



THE MARCONI DIGEST

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THE MARCONI DIGEST

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COVER

Goodwood House, venue for the Communications
Inwards Mission, held in March.

Forum

HAVING INWARDLY DIGESTED... A summary of your reactions

When the first DIGEST was produced, some eighteen months ago, it was intended for circulation at 'management' level. As the magazine has developed and settled into a shape and style of its own it has become obvious that its distribution should be widened considerably, both vertically and laterally. For that reason 'News and Topics relating to the Marconi Management' which appeared on previous front covers is now modified accordingly. We positively encourage a wider distribution of DIGEST, the only publication carrying news across the wide spectrum of the Marconi group of companies.

Regular readers of DIGEST will recall an invitation in a past issue to air their views about the publication, their likes and dislikes, suggestions and hopes for future issues.

Respondents were given the option of remaining anonymous and, perhaps, thereby feeling uninhibited, encouraged to put forward honest opinions and views. Certainly, the majority of replies were constructive and designed to benefit the future development of DIGEST.

Of course the people who put DIGEST together are constantly striving to improve the publication. However, without feedback of the kind received we can only be subjective in our approach. The response we get helps us to tailor DIGEST to what you want it to be.

So, what did you think of the publication? Summarised below are a cross section of the comments received.



Should also contain customers' evaluation and views on our equipment.

Very informative and enlightening but rife with abbreviations . . . a glossary would be useful.

This concentrated form of information is very useful, particularly to those of us who represent several Marconi companies.

Suggest inclusion of contact for further information.

Let's have more down-to-earth statements rather than the rosy pictures which our sales pitches present.

Each issue should include organisation chart and product address information.

Please include more photographs and also send to our customers. The most interesting article was 'The Malvern Link' by Adrian Milne.

Would like to see more on technological developments.

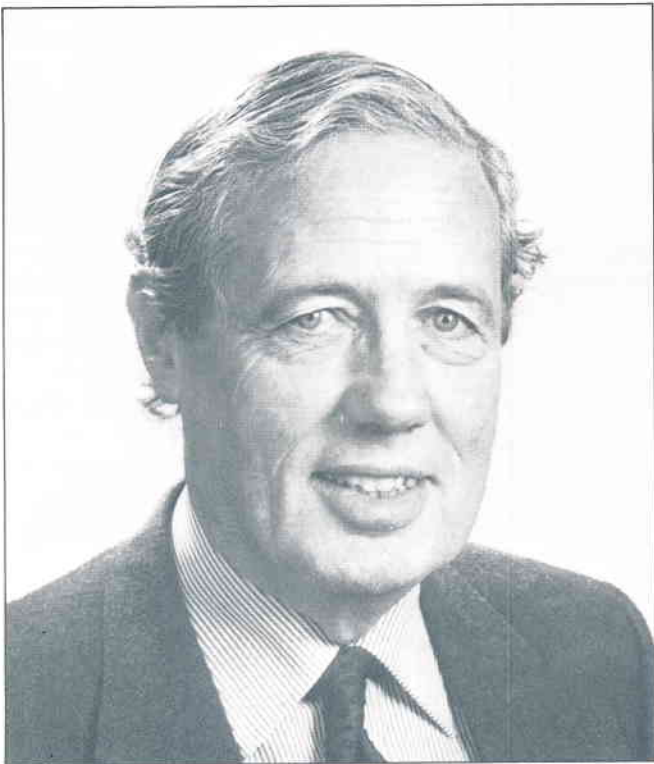
Useful document for customers both within MOD and overseas.

Interesting and useful to marketeers overseas.

More articles of a general nature should be included.



GEC Appointment



Sir George Cooper, GCB, MC, has joined The General Electric Company plc, with management development responsibilities broadly similar to those associated with the late Admiral Sir Richard Clayton.

Sir George was Adjutant General from 1981-84. Apart from his general duties as a member of the Army's top Board of Management, his responsibilities included recruitment, manning, training, promotion and resettlement, and conditions of service.

Sir George, who is a trained engineer, has held many senior military posts. He is chairman of a charity specialising in work with handicapped people, and has varied outside interests, particularly in sport.

Honour for Don Evans



The award of a CBE for Don Evans, Managing Director of Marconi Underwater Systems, was announced in the New Year's Honours List.

Prior to joining Marconi (MSDS) in 1975, Don Evans had a distinguished career in the Royal Navy. He was involved in the Sea Slug 'get well' programme, became First Lieutenant of the Apprentice School at HMS Collingwood, was a Commander on the Polaris programme and finally Captain and Torpedo Executive in charge of Tigerfish.

He undoubtedly made a significant contribution to the Royal Navy's torpedo programme. Subsequently with Marconi, he spearheaded the company's development, production and sales of Stingray and, more recently, Spearfish.

Don Evans has been largely responsible for building up MUSL, which now employs 3,500 staff.



Products

INSIGHT INTO THE LATEST EQUIPMENT

Orion 5000 Means Versatility!

Eddystone Radio, part of MCSL, has introduced a new single band transceiver designed for third world countries or in situations where telecommunications facilities are minimal.

It is called the Orion 5000 and is compact, rugged and easily transportable.

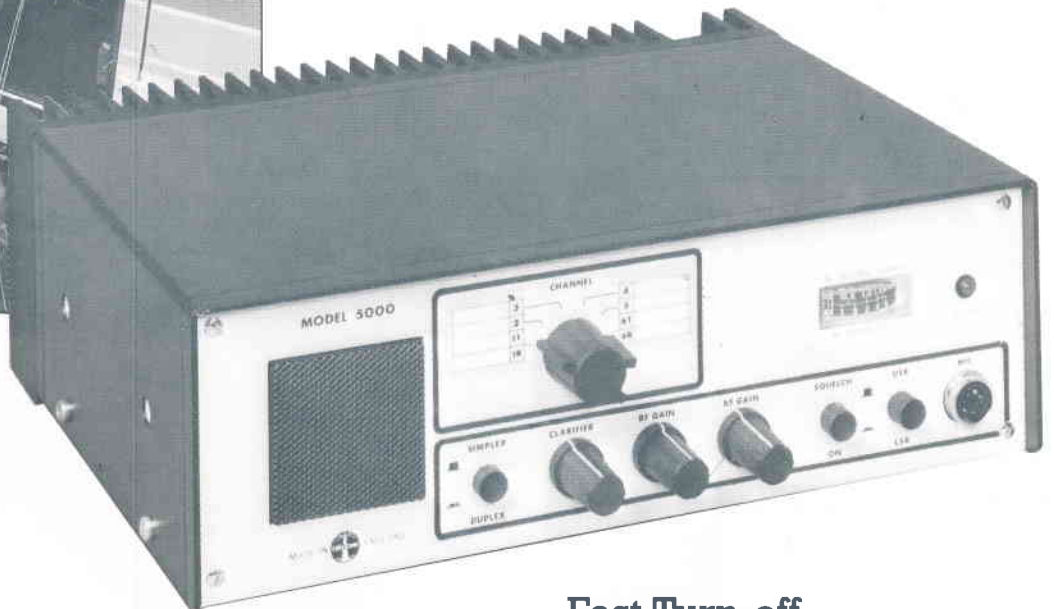
There is an output of 150 watts p.e.p. over the frequency range of 2 MHz – 16 MHz and versions are available for DC battery or mains power supplies.

Eight channels are available, and operation is on upper or lower sideband in simplex or semi-duplex mode.

Further information from Barry Lloyd, at MCSL, New Street, Chelmsford.



Showing Orion installed and working as a mobile station.



Fast Additions to the Family

Marconi Electronic Devices Limited has recently introduced a new family of fast-recovery, high-power PIN rectifier diodes, designated the DSF 805 and DSF 808 series.

An RMS current rating of 785A and a non-repetitive, 10 μ s surge handling capability of 1600A, combined with a maximum reverse time of 1.5 μ s, make the DSF 805 device particularly suitable for high-power industrial applications.

The DSF 808 diode has a maximum reverse recovery time of 9.8 μ s, and is especially appropriate for use with high-power transistor inverters.

Further information from Roger Bassett at MEDL Power Division, Carholme Road, Lincoln.

Launch into Cellular Radio

Marconi Mobile Radio, a division of MCSL at Chelmsford, has launched a range of Marconiphone products for the Cellular Radiophone market following their recent accreditation as a Cellular retailer.

Two vehicle-mounted sets and a modern, cordless radiophone with battery charging facilities make up the launch range.

'Fact File' in this issue (page 12) is a feature article on cellular radio.

Further information from Barry Lloyd at MCSL, New Street, Chelmsford.

Fast Turn-off Thyristors for High Power

Continuous on-state current capability of 360A and peak repetitive voltage handling up to 2500 volts at up to 10 kHz, are offered by Marconi Electronic Devices' new family of fast turn-off thyristors.

The latest electrode design techniques are used in the construction of the six devices, known as the DCR 1058 series. They are packaged in 75 mm diameter button capsule format.

Further information from Roger Bassett at MEDL Power Division, Carholme Road, Lincoln.



New Line Monitor from MI

A Marconi Instruments line monitor used by British Telecom for developing its digital network is being brought out in a new version for the general commercial market to provide new standards of measurement accuracy and fault accountability.

Designated the 2833A, this new Digital Line Monitor will enable telecommunications authorities to have proof of the continuous quality of digital links.

Such proof is essential where the increasing importance of data transmission in business, commerce and security requires ever-closer monitoring of faults and down-time.

Further details from Belinda Mobbs, at MI, St. Albans.

Marconi Instruments' new 2833A Digital Line Monitor offers high-precision measurements coupled with an RS-232C interface to provide a hard copy print-out of results.



Fast Switching Diodes for Capsule Thyristors

Recovery times as low as 5.5 μ s are possible with the DSF 1112, a new 2500 V fast-switching capsule diode introduced by Marconi Electronic Devices.

Designed as complementary to the DCR family of fast-switching capsule thyristors, the DSF range covers peak inverse voltages at up to 4000 volts. Low forward voltage drops allow an RMS current rating up to 2590 A. This is achieved by the use of large diameter (up to 50 mm) silicon slices to improve efficiency and reduce losses.

Further information from Roger Bassett, at MEDL Power Division, Carholme Road, Lincoln.

A European 'First'

Marconi Electronic Devices' Advanced Sample Facility has now made available Europe's first microwave monolithic amplifier chip.

The chips, developed at GEC Hirst Research Centre and produced in a processing plant similar in character to MEDL's Lincoln fabrication facility, are available to OEMs for incorporation in their own hardware.

When mounted, ultra broadband amplification from d.c. to 12 GHz with a gain of 6dB (± 0.5 dB) per chip is possible. Typically the noise figure is better than 6 dB.

Also available is a cascade of four chips which provides a very high gain broadband amplifier module (24 dB from 20 MHz to 12 GHz).

Further information from Colin Corbey at MEDL Advanced Sample Facility, Wembley.

Wide Band Power Sensor

Marconi Instruments' new low-frequency power sensor, type 6912, operates from 30 kHz to 4.2 GHz and has a 50 dB dynamic range from 1 μ W to 100 mW. The 6912 extends the frequency coverage of Marconi Instruments' well-established power meters, the 6950 and 6960, from 30 kHz to 20 GHz.

It has a superior VSWR performance, specified as less than 1.1:1 from 300 kHz through to 4.2 GHz, and has applications in fixed and mobile radio, TV and satellite communications where its accuracy will give increased user-confidence.

Further details from Belinda Mobbs at MI, St. Albans.





Marconi Instruments' new 2870 Data Communications Tester combines a comprehensive pattern generator and error detector to allow tests on lines operating from 50 bit/s to 128 kbit/s.

Versatile Data Comms Tester

Marconi Instruments has designed a new pattern generator and error detector – the 2870 Data Communications Tester – to aid Communications Systems and DP Managers in determining the error performance of digital data systems.

It operates through either the co-directional (G703) interface or with an NRZ (TTL) signal code.

This easy-to-use tester is comprehensive, enabling tests to be carried out on lines operating from 50 bit/s to 128 kbit/s.

Further details from Belinda Mobbs at MI, St. Albans.

R26 Waveguide Load

Marconi Electronic Devices has now made available the first in a series of waveguide loads in R26/WG9A/WR340 configuration.

Its designation is F1284-11 and it is designed for operation in the 2.35 to 2.7 GHz frequency range.

It is rated for 500W continuous mean power and has a VSWR of 1.1:1. It will operate up to a maximum temperature of 300°C.

Further information from Pat Higham at MEDL Microwave Division, Billerica.

£50m Sales Target for the 2955

Marconi Instruments has launched a radio communication test set with a number of features that put it in the forefront of competitive equipment.

It is confidently expected that the 2955 Radio Communications Test Set will achieve a 15% share of the expanding world market for mobile radio test equipment over the next five years with sales worth £50 million.

Little over two-thirds the size of – and lighter than – its main competitors, its launch price is only about half that of other GPIB programmable test sets. It has a number of features not normally found on other sets.

Innovative design simplifies its use enabling tests to be made up to six times faster than with more conventional units, with tests being set up quickly in only three easy steps.

Further information from Belinda Mobbs at MI, St. Albans.



Marconi Instruments' new 2955 radio communications test set is being launched at half the price of other GPIB-programmable test sets, yet it performs tests up to six times faster than more conventional units.

Contracts

FOCUS ON NATIONAL AND INTERNATIONAL SUCCESSES



Update of East Midlands

Busy East Midlands Airport at Castle Donington is situated adjacent to the Derbyshire Hills in an area where there is considerable ground clutter to affect radar surveillance, so installations there have to meet very exacting standards.

Against stiff competition, Marconi Radar Systems has won a £400,000 contract to replace the existing radar surveillance equipment at the airport with the new generation ASR S511 radar.

The S511 was only introduced three years ago but has already been ordered by the CAA for 13 installations, by municipally-owned Newcastle Airport (Digest 2, page 8) and by customers in Spain, Jordan and India.

New Radar System for East Anglia Shipping

An initial £400,000 contract for the installation of a vessel traffic system (VTS) at Harwich has been awarded to Marconi Radar Systems (MRS) by the Harwich Harbour Board.

The contract calls for the provision of three new radars; one to replace the Board's existing radar; the other two to be remotely located and linked to the Harbour Operations Centre by landline data link.

"The VTS will facilitate the surveillance of traffic movements within the harbour area", says David Cremer, assistant sales manager of MRS's Naval Division, "Targets will be tracked automatically, with such information as course and speed displayed to the operator. The system incorporates three TV bright colour displays - viewable in daylight conditions - and will provide all the facilities of a standard radar display."



Multimillion Pound Buccaneer Contract

Buccaneer S2B low-level strike aircraft of the RAF are to get a major update to their passive electronic warfare system under a contract recently awarded to Marconi Defence Systems Limited by British Aerospace.

The contract, worth several million pounds, involves an extensive programme of redesigning and modification of the Buccaneer's existing ARI 18228 crystal video radar warning receiver, including the provision of a comprehensive threat display.

The complete system, Guardian Series 200, is able to determine all known radar threats and operate in the increasingly dense electromagnetic environment that surrounds modern warfare.

International Technology Breakthrough

Marconi Electronic Devices has successfully concluded the first UK licence agreement for semiconductor technology with the People's Republic of China.

The deal struck between MEDL and the Chun Shu Rectifier Plant of Peking is worth £450,000 and involves the provision of technical know-how, the supply of semi-conductor devices and training.

The Peking factory will be establishing a manufacturing plant for state-of-the-art power thyristors and silicon rectifiers for advanced electronic control and switching facilities in railway sub-stations, process control plants, and power generation and distribution systems.

International Study Team Bid

Marconi Defence Systems Limited has joined with Bodenseewerk Gerätetechnik GmbH (BGT) of West Germany, and McDonnell Douglas of USA to bid for a feasibility study of a Long Range Stand-Off Missile (LRSOM).

The bid was invited by the US Air Force on behalf of the governments of the US, UK and Germany.

The relevant expertise of the three companies in the field of precision guided weapons will be combined in the team which, when the study contract is awarded, will be led by MDSL as prime contractor.

European Satcoms Contract

The European Space Agency (ESA) has awarded a £260,000 contract to Marconi Defence Systems for seven satellite communications transmitters.

The highly advanced transmitters, operating over the frequency band 1530 to 1555 MHz, will be made by MDSL's Satcoms Division at Watford.

The order is the result of successful studies into the possibilities presented by this latest L-band spacecraft technology, which confirmed that using such modular solid-state transmitters would result in significant operational benefits, such as improved overall transponder reliability and the facility to use multi-beam antennas to provide flexible satcoms links for the commercial maritime/mobile market.

According to INMARSAT, the market for commercial shipborne, airborne and land-based terminals is growing by 40% per annum, while the traffic carried is increasing by 60% per annum.

Claymore for Middle East – Again

A Middle Eastern country has placed a second order with Marconi Secure Radio Systems for elements of the Claymore radio relay system. The order, worth over £200,000, follows on from the one in August last year (Digest No. 4, page 7) and includes the line-of-sight radio GRO83, its associated Multiplexer MUX 983 and the bulk encryptor Marcrypmux.

Claymore is a lightweight, portable system which is simple to use and maintain. It is of rugged construction and high reliability with very low power consumption.

It offers high security with switching, multiplexing and bulk encryption facilities.

Contribution to Safer Flying

Marconi Communication Systems has won another significant order for Marshal, their store and forward message switching system.

The contract this time is for Marshal to be installed at the new AFTN Centre at Geneva.

The Aeronautical Fixed Telecommunications Network is a world-wide communication network for the exchange of messages relating to the safe movement of air traffic. As such, high reliability is of paramount importance and Marshal fully satisfies this requirement.

Marshal has a further advantage in that it can be adapted easily to interconnect with the forthcoming common International Civil Aviation Organisation Data Interchange Network (CIDIN).

The order was placed by Radio Suisse Limited (on behalf of the Federal Office of Civil Aviation) following international tendering.

Air Defence Study

In Marconi Digest 3 (page 11) we reported the award of a £500,000 feasibility study contract to EASAMS, supported by Logica Ltd.

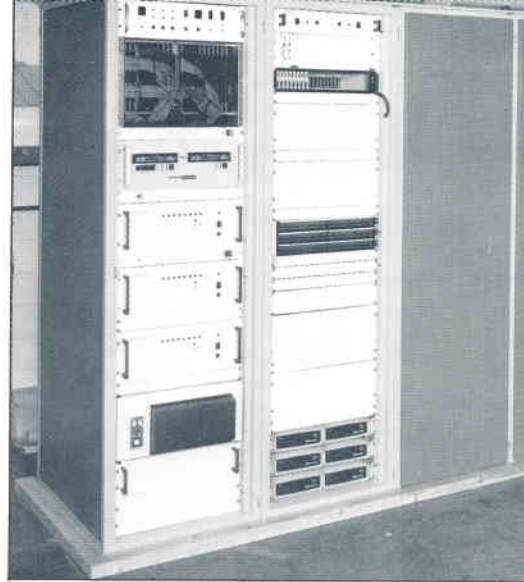
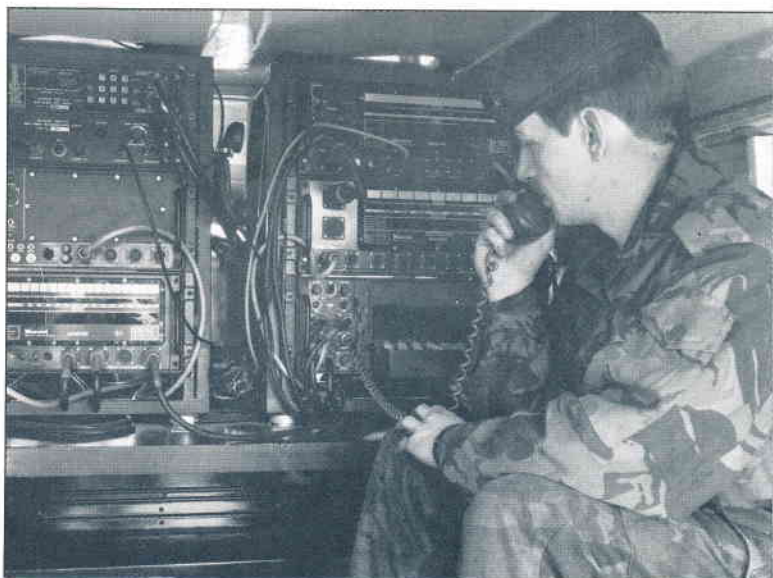
This has now been followed by a £2m MoD contract to undertake a 12-month technical study of vehicle-based Air Defence Command Systems (ADCIS) for the British Army.

The feasibility study examined ways of upgrading command information links between headquarters formations and front-line anti-air missile defence units deployed by 1(BR)Corps in Germany. Now the study will concentrate on the design and development of systems options to the point of demonstrating operational hardware.

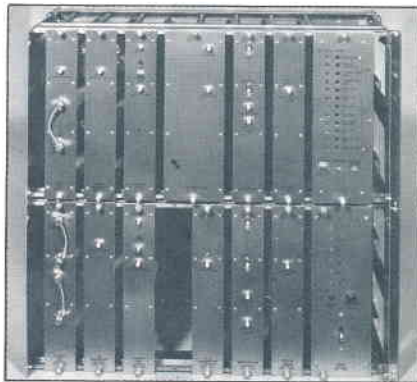
ADCIS will greatly improve the two-way flow of vital, rapidly-changing information between air defence units and so dramatically increase the speed with which weapons readiness states are notified to front-line missile defences.

ADCIS will operate over the British Army area communications net radios, also interfacing with NATO communications networks.

Part of the Claymore system installed in a Land Rover



Marshal store and forward message switching system.



MDSL's Hypergroup Codex.

More from Down Under

Following on from its success in Australia (Digest 4, page 6), Marconi Communication Systems has won more than £500,000 worth of additional business there. Contracts in recent months now come to well over £1.5m.

This time the order is from Telecom Australia for Hypergroup Codex equipment, a unique item that will enable the Telecom authority to introduce digital line and radio bearers into existing frequency division multiplex networks accepting a FDM Hypergroup of 960 channels, permitting digital transmission via a 68 Mbit/s port on a 34-140 Mbit/s multiplexer.



Feature

MARCONI RADAR – A 50 YEAR PEDIGREE

by Bruce Neale, Radar Consultant, MRSL

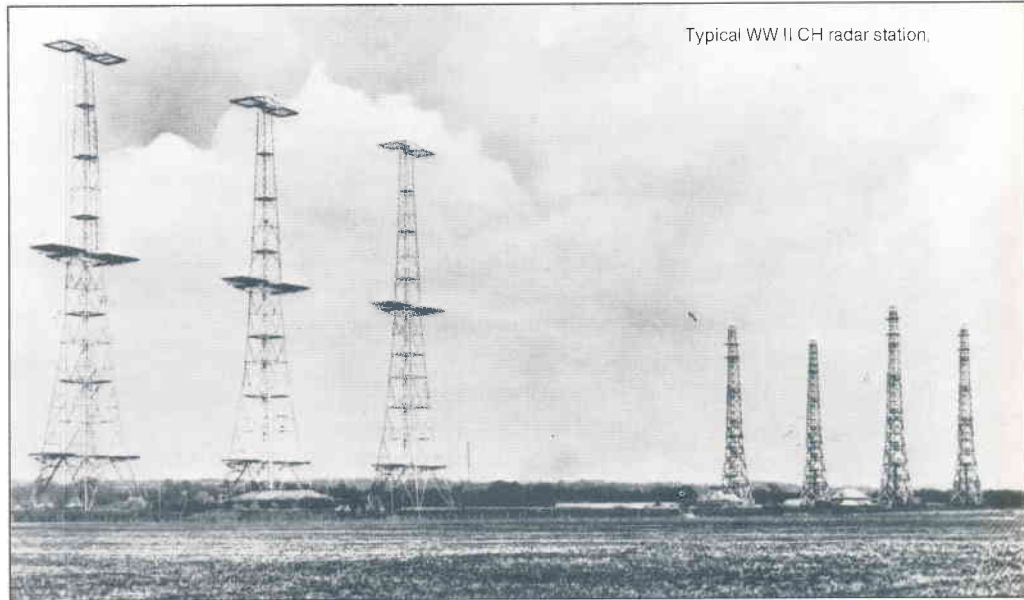
Nineteen-eighty-five is the 50th anniversary year of the celebrated 'Davenport Experiment' which conclusively demonstrated that aircraft could be detected by means of electromagnetic waves transmitted from the ground. Further rapid development led to the installation of an early warning system that could detect and track aircraft in range, bearing and height in time to meet the challenge of Hitler's Luftwaffe. It was a 'close run thing'.

The story of the Marconi Company's (Marconi's Wireless Telegraph Co.) activities in the radar field begins in the early years of the war when it was called upon to design and install the masts and antenna arrays for the many new CH stations that were required for the extension of the radar defence chain along Britain's south and west coasts. In addition to this air defence work, the company made a major contribution to naval radar during the war by developing and manufacturing a completely new air early warning equipment.

The company was able to develop its commercial interest in radar during the immediate post-war period by supplying both naval and ground air defence equipment, based on wartime designs, to foreign countries. The success of the early activities led the company to embark on a programme to improve the performance of the early wartime centimetric equipment. To exploit the fruits of this work a special division, Services Equipment Division (SED), was set up in 1948 under the forceful management of the late Colonel E. N. Elford.

The Berlin Airlift and the tense international situation in 1948 led to urgent action being taken to improve the state of Britain's air defences. The majority of the wartime radar stations had been abandoned or demolished at the end of hostilities; others 'mothballed' in case of emergency. The company was asked to undertake two major commitments: (1) to refurbish and improve the performance of a number of CH (Chain Home) and GCI (Ground Controlled Interception) stations; (2) to study the longer term requirements of a new air defence system for the UK.

The study was undertaken by the late Sir Eric Eastwood and his team at Great Baddow and led to the company receiving in 1949 a multi-million pound



Typical WW II CH radar station.

contract for the design, manufacture and installation of a chain of underground CHL/GCI stations known by the code name 'ROTOR'.

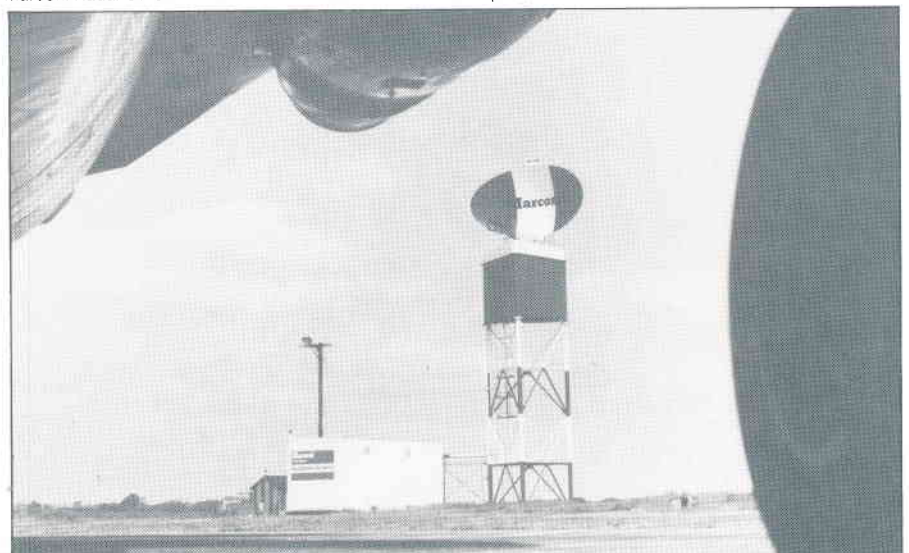
The new system incorporated many innovations including fixed-coil PPIs (plan position indicator) intertrace marking, large screen PPI projection and remotely sited radar sensors. The development work for this huge contract was carried out jointly by the Radar Development Group (R.D.G.) at Broomfield under the late Hugh Wassell, and the Marconi Research Laboratories at Baddow under Sir Eric. The site planning, manufacture and installation was the responsibility of SED (Services Equipment Division) in New Street

under Colonel Norman Elford. To achieve the technical standards required for these complex installations, a massive recruitment and training programme was set up, a large proportion of the recruits being ex-wartime radar mechanics and radio 'hams'.

In parallel with ROTOR, an associated contract for the development and large scale manufacture of a tactical mobile radar equipment code named 'VAST' was placed with the company.

The VAST and ROTOR contracts were, up to that time, the largest ever handled by the company – the ROTOR contract alone being worth over £250,000,000 (including buildings) –

Marconi Radar's ASR 511 surveillance radar at Southend Airport.



and their success, both technically and commercially, set the solid foundation on which Marconi Radar of today is built.

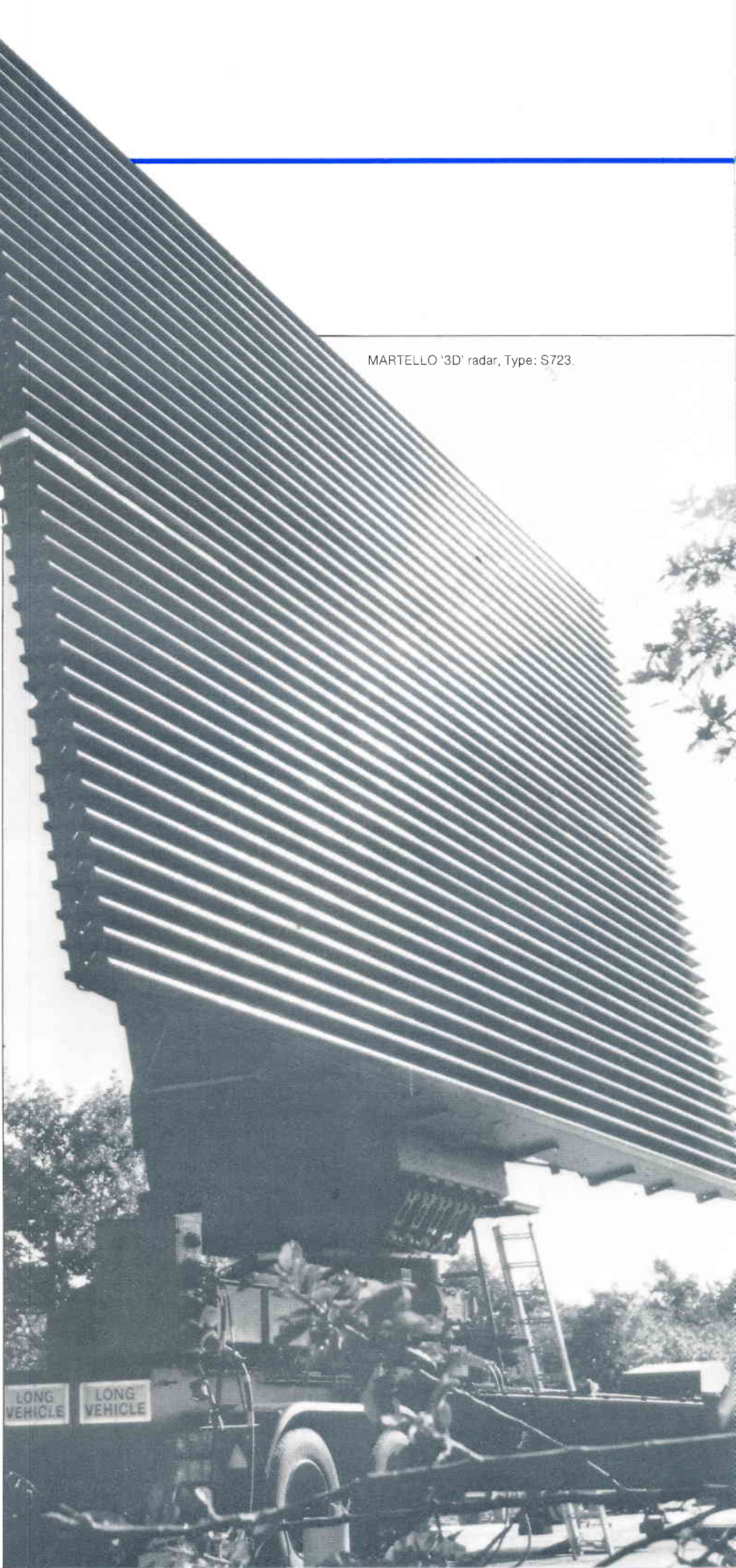
In the space available it is not possible here to do justice to the enormous range of equipment both civil and military that has been designed, manufactured and installed world-wide by Marconi Radar since the VAST and ROTOR contracts. Due to a number of mergers of UK electronic companies in the 1970s, Marconi Radar is today a powerful amalgam of SED and the radar expertise of Metropolitan-Vickers and BTH, both major contributors in their own right to wartime and post-war radar.

To make a definitive list of Marconi Radar's achievements since its early wartime involvement with radar would be a formidable if not impossible task. For forty years it has been engaged in the development, manufacture and installation of a vast range of products from small infantry man-portable Doppler radars to the giant Type 84 and 85 long range surveillance radars that form the backbone of this country's air defence system, culminating in MARTELLO, the world's most advanced 3D radar. It has been continuously engaged on major projects for the RAF, the Navy, the Army and the Civil Aviation Authority both in the UK and Overseas. These projects include: the NATO defence chain; air defence systems for Sweden, Pakistan, Malaysia, Saudi Arabia, Oman, Jordan and many others; naval surveillance and missile guidance systems for Sea-Slug, Sea-Dart and Sea-Wolf; satellite ground stations for SCAT and APOLLO; the huge UK air defence data handling network UKADGE and, of course, MARTELLO for the RAF and NATO. There are approximately one hundred Marconi air traffic control systems in operation throughout the world.

The company is currently developing: an 'Over the Horizon Radar' (OTH); a high performance, clutter-free gapfilling radar, and has entered the competitive field of C³I. A new airfield surveillance radar (ASR) is under advanced development for the Spanish Civil Aviation Authority.

With the intensification of foreign competition — Japan has now entered the field — the company has to pull out all the stops to maintain its well-earned position as a world leader in the supply of advanced radar systems.

MARTELLO '3D' radar, Type: S723



Fact File

CELLULAR RADIO: A MARKET ON THE MOVE

by Barry Lloyd, Press Officer, MCSL

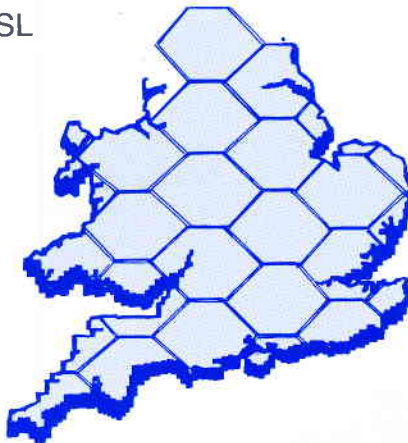
It is obvious that a mobile radio telephone service is indispensable for a number of business and professional users and would be a great advantage to many others. Improved efficiency, reduced operating costs, and enhanced job satisfaction are all measurable advantages of such a service.

In the past, the greater use of this mobile medium was restricted because of the poor quality of message reception, the relatively high fixed costs, and a severe shortage of capacity on the airwaves. Improvements in reception and lower fixed costs in recent years have now made high grade communications on the move a practical proposition.



Unfortunately, only a small percentage of would-be users could take advantage of these improvements since progress in the matter of greater airwave capacity has been slow. In the UK, the number of subscribers who could be connected to the existing automatic mobile telephone network – known as System 4 – was restricted to around 10,000. In some urban areas, particularly London, this meant long waiting lists for the service, and there were even reports of a black market in mobile telephone numbers.

Starting at the beginning of 1985, however, a new technology known as cellular radio was introduced into the UK, with the aim of accommodating as many mobile telephone subscribers as might require service. Cellular radio solves the problem of congestion of the airwaves by re-using the same frequencies many times over. To accomplish this, low power signals are used, and the total coverage area is divided into separate cells which can be anything from a half to



sixty kilometres in diameter depending on the population density to be served. Each adjacent cell uses a different frequency so that, for example, a radio 'barrier', completely surrounding frequency '1', is made by frequencies '2', '3', '4', '5', '6' and '7'; in turn, frequency '2' is surrounded by frequencies '1', '3', '4', '5', '6' and '7', and so on. The result is that, after a suitable lapse of distance, each of the frequencies can be re-used by a different set of subscribers.

Two competitive cellular radio systems are presently being built in the UK. Coverage is being provided first in London, and then along the main road arteries to other major conurbations. It is planned to cover around 90% of the country's population (which is equivalent to about 60% of the land area) by 1990. Estimates put the total number of cellular radio subscribers at 25,000 to 30,000 by the end of the first year of service, rising to as many as 500,000 by the end of the decade.

Marconi Communication Systems, which is the leading supplier of radiophones to the current System 4 mobile telephone network, is gearing up

in earnest to service the new large scale market. At present the company is offering a range of products which includes two radio sets for vehicle installation, and a hand-portable set; additional equipment will be added as cellular demand grows. Already the company has fitted equipment for subscribers in its home town despite the fact that the cellular service will not officially cover Chelmsford until the Autumn.

The new equipment, which will be sold under the Marconiphone name, gives subscribers identical facilities to those available in the conventional telephone line network, including national and international direct dialling to and from mobiles. Some versions also provide a number of features not generally available to ordinary subscribers, such as third party conferencing, on-hook dialling, and call-cost monitoring. The facility to communicate without interruption when moving from cell to cell is provided by an arrangement in which radio stations in neighbouring cells monitor the strength of the mobile's signals – the one receiving the strongest level automatically taking charge of handling the call.

MCSL anticipates that cellular radio will attract a wide range of users including businessmen, the professions, service organisations, transportation and distribution companies, sales forces, the construction industry – in short, anyone who needs to be able to telephone but who finds the use of the wired network inconvenient or impossible. The company is also supplying nearly 500 antennas for use in one of the national cellular systems.

Marconiphone

COMMUNICATIONS YOU CAN COUNT ON

THE Marconiphone RANGE

MP 100

MP 200

MP 500 Hand Portable

All the advantages of land-mobiled phone network, plus the convenience of mobile phone.

Supplement



Electromagnetic Interference

A Problem of Our Time

The phenomenal increase in the use of solid-state electronics in recent years has created a problem that is self-perpetuating. The greater the use of ever-more sophisticated electronic equipment, the greater the need to protect it against interference from other electronic installations. This, together with the need to guard it against the natural elements, has faced the electronics industry with the challenge to design a shielding system that is effective yet transportable, long-lasting yet commercially viable.

The use of electronic equipment and circuitry is so widespread today, and is taken for granted to such an extent, that it is not always realised how much we depend on it in our daily lives.

Whether it is high-tech monitoring or diagnostic machinery in medicine; automation in industry; communications in commerce and entertainment; control systems on the railways, the roads or in the air; or command, control, communications and intelligence in the field of defence, they all rely on the efficient operation of electronic equipment.

A controlled environment

Such equipment is highly sensitive – delicate even – and is susceptible both to physical damage and, increasingly, to electromagnetic interference (EMI). The more sophisticated the circuits the more liable to malfunction due to outside factors, they become.

Human beings work at their best in a controlled environment, and so do today's high-tech electronic systems. In fact, the human being is more adaptable in a lot of respects and can very often operate in conditions that would be less than optimum for the sophisticated equipment he is using.

There is a need to control temperature, humidity, air conditioning and, of course, the ingress of dust, dirt and moisture.

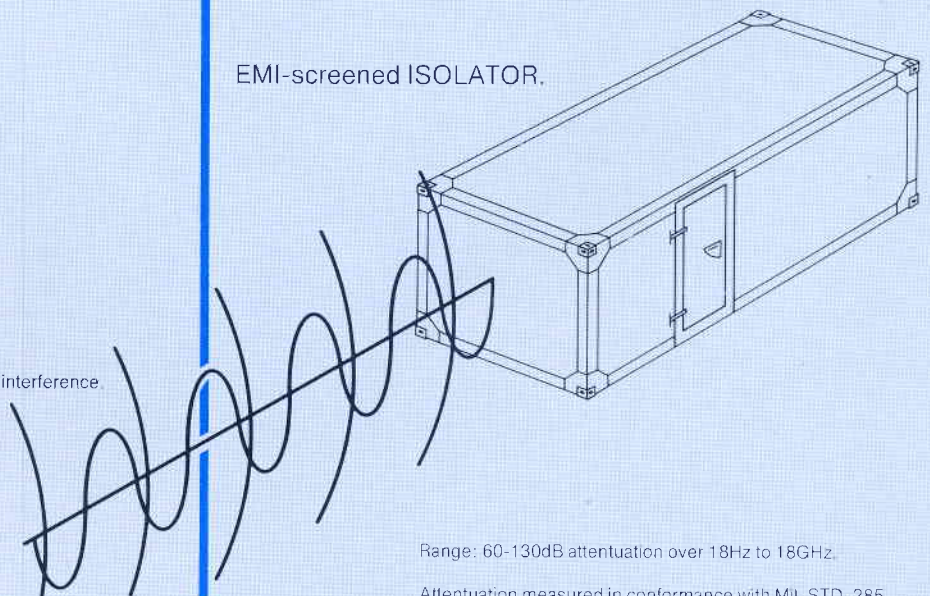
There is a need to protect the equipment against the ravages of a baking sun, an arctic night, torrential rain, hailstones, snow and hurricane force winds.

EMI – and EMP

The physical elements can be kept at bay comparatively easily in a permanent building. But not even a brick or concrete structure will shield sensitive electronic equipment against EMI unless it has been specially constructed.

EMI-screened ISOLATOR.

External interference



Range: 60-130dB attenuation over 18Hz to 18GHz.

Attenuation measured in conformance with Mil. STD. 285.

However, so much of the equipment we are considering can never be housed in such a structure that another solution must be found.

Before we consider that solution, let us look in more detail at the problem of EMI, whether man-made or natural.

Electromagnetic interference is electrical 'noise' that results from a host of everyday, electronically-controlled equipment such as television, radio and radar transmitters, welding equipment, switch gear, communications and data gathering installations and medical diathermy machinery.

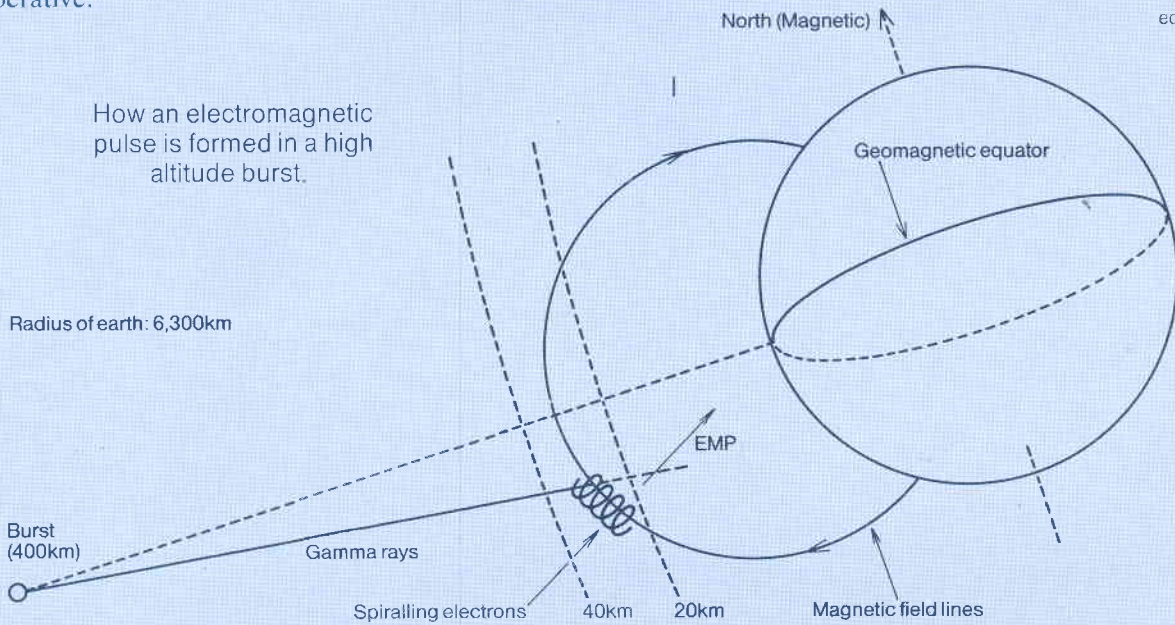
Natural sources of such 'noise' are lightning and other atmospheric disturbances.

Another, hopefully remote, source of interference would be the detonation of a nuclear weapon which, before the physical effects of thermal pulse and air-blast pressure waves had had their effect, would blanket an area with a microsecond burst of electromagnetic energy (EMP) that would instantly render any unprotected electronic circuit inoperative.



ISOLATOR shelter fitted with military radio equipment by MSRL.

How an electromagnetic pulse is formed in a high altitude burst.



Sophisticated Circuitry

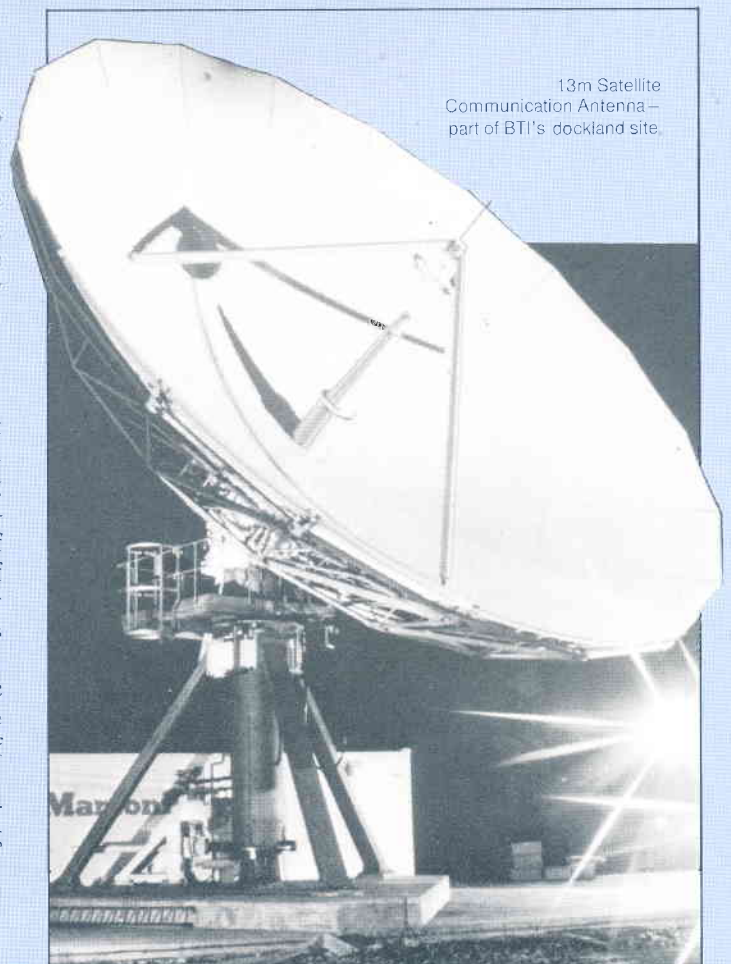
Even comparatively simple consumer equipment such as washing machines, videos, heating controls, automobile management systems and heart pacemakers can be affected by the high level of ambient EMI. Of course, the more sophisticated circuitry of radars, computers, complex telecommunications and control systems are much more susceptible to interference, with malfunction as the likely result.

Two-way protection

Not only is it necessary to protect sensitive equipment against EMI, it can be just as essential to prevent the electronic signals emitting from that equipment being picked up by sensitive monitors in the hands of an enemy – military or commercial! We have all heard recently of embassy typewriters being bugged to transmit signals out of the machine to receivers outside the building where they are unscrambled, decoded and passed to the host country's intelligence services.

Not only can such electronic surveillance have a dramatic effect on military or diplomatic espionage, but the same techniques in the commercial field can make nonsense of industrial security.

On the battlefield, the ability to 'read' an enemy's command and control systems by remote electronic monitoring would give an incalculable advantage.



13m Satellite Communication Antenna – part of BTI's dockland site.

If you want the thing done well – do it yourself!

The Marconi Company has as big a need to protect its sensitive equipment in research, development and in production as any other civilian organisation in the world.

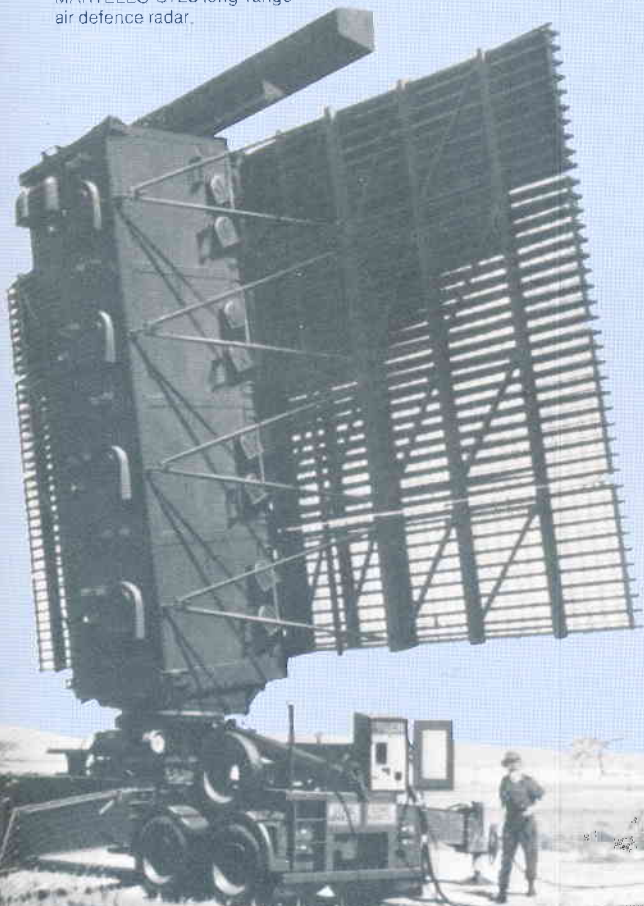
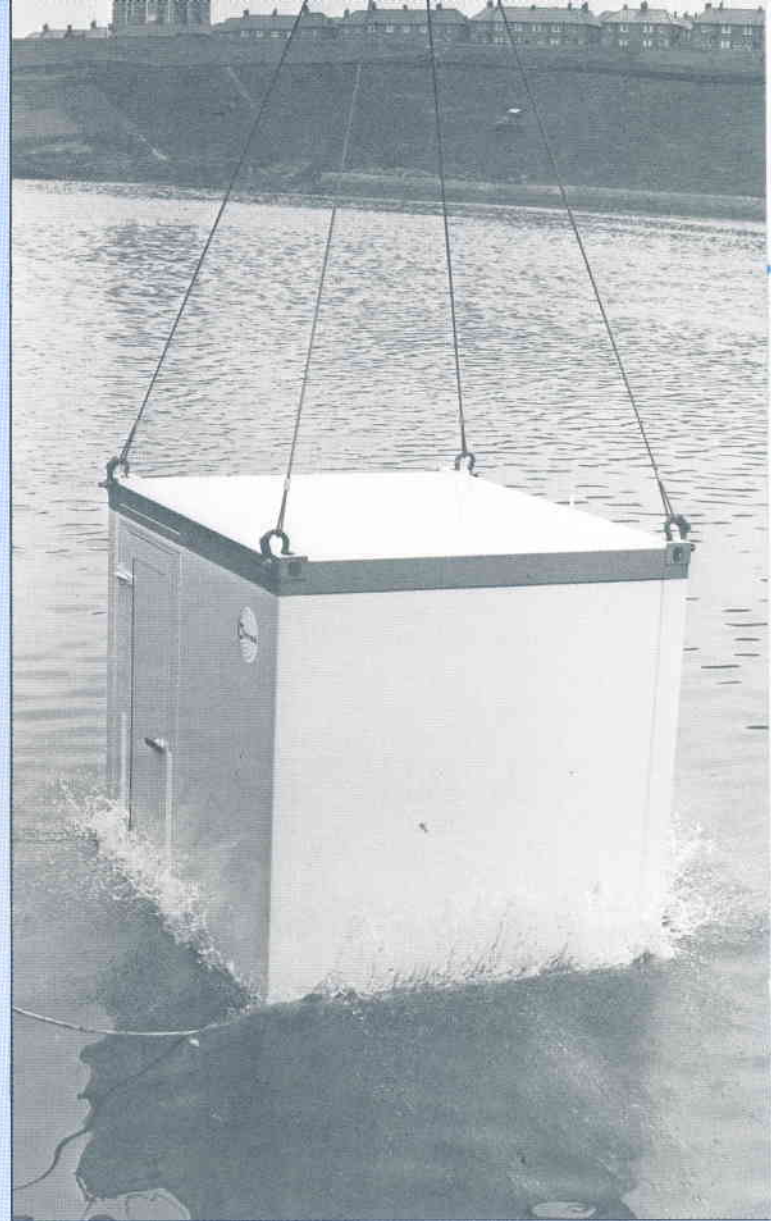
Furthermore the equipments it manufactures and installs for its customers almost invariably require maximum shielding.

Although a range of shelters is available from suppliers both in the UK and abroad, Marconi found that none met the company's stringent specifications at a realistic price. The logical step, therefore, was to design and build its own not only for its own requirements, both internally and for contract installations, but to make available to other organisations.

Marconi Radar Systems' vast experience in the design, production and management of electronic systems enabled the company to produce a shelter combining features that would appear to be incompatible – maximum shielding with minimum weight, strength with adaptability, rigidity with ease of transport, and compactness with a full specification.

ISOLATOR being lowered into the Tyne.

MARTELLO S723 long-range air defence radar.



The ISOLATOR

The Marconi shelter – named ISOLATOR – gets its basic strength and shielding effect from a modular construction employing single-piece vacuum-bonded panels, up to 6 metres in length, consisting of aluminium alloy facing sheets bonded to a structural foam core material.

This single-panel method has the advantages of lighter weight and less risk of thermal bridging over joint interfaces, along with fewer opportunities for water, wind and dust to penetrate.

Ingenious joint interfaces provide maximum sealing with a degree of flexibility that allows transport by air, sea or land in the most adverse conditions without risk of stress damage, while modular construction permits a variety of siting configurations.



A Package Approach

The Marconi Company's total involvement in the broad spectrum of the electronics systems means that an Isolator can be fitted-out to a customer's precise specification and tested to all accepted standards before being transported and installed ready to run.

All internal services such as temperature and humidity control, air conditioning, and power supplies, can be specified, along with cable vaults and transient suppression circuitry. Ballistic protection can be incorporated and the shelter can be nuclear hardened against blast and thermal pulse.

ISOLATOR – A Solution for the Future

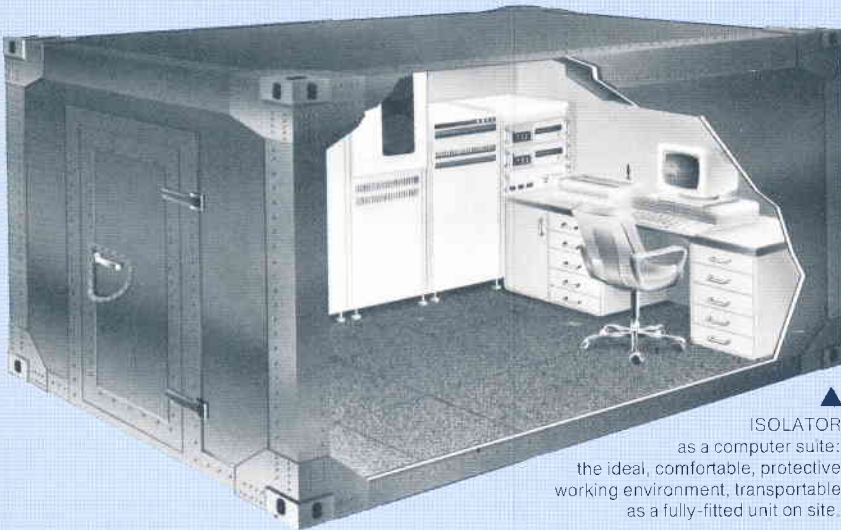
If EMI is the problem of our time, then ISOLATOR is the solution of the future.

With the proliferation of electromagnetic interference, the need to protect more and more equipment from it is fast becoming a major problem.

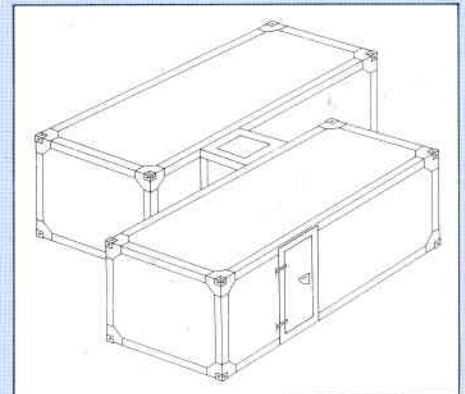
Whether in the military sphere or in commerce and industry vital installations need the best protection possible against natural and man-made interference. It is to answer that need that MRSL has produced, arguably, the most complete, the most efficient, the most cost-effective protection system – ISOLATOR.

Author's Note: This appraisal of the problem and the Marconi Company's approach to the solution can only give the briefest idea of ISOLATOR. Those readers interested in a

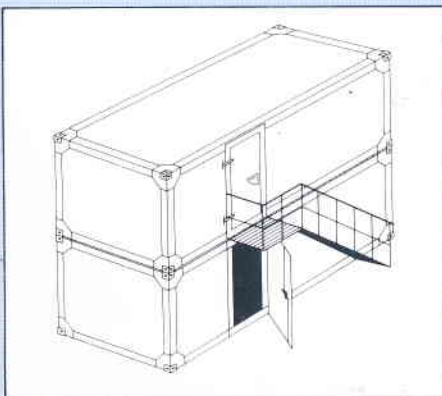
comprehensive description of the various models and adaptations are recommended to read the 'Technical Manual' available from Malcolm Wood, MRSL, Gateshead.



▲ ISOLATOR as a computer suite: the ideal, comfortable, protective working environment, transportable as a fully-fitted unit on site.



▲ A side-linking configuration allows working space while ensuring all the protective features within any number of units.



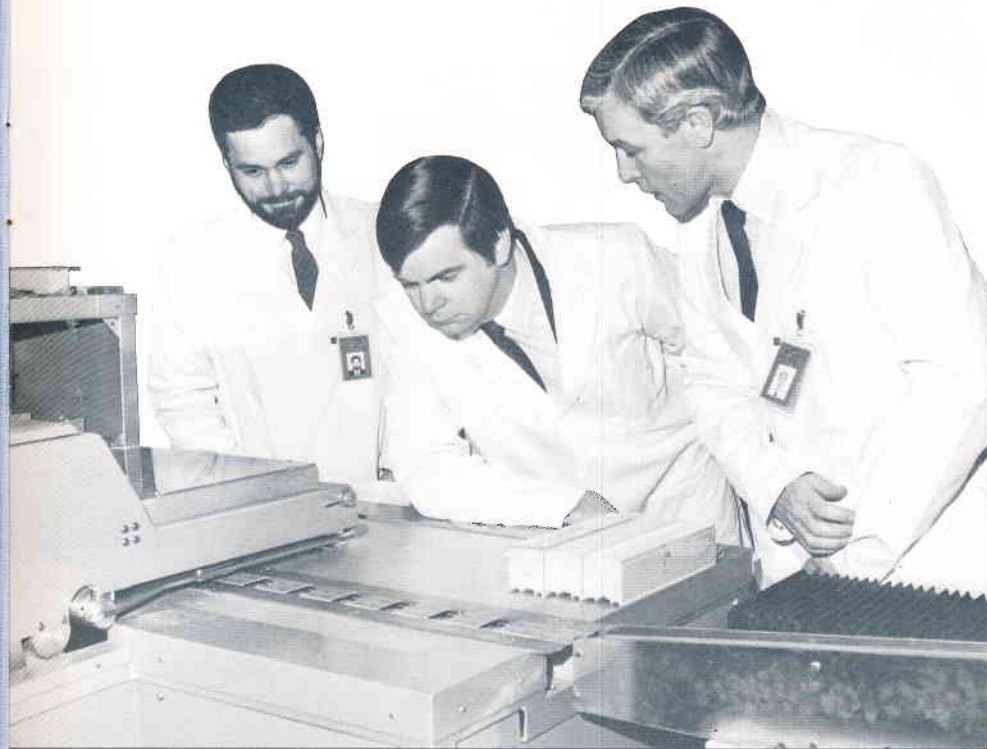
▲ Double-stacking is useful where site space is a problem.



▲ ISOLATOR as a field unit operating theatre or surgery. There are any number of applications for this portable version.

Interface

COMPANY ASPECTS AND AFFAIRS



Simon Coombs, MP for Swindon, recently visited MEDL's Swindon plant where the Hybrid Division is producing advanced hybrid microcircuits and microelectronic subsystems.

Here Simon Coombs is seen with Neil Haverty (left), Sales Manager, and Vic Smith (right), General Manager, alongside one of the latest microcircuit automated assembly systems that picks and places up to 2300 components an hour.

Cost Saving Efficiency with Klystron

Marconi Communication Systems, working in collaboration with Comark Communications Inc., of Massachusetts, have achieved over 77% Klystron Beam efficiency at station WTTE - TV, Channel 28, in Columbus, Ohio.

This remarkable improvement from a previous figure of 46% puts the Klystron energy performance on a par with VHF tetrode technology.

It means that a UHF broadcaster's energy costs can be reduced significantly and, in fact, it is estimated that when the drive/modulator and pulser system are installed as a retrofit package, it will pay for itself in a year, assuming typical energy prices.

The tests were a joint effort between the two companies using the new Marconi B7500 Modulator operating in a new Comark S series 60 kW Visual Amplifier using an Amperex YK1265 Klystron. A Comark high-energy CTM-20 Pulser was interfaced with the B7500.

Marconi and Comark believe that this is the highest efficiency ever reached for any UHF Klystron under actual field conditions, achieving stable operation with full broadcast performance at 60 kW peak output power.



EASAMS Training Rig Keeps Tornado in Fighting Trim

The Tornado F2 (Air Defence Variant) is the RAF's front-line interceptor aircraft.

Flying at supersonic speeds, the Tornado can undertake long-range patrols and is able to detect and destroy high-speed targets at all altitudes and in all weathers, by day or night.

It relies on the most sophisticated electronic systems, and the servicing of these is a priority task of RAF front-line base technicians.

EASAMS has been developing an advanced training rig to aid these technicians for some two-and-a-half years, and recently David O'Dwyer, manager of the Weapons Systems Division of the company, handed it over to the RAF at Cottesmore.

Apart from general Tornado avionics training, the Avionics Ground Training Rig is designed to allow technicians to diagnose system faults reported by the aircrew by literally 'flying' the simulated aircraft from life-size cockpits.



David O'Dwyer presents Sqdn.-Ldr. Adrian Thorpe, O/C Tornado Ground Servicing School, with a plaque to commemorate the handing over of EASAMS Avionics Ground Training Rig at RAF Cottesmore.



Long Service Award for Marconi Publicity Manager

John Pool, Publicity Manager of The Marconi Company and Director and General Manager of L. P. Foreman (a Chelmsford-based Marconi company) was recently presented with an aneroid barometer to mark his 25 years of service with The Marconi Company.

The presentation was made by the Company's Life President, Sir Robert Telford, CBE (centre left), and they are seen here with Frank Braybrook, Personnel Manager of Marconi's Chelmsford Services Unit (left) and Jimmy Aikman, a Director of L. P. Foreman who recently retired as The Marconi Company's Director of Manufacturing Services.



Over ten years ago, Marconi developed the AMETS artillery meteorological system which has been in service with the 94 Locating Regiment at Celle, Germany, ever since.

After 28 years' service in that area, the unit has been posted away and to mark their departure they commissioned Terence Cuneo to paint a picture, which included the AMETS balloon with its radar reflector and electronic sonde.

At an informal ceremony last November, Major-General Ralph Crossley, CBE, presented a framed print of the painting to Paul Robinson, MD of Marconi Command and Control Systems, and Reg Beckley (left), General Manager at Frimley, as a 'Thank You' for the Company's contribution towards the cost of the painting, and in recognition of its continuing service to the British Army.

Bigger IC Team at MEDL

Marconi Electronic Devices has just taken on 35 new graduates to augment its IC team.

At Lincoln, twenty-seven will be joining the team in various departments from product engineering to marketing and from wafer fabrication to QA, while eight will be working at the Wembley Design Centre.

Commenting on these appointments, Hamish McLaren, IC Marketing Manager, said: "We try to offer the best jobs in our field. Our equipment and plant are second to none in technology and quality and the total environment is one of engineering excellence. We are recruiting some of the best graduates in Europe and as far as we are concerned, there are unlimited opportunities."

Flexaguide Moves to Gabriel

Marconi Instruments has transferred the manufacture of the Flexaguide range to Gabriel Microwave Systems of Newton Abbot, Devon.

Gabriel Microwave specialises in the flexible waveguide field and will continue to manufacture Flexaguide to the same high standards that MI has set for this microwave transmission medium that has been used so successfully in a wide range of radar and communication systems operating between 1.12 and 18 GHz.

Gabriel Microwave is a member of the Siebe plc group of companies.

The transfer from MI will release production capacity for its expanded range of test and measurement instrumentation, including cost-effective and innovative equipment in the RF and microwave bands.

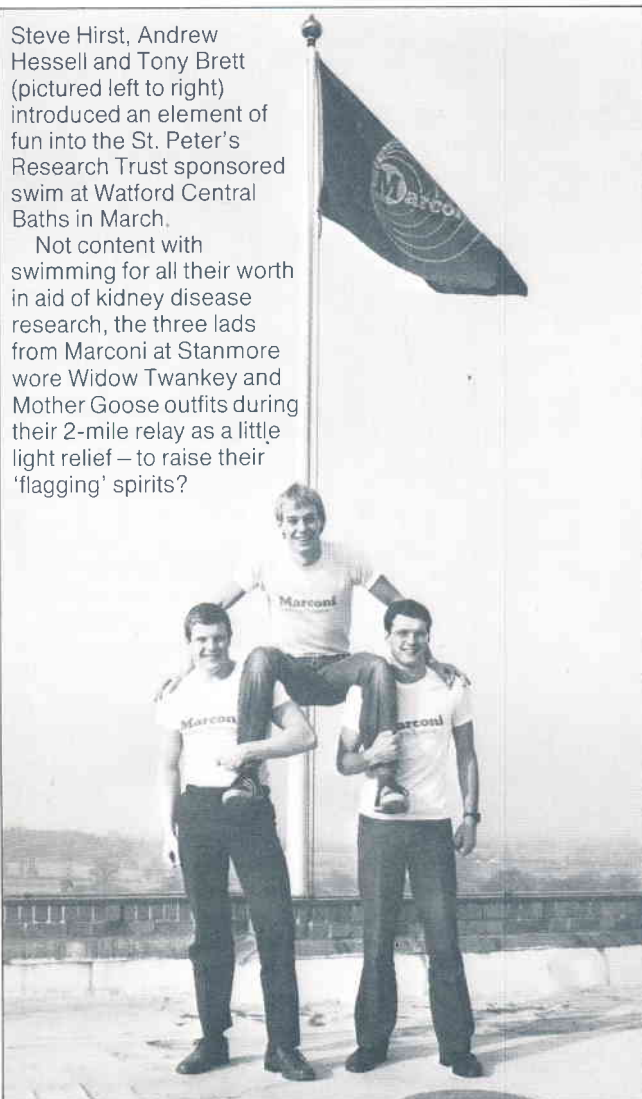
Mimco Move in Hull

Marconi International Marine's regional office in Hull has recently moved from St. Andrew's Dock to new, improved premises at:

Marconi House, St. Peter's Street,
Hedon Road, Hull HU9 1AA.
Tel: (0482) 26144.

Steve Hirst, Andrew Hessel and Tony Brett (pictured left to right) introduced an element of fun into the St. Peter's Research Trust sponsored swim at Watford Central Baths in March.

Not content with swimming for all their worth in aid of kidney disease research, the three lads from Marconi at Stanmore wore Widow Twankey and Mother Goose outfits during their 2-mile relay as a little light relief – to raise their 'flagging' spirits?



MDSL Demonstrates TV Satellite Transponder

Marconi Defence Systems', Colonial Way, Watford, space laboratory, was the scene of a Marconi 'first' recently, when representatives of organisations at home and overseas with an interest in direct TV broadcasting by satellite (DBS) watched a demonstration of the UK's first working transponder technology.

The demonstration utilised a 17/12 GHz transponder developed for Britain's first DBS spacecraft, UNISAT.

Computer-controlled simulation, employing state-of-the-art microwave integrated circuits and high-stability, low-loss filters, showed how the new technology would benefit both DBS operators and domestic users by significant technical and operational advances.

The Colonial Way establishment is already well known world-wide for its development of transponders and microwave filters which have been supplied for over 60 satellite projects from the UK to Japan, including INTELSAT, MARECS and INMARSAT.

MSRSL Speech Recognisers Get Airborne

Anything that can speed up operating the mass of controls in today's supersonic military aircraft must improve its fighting efficiency.

To this end an SR128 connected word speech recogniser from Marconi Secure Radio Systems at Portsmouth has been undergoing trials in a BAC 1-11 aircraft initially at RAE, Bedford.



Larry Blonstein, Marketing Manager of British Aerospace Dynamics Group, points out a feature on the 17/12 GHz transponder to (left to right): Rheinardt Schnabel, satellite sales and marketing manager for ANT Germany; Danny Gruneberg, MD, of United Satellites Ltd (who collaborated in the demonstration); Dave Matthews, manager MDSL's transponder group; Dennis Cummings, business development manager of the group; Mike McNeill, ground terminal specialist from Marconi Communications Ltd.

The object was to see whether certain control functions could be activated by the spoken word, rather than by manually operated switches, levers etc.

Early trials proved so successful that further tests have now been carried out by RAE, Farnborough, in a Buccaneer Mk2B at 550 knots at 250 ft giving a background cockpit noise level of 115 dB.

Using both isolated words and strings of connected words very high success rates have been achieved and have justified further advanced trials into genuine in-flight applications of speech recognition.

MEDL Opens Another European Semiconductor Design Centre

The second in a planned eight or nine semiconductor design centres in Europe and Scandinavia for 1985 has just been opened in Switzerland by Marconi Electronic Devices.

In collaboration with HMT Microelectronic AG, a design centre has been established, with direct terminal access to MEDL's Wembley CAD facility and offline interactive graphics display systems, for Continental engineers.

HMT, fully supported by MEDL engineers, will provide a semi-custom i.c. design service using both gate-array and cellular approaches.



Digest Vol 1 No. 4 (page 26) reported EASAMS' success in the GEC National Young Employees Competition last September. As a result of sponsorship raised by the team, EASAMS were able recently to hand over a cheque for £440 to the League of Friends of Frimley Park Hospital for the purchase of cot death alarm equipment similar to the unit shown in our picture with the successful employees—
Peter Allan, Richard Kenwood, Kathie McEwen,
Nick Tuson and Julie Ryan.



Scottish Young Scientists Chosen

In Digest 3 (page 25) we reported that Marconi Instruments and Marconi Secure Radio Systems at Hillend and Donibristle had joined forces to sponsor a competition among secondary school children in Scotland to find the 'Scottish Young Scientists of the Year'.

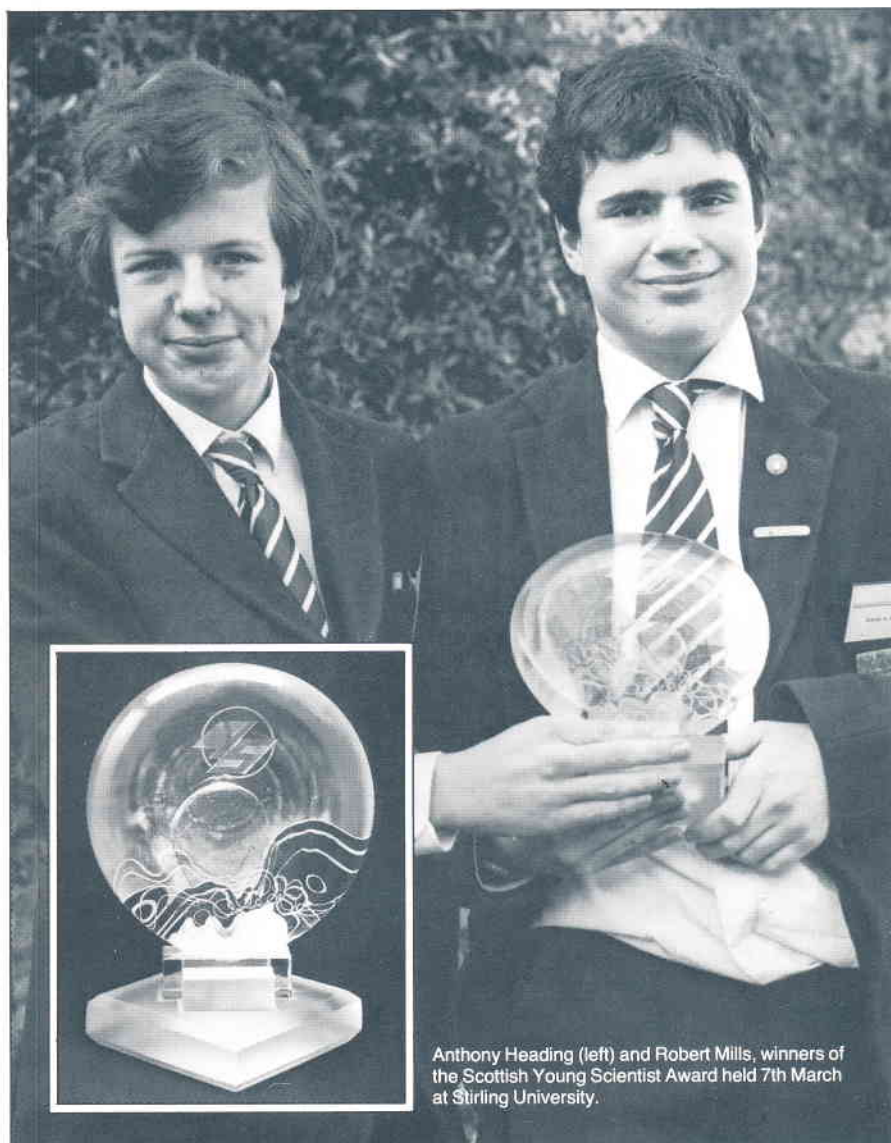
The number and standard of entries exceeded all expectations. Projects with practical potential dealt with subjects as diverse as sound insulation and teeth, musical instruments and a Scottish burn!

The teams from Glasgow High School, Carlisle High School and Rockwell High School, Dundee, reached the finals, as well as the winners George Watson's College, Edinburgh, led by 14-year-old Robert Mills and 16-year-old Anthony Heading. Their project on sound insulation won them the magnificent Caithness glass trophy (shown here) and £500 worth of microcomputer equipment for the school.

The runners-up received computer software to the value of £250.

In announcing the results, BBC television presenter Louise Batchelor praised the competition for the way it gave the schoolchildren the opportunity to use their scientific knowledge and develop their sense of initiative in a high technology context.

The audience of schoolchildren and guests from industry, education, training and the government also heard a talk on satellites from the guest speaker Daniel Gruneberg, Managing Director of United Satellites.



Anthony Heading (left) and Robert Mills, winners of the Scottish Young Scientist Award held 7th March at Stirling University.

MDSL Delivers 'Heart' of Skynet 4

One of the most important elements in Britain's Skynet 4 military communications satellite has recently been delivered to MSSL at Portsmouth by the transponder group of Marconi Defence Systems Satellite Communications Division at Watford.

At Portsmouth it will be integrated with other elements of the satellite's communications payload ready for its space shuttle launch in 1986.

The extra high frequency package will provide a single 45 GHz channel to the satellite and will be used by the Royal Signals and Radar Establishment to determine propagation conditions encountered at high frequencies.

These investigations will lead towards military communications systems of the future that will be able to take advantage of the wider bandwidth associated with higher frequencies. MDSL is already actively pursuing military and civil space applications projects that employ frequencies extending to 200 GHz.



اللغة العربية - في خدمتك

Arabic – at Your Service!

The Marconi Company has set up a translating and interpreting unit and its services are available to systems companies on request.

John Forster, a fully qualified translator, will be operating the various services on offer and he has considerable experience in these fields.

In addition to interpreting, and escorting Arabic-speaking visitors, he will undertake translation from Arabic to English and vice-versa, providing the necessary typing service and Letrasetting for slides, document covers etc. Facilities for producing final camera-ready copy for brochure reproduction are also part of the service.

Proof-reading and checking, and the circulation of translated articles of interest in Arabic, French and Italian journals, will be part of the services available, as will stand-manning at home and abroad and liaison with London-based Arabic Embassies and Chambers of Commerce.

John Forster can be reached on extension 4372 at Stanmore.



Special Report

THE GOODWOOD COLLECTION

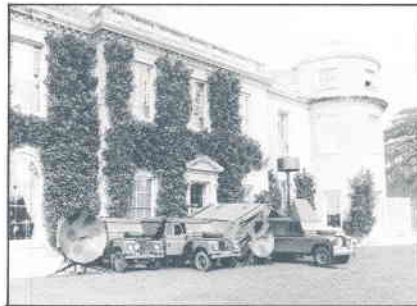
by Peter Ireland, Press Officer MDSL/EASAMS Limited

Goodwood House, Hampshire. This family seat of the Dukes of Richmond, famed for its fine furniture and paintings, provided the setting for a quite different type of collection earlier this year.

It's always intriguing to spot coincidences, don't you think? Well, it certainly intrigued me to find that on the very day a newly-published book claimed that computer fraud could be costing Britain £2,500 million a year,* Marconi was quietly unveiling MARCRYPDATA, an encryption device for computer terminals that promises to hack the 'hackers' down to size.

It was just one of those topical coincidences that helps to focus one's thoughts on the problems now faced by professional communicators – those whose need it is to protect data, voice, telegraph or facsimile transmissions, whether they be over public telephone, military communications, satellite or cellular radio links. The same thoughts would doubtless have been exercising the minds of military communications experts from ten countries when they visited Goodwood House at Marconi's invitation in March. MARCRYPDATA was but one of a quite unique collection of communications and information handling hardware that vied with the Canaletto paintings, Sèvres porcelain and Gobelins tapestries to catch the eye of our overseas guests. But they had come to listen, as much as to see, and it was John Sturge, managing director of Marconi Secure Radio Systems, who set the scene with his address, appropriately entitled 'Communications in a hostile environment'.

If hostility implies an enemy, then it is one boasting a formidable arsenal: from the dust, damp and vibration which assaults equipment and user alike, to those natural and man-made electromagnetic conditions against which communicators fight a ceaseless battle. Electronic penetration of communications networks by opposing forces could be achieved in multifarious ways too. Eavesdropping and monitoring, using modern ELINT methods, today extended to the interception of stray emissions from buildings housing computers and



communications equipment; one good reason why US companies engaged in the manufacture of TEMPEST equipment are now enjoying growth rates in excess of 30% per annum. (See also the 'Supplement' in this issue.) The overt disruption of communications, through sophisticated Electronic Countermeasures methods, presented yet another serious threat. In this connection, I wonder how many readers realise that 1985 marks not only the 50th anniversary of the first operational use of radar, but also the 80th anniversary of the first attempt at communications jamming during wartime?

If this hostile environment conjures up a bleak prospect of corrupted, disrupted and compromised communications, John Sturge made plain that many of today's sophisticated interception/jamming techniques could be deployed equally effectively by terrorist as well as

conventional forces. Needless to say, direct physical attack on communications centres had to be regarded as an ever-present possibility. If this, then, is the enemy, what defensive solution does Marconi advocate?

According to John Sturge, the day of selecting the appropriate 'black box' to any given communications requirement was long since past. The whole procurement issue had to be considered from an evolving Total Systems viewpoint. And to take advantage of what was now possible in electronics, one needed to search for purely digital solutions. Developing his theme further, he perceived six ways in which communicators could retain the initiative. They had to DIVERSIFY into as many different transmission methods as possible, utilising optical and line, as well as radio systems. This needed to be coupled with DISPERSION in the sense of multipath routing and frequency spreading, adopting the packet techniques of data handling facilitated by such methods. The physical and electronic concealment of equipment had to be considered under the heading of DECEPTION. Above all, equipment had to be intrinsically ROBUST and its design geared to SIMPLICITY of operation and training. Finally, the MANAGEMENT of the Total Systems Plan had to commence at the design

The Ballroom, Goodwood House: Marconi puts the finishing touches to its display of communications technology in readiness for overseas visitors



stage, emphasising full interoperability, and extend to system implementation at all levels.

It was a plan that resisted any temptation to opt for one of the low-grade cryptographic distribution methods now available. The false sense of security instilled with these crypto keys was more dangerous than having no cypher protection at all. Equally, it was a plan that paid particular attention to data transmission rates to ensure that these did not swamp the human end of the system. It might seem desirable to generate data at Mbits/sec but even the whole of SHAPE headquarters could only absorb information at about 3 Kbits/sec, a limitation often termed as 'cognitive overload'. It followed from this that key information only should be selected for transmission. It stood a much better chance of getting through and would achieve a high processing gain at the receiving end.

If the communications philosophy outlined above presented a framework for military communications planning in the Eighties, the exhibits at Goodwood added flesh to the skeleton. Perhaps not surprisingly, a 'Go for Exports' mood was much in evidence among the participating companies†; a reflection of the buoyant world market for military communications, and one in which annual expenditure is expected to increase by 50% up to the end of this decade. In just one overseas area – the Far East – spending on tactical milcoms is, according to one recent report, likely to top \$10 billion by 1987.

With operating frequencies extending from VLF to EHF, and with tactical and strategic applications on land, at sea, in the air and in outer space, it would be impossible to describe the many milcoms systems exhibited at Goodwood in an article of this length. Certain trends were, however, apparent, and the most striking of these was the move towards the Fill Management process for high-grade cryptographic security. The process eliminates the laborious and error-prone task of entering hop-set codes into modern frequency-hopping radios. In practice, a desk-top Fill Management Unit is used at a headquarters location to generate, edit and store control information such as



Martin Gough of MDSL outlines the technology options now available to meet C³I requirements.

key variables, frequency settings and selective call allocations. This data is then injected into a pocket-size Fill Gun. Having been conveyed to a forward area, the Fill Gun is simply connected to any number of combat net radios for the key setting to be automatically loaded.

The Fill Management process can be applied without modification to Marconi's Scimitar and Minstrel secure radio systems, and also to older generation clear radios, provided that a high security encryption add-on such as MarcrypTac or MarcrypFlex is acquired.



The Scimitar range of combat net radios comes under the scrutiny of our overseas guests.

Another noticeable trend is the burgeoning interest in satellite communications and Marconi's ability to satisfy just about any requirement in this

field. It is an inventory quite staggering in its breadth, ranging from transponders and communications payloads for satellites of every description, embracing every imaginable ground segment requirement (anchor stations, battlefield manpacks and mobile installations, plus naval and airborne terminals), and extending to the provision of quite unique frequency-hopping spread spectrum modems, acknowledged as the definitive counter to satcoms jamming. Marconi's sales successes in this area are legion, and Goodwood hummed with news of latest orders: an export breakthrough for SCOT naval terminals; a containerised earth station for the Yemen Arab Republic (to establish links with the recently-launched Arabsat satellite); and whispers of an eagerly-awaited order for satcoms modems.

Managers who wish to familiarise themselves with Marconi milcoms might find the 'At-a-Glance' guide of assistance in pursuing their enquiries with particular companies. □

* The Hacker's Handbook by Hugo Cornwall (Century Communications £4.95)

† Marconi Secure Radio Systems, Marconi Communication Systems, Marconi Defence Systems, Marconi Command and Control Systems.

At-a-Glance Guide to Marconi Milcoms Systems

ARMY	BATES artillery target engagement system (4); CLANSMAN vehicle radio (1); CLAYMORE digital radio relay (1); Digital LOS communications (2); Fill Management Systems (1); MARCRYP digital crypto units (1); MARDEX digital exchange (1); MARDATE message entry terminal (1); MARICOM fibre optic intercom (1); MARMOSSET mobile satcom terminal (3); MINSTREL secure VHF/FM radio system (1); MFT-2 point-to-point HF comms (2); Satcom terminals, anchor stations & manpacks (3); SCIMITAR frequency-hopping radios (1 & 2); SENTRY Mobile Electronic Security Measures systems (3); STARS store-and-forward device (1); Tactical mobile HF tropo systems (2); TRIFFID field tactical UHF radio relay (2)
NAVY	ASSATS ship-to-shore telegraphy system (2); Diver Comms systems (5); ICS3 integrated naval comms systems (2); MAKAIRA naval comms (2); SCOT naval satcom terminal (3); SEAFOX naval comms system (2); VLF receivers (5)
AIR	MASTER airborne satcom terminal (3)
JOINT SERVICE	Frequency-hopping spread spectrum modems (1); GROWLER vocoders (1); HERMES all-service ESM/ECM (3); OPERATIONS CENTRES (single & joint service) (1 & 3); SKYNET 4 satellite comms payloads (6 & 3); SR-128 speech recognition equipment (1); TACTIC Ops Centre software (3); VORAS Video disc-based information display (1).
Key: (1) MSRSL. (2) MCSL. (3) MDSL. (4) MCCSL. (5) MUSL. (6) MSSL.	

Mission Quite Possible

The visit of communications experts to Goodwood was just one of over seventy Inwards Missions organised by British Industry, with the help and support of government departments, over the past twelve months. The missions provide an opportunity for groups of selected overseas customers (actual and potential) to visit the UK and to discuss their requirements with hosting companies.

In the case of the defence electronics industry, three missions a year are organised through the Electronic Engineering Association, with the Defence Sales Organisation providing all secretariat services, and with the British Overseas Trade Board providing a high level of financial support for air fares, accommodation, and UK travelling expenses.

Co-ordination of Inwards Missions within Marconi is carried out centrally and readers wishing to explore mission possibilities are encouraged to contact Jack Ward, Marketing Support Manager, The Marconi Company Limited, The Grove, Warren Lane, Stanmore, Middx HA7 4LY. Telephone: 01-954 2311 Ext. 4719. Telex: 22616.

Exhibitions

Hardly a week goes by when one or other of the Marconi companies is not engaged in building up an exhibition stand, manning one or breaking it down, somewhere in the world – and the last few weeks have been no exception.

In this issue we report, in brief, on five recent exhibitions where the Marconi name has been prominent.

EXHIBITION 1

MECOM '85

The Middle East is probably the fastest developing area in the world and the market there for high-tech communications equipment and systems is enormous, despite the fact that an extensive and up-to-date telecommunications network is already established in the Arabian peninsular and the Gulf States.

The requirement is not only for civil communications – domestic, industrial and commercial – but also for the emergency services and defence, as is well illustrated by the fact that a Middle East country is establishing a C³I defence operation centre – a 'first' for Marconi.

Although exhibition facilities in Bahrain are limited, over 150 companies from 20 countries took part in Mecom '85, the 4th Middle East Electronic Communications Exhibition and Conference held there early in February.

It was the largest-ever communications show to be held in the Middle East, and its success is a measure of the huge potential in that area for companies like Marconi.

The Marconi Company was one of 33 UK organisations exhibiting under the auspices of the British Overseas Trade Board, while the Canadian Marconi Company was there as part of the Canadian contingent.

MSRSL featured defence communication equipment and command and control systems on the stand, while MDSL showed a range of satellite systems and ground terminal equipments. Among these were Scot, Marmoset and Master, the airborne terminal proposed for the Nimrod maritime reconnaissance aircraft.

An excellent model of a Skynet was on show as an example of just one of the many satellites for which the company's



Visitors from Oman discussing satellite communications with Peter Law of MDSL.

transponder group has supplied equipment. A typical defence operations centre completed MDSL's display and evoked keen interest.

Marconi Instruments' range of advanced instrumentation was well received.

In particular, great interest was shown in MI's new Radio Communications Test Set, the 2955, which dramatically cuts measurement times for modern FM and AM receivers.

Their AM/FM Signal Generator 2022, aimed at the radio servicing and

maintenance markets, and the 2440 Microwave Counter, together with digital and analogue Power Meters, completed MI's contribution.

McMichael made a big impact with a digital video teleconferencing system, while the Canadian Marconi Company showed an automated HF radio system for voice and data communications.

A conference was held in conjunction with the exhibition, and Peter Law from MDSL read a paper on satellite communications systems linked to the increasing interest in C³I.

Peter Law shows one of the exhibits to the Bahraini Minister of Transportation, Mr Ibrahim Humaidan.

The radio communications test set 2955 from MI that caused such interest at the exhibition.



EXHIBITION 2

CAD '85

Brighton was, once again, the venue for a high-tech exhibition recently.

CAD '85 was an opportunity for industry to see everything that is new in CAD-CADCAM-CAE and CADMAT.

MI represented Marconi at the show, and its new, sophisticated CAD system, MicroQUAD, was one of the highlights of the exhibition. It had also been at Brighton late last year at INTERNEPCON where it attracted a lot of attention.

At CAD '85, Marconi CAE Systems illustrated its PCB design capability with MicroQUAD and its compatible design data-capture workstation, DASH-1. With its suite of powerful design-automation software, MicroQUAD produces high-quality photographic artwork and integrates the design office with the factory.

Fast inter-activity, improved edit facilities and auto-routing of tracks on the board are particular features of MicroQUAD.

Supporting MicroQUAD was a display of Quadrant 2, the high-performance two-dimensional draughting system for the high-speed generation and storage of accurate mechanical electrical and schematic drawings.

EXHIBITION 3

Sound '85

The recently re-formed Elettra Communications Division of Marconi International Marine carried the flag for Marconi at SOUND '85 at the Novotel, Hammersmith, in February.

The new set-up is headed by Geoffrey Newborn, under whose guidance the Division promoted a selection of items from their wide range of equipments for every type of sound installation.

MIMCO's newly formed PR Department, under Publicity Manager Colin Riches, launched a special newspaper, Westway News, at the exhibition. In it, MIMCO's Managing Director, George Hill, emphasised the company's total commitment to the sound and audio-visual communications market for on-shore sites.

The lively newspaper set the background for the new division and illustrated some of the equipment available, while also introducing the members of Elettra's staff that customers will be dealing with.

A section of the Elettra Division's stand at SOUND '85



CAE System's new MicroQUAD circuit board design workstation that has attracted so much attention recently.



EXHIBITION 4

Expoship London '85

Oceanray – the radically new and competitively-priced shipborne satellite communications station that was such an attraction at Marconi '84 (Digest 4, page 4) – was again one of the highlights of the show on Marconi International Marine's stand at Expoship London '85.

MIMCO promoted a number of items demonstrating state-of-the-art technology at the exhibition which was held in March. Included in the impressive display was a sophisticated new navigation echosounder – Seachart 3 – that offers a number of user advantages such as easy installation and

operation, competitive pricing and, uniquely, the provision of clear, complete information at a glance.

ARPA, a third-generation, bright picture microprocessor-controlled automatic radar plotting aid was shown and accompanied by a continuous video presentation as a layman's guide to plotting aids.

The latest integrated radio-telex package, Spector 3, with its numerous features such as unattended transmission and reception of telex messages 24 hours a day, was another item that attracted attention, along with Oceanic, MIMCO's latest ssb communications receiver that covers the frequency range from 15 kHz to 30 MHz.

A feature devoted to the new Elettra Sound Communications Division of the company completed the stand.

Colin Riches, Marconi Marine's Publicity Manager, with the Rt. Hon. The Lord Mayor of London, Sir Alan Traill, GBE, MA, when he signed the visitors book on the company stand at the recent Expoship Exhibition.



EXHIBITION 5

Hybrid Microtech

This is a small exhibition for the hybrid and surface mount world. It has been held annually for several years now, and MEDL's hybrid division has found its participation there over the last five years to be increasingly useful.

This year 15 real business opportunities were outlined during the two days of the show, during which the stand was inundated with enquiries.

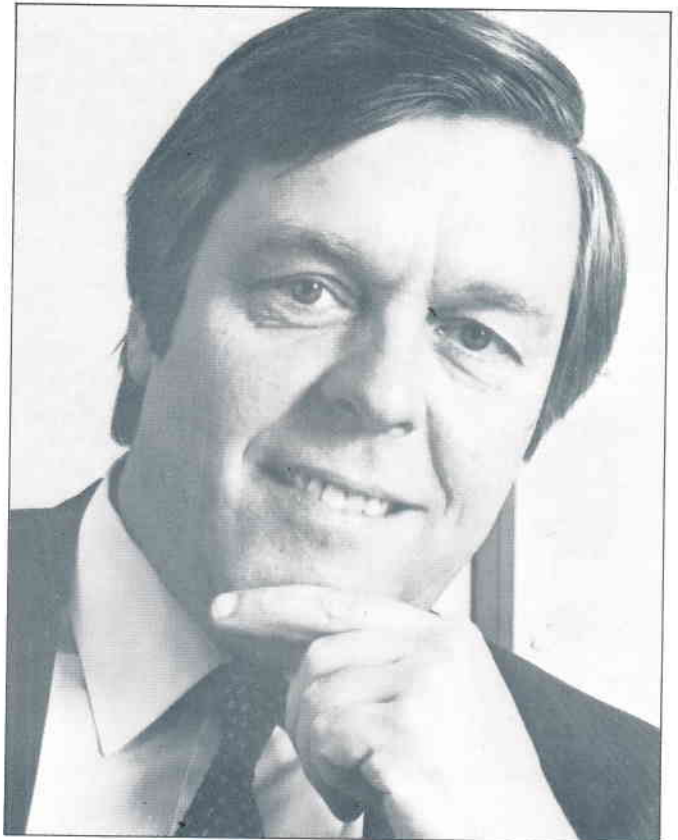
It was MEDL's mixed technology approach to solving today's microsystem problems that attracted the attention – a 'stepping stone' to total surface mount, by utilising surface mount devices on one side of a through hole PCB with through hole insertion on the other, offering very high component density, and high reliability with low weight and low cost.

People



Sir Peter Anson – First Chairman in Space

The first Chairman of Marconi Space Systems Limited is Sir Peter Anson, Bt, who since shortly after retiring from the Royal Navy in 1975 has successively held the appointments of Divisional Manager Satellites in Marconi Space and Defence Systems Limited and since April 1984 Managing Director of the newly formed Marconi Space Systems Limited. In his Naval career, as well as holding several sea commands, he specialised in Communications and for many years was intimately concerned with the improvement of Communications between ships and the land. Latterly, as Captain of the Naval Communications School and also when serving as a Rear Admiral in the post of Assistant Chief of the Defence Staff (Signals) he played a leading part in the introduction and operational use of the UK Military Satellite Communication System. During the Second World War he served in H.M. Ships *Prince of Wales* and *Exeter*, and after surviving the sinking of each in turn he was held a prisoner of war by the Japanese in the Netherlands East Indies from early 1942 until the end of hostilities.



Andrew Glasgow promoted to M.D.

Andrew J. Glasgow, OBE, has been appointed Managing Director of Marconi Space Systems Limited in succession to Sir Peter Anson.

Mr Glasgow, who is married with two children, joined the company in 1967 at Stanmore, initially working on guided weapons and satellite communications. In the early 1970s, he helped to establish and build the Underwater business at Portsmouth, holding various positions. In 1978 he was responsible for the Stingray torpedo activities at Wembley. In 1980 he moved back to Portsmouth as the Stingray Project Manager and was subsequently appointed Projects Director of Marconi Underwater Systems Limited, Portsmouth.



Canham



Stapley



Ferry



Piccini



Hemmings



de Kort



Bouchier



Haverty



Lanyado



Sainsbury



Skoda

The Marconi Company Limited

Ing. Raffaele Piccini, Managing Director of Marconi Italiana Spa, appointed a Director of The Marconi Company.

Marconi Command and Control Systems Limited

J. Peter Ferry appointed Assistant Marketing Director (European Collaboration) from Assistant Marketing Director (External Affairs).

Richard Stapley appointed Assistant Financial Director.

Marconi Communication Systems Limited

Terry Canham appointed Divisional Manager, International Projects from Programme Manager, Space and Microwave Division.

Len Hemmings appointed Training Manager.

Marconi Defence Systems Limited

George de Kort appointed Production Director from General Manager, Broad Oak Works.

Marconi Electronic Devices Limited

Malcolm Bouchier appointed Sales Manager IC Division, Lincoln.

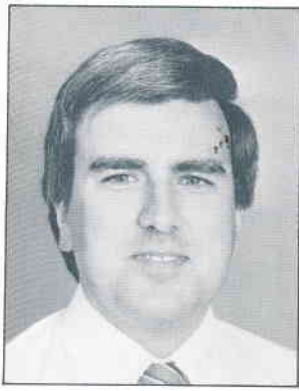
Neil Haverty appointed Sales and Marketing Manager, Hybrid Division, Swindon.

Marconi Instruments Limited

Dr Saul Lanyado appointed General Manager, Donibristle.

Les Sainsbury appointed General Sales Manager, Instruments Division.

Heinz Skoda appointed Assistant Sales and Marketing Director.



Newborn



Sawkins



Matthews



Birkinshaw

Marconi International Marine Company Limited

Geoff Newborn appointed TV and Audio Manager of Elettra Communications.

Eric Sawkins appointed Sales Manager, Elettra Communications.

Marconi Radar Systems Limited

Chris Matthews appointed General Manager, Gateshead.

Marconi Secure Radio Systems Limited

Eric Birkinshaw appointed General Manager, Browns Lane, from Technical Manager and Deputy to General Manager.

Dr Clive A. Bridges appointed Director of Projects from General Manager, MSRSL, Browns Lane.

Dr Howard W. Lightfoot appointed Assistant General Manager, Kildgrove, from Divisional Manager, Communications Terminals Division.

John Loder appointed Training Manager from Manpower and Resources Manager, MCSL.

David R. Phyll appointed General Manager Kildgrove from Assistant Production Director.

Marconi Underwater Systems Limited

Peter Garside appointed Sales and Marketing Director.

Frank Simm appointed General Manager, Waterloo, from 1125 Programme Manager.

EASAMS Limited

J. N. H. 'Ian' Dempsie appointed Financial Director from Financial Executive.



Loder



Lightfoot



Phyll

Loder



Dempsie



Simm



Garside



Marconi

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The Grove, Warren Lane Stanmore,
Middlesex HA7 4LY, England

