistant Managing Directors	Mr. W.H. Alexander Mr. P.F. Mariner
Financial Director	Mr. D.C. Rickard
Directors and General Managers	Mr. R.W. Howard Mr. P.A. Hearne Mr. W.R. Paterson
General Managers	Mr. D.G. Thomas Mr. A.C. Leacy Mr. J.A.C. Kinnear
Director of Manufacturing Services	Mr. A.J. Harrison
Company Personnel Manager	Mr. E.J. Bradley
Market Development Executive	Mr. M.V. Needham
Company Information Executive	Mr. M.F. Moulton



Statement by W.H. Alexander Assistant Managing Director of MAv and the Company's chief executive for the Rochester Establishment



This has been a difficult year for us at Rochester but we have come through it very well. Many major projects were in the early stages of production, with all the special demands which this entails, and at the same time we were critically short of space. The new production work included all the systems for the Tornado IDS, the Nimrod Mk II Sonics and Central Tactical System, the F16 Head Up Display and the Cobra Air Data System. We have now acquired a further 137,000 sq ft of space in the new Phase III building and the factory acquired from Thorns. This brings our total space to over 3/4 million sq ft, to house our population of nearly 6,000. Not only will this give us enough space to operate efficiently but it will also allow us to locate most of our activities in the right place.

A start has been made on the new building at Nailsea and we are looking forward to our two youngest businesses, in North Sea Oil and Power Supplies, blossoming in the West Country.

While contending with our difficulties on current production, we have not failed to keep up progress in new technology. This is vital to ensure success in obtaining new orders and our ability to compete in the United States market was demonstrated, once again, with our winning of the contract for the LANTIRN Head Up Display.

The successes of this year, the new contracts, the new designs completed and put into production and deliveries keeping pace with our customers needs, have not been achieved without considerable support from some of the less glamorous of our activities. Among these we have to thank are Personnel, Training, Canteen, Works Engineering, Transport, Accounts, EDP and Company Aircraft. We have also continued to develop better ways of supporting the ultimate user of our equipment and we must not forget that without this vital service the customer is not likely to come back for more.

Flight Controls Division has delivered the first breadboard of the new, microprocessor-based Slats and Flaps Control computer, for the A310 Airbus. Integration of hardware and software is imminent.

In conjunction with MAv Inc, 117 computers, 105 Mode select panels and 42 retrofit units have been delivered for the 747 Full Flight Regime Autothrottle system.

The first Advanced Subsonic Aerial Target (ASAT) system is nearing completion and the Sea Vixen drone has been successfully flight tested. A development of the Jindivik drone permits a 4g "evade manoeuvre".

Hydraulic actuator development has concentrated on double failure-survival. A variant of the Blindfire Rapier radar actuator has been developed for Sea Wolf, and a "fly-by-light" actuation system has been demonstrated with FARL.

Combat Aircraft Controls Division, launched formally in April is now 500 strong. With some 80% of its business for Tornado, the main activity has been building up the Production Department, to deliver 12 Autopilot/Flight Director and

Command Stability Augmentation systems per month, and preparing the Spin and Incidence Limiting System for production. Engineering has been fully stretched, delivering rig equipment to Warton for the Jaguar "fly-by-wire" demonstrator aircraft and modifying Tornado equipment due to last-minute flight testing.

Except the Model Shop, the entire Division completed its move, to the new "Phase III" building, in October, gaining physical autonomy and near-ideal working conditions.

The Tornado programme promises future security and the new developments make CACD well placed to compete in world markets.

Instrument System Division production of the unique Air Speed System for United States Cobra helicopters has now reached over 25 sets per month, 163 sets having been produced by the end of October. Production of the Tornado Stores Management System is also under way and deliveries are approaching 5 sets per month, aiming at an ultimate rate of 8 per month. 19 sets of the very advanced system have been produced by the end of October.

New orders have been received, for microprocessor-based Air Data Computers, and preproduction units of the Automatic Map Reader have been made, in association with MAv Inc. Atlanta. Trials in the USA have already led to requests for quotation for production quantities from Hughes and Bell. A flight demonstration will shortly begin in Germany.

Powerplant Systems Division has made significant progress in all its main product areas. The Automated Powerplant Test system, for testing Tornado's RB199 engines, when in service, has been installed successfully. The first production APT system is now being manufactured.

Prototype and initial production versions of the Supervisory Control Unit, delivered for new Rolls Royce RB211-535 engines, are for controlling development batch engines. Fuel flow system deliveries for Hawk, Harrier and Tornado aircraft are continuing and development batch transmitters have been delivered to McDonnell-Douglas for the AV8B version of the Harrier.

Inertial Navigation Division continues to produce Navigation and Weapon Aiming Systems for export, and further orders have been received during the year.

With the completion of production deliveries of Central Tactical Systems, for Nimrod Mk2, the important post-development phase of the project is now under way. Naval Compass Stabiliser equipment continues in production for the Royal Navy and other navies, into whose service it has now been successfully introduced.

Looking to the future, the engineering department has done extensive work related to new products, including working with other Divisions.



New LANTIRN "Holographic HUD" for US Air Force.

Airborne Display Division won three major contracts in 1980, helping the company to retain its world lead in the development and production of pilots' head-up display (HUD) systems.

An adaptation of the highly-successful F-16 system has been chosen by the Royal Danish Air Force for its Draken fleet, involving use in 2 prototype and 41 production systems. We also won the important US Air Force LANTIRN contract for wide-angle holographic HUD systems, for A-10 and F-16 night operations. Production options involve many hundreds of systems.

Our electronic head down displays include the high-contrast equipment for Tornado ADV, for use with the Company's AI radar.

Automatic Test Equipment Division, now nearly 650-strong, has maintained progress on major ATE contracts, despite a move to new premises, which is now nearly complete.

The first Automatic Test System (ATS) for Nimrod Mk2 has been delivered to RAF Kinloss and the go-ahead for the first production batch of ATS for the Tornado project has been received, an important step in Europe's biggest-ever automatic testing programme.

With an eye to the future, the Company has made a major investment in ATE software, with the acquisition of an in-house LASAR facility, an automatic system for generating programs for testing complex digital modules. In addition, a new, and even more cost-effective commercial version of the digital module tester, has been produced and commissioned.

Maritime Aircraft Systems Division has had a most successful year, delivering in quantity the western world's most advanced airborne acoustic analysis system, AQS901, for the anti-submarine forces of Great Britain and Australia. The equipment is now in squadron service with both the RAF and the RAAF.

Deliveries to the Royal Navy of LAPADS, the Company's own Lightweight Acoustic Processing and Display System, for installation in the Sea King Mk5, culminated in the roll-out of the first aircraft in October.

Design and development of the next generation anti-submarine equipment,

for a Sea King replacement helicopter, has gathered momentum and the Division has based a team at Yeovil, in premises close to the Westland factory, to work on total avionics system integration for the projected WG34 helicopter.

Aviation Service and Repair Division is actively preparing for the future, while continuing to meet its responsibilities to civil and military aircraft operators.

Boeing 747 autothrottle support involves serving 40 airlines world-wide. Planning is advanced for similar support of Airbus A310 equipment.

The Division is supporting the Armed Services of countries operating Jaguar, Harrier, Lynx and F16 aircraft through the design, development and operation of dedicated repair facilities. 27 Technical representatives are deployed on-site in Europe, Asia, the Middle-East and South America.

New support plans are being formulated for India (Jaguar), Germany (Lynx) and Finland (Hawk) and a repair depot for Tornado equipments will shortly be in operation at Rochester.

Nailsea, after its first full year, is now a hundred strong and is establishing a production department. A new factory on the adjacent 5 acre site is already taking shape.

A complete set of electronics, for the subsea control of oil wells in the BP Magnus Field, has been delivered and has undergone land trials in England,



LAPADS Installed in Royal Navy Sea King Mk5.

Scotland and the USA. Subsea installation starts in 1981.

The team is also developing new types of low-voltage power supply, for a wide range of users, including other Divisions of MAV. In addition, second line test equipment is being designed and produced for MASD's new lightweight antisubmarine system, LAPADS.

Gyro Division has grown a further 20% while maintaining profitability. In March, the 10,000th example of the best-selling GR-H4 gyro was handed over to the MoD, for the Sky Flash missile.

Looking to the future, the Company has invested in sales and manufacturing licences for the Northrop advanced-performance GI-G6 rate integrating gyro, for production in 1981/82. Meanwhile production acceptance of the Sting Ray torpedo's Control Sensors Unit has commenced, development of an advanced derivative for the next heavyweight torpedo has begun and gyro production for many other applications continues.

Flight Automation Research Laboratory completed for the Farnborough Air Show a working demonstration of an optically-signalled flight control system - "Fly-by-Light".

Research on holographically-formed optical systems for head up displays, carried out in conjunction with the Great Baddow Laboratory, helped the Company to win the important LANTIRN contract. Development, with Marconi Electronic Devices Ltd., of new MIL STD 1553B microcircuit terminals, has earned the approval of the US Air Force. The MACHAN unmanned aircraft developed in conjunction with Cranfield Institute of Technology is being readied for its first flight.

Central Quality Department provides specialist services to establish and maintain quality standards for MAV Divisions and for other customer organisations. In particular, during 1980, 650 environmental and electromagnetic compatibility tests were completed, covering a range of equipments and specifications; 2,000,000 electronic components were tested; 25,000 measuring devices, including 50 environmental chambers, were calibrated and 2,000 electrical measuring instruments and devices were repaired.



Preparing for the next 10,000 GR-H4 Gyroscopes.

Electronic Data Processing (EDP) department has continued the conversion and overhaul of Elliott 503 systems, for use on the ICL 2904 at Rochester and the IBM 3032 at Chelmsford. Two new analysts have joined the team and work continues on extensions and new systems for production accounting and management information.

ICL 7000 series terminal computers, communicating with EDP's 2904, have been installed in Inertial Navigation and Instrument Systems divisions and similar machines are planned for other divisions at Rochester.

Central Machine Shop as a service division, is very much geared to the commercial and design activities of product divisions of the Company.

During 1980, CMS has rationalised its production and plant, more to the manufacture of line replacement unit boxes than to piece parts. A Redux Bonding facility has been installed, making us independent of outside suppliers and reducing lead times.

This facility is also intended to serve our Borehamwood and Basildon sites for bonded assemblies.

Works Engineering Services has had a particularly busy year, due to the Company's expanding activities. Projects included new buildings, refurbishing 75,000 sq. ft. of existing buildings, fitting out 150,000 sq. ft. of new office and production accommodation, 5 acres of new car parks, rebuilding 160,000 sq. ft. of factory roof, re-layout of 70,000 sq. ft. for Divisions, maintaining

and servicing 976,000 sq. ft. of factory and installing a computerised Energy Management System.

The Mailing department handled 1.8 million outgoing and 366,000 incoming letters, Telex handled 43,750 messages and the switchboard took over 2 million calls, during the year. The Transport department travelled 370,000 miles on Company business (equivalent to 16 times round the world).

Accounts Department provides the essential administrative back-up to trading divisions whose expansion has brought an increased work-load. Over a twelve month period, for example, we processed for payment approximately 120,000 suppliers' invoices totalling £100M. We received £150M from our customers, a large proportion of which was in foreign currencies. We paid wages, salaries and expenses to approximately 5,300 weekly and monthly paid employees.

The Personnel Department's successful recruitment efforts this year boosted Rochester Establishment strength by 700, in all categories, notably production and engineering, reaching 5,900 in total. The growing Nailsea site has a resident Personnel Manager.

Career development work currently involves 650 young trainees plus progressive training for adults, including schemes for newly-promoted supervisors and managers. Of 220 young trainee entrants, 100 were craft and technician apprentices, who started at the extended Hopewell Drive Training Centre. It was an MAV team which won the London & S.E. Regional final of the EITB's TECCOM competition this year.

In addition to important careers work with schools and universities, a Work Experience Scheme has started for 25 young people. Hundreds of employees have joined the MAV Group Savings and BUPA schemes. On the sports and social side, children of Company employees will receive 2,900 toys this Christmas and 1,400 will attend parties at Airport Works. Work for the elderly and the handicapped has also reached new heights and the Athletics team has had an outstandingly successful year.

Borehamwood Establishment

— covers Hertfordshire, Buckinghamshire and Northamptonshire

Statement by P. F. Mariner Assistant Managing Director of MAV and the company's chief executive for the Borehamwood Establishment.



This has been a year of significant milestones in the major projects of the Borehamwood divisions. Development models of both the AI Radar and the AEW system have been successfully commissioned in our proving rigs and models supplied to British Aerospace for their avionics rigs at Warton and Woodford respectively.

Further models of both systems are being supplied, which will be installed in prototype aircraft for flight proving next year. In both cases, manufacture of the first equipments for delivery to the Royal Air Force is already under way.

By energetic recruitment over the last 5 years, we have increased our strength by some 500 to 600 each year to a present size of nearly 3,500. Acquiring the necessary premises to accommodate these additional staff and the facilities and activities associated with them has proved difficult but we have now achieved the necessary break through.

This year we have extended our factory at Hemel Hempstead, which with our premises at Radlett, provides the 250,000 sq. ft. needed for the 800 people and their facilities engaged in development and production of the AEW Mission System Avionics project, and the control of the 185 sub-contractors involved.

In June this year, after several frustrated attempts to secure suitable premises near to Borehamwood, we took a suitable site at Milton Keynes.

Additional premises at Welwyn Garden City provide some 30,000 sq. ft. extra floorspace for the commissioning and testing of sonar signal processing systems for the Navy.

The expansion of our workforce, the relocation of many of our employees and the movement of their working facilities, the day-to-day operation of the additional premises with the very much widened geographical spread of our activities, together with the raised level of our business activities have been a great challenge to our supporting staffs — Personnel, Accounts, Site Services, Transport, Catering etc. to which they have responded admirably.

Airborne Radar Systems Division is responsible for the new 'Foxhunter' Airborne Interception radar, which has been flying in a Buccaneer trials aircraft, prior to installation in the RAF's Air Defence Variant (ADV) of the Tornado aircraft. A further A-model radar has been integrated with this aircraft's weapon system rig at Warton. The first and second ADV development aircraft have flown, and we shall be flying a prototype radar in the third aircraft, next year. An initial production order has been received, covering all the production tooling and test equipment and a first pilot batch of 20 radars.



AEW System - Operators' Stations

A contract has been received to study the Mark 2 version of the radar for a future update and two types of unit are being manufactured, of the terrain-following radar, for the Interdiction/Strike version of the Tornado, as part of a 3 nation group. First units were supplied ahead of time and, in fact, ahead of all the other members of the group.

Airborne Warning Systems Division is concerned entirely with the development of the very advanced Mission System Avionics (MSA) for the RAF's new generation of Airborne Early Warning Aircraft, AEW Nimrod. The Company is directly responsible to the Ministry of Defence for the MSA, which represents a

massive improvement to the RAF's defensive capability. The Comet radar trials aircraft, having undergone its overhaul, has commenced a second phase of radar trials from RAE Bedford with outstandingly successful results, and the Communications trials aircraft, a modified Nimrod 1, has recently completed a very successful programme of trials on the communications sub-system, the most sophisticated and comprehensive to be installed in any European aircraft.

The first B-model, in the MSA Integration Rig at Radlett, was formally 'switched-on' for its system trials by Controller Aircraft in July. The second has been transferred to the System Integration Rig at Woodford. The next two models are being built up in the two Commissioning Rigs at Hemel Hempstead prior to being fitted into fully converted aircraft at Hatfield early next year. The delivery of the first RAF system is forecast for the middle of next year.

Airborne Software Division has delivered further updated issues of the AI software to the aircraft weapon system rig, for integration with the Tornado ADV weapon system software, which have worked well.

The final version of the AEW Mission System software is now being written and tested, the development prototype having been completed and run at system level trials.

Considerable emphasis has been placed on the management of these large software programmes.

Mobile Radar Division's successes this year include the contract for a substantial security installation for a nuclear reactor site in West Germany, and a contract from the Coal Board to supply a radar, to indicate coal level in bunkers.

Our first export order has been received for the new improved 20 km version of the successful ZB 298 radar, and we have been informed that the Danish Army has decided to have its holding of ZB 298 radar modified to the new standard.

Delivery of Common Mounting Systems to the MoD continued throughout the year. With completion of deliveries of 50 sets to the Australian and New Zealand armies, over 1,000 equipments have now been supplied.

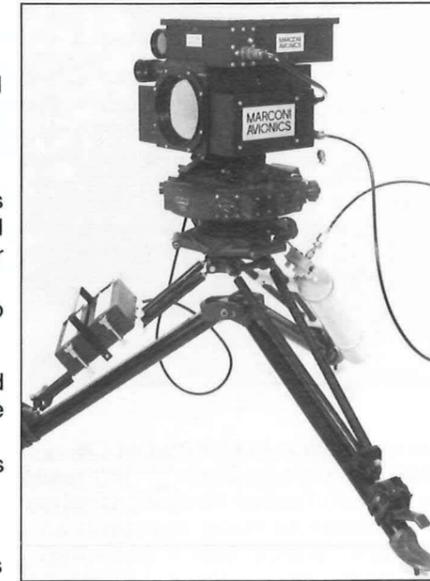
Special Projects Division based at Welwyn Garden City has maintained its lead in electronic digital signal processing and display technology for acoustics and sonar. During the year the division has seen an increasing order book from its major customer — the Royal Navy, and has continuously expanded its staff and space. The major growth area is now in the Production Department as the first of the Sonar Programmes approaches pre-production.

Neutron Division has achieved steady sales of its range of High Intensity X-ray generators and instruments and development has continued successfully on a number of CO₂ gas-lasers of different types.

The Division has been chosen by Hughes Aircraft Company to provide the CO₂ Laser Transmitter for the Advanced Development Programme of a prototype rangefinder for the XM1 tank which they are performing for the U.S. Government.

The CO₂ "TEA laser" offers significant advantages over the solid state types used in existing laser rangefinders. The wave-length of 10.6 microns is compatible with the Thermal Imaging night viewing systems and a common optical system can be used.

Delivery of the first model has taken place and system trials will commence shortly.



Common Mounting System with the "TEA Laser" rangefinder

The Research Laboratory aims to support Borehamwood Divisions in the technologies needed for current and potential business. It advances techniques and expertise, makes feasibility studies, initiates advance development and acts as a centre of expertise and information for use in engineering, manufacturing, and marketing.

Of 40 separate activities undertaken in 1980, the work on wave analysis, radars and radiometers in the 3mm band, laser rangefinders, laser gyroscopes and high-density electronics packaging, are the most significant.

Lightweight Structures Department formed earlier this year at Radlett, into an autonomous Production Unit, manufactures airborne composite structures from glass and carbon reinforced plastics. Recently procured oven and autoclave facilities enhance the department's capabilities, in support of production commitments for the radar aerials of the AEW Nimrod and Tornado ADV programmes.

Thick Film Department has been actively engaged in the production of the many Thick Film circuit requirements for the Divisions at Borehamwood.

It has also supplied a variety of Thick Film modules to other customers, including the Ministry of Defence and has maintained progress towards achieving Capability Approval to BS9450 next year.

The Model Shop which provides a facility at Borehamwood and Radlett has recently formed an additional facility at Milton Keynes.

The function at all three sites is to manufacture electronic and mechanical prototypes, and to support the Engineering Departments in order to assist in the transition from Research and Development through to the Production phase.

Central Publications Department has increased its capacity for reprographics, illustrating, photographic and word processing services, as well as seeking to enhance its standards of service and excellence.

The Department's writing group prepares handbooks and production test specifications for military projects. While its nucleus is at Borehamwood, self-contained writing groups with their word processors, are co-located with the engineers at the other divisional sites. A large modern office at Peterborough provides additional support to the writing projects.

The Personnel Department has successfully stepped up its recruitment drive, to meet the requirements of major projects and to staff new premises. Strength of the Borehamwood Establishment is now nearing 3,500 and at Milton Keynes, where a full-time Senior Personnel Officer has been posted, the team is already 430 strong.

Among many other activities in the busy year, a new Training Centre has been completed, at Kenwood House, Borehamwood, for which a Training Manager has been appointed and, on the social side, 1,000 employees and their families and friends, are expected to attend the annual Carol Service in St. Albans Cathedral. Canteen facilities at the various sites are being developed, in line with the Company's growth.

Basildon Establishment

— covers Basildon and Stanmore

Statement by W.R. Paterson, Director and General Manager of MAV and the company's chief executive for the Basildon Establishment.



1980 has seen a continuing increase in activity, albeit at a slower rate than was predicted a year ago. Growth is particularly noticeable in EOASD, ASD and ARSD (Basildon), due to production build up on STING RAY, AEW NIMROD Communications, and to licensed manufacture of transmitter and power supply units of the TORNADO nose radar.

Investment in plant and machinery has continued at a high level and includes the acquisition of a new building at Pipp's Hill industrial estate, a GEC 4065 computer for scientific computing, n.c. milling machines and lathes, and automatic test equipment.

New projects include JTIDS, TICM full development, AD660 Doppler production, Thermal Cueing Aid demonstrator and "Blowpipe" update.

Significant milestones have been achieved by the successful demonstrations of Category II and Category III high performance thermal imagers, the successful completion of the AEW NIMROD communications flight trials, delivery to Boeing of the first AD660 doppler on schedule, and first deliveries of Tornado Radar units.

These activities have required a high level of commitment by the employees in divisions, together with the central services supplied by Personnel, Training and Accounts departments, the Central Machine Shop, Works Engineering, Transport, Telephonists, Goods In, Packing and Despatch, Purchasing and Reprographics.

Airadio Systems Division design, development, production and field support teams have supplied over 1100 units for the AEW Nimrod Communications System during 1980. Highly successful flight trials of the complete system have been conducted with the Nimrod Communication Trials aircraft and the Transportable Ground Station.

Other achievements included definition of the complete communications system for a Sea King Replacement helicopter, and practical development of secure systems for advanced radios in maritime aircraft of the Royal Navy and Royal Air Force.

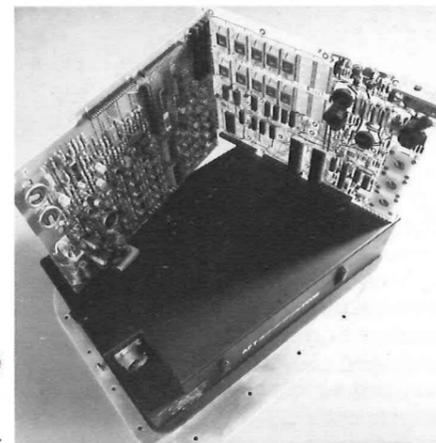
Of outstanding importance for the future was the Division's appointment in April 1980, as systems contractor to the Ministry of Defence, for the introduction of the JTIDS communications concept to the Armed Services.

JTIDS— Joint Tactical Information Distribution System. A new communications concept for the rapid transfer of data between a large number of subscribers in real time.

Airadio Products Division, with its associated **Airadio Spares and Service Unit** at Stanmore, is responsible for the supply and support of the Company's wide range of airborne radio products for the world's military and commercial aircraft.

The introduction into service of the AD660 Doppler, for Boeing airliners, and the AD2620 Tactical Navigation System, for the Italian Air Force, represents an important advance, both in technology and in potential exports. In a further major export order, APD will finalise development of the AD3400 multi-mode communications system, thus improving the prospect of orders from other customers, in the UK and overseas.

The Airadio Spares and Service Unit continues to attract servicing work from military and commercial users of avionics and is now responsible for the servicing of all the avionic equipment of Laker Airways DC10 and 707 airliners.



New AD 660 Doppler Velocity Sensor ordered for Boeing Airliners

Electro-Optical Products Division has continued to diversify and contracts which were received include the supply of television camera systems for use in radiation environments of nuclear power stations, security systems in the Middle East, on the Royal Navy's new seabed operations ship, in medical X-ray equipment, on giant earth-moving vehicles and in the hazardous environment of North Sea oil platforms. This diversification, together with well-established military business, both at home and overseas, to a large extent shielded the Division from the severe cut back in UK defence spending, experienced during the latter half of the year. In spite of the strengthening pound, exports continued to rise, with systems supplied to Scandinavia, throughout Europe, in South America and in both the Middle and Far East. Work currently being carried out, in the new-technology fields of solid-state TV cameras and infra-red equipment, should provide a sound basis for military business in the next decade.

Electro-Optical Surveillance Division has, during the past year, successfully demonstrated the Thermal Imaging Common Module equipment produced under the PD2 Contract, which has led to the receipt of the Full Development Contract, now well under way. This equipment has produced a great deal of interest overseas which, together with

our partners, Rank Taylor Hobson, is being developed by presentations and equipment demonstrations.

The Heli-Tele equipment for the Metropolitan Police was successfully put into service earlier this year and was seen operating during television coverage of the release of the Iranian Embassy hostages in London and the visit of Her Majesty the Queen to Rome. The Metropolitan Police, who have ordered a second system and spares, will be using this equipment on the new Bell 222 helicopter they have purchased. EOASD has supported Bell Helicopter Textron in integrating Heli-Tele into this new aircraft type. With a recent order to supply Heli-Tele for the Lynx helicopter, total sales now top 25 systems.

Electro-Optical Advanced Systems Division continued to expand its workforce and projects throughout the year almost doubling the sales relative to 1979. Guided weapon equipment manufacture continued at a high level and there was a steady growth in work on the Sting Ray torpedo and associated trials equipment. A number of torpedo trials were supported in Scotland and Gibraltar.

The division acquired a GEC 4000 series computer in the year for engineering purposes.

Future Systems Laboratory work continued on electro-optical pilot aids. Prototypes have been built and trials held for low light TV pilot aids and thermal cueing aids.

An underwater colour TV camera has been developed for North Sea oil and other similar surveillance or search applications. Films of Prince Charles diving on the wreck of the "Mary Rose" Tudor warship were taken with this camera and shown on BBC and ITV.

Central Machine Shop, with a team of 160, mainly serves Divisions at Basildon, but also does specialised work for other Establishments.

The Company has invested in additional numerically-controlled turning and milling equipment, which can be used continuously. New computer equipment, for program preparation, has also been installed. A computer has also been introduced into production control, for shop loading and job progressing. There



New night vision system for helicopters

has also been investment in conventional plant, with the purchase of three milling machines.

Accounts Department work load has risen, due to increased activity on the site and the staff has made special efforts to meet difficult accounts deadlines.

The department has made new use of computers, for the full clearance of invoices with purchase orders and for recording all fixed assets. The printing of computer output is now being undertaken at Basildon.

Plant Engineering Department has a Site Maintenance Unit, a Project Design Group and a Security Force, all providing a service to twelve buildings, including one at Stanmore. The sites cover 18 acres.

The task is formidable, with some 380,000 sq. ft. of roof area, over 7,000 light fittings, 1 1/2 miles of security fencing, over 1 mile of roads, 5 boiler houses, 50 air conditioning plants, 48 toilet blocks, and four continuously-manned gatehouses to look after, plus 500 machine tools, 25 environmental chambers and many other items to be maintained. Some 20,000 sq. ft. of the site has been re-organised or updated in the year and a 69,000 sq. ft. building has been converted, to house E-OASD at the end of February 1981.

Services Control is a team of fifty people, giving a service in Transport, Packing, Telex, Telephone, Post, Reception, Goods In, Stationery Stores, Maintenance Stores, Overalls, O&M and last but not least, Central Purchasing.

In the year, it dealt with 450,000 Telephone calls, 250,000 letters and 30,000 Telex messages, and placed orders worth £1.4 millions. Goods Inwards handled 37,500 consignments, and 40,000 consignments were despatched. 200,000 miles were travelled in delivering and collecting.

The Personnel and Training Department has had a busy year, in which 500 people were recruited and more than 600 staff had changes in responsibility, transfers or promotions. Of the 2,170 people now in the Basildon team, 180 are apprentices and trainees, of whom 70 arrived this year.

The Department has worked hard with schools and universities to attract able young people. Over 50 undergraduates came for industrial training, and school pupils (plus four teachers) came for two-week work experience programmes. A new Medical Department has been completed and a full health-screening programme is under way.

Report from the United States:

Marconi Avionics Inc. is a United States operation with facilities in Atlanta, Fort Worth, Seattle, Dayton and Tampa. Its President is Harry Eagles, formerly Divisional Manager of Marconi Avionics AS&R Division.

The main plant, at Atlanta, Georgia, has substantial manufacturing and engineering design facilities. The other sites are local to major customers, whom they support. The total team now numbers almost 400, many of whom help to make MAV products and technology available for United States defence programmes, current examples being head up displays for A-7 and F-16 aircraft.

As well as working with MAV on common programmes, Marconi Avionics Inc. wins contracts direct with the US Directorate of Defense and aircraft manufacturers. A notable example is the A-4M head up display, and the design and manufacture

of associated manual and semi-automatic test equipment.

Product support is another mainstream activity, including the repair of most military and civil avionics supplied by MAV to the United States. It also includes logistic planning, technical publications and on-site engineering support for the US Navy and the US Air Force.

New projects include further development of the Automatic Map Reader and activities related to CO₂ lasers. Together with other new programmes in engineering, manufacture and product support, they indicate a very healthy future for MAV Inc.



The Atlanta facility

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