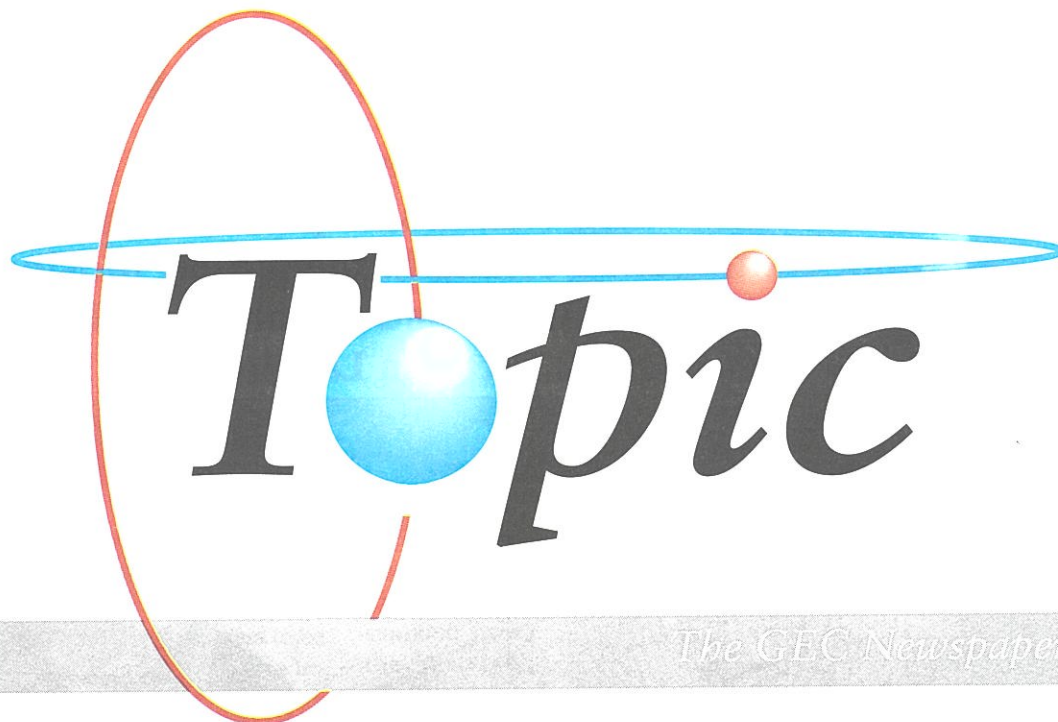


**AVERY  
BERKEL IN  
DEPTH  
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**GEC  
MARCONI  
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GREEN ARE  
YOU?  
PAGE 9**



The GEC Newspaper

December 1993

# Jubilee celebrations for GEC

**GEC companies have won orders totalling more than £360 million to supply equipment to London Underground for the 16 km extension to the Jubilee Line.**



GEC ALSTHOM has secured orders totalling more than £300 million for the rolling stock and power supplies whilst GPT has won a £60 million order for the communications system. The extension will link East and West London via Docklands and is the largest addition to the London Underground for more than 20 years. The project is understood to be the UK's largest construction project since the Channel Tunnel. Digging is due to start in December with the service scheduled to come into operation in April 1998. When completed, areas such as Southwark, Bermondsey, Greenwich, West Ham and Stratford will be readily accessible from the west of the City. In all, there will be four Thames crossings.

## Metro-Cammell

Birmingham-based GEC ALSTHOM Metro-Cammell, which has been London Underground's principal supplier of rolling stock for many years, will design and supply 59 six-car train sets to a value of £250 million. Work will start immediately with deliveries being made over a 22 month period beginning in November 1995.

## Traction

The Manchester and Preston based sites of GEC ALSTHOM Traction will manufacture the trains' propulsion and auxiliary power systems.

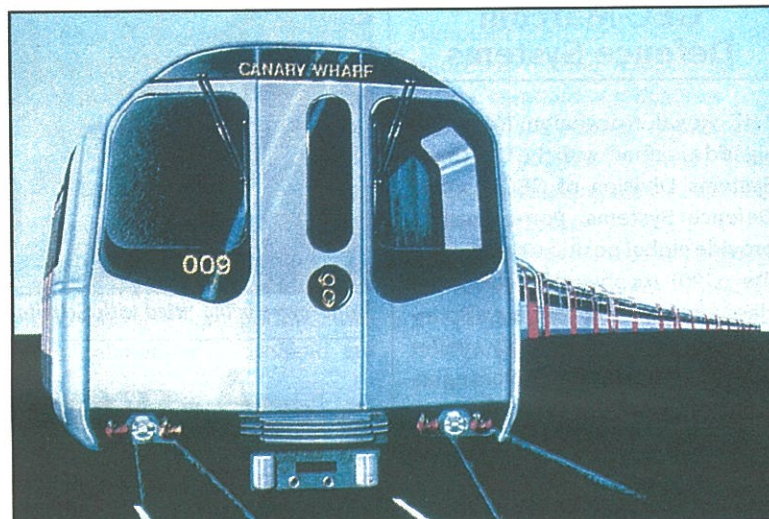
## TDPL

GEC ALSTHOM Transmission & Distribution Projects (TDPL), Stafford, under a £52 million contract, will supply the electrical power supplies, cabling and conductor rail system to power the trains and their heating, lighting and ventilation systems. The order also covers the reinforcement of 21 km of existing line and is the largest for transportation power supplies to be won by the company.

## GPT

GPT's £60 million order for communications systems is the largest of its type awarded in railway transportation history. It covers the complete design, supply and installation of all communications aspects of the Jubilee Line extension and the upgrading of the existing line.

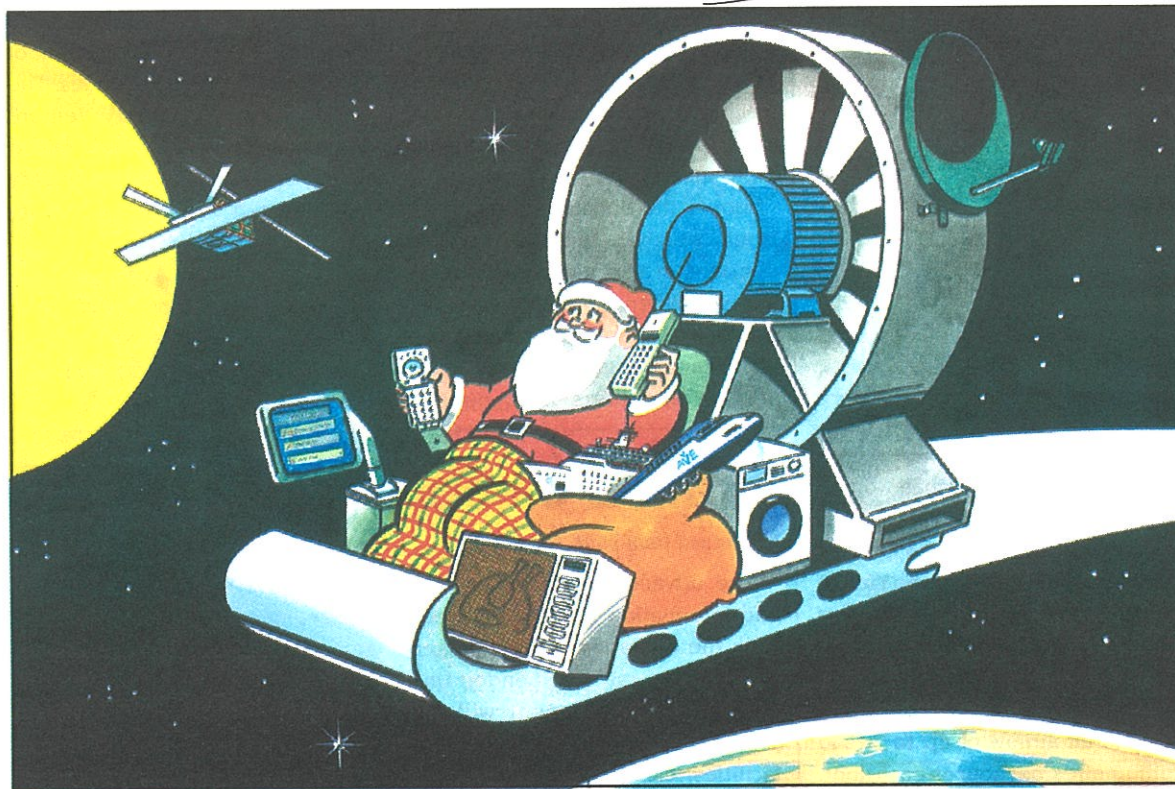
*Continued on page 2.*



*An artist's impression of the tube travelling on the Jubilee Line extension.*

## Christmas greetings from our chairman

A very Happy Christmas to everyone and best wishes for 1994 to you all.



## High powered order

**GEC ALSTHOM Transmission and Distribution Projects (TDPL), Stafford has signed a US\$ 200 million contract with Power Grid Corporation of India for the supply of a turnkey high voltage direct current (HVDC) convertor station to link the western and southern regions of the country's electricity network.**

*Continued on page 2.*



## News In Brief

### GEC ALSTHOM

ROYAL Caribbean Cruises has confirmed an order for a second 1,800 passenger cruise ship, to be built by GEC ALSTHOM's Chantiers de l'Atlantique subsidiary. The initial contract for the two cruise ships was signed earlier this year. The 70,000 ton ships will be delivered in April 1995 and March 1996.

### GEC-Marconi Combat Systems

GEC-Marconi's NAUTIS technology has been selected for the Spanish minehunter programme. The contract awarded to the company's Addlestone site is worth approximately £5 million and covers the supply of four ship systems.

### GEC-Marconi Defence Systems

THE Royal Norwegian Navy has signed a contract with the Electronic Systems Division of GEC-Marconi Defence Systems, Portsmouth to provide global positioning by satellite (GPS) receivers for the Oslo-class frigates. The contract also includes an option to supply similar GPS receivers for other Norwegian Navy platforms.

### GEC New Zealand

THE manufacturing operation of GEC New Zealand has been awarded ISO 9002 accreditation. This represents two years' intensive work and will further enhance the credibility of the company as a major supplier of light fittings and commercial and domestic fans.

### Marconi Instruments

MARCONI Instruments, St Albans has introduced a pulse modulator for testing civil and military radar systems. The 6145 adds a pulse modulation capability to the integral synthesized signal generator of the company's 6200 series microwave test sets, as well as any other microwave source.

### Woods of Colchester

WOODS of Colchester has won an order worth £35,000 for a car park ventilation system. The seven-storey car park, linked to the Vienna Metro system, forms part of a new complex at Erdberg. Woods is providing a system of Jetfoil aerofoil fans, automatically-activated, to provide an airflow of up to 70,000 cubic metres per hour on each floor.

# Striving to keep the peace

**EMPLOYEES** at GEC-Marconi Communications have completed an urgent programme for the United Nations to provide equipment for the Malaysian peacekeeping contingent working in the mainly Moslem areas of Bosnia. The company has supplied Scimitar H and Scimitar V military radios and associated equipment which have been fitted in Landrovers.



Landrovers being fitted with Scimitar H and Scimitar V military radios, before being shipped to Bosnia.

GEC-Marconi is also providing training to the Malaysians in the use of the equipment and its comprehensive communications facilities.

### Support

The programme, which received the full support of the British Government, was carried out by a consortium of UK companies led by GEC-Marconi and British Aerospace, who supplied the Landrovers. The companies worked with the British Government to respond to the needs of the UN and the Malaysians in the shortest possible time. GEC-Marconi is proud of its employees: at Chelmsford and at its production facilities in Portsmouth and Ankara - the latter having worked on the project with the full support of the Turkish Authorities. For the opening of the new Turkish factory, see page 4.

## A-weigh we go!

**AVERY Berkel, in association with the Buckinghamshire County Venture Scouts & Ranger Guides, presented a digital electronic weighing system to the International Rescue Corps (IRC) at the headquarters in High Wycombe.**

The IRC attends natural disasters such as earthquakes, to save lives. The Avery Berkel electronic weighing system is to be used for rapid weighing of vital equipment at the High Wycombe base, to ensure the loads rescuers are packing do not exceed air cargo safety regulations. The weigher also provides a printed weight ticket to enable British Airways to arrange the rescue flights more quickly.

Prior to the donation of the electronic weigher, the IRC was dependent on antiquated mechanical scales. When assistance was requested to sharpen up the accuracy on air cargo weighing, Avery Berkel service engineers from nearby

Reading consulted the Venture Scouts & Rangers Guides to provide a precision weighing replacement.

### Heavy duty

The Avery Berkel heavy duty weighing platform is capable of taking loads of up to 1.5 tonnes. The Buckinghamshire County Venture Scouts & Rangers Guides raised money to fund the high accuracy instrumentation with a cross-country weigh 'n' walk.

The team from Avery Berkel's Reading service centre undertook to help the IRC as part of the company's '6 by 96' quality improvement initiative.

## Jubilee celebrations for GEC

Continued from page 1.

The advanced communications and information system will meet both the operating and passenger needs of the railway. London Underground management will be provided with track to train radio facilities, closed circuit television

cameras and the very latest network management systems and passengers will have public address and information displays. Overall, customers will have increased levels of safety, security and journey planning information.

## High powered order

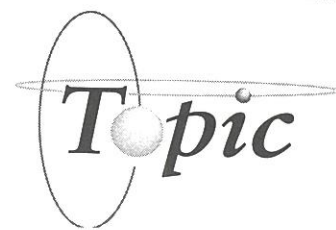
Continued from page 1.

The contract was signed in India during the visit of the Secretary of State Douglas Hurd, following the company's selection for the project earlier this year.

The two-pole 1,000 MW/200 kV DC system will link Chandrapur and Ramagundam and will be an important step towards establishing a national power grid. It will enable power to be transferred in both directions between the south and west of the country. This will result in more efficient

use of generating plant and improved reliability of supply through the availability of power from either system. The project is scheduled for completion in three years' time.

The interconnector will use the advanced power conversion technology that secured The Queen's Award for Technological Achievement for the company in 1991. TDPL is supplying similar equipment for projects in Canada and South Korea.



Topic is the newspaper for all GEC employees. It aims to be a link between all the company's operations, keeping them informed and aware of each others' interests and employees' activities.

Editor: Claire Astle  
Assistant Editor: Viveka Thomas  
Topic Office, GEC, 1 Stanhope Gate,  
London W1A 1EH  
Tel: 071 493 8484 G-NET: +783 389  
Fax: 071 491 0708  
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## News In Brief

### GEC-Marconi Avionics

A contract for a research and development programme examining the next generation of airborne radar technologies for fighter aircraft has been won by GEC Thomson Airborne Radar (GTAR), ie Thomson CSF and GEC-Marconi Avionics. The contract was placed by the French Ministry of Defence.

### GEC-Marconi Communications

GEC-Marconi Communications Marine Division, Chelmsford and INSEC based in Normandy, have reached agreement for the development, manufacture and marketing of a family of Inmarsat standard 'M' satellite communications products. The family, consisting of maritime and land based portable variants, will use the Inmarsat global satellite system, enabling users to have a direct dial remote access into the international telephone network.

### GEC-Marconi Naval Systems

GEC-Marconi Naval Systems has formed a team to bid for the position of UK prime contractor for the common generation frigate (CNGF). The team comprises Yarrow Shipbuilders and British Aerospace Defence, supported by Vosper Thornycroft. The CNGF tri-national programme is designed to meet the joint requirements of Britain, France and Italy for a new anti-air warfare frigate.

### GEC Plessey Semiconductors

GPS, Swindon and Canadian Marconi Company have announced a joint development programme under which they will produce and market the world's most advanced receiver technology for commercial global positioning by satellite applications.

### Marconi Radar and Control Systems

DURHAM County Council has awarded a contract to Marconi Radar and Control Systems, Camberley to supply the Durham County Fire and Rescue Brigade with an integrated computerised system that will receive emergency calls, mobilise control and manage the Brigade's operational resources. The system will be operational during 1994.

### In the network

AT the recent launch of its GAIN 300 (global advanced intelligent network) product range, GPT demonstrated its personal numbering system. The system provides network operators with facilities to offer customers the ability to route calls. Assisted by a voice guidance system, customers can indicate the numbers to which calls are to be redirected - to the home, to work, to a mobile phone or to a voice mail box. This enables customers to be reached anywhere, at any time using one personal number. They can also choose, using a special code, to receive only important calls.

Recent network orders include the largest ever placed by a cable telephony operator for System X public exchanges. Southwestern Bell/Cox is buying up to ten exchanges for use by its Midlands and the North West franchises. A multi-million pound System X order has also been confirmed by Nynex CableComms for use in the south of England. The exchanges will enable Nynex to switch telecommunications traffic within its own network; to select interconnect partners for national and international traffic and to introduce advanced services such as ISDN (integrated services digital network) and voice mail.

Another part of the Nynex group, Gibraltar Nynex Communications (GNC), has ordered an intelligent voicemail 1110 voice processing system. The 1,000 mailbox system will enable GNC to offer business and residential customers call answer, voice mail and information access services.

In the UK, a £22.5 million order has been placed by British Telecom for the supply of digital cross-connect equipment multiplexers, line systems and network management. The equipment, which will be supplied over the next two years, will be used in BT's Kilo stream digital network. *People can be contacted any time, anywhere with a personal number.*



### In business

A second order from Telecom Eireann in just eight months has brought the value of Gem payphones ordered by the company to nearly £2 million.

Another payphone order, from Telekom Malaysia, has brought to more than 27,000 the number of payphones sold in the country.

### In education

In the videoconferencing field, GPT equipment has been selected for use in the UK's joint academic network, SuperJanet, which will link up to 100 British universities. The network will enable contributions to classes to be made from hundreds of miles away and is believed to be the most ambitious of its type in the world.

GPT videoconferencing equipment has also been selected by one of the world's oldest veterinary schools, the Royal Veterinary and Agricultural University in Denmark, to link its main campuses in Copenhagen and the Agricultural Research Centre in Foulum. The campuses are over 400km apart and travel between them requires either a ferry or a flight. Links have also been established with universities in France and Sweden and links with other universities in Holland are planned.

### On the move

GPT has launched its new PBX (private branch exchange) open communications architecture (OCA), with the introduction of a new version of its successful iSDX (integrated services digital exchange). OCA signals a change in the relationship between the PBX and other elements of in-

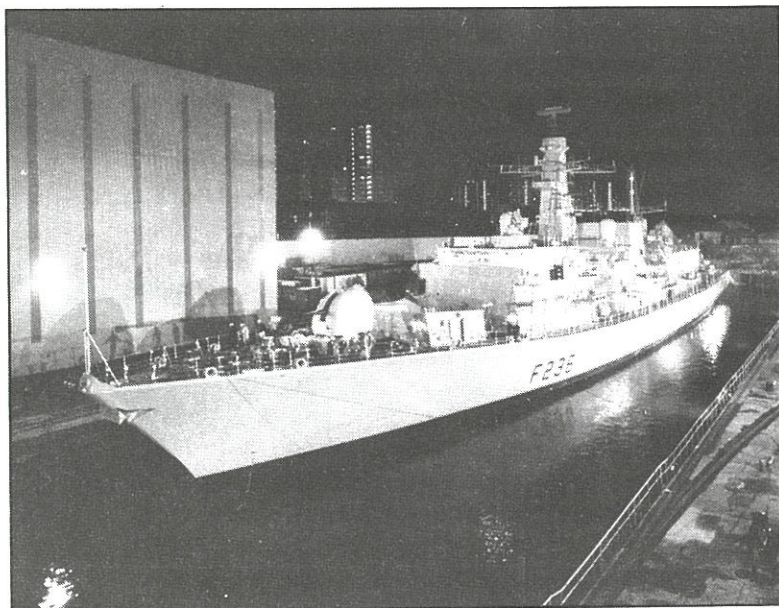
formation technology infrastructure. It enables a step by step increase in processing power; the widening of computer supported telephony applications; further support for industry standard applications programmes; the support of basic rate ISDN services such as videoconferencing and CT2 cordless communications.

Also in the iSDX field, a 12 month supply order has been placed by Greek network operator, Hellenic Telecommunications Organisation (HTO). The contract is valued at £1.1 million and includes the option to increase the order by 30 per cent.

In another business area, a bandman intelligent bandwidth management system supplied to the Government Centre for Information Systems has enabled the number of calls made to be increased by 50 per cent, without any new circuits being added. The network now handles 65 million calls annually.

## Dashing Montrose

HMS Montrose, pictured below, prior to handover to the Royal Navy in Devonport. Montrose is the sixth Type 23 duke class frigate to have been built by Yarrow Shipbuilders. There are a further three to build.



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# Nationwide integration

**WITH the complexity of the systems installed in today's commercial and industrial buildings, automatic control is becoming an essential requirement - a need that Satchwell Control Systems of Slough is well placed to meet.**

Satchwell employs over 800 people, with about half of its manufacturing output accounted for in export markets. It not only has 10 UK regional offices but distributors in over 35 countries across Europe, Scandinavia, the Far East, Australia and the Middle East.

One of the company's most sophisticated products is the BAS 2000 building automation system which centrally controls heating, ventilation and air-conditioning. This has achieved considerable success worldwide and been installed in many prestigious developments including Stansted Airport and Harrods in the UK, Bourke Place in Melbourne and the Hesperia Hotel in Helsinki.

cluding guaranteed response times for critical buildings or processes.

Traditionally, smaller sites such as schools have not installed integrated 'intelligent building' systems on cost grounds, preferring discrete systems to monitor and control temperature and ventilation. However, with the introduction of Satchwell's networking software, Satchnet, a low cost, expandable local area network (within one building) or wide area network (within more than one building) package, such integrated control has been brought within their reach.

Plant and equipment are represented by symbols on a computer screen and the user has direct access to the plant data and status



Pictured above is Terry Melhuish, product sales manager displaying the new Satchnet Integrator logo.

Satchwell has also developed fully integrated control systems to provide a total solution to owners and users of 'intelligent buildings'. Although linked through the BAS 2000, individual systems such as access and security, fire alarms, lift monitoring, waste management, lighting and electrical power retain their separate integrity.

The company offers a comprehensive turnkey service, which includes project management, design and installation, after sales service and training.

Maintenance and support packages are provided for all types of buildings. These are customised to suit individual requirements, in-

formation using a mouse. Dynamic system information, such as temperature and humidity levels, are displayed on the screen and are constantly updated.

To support the system, Satchwell has established 50 dedicated integrators throughout the UK to advise, supply and install complete Satchnet control systems. Trained to offer an independent local service, each integrator is vetted by Satchwell and, on approval, presented with a plaque.

For further details contact Jan Hilliar at: Satchwell Controls, PO Box 57, Farnham Road, Slough, Berkshire, SL1 4UH. Tel: 0753 550 550, G-Net: +716 2433.

# Marconi opens for business in Turkey

**TURKISH President Suleyman Demirel recently opened the purpose-built Marconi Kominikasyon factory in Ankara. The 36,000 square metre facility cost some £6 million.**

Marconi Kominikasyon is a joint venture formed to service a £100 million contract in 1990 between GEC-Marconi Communications and Turkish partners Has Holdings, Cihan Elektronik and Elit Elektronik. The contract relates to an initial order for the supply of 3,000 Scimitar H (high-frequency) radio systems to the Turkish armed forces.

## Most advanced

Scimitar H is one of the most advanced military radios in the world and won for GEC-Marconi the Queen's Award for Technological Achievement in 1991. To date, over 1100 Scimitar H systems have been formally accepted by Turkey's Under Secretariat of Defence Industries. Many of these were manufactured by Marconi Kominikasyon in a leased factory.

The new factory currently employs about 150 staff and a support capability is also being added.

To enable Marconi Kominikasyon to manufacture to the highest European and NATO standards, its staff have been trained at the GEC-Marconi Communications factory in Chelmsford.

On opening the factory, President Demirel said: "This has been a good example of Turkish-British coop-



Sir Geoffrey Pattie invites the President to cut the ribbon and declare the Marconi Kominikasyon factory open.

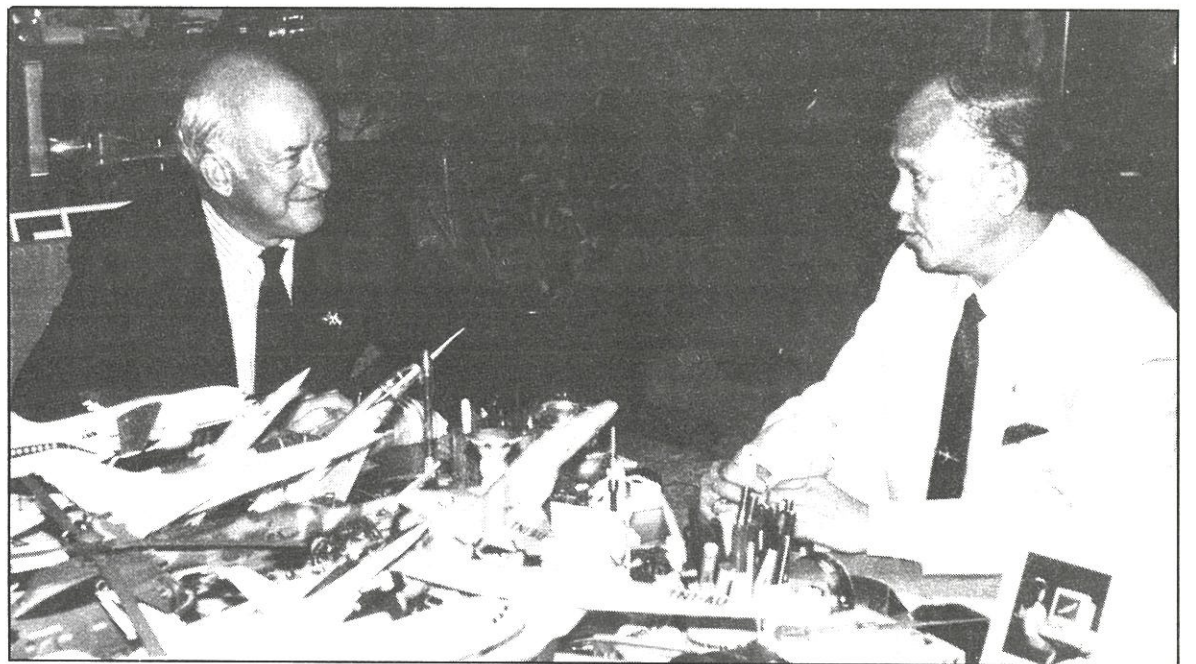
eration. New ones should follow this successful venture."

## Bricks and mortar

Earlier, GEC-Marconi chairman, Sir Geoffrey Pattie, MP told the president and distinguished guests: "This factory, in bricks and mortar, represents a promise made good and is a lasting expression of GEC-Marco-

ni's and Britain's commitment to a long-term relationship with Turkey. Together Marconi SpA, GEC-Marconi Communications and Marconi Kominikasyon are already functioning as a powerful and fast developing pan-European communications grouping today. We are very pleased to have this facility adding to our European manufacturing capabilities."

# The meeting of two forces



Sir Geoffrey Pattie, chairman of GEC-Marconi talking to the Indonesian Minister of research and technology, professor Dr Ing. Bacharuddin Habibie, following the signing in Jakarta of a Memorandum of Understanding on naval equipment co-operation between the Indonesian Government and GEC-Marconi.



## News In Brief

### Creda

Creda, Blythe Bridge has introduced a concept specifically designed to keep food fresher for longer. Creda's Fresh Time fridge system is more advanced than a conventional fridge and uses pressurised chilled air to cool the food. Another new Creda product is a fridge freezer with a zero-chill compartment. This operates at 0 degrees Celsius and provides a function between refrigeration and freezing.

### GPS

GPS, a major supplier of integrated circuits for the Apple MessagePad, recently announced that it is to expand its work with Apple on Newton technology.

The GPS chipset and Newton technology are being considered for several potential applications, one of which is to produce strategic components in the wireless arena for Newton.

### MAN Energie

GEC ALSTHOM's subsidiary MAN Energie of Nuremberg has won an order to design and engineer the 1,600 MW lignite-fired Lippendorf power station in Saxony, Germany. Valued at approximately £34 million, the order is the largest ever won by the company.

The power station is scheduled for completion in the year 2000.

### Marconi Radar and Control Systems

The Italian Navy has placed an order for the supply of a deck approach projector sight (DAPS) for the Italian aircraft carrier 'Giuseppe Garibaldi'. DAPS, developed by Marconi Radar and Control Systems, Camberley is an optical system which enables VTOL (vertical take off and landing) aircraft and helicopters to land on an aircraft carrier or aviation support vessel when the ship is underway.

### Videojet

Videojet has recently launched its Videojet 37e ink jet printer which combines simplicity, reliability and low cost. It is designed for small or low volume manufacturers who were previously restricted to less efficient coding methods. Additionally, larger operations with more basic coding needs will also benefit from the new printer.

# Cobra Venom on the attack

**GEC-Marconi Avionics (GMAV), in partnership with Bell Helicopter Textron of the USA, has submitted a proposal to the UK's Ministry of Defence (MoD) for a new two-seat attack helicopter for the British Army.**

GMAV's proposal, the Cobra Venom satisfies the MoD's requirements perfectly. It uses off-the-shelf technology, can carry a wide variety of weapons and can perform missions effectively by day or night and in poor weather.

At its heart, GMAV's 'glass' cockpit has been designed to reduce crew workload greatly, through the use of multi-functional colour displays and

advanced avionics.

Each of the two crew members has two head-down displays which provide information in a readily assimilated form. The screens display flight information normally provided from 25 different instruments, a digital map with a variety of overlays giving mission and navigation information, weapon status and systems information as well as a forward looking infra red (FLIR) or TV targeting capability.

Flight data, FLIR and night vision images and targeting information can be displayed on the crew member's helmet mounted display. This allows the pilot to fly 'head up', dramatically reducing the amount of time he spends looking down into the cockpit and hence enhancing flight safety.

Venom's attack capability will be further enhanced by the addition of smart weapons such as Brimstone - a fire and forget missile, and sensors and defensive aids to allow operations beyond the reach of most enemy threats.



The Bell AH-1W.



The Venom cockpit demonstrator.

Bell Helicopter Textron and General Electric will provide the well proven airframe/engine combination based on the AH-1W, the US Marine Corps' latest helicopter. Bell has an impressive pedigree in the supply of military helicopters. Webb Joiner, president of Bell said: "of more than 2,000 aircraft employed in the Gulf War, more than half were Bell helicopters." He added, "we at Bell take a great deal of pride in the fact that Bell products are ready to go to work each and every day. The product that we are offering is a combination of the most reliable airframe combined with the outstanding avionics package from GEC

to give the UK the best weapons system available."

Sir Geoffrey Pattie, chairman of GEC-Marconi, described Venom as a very modern highly capable system, hard to detect and offering a multi-role capability. He added: "Its advanced infra-red targeting system, together with its intelligent weapons systems including fire and forget missiles will give Venom the ability to stand off at long ranges and to strike, destroy and survive on the modern battlefield."

The MoD's decision will be made in 15 months. If GMAV's bid is successful, Cobra Venom will have its first flight in 1997.

## NNC celebrates its successes

**NNC has won a multi-million pound order from the Ministry of Defence to design and build a liquid waste treatment plant at the Atomic Weapons Establishment at Aldermaston.**

The design work will require specialist engineering skills, particularly mechanical, process and control and

instrumentation, from NNC's Power and Environmental division. Manufacture of specialist plant will be

carried out at the company's Engineering Development Centre at Risley, near Warrington.

Derek Taylor, managing director of NNC said: "This order is a major business boost for NNC and provides secure employment for a significant number of our people. We are delighted with the order because it demonstrates our continuing success in the defence industry at a time of difficult trading conditions."

### Success in Coventry

The success of NNC's waste to power project in Coventry was celebrated at the plant's official opening. Together with Coventry and Solihull councils, NNC representatives enjoyed a ceremony conducted by John Leslie of Blue Peter.

The plant is one of only four such waste incinerators in the UK and generates up to 13 MW of electricity. It is also the UK's second largest waste incinerator plant, handling 170,000 tonnes of public and commercial refuse each year.



NNC director, Neil Forsyth (right), with John Leslie, of BBC's Blue Peter, opening Coventry's waste to energy power station.



# Full steam ahead

**CHRISTMAS** celebrations are in order at both GEC ALSTHOM's Manchester based Power Plants Group and Large Steam Turbines in Rugby. After more than seven years' work, the first of the two 900 MW units at the Guangdong nuclear power station in the People's Republic of China, has just gone into operation. The second unit is scheduled to follow in mid-1994.

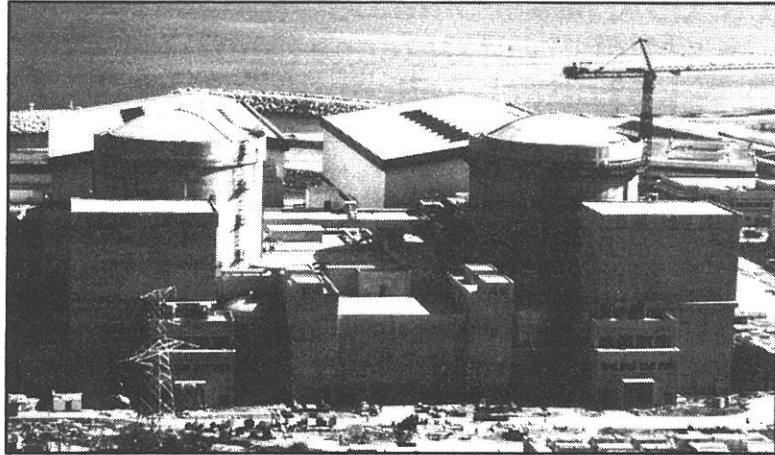
GEC ALSTHOM's contract with the Guangdong Nuclear Power Joint Venture Company was for the supply of the station's conventional island. It included the civil design and the supply of all the electrical and mechanical plant within the turbine hall as well as the main and auxiliary transformers. Also included was erection supervision, commissioning and start-up, and training for the customer's design, operation and maintenance staff.

Although GEC ALSTHOM has built a number of coal and gas fired power

stations in China, this is the country's first major commercial nuclear power station.

## Largest

The 900 MW turbine generators are also amongst the largest of their type in the world. They are over 60 metres in length and have a maximum turbine rotor diameter of 14.5 feet. This means that when rotating at 3,000 rev/min the blade tips travel more than 2,000 feet every second. That is almost 2.5 times the speed of sound!



The Guangdong nuclear power station.

## Phoenix rises

PHOENIX, the GEC-Marconi Avionics unmanned air vehicle system developed for the British Army, has received formal system acceptance from the Ministry of Defence.

Phoenix is the latest and most capable of a new generation of recoverable unmanned aircraft systems and provides low risk, high quality battlefield surveillance and target acquisition data. Phoenix is ideal for a broad range of potential scenarios including regional conflicts and border surveillance.

Following user familiarisation trials, the system will go into operational service in 1995.

## Developing relations



A HIGH level delegation from the Chinese Ministry of Internal Trade (CMITC) and the China National Overseas Trading Corporation (CNOTC) visited Marconi Instruments (MI) as part of a UK tour to develop relations with some of China's leading British suppliers. The visitors spent a day at the company's St Albans and Stevenage sites learning about product developments as well as seeing the scale of manufacturing operations at the sites. The delegation led by Ma Yimin (above left), vice minister of CMITC and Wang Tianei (centre), vice president of CNOTC were shown some of MI's products by Sandy Warwick (right), deputy managing director.

## Ultra energy efficient

**HOTPOINT**, based at Peterborough has further improved its **Aquarius** energy-saving laundry products with new water, energy and detergent saving features.

The new Aquarius washing machines benefit from: more accurate temperature control, using a thermistor rather than a thermostat and an inter-rinse lower speed spin to reduce foam levels and remove detergent using less water. A special spin sequence optimises spin duration for each fabric type. Creasing is minimised by using a lower spin speed to remove the bulk of the water.

The new Aquarius tumble dryers incorporate an enclosed air flow system to reduce noise levels and a high performance heater element and economy thermostat to reduce heat loss.



A tumble dryer from the Aquarius range.

## The winds of change

**THE** new **JM Aerofoil** series of fans - launched by Woods of Colchester at the HVAC (heating, ventilating and air conditioning) show - provide a radical advance in air movement technology.

The result of a £1 million investment programme, the versatile JM range of cased axial flow fans, can meet virtually any ventilation requirement at a highly competitive price.

### Performance

The high-performance specification - together with an increased range of diameters, motors and ancillaries - ensures that customers can select exactly the right combi-

nation for the job.

Initially available in 11 diameters, from 315mm to 1,000mm, the JM range incorporates the latest developments in aerodynamic research, computer aided design and finite element component analysis.

Maximum performance is achieved by a new, highly aerodynamic adjustable pitch impeller, which increases efficiency and reduces running costs. Impeller blade sections optimise the air flow performance in both ducted and non-ducted appli-

cations.

Other features include low installed vibration and noise levels, as well as multiple mounting configurations.

### Investment

Commenting on the launch of the JM series, David Priest managing director of Woods said: "Woods' huge investment in design, testing and plant for this new range demonstrates the company's commitment to its customers."

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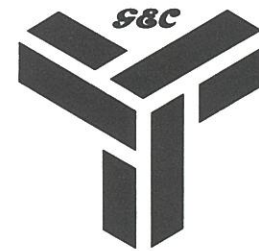
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# EMC - a testing time ahead



Technology Information Pool

**WITH** our ever increasing dependence on electrical and electronic products and the potential for interference between them, it is essential that designers and manufacturers ensure the electromagnetic compatibility (EMC) of their products.

Electromagnetic emissions can be radiated through the air or conducted through cables and can occur from products containing items such as: motors, dimmer switches, relays and microprocessors. These products can be found in all walks of life - in and around the home, in shopping centres, in the workplace and in airports. As most products are also adversely affected by such emissions the need for regulatory control is apparent. The degree of performance degradation can vary from intermittent disturbance of a television picture to the corruption of data in a computer system.

Companies that design and manufacture all relevant electrical apparatus must now make a declaration of compliance with the new regulations. This enables the apparatus to carry the 'CE' mark which is required by law before products can be sold within the EC.

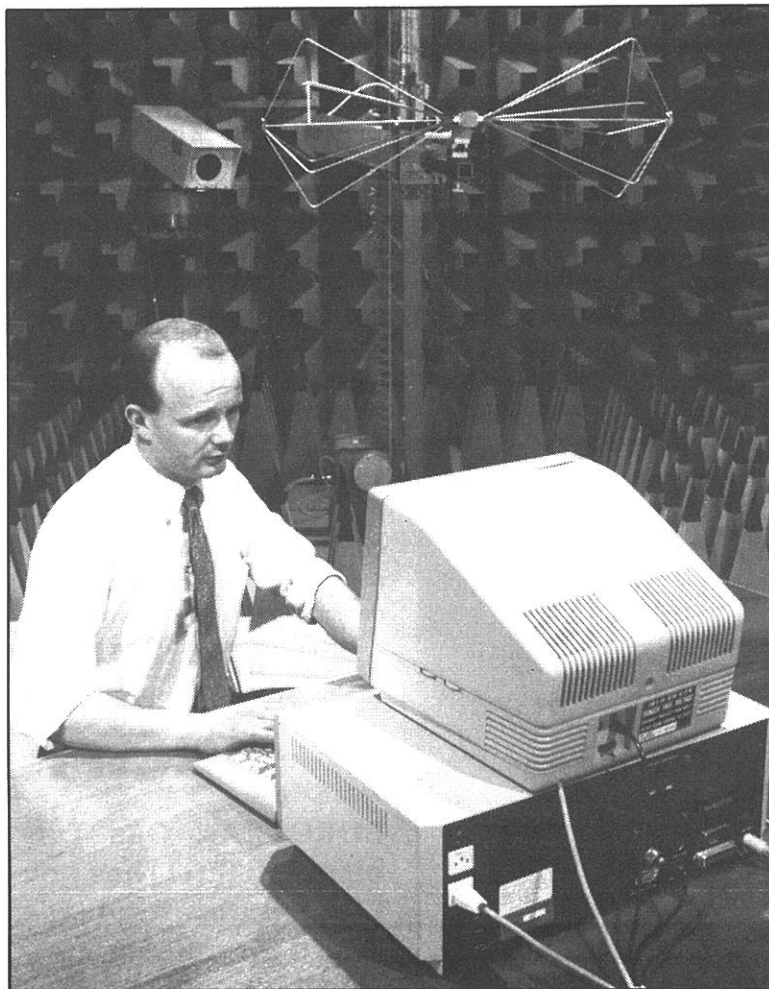
The information required to support such a declaration includes: detailed descriptions of the design,

its construction, design proving tests, installation instructions and, in many cases, formal test results on both design and sample production equipment from EMC accredited test centres.

Although products for military applications have been subject to stringent EMC standards for a number of years, the recently introduced regulations cover all relevant types of electrical products. The UK law that enacts the EC's EMC Directive dictates that equipment must not emit or exhibit susceptibility to radio frequency interference within prescribed limits.

Having built up extensive facilities and considerable expertise in EMC testing, several GEC businesses offer a design and test service to companies both inside and outside the Group.

Coordinated through the EMC Special Interest Group (SIG), part of GEC's technology pool, this service is probably the most comprehensive in the UK.



An anechoic test chamber.

## Edinburgh

GEC-Marconi Avionics' EMC test centre at South Gyle was the first in northern UK to be NAMAS (National Measurement Accreditation Services) accredited. It has provided a specialist service to the military and space markets for 25 years. Testing is carried out in six chambers using equipment covering the range 20 Hz to 18 GHz and beyond.

The test standards addressed cover radar, electro-optics, navigation and display systems amongst many other avionics, naval, land and space-based systems.

The centre is enhanced by a nearby NAMAS accredited calibration laboratory with its ability to certify and repair radiation hazard monitors. It is also close to Donibristle which enables the transfer of staff and equipment to provide customers with one of the most comprehensive capabilities available.

## Portsmouth

The Portsmouth centre, operated by Matra Marconi Space, was constructed in 1980 to test satellites and associated equipment. Its 13.5 metre long anechoic chamber - one of the largest in Europe - enables very large items with very high current and voltage demands to be tested.

The site is able to meet most space, military and civil test requirements.

## Rochester

The EMC Laboratory at Rochester is part of GEC-Marconi Avionics and

offers 30 years experience in the EMC field. It is provisionally listed by the DTI as a Competent Body and is currently pursuing NVLAP accreditation. It is able to test equipment at frequencies up to 40 GHz and comprises a complex of nine screened rooms. These pro-

vide facilities for testing automotive vehicles, telecommunications and avionics systems and commercial equipment to most national and international EMC standards. Special facilities include rolling roads and forced air cooling.

## Stevenage

Marconi Instruments has been designing and testing electronic test equipment to international standards for over 50 years. Its Stevenage centre is able to carry out testing to meet the requirements of the EC's EMC legislation.

Associated services include safety evaluation, climatic testing and the calibration of EMC antennae and absorbing clamps in the NAMAS accredited calibration laboratory.

The centre's indoor and outdoor facilities can accommodate products up to 1 metre cubed, testing for both emissions and susceptibility. The company also operates local EMC surgeries and offers its know-how on a consultancy basis.

For further information on EMC testing and the Special Interest Group contact: Stan Robson at Marconi Defence Systems on: 081 954 2311 or G:Net + 701 3228.

## EMC testing

EMC test centres have specially constructed screened rooms, often referred to as anechoic test chambers, that enable equipment to be operated inside without causing interference outside.

The equipment under test is subjected to uniform electromagnetic fields from source antennas. In order to substantially reduce multiple

reflections from internal surfaces, the chamber's walls, ceiling and floors are covered in a radar-absorbent material. Some centres also have open area test sites, which are free from nearby reflecting objects. These are made of non-metallic materials and are used to measure electromagnetic emissions from every angle.

## GEC's NAMAS test centres

### Coventry

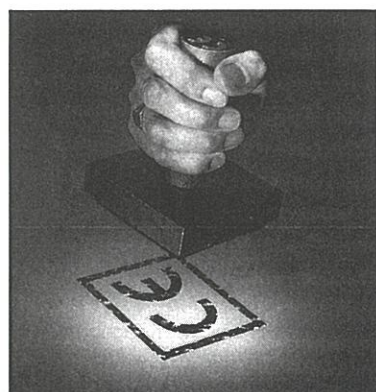
GPT's EMC & climatic test centre at Coventry has extensive experience in testing large and complex electronic systems. Specialist skills include testing to the parallel requirements of the EC's EMC and Telecoms Terminal Equipment Directives. The centre has two test chambers; one of these is equivalent to an open area test site. Added customer benefits are the integral environmental laboratories and the consultancy service.

### Donibristle

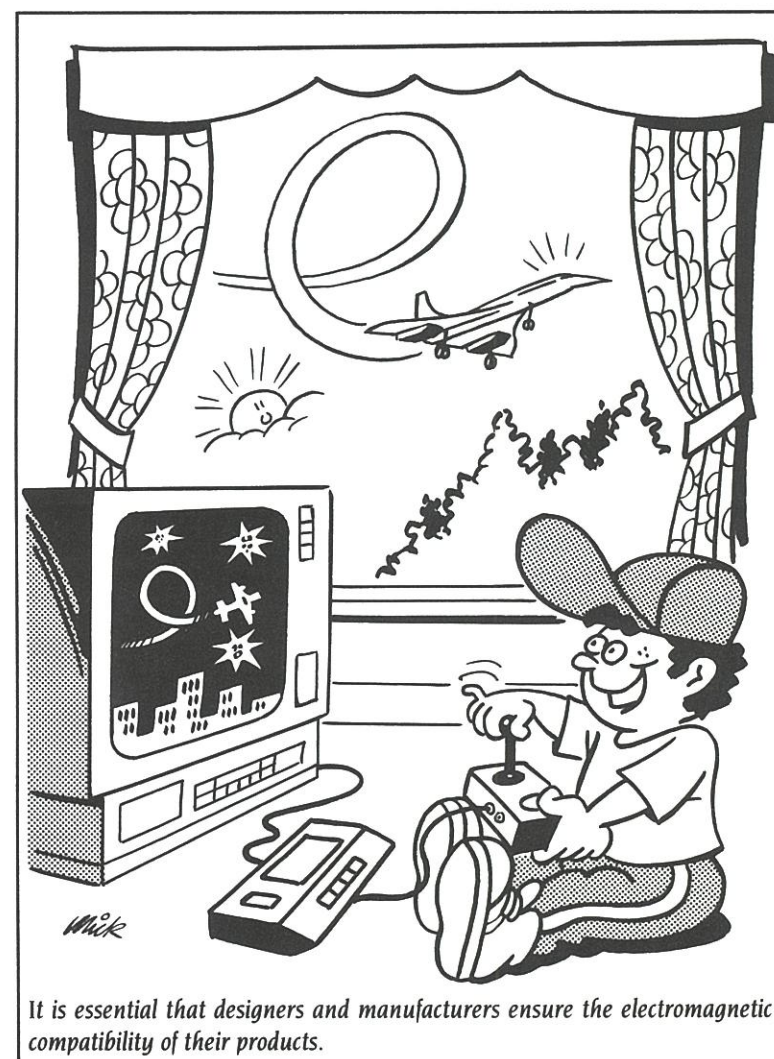
This purpose-built EMC test centre is operated by GEC-Marconi Avionics and caters for civil products from all sectors of industry. The site's comprehensive facilities are available 24 hours a day and include six

anechoic test chambers (ie isolated from outside influences) and a covered, all-weather open area test site. The centre covers a wide range of EMC test specifications and has submitted an application to the Department of Trade and Industry for Competent Body status.

Donibristle has attracted a variety of forward-looking customers. The specialist staff are experienced in testing systems and products.



The CE mark.



It is essential that designers and manufacturers ensure the electromagnetic compatibility of their products.



# Investing in people

**EEV recently celebrated the completion of a newly refurbished training centre on its main site in Chelmsford with an open day.**

The new training facilities are the result of some £500,000 investment and highlight EEV's commitment to continuous improvement.

## Priority

When EEV re-organised in 1991, the new senior management team identified the overriding issues which needed to be addressed. The production of competitive products through low cost, high quality manufacturing was considered the key business priority and this provided the direction for development activities. Highly focused training courses aimed at achieving specific improvements included: strategy

building workshops, training in world class manufacturing techniques, team building and project management and engineering design.

Youth Training Schemes in association with Essex TEC have also been established and National Vocational Qualifications have also been awarded to EEV employees.

Training activities within EEV have developed strategically, driven by the company's changing business needs. Such initiatives were contributory factors in EEV successfully attaining ISO 9001 accreditation recently, and provide a sound foundation upon which to secure the 'Investors in People' award during 1994.

EEV's initiatives, supplemented by

income generation activities, are ensuring cost effective delivery of training and development, which is now resulting in an improvement in EEV's general performance.

One visitor to the training centre's open day was Simon Burns, MP for Chelmsford. He said of EEV, "Supplementary to facilitating the training needs of EEV, they have been able to utilise their resources to help other companies in the area with their training, thereby benefiting the local area and economy even more.

"At a time when, sadly, all too often the news is bleak it is refreshing and encouraging to learn about a positive, good news story which amply demonstrates a far-sighted and intelligent approach to training."



Michael Clegg (right) presenting John Spinks, managing director of EEV with an Essex TEC certificate of commitment to the Investors in People.

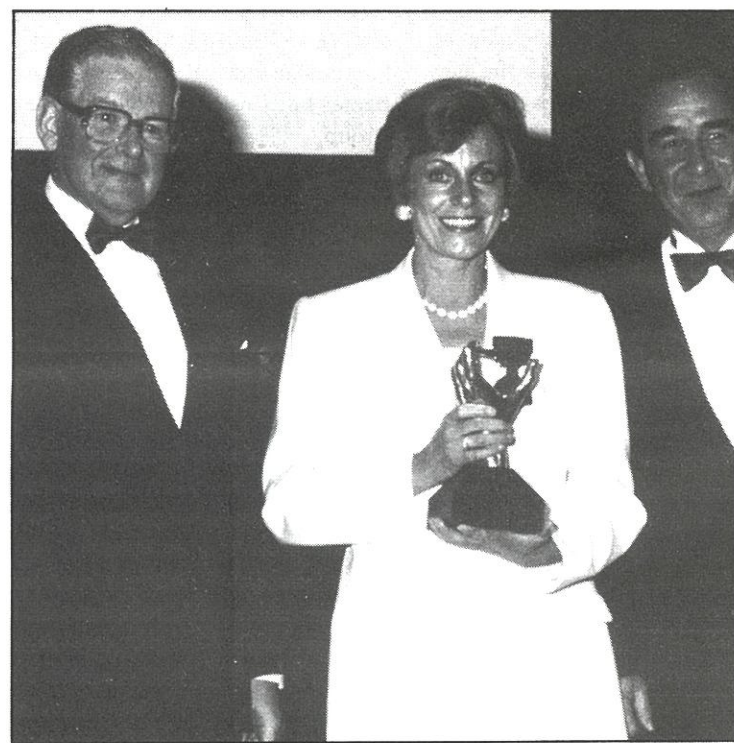
## Electrical Review award

**EUROPEAN Gas Turbines Ltd (EGT) has won Electrical Review's award for training.**

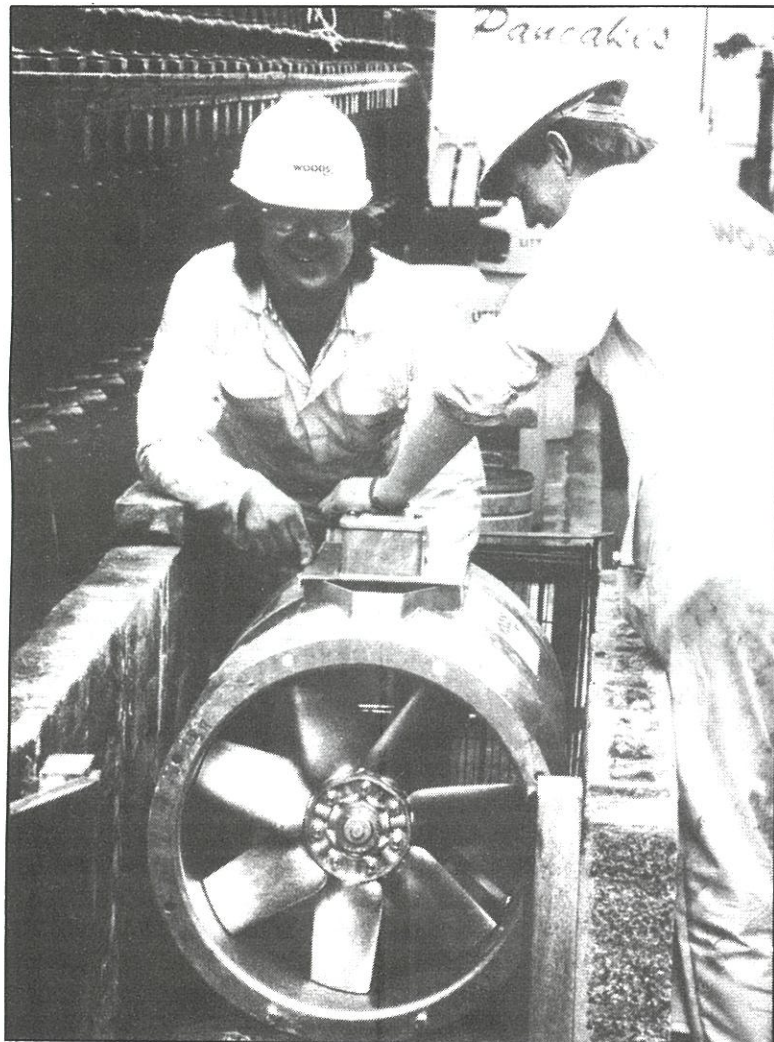
The company's training and development manager Mary Weir, received the award from newscaster, Martin Lewis, during a gala awards presentation at London's Grosvenor House Hotel.

The award was sponsored by the Association of Supervisory Electrical Engineers (ASEE) and EGT was selected for its positive approach to training at all levels.

Managing director, Paul Barron said: "We are delighted with the award. It will undoubtedly attract the attention of our customers to the training initiatives we are introducing throughout the company to ensure the quality and reliability of our products and services are maintained."



Mary Weir, EGT with Tim Tunbridge, editor of Electrical Review (right) and Bill Price, managing director of ASEE (left).



## Breakfast is served thanks to Woods

WHEN Anneka Rice was challenged to refurbish a dilapidated 'soup kitchen' at St Martin's in the Field, Trafalgar Square, Woods of Colchester came to her assistance.

The company had just two days to provide the best possible extraction and ventilation system.

Used to responding quickly to customer needs, two Woods engineers, Nick Ling and Alan Marsh (pictured above), rushed to the site, where they remained for the duration of the challenge. Nick and Alan were involved with designing and installing the fan extraction system, and advised on correct ventilation in the entire building.

In the event, Anneka and her team accomplished the task with half an hour to spare and several hundred cooked breakfasts were served to the homeless by the 9.00am deadline.

## Britain's best acknowledged

**GPT, Liverpool has won two top awards.**

The Edge Lane site has been named Best Electronics Factory in the UK and Best Factory in the North West.

GPT manufacturing director, Stan Edwards received the awards at London's Savoy Hotel following the announcement by Howard Davies, director general of the CBI.

More than 260 companies throughout Britain entered the competition, run by Management Today magazine and The Cranfield School of Management. Just nine were selected to receive awards.

A delegation of judges, including Cranfield's Colin New, professor of

manufacturing strategy, Marek Szewczewski, the Best Factory research fellow, Roger Benson of the CBI and Malcolm Wheatley from Management Today visited GPT to tour the Edge Lane site and talk to staff.

The Management Today Best Factory Awards scheme is aimed at providing a focus for the acknowledgement of outstanding achievement in manufacturing in the UK.

Stan Edwards said: "GPT has an envied reputation in the field of manufacturing excellence in the UK and in foreign markets and we are delighted this has been recognised by our success taking both of these prestigious awards."

## Go for gold

THE 1993 award committee the 20th International Symposium on Gallium Arsenide Related Compounds selected James Turner of GEC-Mar Materials Technology, Cas for the Heinrich Welker medal.

This medal, the premier award in its field, is made by an International committee to a scientist or engineer who has made an outstanding contribution to gallium arsenide.

The importance of the technology pioneered by James, has already been recognised by The Queen in 1981, when he was awarded the



# Understanding the environment

**T**he work of the GEC Hirst Research Centre towards eliminating ozone-depleting CFCs (chlorofluorocarbons) from the electronics industry, has been recognised by the United States Environmental Protection Agency (EPA).

The Centre recently won a 1993 stratospheric ozone protection award for its leadership in research and education in eliminating ozone-depleting solvents. The award is one of only four made in the UK (and one of 78 in total) and acknowledges the leading role played by GEC-Marconi in CFC replacement.

## Major role

Since 1989, the Centre has monitored the legislation initiated by the Montreal Protocol and the restrictions on ozone-depleting solvents, principally CFCs. It is also playing a major role in steering GEC units towards using alternative chemicals

whilst working with them to decide on replacement policy. To date, Hirst has been asked to help with environmental problems on 61 different sites. It was also invited to provide the representative for the UK electronics industry on the UNEP (United Nations Environmental Protection) Technical Options Committee which reports to the signatories of the Montreal Protocol.

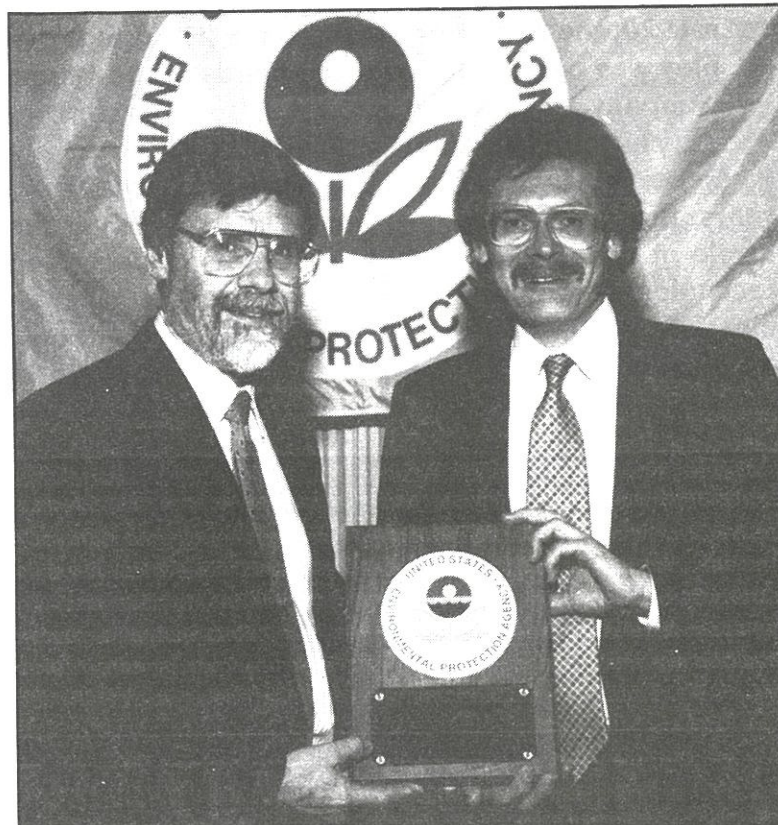
"This year's winners join a small group that have been honoured since 1990 for individual, corporate and association leadership", said Stephen Anderson, acting deputy director of the US Environmental Protection Agency. "These people and organisations from everywhere

in the world have innovated and cooperated to speed protection of the stratospheric ozone layer."

Brian Richards, chairman of GEC-Marconi's CFC replacement working party and David Andrews, a UK representative on the UNEP Technical Options Committee, accepted the award on behalf of the Hirst Research Centre at the International CFC and Halon Alternatives Conference in Washington. Both Dr Andrews and Dr Richards have been prominent in leading research programmes and giving practical advice throughout the industry.

In the next issue of Topic we will look at the Centre's range of services and activities

## ENVIRONMENT



Dr Brian Richards (left), chairman of GEC-Marconi's CFC working party and Stephen Anderson (right), acting deputy director at the US Environmental Protection Agency receiving the 1993 stratospheric ozone protection award.

## How environmentally friendly are you?

### 1. How do you get to work?

- (a) Public transport
- (b) Car
- (c) Cycle or walk

### 2. What does EPA stand for?

- (a) Emergency planning audit
- (b) Environmental protection act
- (c) Extended play apparatus

### 3. Which of the following are ozone depleting substances?

(you can tick more than one)

- (a) Halon
- (b) Oxygen
- (c) Nitrogen
- (d) Steam
- (e) CFC refrigerants
- (f) Genklene

### 4. What does NRA stand for?

- (a) Non refrigerant appliance
- (b) National Rivers Authority
- (c) Non responsible adult

### 5. Where can you tip hazardous chemicals?

- (a) In a foul sewer
- (b) Down the nearest drain
- (c) No-where, they must be drummed and removed from site by a specialist waste contractor

### 6. If you turn down your heating thermostat by 1 degree Celcius (2 degrees Fahrenheit), how much gas/oil will you save?

- (a) 5 per cent.
- (b) 10 per cent.
- (c) 20 per cent.

### 7. What are Special Wastes?

- (a) Waste from valuable materials
- (b) Certain wastes that are inflammable or dangerous to life
- (c) Specialist Waste Contractors

### 8. Does your car use:

- (a) Four star petrol

- (b) Unleaded petrol
- (c) Diesel

### 9. At home, have you (you can tick more than one)

- (a) Insulated your loft
- (b) Installed energy efficient light bulbs
- (c) Installed a timer and thermostat on the heating system

### 10. The Clean Air Act prohibits the emission of dark smoke and dust. In the magistrates court, how much can you be fined for this?

- (a) £200
- (b) £5,000
- (c) £20,000

Please send your answers, along with your name and address, to the Topic Office by 18th January 1994.

## Prizes galore

UNTIL now, most household batteries could not be recharged and were discarded after use, a practice which is wasteful, expensive and potentially damaging to the environment.

### Battery Manager

Now, Innovations has developed a simple and safe way of recharging used batteries. The Innovations Battery Manager is capable of recharging all leading brands of most ordinary household batteries. Batteries can now be recharged up to

20 times thereby extending original battery life by up to 10 times.

Simply plug Battery Manager into the mains using the adaptor supplied, switch the selector to the type of battery you wish to recharge and insert up to four batteries. Its built in controls constantly monitor the state of each battery. As soon as the battery is recharged to its maximum capacity, Battery Manager automatically shuts down the charge to make overcharging impossible.

Topic has two Battery Managers to

give away to the first two, correct entries selected at random to the above environment quiz.

### Books

For the two runners-up, we have two books to give away. The first, *Icewalk* by Robert Swan, is about his expedition to the North Pole and highlights the dangers of pollution; and the second, *The Water Book* by Hugh Barty-King, traces the history of water transportation through the ages.

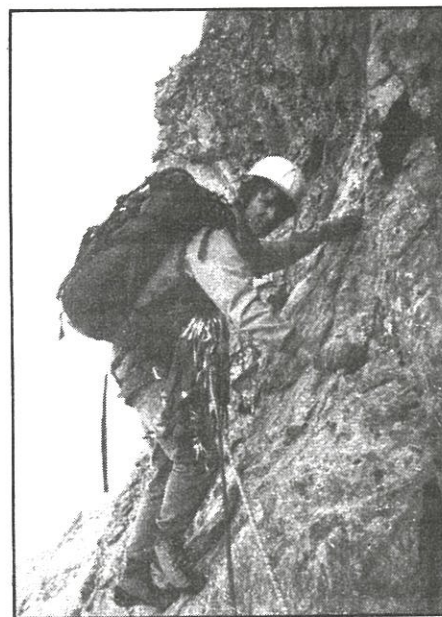
## Boyle's Law

**NO suggestion that the appointment of Simon Boyle as the GEC group environmental lawyer is an unusual instance of "gamekeeper turned poacher" will be entertained! Simon joined GEC after two years as a solicitor with Wigan Borough Council where he was responsible for regulation and enforcement of environmental legislation. His present role will draw on this valuable experience.**

In his short time with the company, Simon has already married his legal knowledge with the technical expertise of Dr Cedric Rodrigues,

GEC's neighbours to do the same. The "E-team" stress that environmental concerns are the responsibility of all of us at GEC and they

GEC's energy and environmental adviser. Together they forge a formidable environmental task force (the "E-team") which some readers may already have encountered on site. Their ever expanding ambit includes awareness training on environ-



Simon Boyle enjoying an afternoon stroll.

mental matters throughout all levels of GEC, ensuring the group's stringent compliance with environmental obligations and even bringing pressure to bear on some of

welcome all suggestions and assistance.

A warning, Simon's hobbies include scaling mountains so if he comes on a site visit keep him away from chimneys!

Recently there have been a profusion of new environmental laws and regulations.

To help guide readers through this legal minefield, Simon will be writing a regular column in Topic under the heading of "Boyle's Law", starting in the February issue.



# Serving the Group

# INNOVATION

In 1920, the Hirst Research Centre (HRC) at Wembley was opened to meet the needs of the Osram company, then located at Shepherd's Bush in London, to ensure a flow of future products and technologies associated with light bulbs. During the ensuing 73 years, the role of HRC evolved to one of serving the whole of the GEC in its wide range of products and technologies, with particular emphasis on telecommunications, materials and components for electronic applications, as well as support for factory operations.

Although HRC has now left the Wembley site and relocated at Borehamwood, its essential business role has not been reduced. Indeed, it has been enhanced with the incorporation of the Applied Physics division, previously part of GEC-Marconi Avionics. This has provided a laser development capability and high technology manufacturing for specialised components.

## A partnership

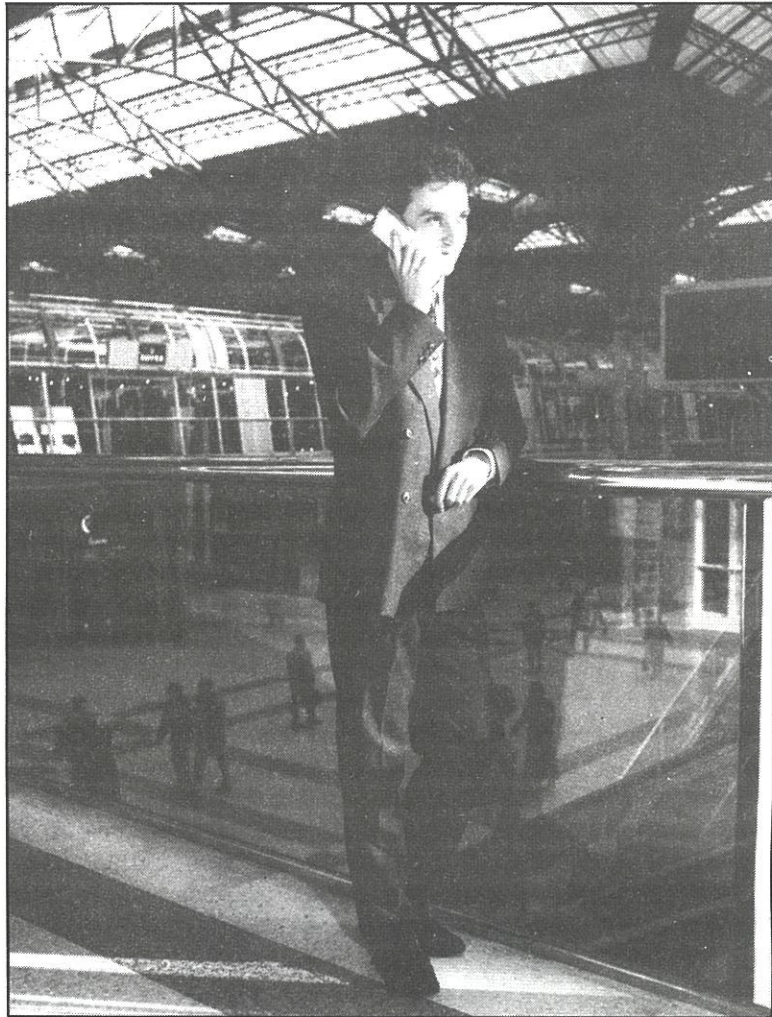
As a central research facility serving the Group, the Centre has always had close links with the operating units. Over the past decade, this association has evolved into a strong partnership in which the work carried out within HRC is wholly customer driven. Targeted research programmes are undertaken with the objective of generating new business through creating and sustaining capabilities in technologies for application within the units. Typical examples include: systems and control theory, biosensors, speech recognition and image coding.

In technology development, HRC creates the know-how and the capability for cost-effective manufacture prior to product development and application programmes. Technologies having both military and civil applications are chosen to maximise the potential for exploitation. Typical examples include: image and speech processing, laser systems, displays, and millimetric radar for vehicle collision avoidance.

## Three approaches

Three approaches have been developed to satisfy the requirements of GEC units.

The first is an integrated lifecycle approach to the development of technologies. HRC plays a key role in all aspects of a project from modelling, through design, design validation, materials choice and characterisation, the development of the technology itself, and the implementation of production, to the provision of post-manufacturing product support and trouble-shooting facilities. The development of GPT's CT2 (cordless telephone) emanated



The CT2 cordless telephone.

from just such an approach. Following a feasibility study and the generation of a prototype at Wembley, the technology was transferred to a development and production team at GPT (Beeston), where HRC has continued its involvement at a high level, both in current product support and in the modelling and development of the next generation.

The second approach is the development of leading systems technologies which are then transferred to operating units. This has been a distinctive feature of HRC's activities. Silicon-on-sapphire (SOS) technology in the early 1980s provided GPS at Lincoln with a core technology on which to build business. HRC-developed infrared detector technology, has been consolidated into the business of GEC-Marconi Infrared at Southampton. More recently, HRC-developed video algorithms have been embodied in video-telephone products.

The third partnership approach is through both short and medium term support to units. The Centre employs nearly 500 staff whose expertise spans many scientific and engineering disciplines. A particular strength is the ability to rapidly apply multi-disciplinary teams to problem-solving and to participate (sometimes on short-term secondments) in clients' design teams. This approach is strengthened by an impressive array of analytical and diagnostic techniques. The same diverse technical expertise, combined with good communications skills, has enabled HRC to provide consultancies over many activities from business planning and tender generation, through legislation compliance and a variety of technical matters, to systems assessment and supplier audits.

## The environment

Exacting legislation governing environment and industrial and safety, is placing severe demands on the electrical and electronic industries. It was to GEC's local site management Hirst Research Centre's Environmental and Safety Services was established. See the environmental feature on page 9 for further details.

## Manufacturing

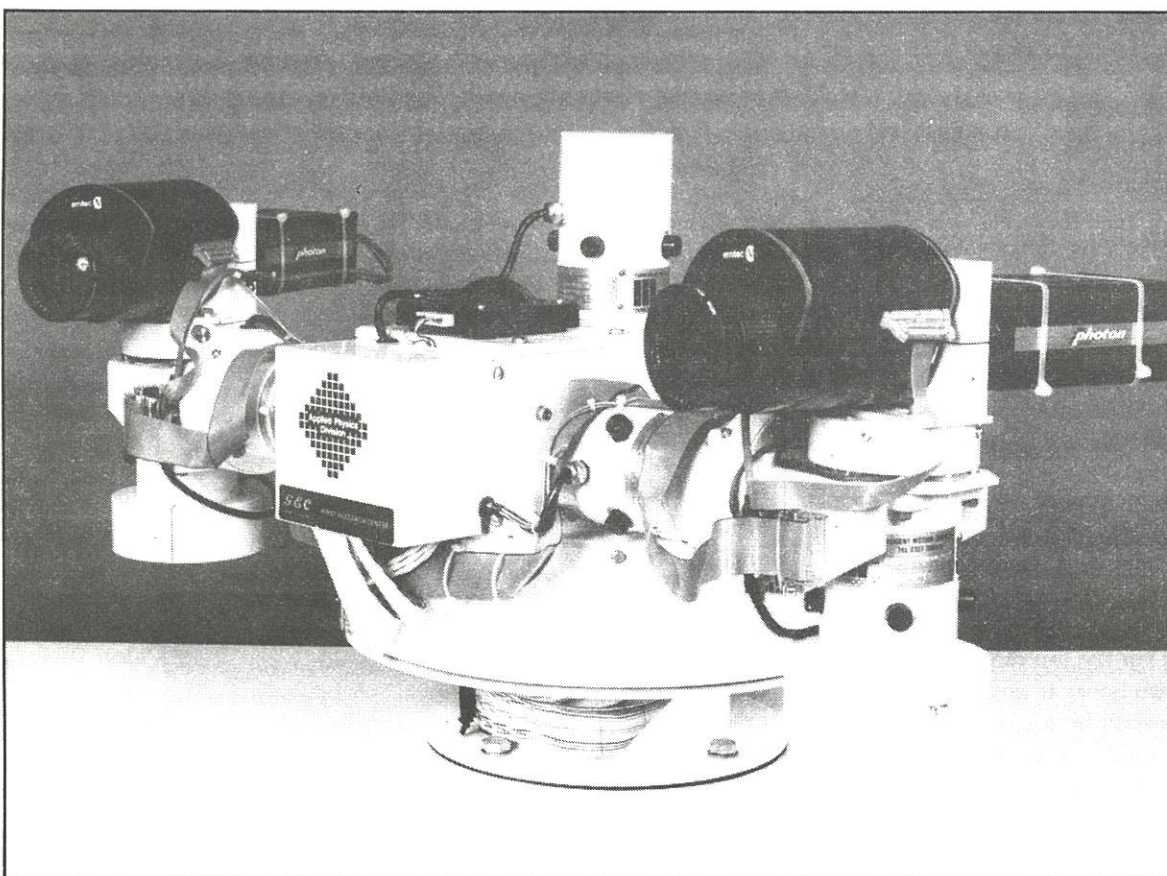
As an operating unit with a manufacturing capability, HRC aims to develop and provide a range of advanced products to meet customer requirements and to address new and developing markets. Successful products include high stability quartz resonators and oscillators, space and military applications, laser energy meters and components for specialist applications. For example, in a comprehensive plating and metal finishing facility (approved for Euro Space Agency and Ministry of Defence work) processing is routinely undertaken on components fitted for both ground and satellite based systems.

## Into Europe

Where the business interests of units are well matched to national and international collaborative programmes, HRC is frequently ported by those units to participate on their behalf. Such projects enable the cost-effective generation of technology which can then be transferred to the relevant units. For example, a new technology for bonding high power devices to heavy metal heat sinks successfully generated by HRC under the BRITE European project, has been used by GPS at Lincoln much more and at lower cost than would otherwise have been possible.

## The future

HRC is manifestly unlike a university, where information is sought in its own sake. The wide and varied range of activities carried out by HRC is developed in close partnership with the units with 90 per cent. of its work being customer contractor driven. For the future HRC is determined to extend and consolidate this successful partnership and the move to Borehamwood will enhance the process.



Advanced vision recognition and control unit.



# Interim report 1993

## The Chairman's statement

In announcing the results, GEC's Chairman, Lord Prior, commented: "Profits before taxation for the first six months of the current financial year were £360 million (£356 million). Earnings per share rose to 8.2p (8.0p).

Most of our businesses performed satisfactorily in generally poor trading conditions. Operating profits of Power Systems and Telecommunications were ahead of budgets which predicted heavier weighting in the second half than last year. Profits were better than last year in several GEC-Marconi units, but were less satisfactory in Electronic Systems overall as a result of lower margins from Continental European activities and higher development spend. Weak demand and low price imports, led to the Cables group recording a loss in the six months. Most of our businesses in the United States, particularly Gilbarco, Picker and Videojet, made increased con-

tributions to profits.

Our efforts to win exports for British industry and to open new markets have continued to be successful. The proportion of our sales to customers outside the United Kingdom increased to more than 70 per cent., including sales to the fast growing economies in the Far East and South East Asia of £509 million, up by 29 per cent. Exports from the United Kingdom in the six months rose by 6 per cent. to £678 million.

Since 31st March 1993, the outstanding order book rose to more than £13 billion, a new record, and an increase of 5 per cent. Net cash balances in the Group increased by £146 million to £1,362 million and

our share of net cash in joint ventures by £85 million to £1,070 million.

Whilst profits will, as expected, be weighted towards the second half of the current year, the directors consider in the light of the current trading conditions that they are unlikely to be substantially higher than for last year. As the economies of the world look towards recovery, our prospects are enhanced by the leading position we have established in many markets, the strength of our order book and our favourable cash position. Your directors accordingly announce an increased interim dividend of 2.81p (2.68p) per share payable on 31st March 1994."

## HIGHLIGHTS

6 months to 30th September  
1993 1992

### TURNOVER

£million	4,386	4,262
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### PROFIT BEFORE TAXATION

£million	360	356
----------	-----	-----

### EARNINGS PER SHARE

pence	8.2	8.0
-------	-----	-----

### DIVIDENDS PER SHARE

pence	2.81	2.68
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### OUTSTANDING ORDER BOOK

£million	13,023	11,926
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## Principal activities for the 6 months to 30th September

### ELECTRONIC SYSTEMS

Order intake exceeded sales in the six months. The order book at the end of September at £4,988 million was 2 per cent. higher than at 31st March. Major orders received included Avionics for Saudi Arabian Tornados, Battlefield Artillery Target Engagement (BATES), Sonar Systems for the fourth Trident submarine and the Laser Warner for Eurofighter.

Marginally lower sales than last year yielded better profits in most units but were down overall principally because of lower margins from Continental European activities and higher development spend.

### POWER SYSTEMS

The outstanding order book rose to a record £6,630 million. In GEC ALSTHOM demand for power generation and transportation equipment has continued to be strong. GEC ALSTHOM was selected to lead a consortium to negotiate a contract to supply 46 high speed trainsets and the associated signalling and central control system for the Seoul-Pusan line in Korea. GEC ALSTHOM has continued to generate cash from marginally increased sales; further improvement was made in margins after interest.

### TELECOMMUNICATIONS

Orders received increased by 32 per cent. Order intake for System X, including for advanced applications, and for GPT's synchronous transmission products has also been strong. Since the 30th September, GPT has also won a major order to design, procure and install the communications link for the Jubilee Line extension.

Profits were down on last year but are in line with budgets for the year in which results are more weighted towards the second half of this financial year than last year.

### CONSUMER GOODS

Although there was no general improvement in the market, sales and profits increased slightly after charging increased reorganisation costs against profits.

### ELECTRONIC METROLOGY

Trading conditions improved in the United States and Gilbarco's sales and profits increased sharply. New management in the now unified Avery Berkel business is in place to take the measures necessary to increase sales and profits.

### OFFICE EQUIPMENT AND PRINTING

Videojet remained at the head of the market and achieved record sales and profits despite weak markets in Europe. Videojet's single jet product range has been complemented by the acquisition in the UK of Elmjet which develops and sells industrial array ink jet printers.

Weak markets delayed recovery in AB Dick.

### MEDICAL EQUIPMENT

Picker International's sales and profits reached record levels. Achievements in the six months include an increase of 62 per cent. in orders outside the United States as CT and Nuclear products gained worldwide acceptance, backed by the successful launch of new Magnetic Resonance machines with the addition of the high field strength "Edge" and low field strength "Asset" products and the completion of the new X-ray tube manufacturing facility in Chicago.

### ELECTRONIC COMPONENTS

In Semiconductors sales and profits were down as demand from some customers in computer peripherals and defence was reduced. EEV and Marconi Instruments made progress with increased sales and profits.

	Profit before tax £ million		Turnover £ million	
	1993	1992	1993	1992
<b>Electronic Systems</b>	79	90	1,137	1,182
<b>Power Systems</b>	79	77	1,421	1,445
<b>Telecommunications</b>	44	61	494	491
<b>Consumer Goods</b>	8	7	122	114
<b>Electronic Metrology</b>	15	9	232	193
<b>Office Equipment &amp; Printing</b>	17	15	165	140
<b>Medical Equipment</b>	19	14	305	232
<b>Electronic Components</b>	6	6	148	138
<b>Industrial Apparatus</b>	4	8	160	161
<b>Distribution &amp; Trading</b>	6	5	191	160
<b>Other Activities</b>	(10)	(7)	9	15
<b>Intra-Activity sales</b>			(66)	(55)
	<u>267</u>	<u>285</u>	<u>4,318</u>	<u>4,216</u>
<b>Other associated companies</b>	12	9	68	46
<b>Income receivable from loans, deposits and investments, less interest payable, including £32 million (1992, £24 million) from joint venture associates</b>	<u>81</u>	<u>62</u>		
	<u>360</u>	<u>356</u>	<u>4,386</u>	<u>4,262</u>
<b>Order book outstanding at 30th September</b>			<u>13,023</u>	<u>11,926</u>

### INDUSTRIAL APPARATUS

Demand remains very weak and poor results have been exacerbated by low price imports, particularly in the Cables group where a loss was recorded for the period. Satchwell Controls, however, increased sales and profits.

### DISTRIBUTION AND TRADING

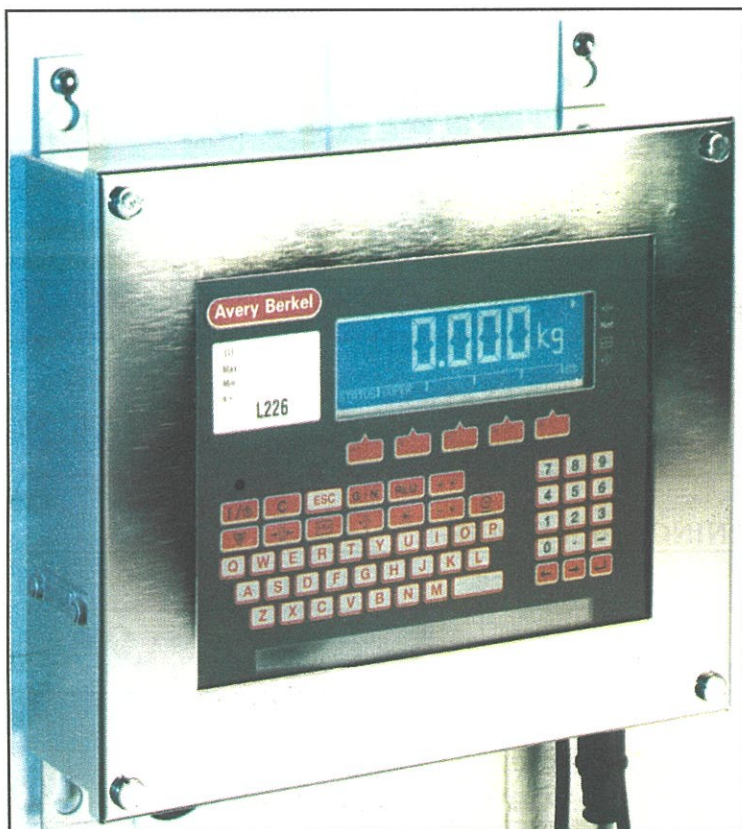
Sales and profits were higher in the distribution and trading businesses in the Far East; there have been signs of economic recovery, particularly in New Zealand.

### RESEARCH AND DEVELOPMENT

Research and Development expenditure, including the Company's share of joint ventures, amounted to £499 million (1992 £513 million), of which £196 million (1992 £184 million) was privately funded.



# Avery Berkel caters for the



The Loadstar indicator with its brilliant blue graphics display provides sophisticated control over all food factory weighing operations.

## At the farmyard

Avery Berkel-designed bulk weighing and control systems, including feed hoppers and vehicle weighbridges, ensure that the correct mix and weight of animal feed

or fertiliser is dispensed to and from each lorry. Systems can be driver-operated and permit highly reliable loading operations with minimal vehicle movement.



This outer case marker accurately weighs and labels traded units prior to dispatch from the food plant.

## The cattle market

Avery Berkel platforms are used to weigh cattle in the auction market. Computerised systems are increasingly being installed not only to give precise measurements but also to speed up the bidding process

which reduces animal stress. Whilst one lot is being weighed, details of the previous lot such as catalogue number and average weight per beast are displayed on large electronic displays in the ring.



Super-safe bread slicers ensure precise in-store slicing for a variety of bakery products, including warm loaves.

## The food factories

Avery Berkel equipment is in daily use throughout the food industry, weighing anything from a 45 tonne milk tanker on a high capacity weighbridge, to one microgram of fat on an analytical balance in the food science laboratory. Often, this equipment will be interfaced with a computer to ensure fast, accurate data capture. Food manufacturers can tightly control their margins and profitability by precise control of weighing operations - in raw materials receiving areas, in-process weighing and finished product dispatch.

Avery Berkel's meat processing systems help to improve productivity throughout a meat plant. A typical computerised system weighs, identifies, grades and checks incoming carcasses and monitors the yield efficiency of the operation at every stage, thereby reducing waste and product give-away.

With less accurate weighing systems, operators tend to overfill packages to make sure they are not underweight.

In addition to ensuring that processed cuts are packed and labelled

correctly, these systems can also manage orders and match capacity to demand. Such equipment must also be 'hoseproof' for stringent cleanliness routines.

Avery Berkel's recently launched programmable weight indicator, Loadstar, can be linked to any electronic weighing platform.

Loadstar enables highly accurate net weights to be achieved within pre-set limits and ensures precise filling of containers with minimal product give-away. Once programmed, complex weighing routines are easily completed. Loadstar can also be used to control all types of recipe weighing and for food batch traceability. Checkweighers are also used to accurately count portioned sachets for bulk catering packs.

Avery Berkel also offers a comprehensive range of weigh/price labelling equipment, wrapping systems and vacuum packaging machines for food manufacturers and high volume packaging factories. These include the Surewrap range of automatic stretch wrappers and the Surevac range of vacuum packaging machines.

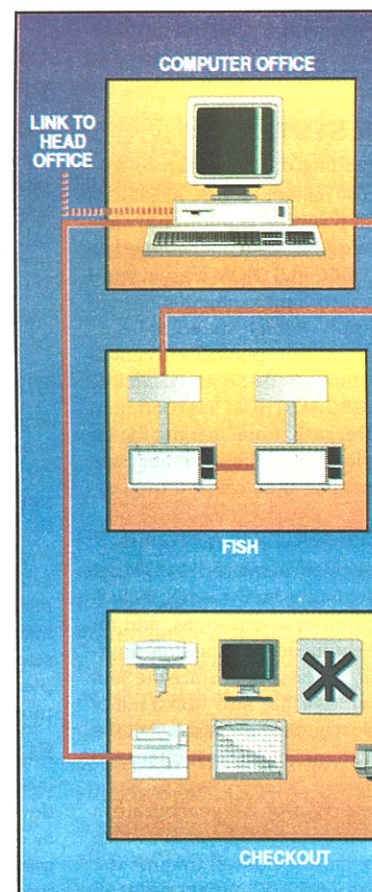


## From p

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A typical Avery Berkel supermarket



# complete retail food chain

## Berkel

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#### From the retailer to the table

Over 70 per cent. of food retailers in the UK use Avery Berkel weighing and food processing equipment. With major supermarket groups setting stringent standards for delivery, presentation and traceability of branded food products, distribution depots now require special bar-coded box end labels on supplies arriving from

food factories. These are electronically scanned on arrival and enable the contents to be identified and deliveries to be compared against original orders. Avery Berkel has developed an outer case marking system (OCM) to enable food factories to comply with these requirements.

Supermarket depots are also installing the advanced OCM system because it links with their own computerised stock control and order processing systems. This facilitates a fast turnaround in the goods receiving area and gives information on suppliers and batch numbers for complete traceability of food products.

Other Avery Berkel products found in stores are super-safe slicers for meat counters and shaver slicers for the delicatessen; whilst behind the scenes there are meat mincers, tenderisers and food mixers for preparation areas and in-store bakeries; hygienic washers for kitchenware and utensils, and dishwashers and glass washers for customer or staff restaurants.

Avery Berkel also manufactures advanced scales incorporating bar code scanners which are built into supermarket checkouts for fast, accurate weighing and pricing of purchases from in-store counters.

The recently launched Advantage range of scales not only weigh but also provide receipts and labels on delicatessen, bakery, cheese, meat and fresh produce counters. In supermarkets, as many as 32 Advantage machines can be linked, providing weigh-price labels or bar-coded receipts for scanning at the checkout.

Multi-machine systems are computer-controlled, allowing centralised changes in price or product. In these systems, the scanner scales are often linked to powerful electronic point of sale systems (EPoS) which capture essential information on all customer purchases. The EPoS equipment is

controlled from the rear of store by Avery Berkel's computerised business management system which provides comprehensive reporting on sales, profitability and stock levels. Valuable business data can also be polled by the supermarket's head office computer, enabling improved response to regional consumer buying trends, timely stock replenishment from the food distribution depots and enhanced control of profitability by the supermarket head office.



Avery Berkel's dishwasher is central to a hygienic and efficient wash up area.



Slicers are prominent in the delicatessen section. The 'Advantage' retail scale links to scales on other counters for store-wide control of fresh food retailing.

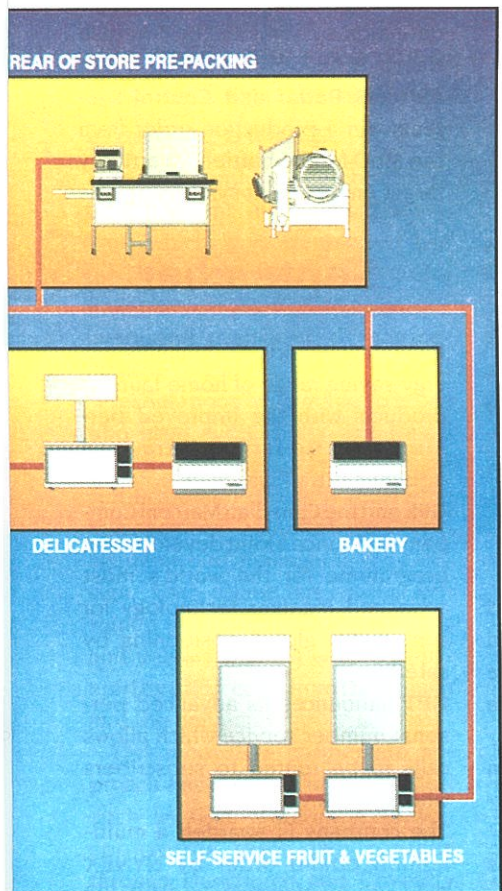
#### Customer support

In addition to offering a one-stop-shop approach to supplying products which meet the needs of the retail food chain, Avery Berkel offers a comprehensive service support for its products. With 1,000 fully trained service engineers in

the UK alone, Avery Berkel's after-sales organisation operates through a national network of more than 80 service centres, proof that right from pasture to plate, Avery Berkel is committed to providing total customer satisfaction.



The scanner scale allows fast throughput of fresh products across the checkout surface. Goods are weighed in front of the operator instead of being lifted onto a separate scale.

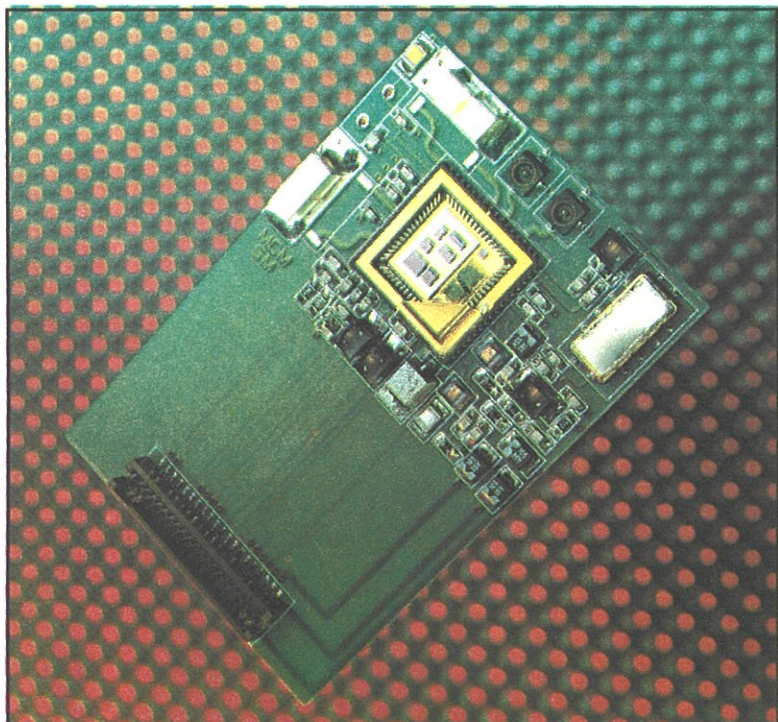


food processing system.



# 1993 - the first six months

A review of some of the major orders and events during the first half of GEC's financial year.



GEC Plessey Semiconductor's (GPS) wireless transceiver for the new generation of wireless LANs.

## April

**GPT Video Systems** launches the FOCUS 500 mobile voice and image communications centre.

**GPT Strategic Communication Systems** wins an order to modernise voice and data telecommunications on British Rail's London-Tilbury-Southend line.

**TaDPoLe** wins The Queen's Award for Export Achievement.

**GEC Sensors** (now GEC-Marconi Avionics) wins an order for the supply of several hundred advanced thermal imaging sensors for firemen's helmets.

## May

**GEC-Marconi Defence Systems** successfully completes trials of 'black box' vehicle data logging systems on Manchester's Metrolink.

**GEC-Marconi Communications** of Virginia awarded an order by the Voice of America for a broadcasting station for Sri Lanka.

**Marconi** supplied communications equipment used by Rebecca Stephens to announce her successful Everest ascent.

**GPT Video Systems** wins an order for the first videoconferencing network in the People's Republic of

China.

**GEC ALSTHOM** purchases the Mexican steam turbine generator business, Turalmex.

**GEC ALSTHOM T&D Substation Projects** wins an order to extend the 420 kV substation at Castle Peak Power Station, Hong Kong.

**GEC Sensors** wins the 'Prince of Wales Award for Innovation' for its new thermal imaging sensor.

## June

Nine GEC employees are recognised in the Queen's Birthday Honours List.

**Videojet Systems International** acquires Elmjet of Cambridge, now trading as Videojet Graphic Systems, manufacturer of high technology printing equipment.

Holland's top technical University at Delft orders a 6,000-line iSDX (integrated systems digital exchange) private communications system from **GPT**.

**GECALSTHOM** is instructed to start work on the 1,360 MW gas-fired power station at Connah's Quay in North Wales.

**GECALSTHOM** acquires Compania Argentina de Medidores, a protective relay manufacturer in Argentina.

**GEC-Marconi Avionics** is formed.

**GEC-Marconi Avionics** wins orders from Dornier Lufthart of Germany for surveillance systems for Finnish Frontier Guard aircraft.

Maiden flight of the avionic development aircraft for the Tornado mid-



A Tornado GR.1A. The avionic development aircraft for the Tornado's mid-life update first flew in June of this year.

life update programme for which **GEC-Marconi Avionics** is a major supplier.

## July

**GEC-Marconi Avionics** wins an order for multi-turret, long range target detection and identification systems for the Fokker 50 maritime patrol and search and rescue aircraft.

**GPT** wins its first overseas cordless iSDX order for the headquarters of Telekom Equipment in Malaysia.

**European Gas Turbines** wins orders to supply Croatia's power utility, Hrvatska Elektprivreda with two Frame 5 gas turbines.

## August

**GPS** launches its credit card-sized radio transceiver which will be used amongst other applications for the new generation of wireless local area networks (LANs).

Through **GPT Australia**, **GPT** wins an order for the first CT2 Telepoint network in Vietnam.

A **GEC ALSTHOM**-led consortium is selected to negotiate a contract to supply 46 high-speed trainsets and

the associated signalling and central control system for the Seoul-Pusan line, in Korea.

**GEC-Marconi Avionics** wins an order to supply enhanced submarine detection systems to the Swedish Navy.

**Marconi Radar and Control Systems** win a production order from the MoD for the battlefield artillery target engagement system.

## September

**Hotpoint** extends its Aquarius energy-saving range of home laundry products with the improved performance Aquarius Ultra and Aquarius Ultra Plus.

**GPS** and the Canadian Marconi Company announce a joint development programme for the world's most advanced receiver technology for commercial global positioning by satellite.

**GPT** announces its advanced personal number service which allows calls to be routed to subscribers wherever they go.

The company is awarded a multi-million pound order by NYNEX Cablecomms for System X digital public telephone exchanges.



The Metrolink, fitted with GEC Marconi Defence System's black box vehicle logging system, operating in Manchester.



# Manufacturing by design

**THERE** has been much concern in the national press recently about the decline of interest in science and engineering especially amongst the young. This is a phenomenon which is not peculiar to this country, but is nevertheless a serious issue with implications for national prosperity.

The publication of this year's GCSE and 'A' level results, together with information about students' choices of further education courses, showed a further decline in the number of young people electing to take science and engineering options in higher education.

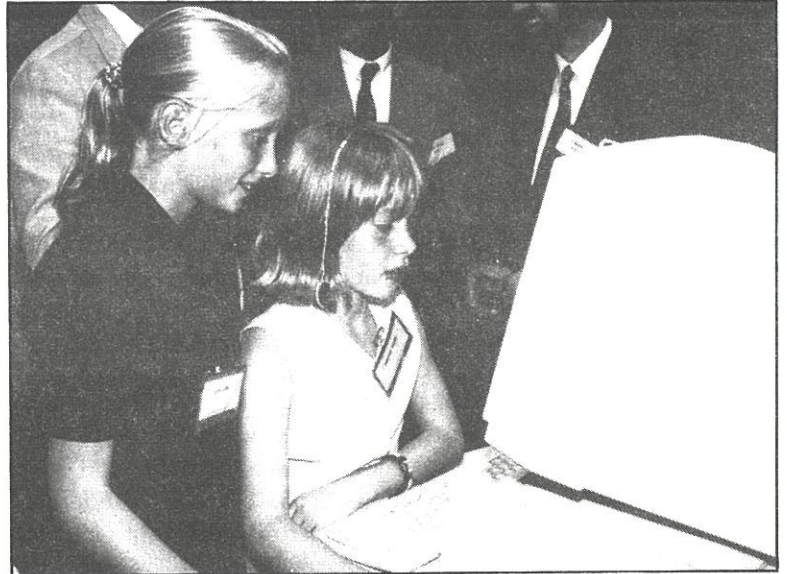
Recognising the importance of raising the interest of young people in engineering, the National Manufacturing Council of the CBI, has launched 'manufacturing by design'. This is a full computer aided design software package, designed by Computervision, a major supplier of

design software to industry, together with a comprehensive pack of teaching and learning materials. It aims to excite the interest of 14-16 year olds in technology and modern manufacturing techniques.

The CBI believes that manufacturing stands at the heart of wealth creation in the UK economy. Howard Davies, the CBI's director general said: "To provide the skills British business needs to compete internationally, we need to increase the demand from youngsters for technology related subjects... This programme aims to do just that, and so attract the brightest and the best to help build our manufacturing base in the future."

The project, which is supported by GEC, Unilever and Shorts, has been designed to assist in the teaching of technology as part of the national curriculum. Using the latest technology, pupils are set simple tasks such as calculating the volume of

TRAINING  DEVELOPMENT



Schoolchildren using the manufacturing by design package.

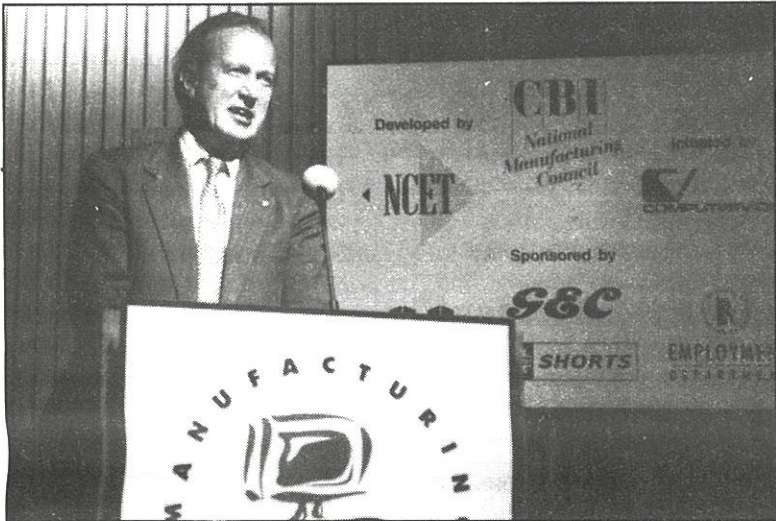
detergent containers to complicated projects such as designing a factory layout and designing electronic circuits for the latest satellite communications systems.

The computer software can be used to design the simplest or most complicated products with the help of curriculum material which explains to teachers and pupils how the software can be used and the manufacturing concepts involved. The materials contain real life examples of how GEC and other manufacturers use computers in design and manufacturing.

The work of Creda, Blythe Bridge and GEC-Marconi Avionics, Edinburgh are used as case studies and

in two of these, Graham Russell, production manager at GEC-Marconi Avionics and Roy Walker, design manager at Creda discuss the manufacturing processes of their companies and how they use CAD.

Participants will receive support through the CBI and the National Council for Educational Technology. There are plans to hold a number of regional celebrations where selected work from participating schools will be exhibited to the public. The most promising designs will progress to the manufacturing stage. A national exhibition of the best designs and the manufactured products is planned for Autumn 1994.



Pictured above: David Hunt, Secretary of State for Employment at the launch.

## University honours

**THE** GEC Management College at Dunchurch, near Rugby, hosted a special Coventry University graduation ceremony recently at which some 100 managers from GEC and its associated companies received postgraduate awards.

The ceremony was a celebration of the excellent industry-academic links which have developed between Dunchurch and Coventry University through joint design, delivery and evaluation of management courses.

Presentations were made to those who have successfully completed one of a number of postgraduate certificate and diploma courses in management, manufacturing management and management of design. Each course has content designed jointly by client companies and university faculties and delivered by tutor teams from Dunchurch and the university.

This innovative partnership approach has resulted in companies, such as GEC-Marconi Avionics, sponsoring their own courses through Dunchurch and Coventry

University.

The ceremony was staged in a marquee in the Dunchurch grounds. GEC chairman Lord Prior, Sara Morrison a GEC director and Peter Gershon, managing director of GPT represented the company. Coventry University was represented by the vice chancellor, Dr Michael Goldstein and other senior academics.

On the same day, Dunchurch was the venue for the annual meeting of the Arkwright Scholarship Award Scheme which provides scholarships in engineering and technical subjects for school pupils.

GEC sponsored two Arkwright Scholarships in 1993; the students were Andrew Gemmill of Framlingham College, Woodbridge, Suffolk and Jonathan Wright of Exeter School.

## Women mean business

**THE** training programme 'women mean business' devised by Hotpoint, Llandudno Junction and Llandrillo College has won a regional training award. The course aims to encourage women on the shop floor to gain supervisory qualifications.

In 1990 the management structure of Hotpoint changed, becoming less hierarchical and more team orientated. In seeking to appoint team leaders from the shop floor the company received only one application from women. Hotpoint realised it was missing out on considerable potential and was keen to redress the balance by offering a programme of training to female members of staff.

The course is run two hours in company time and two hours in participants' own time, and is taught through workshops, combining videos, written work, outdoor pursuits and hands-on training.

The women undertake challenges they had never contemplated before, from speaking to a group to climbing mountains! Each candidate has to complete two projects. The first is an expanded summary of

experience and record of achievement, aimed at improving self confidence and realising latent potential. The second is related to the work place or individual career development.

The initial enthusiasm resulted in the first course being over subscribed threefold. Its success has encouraged the company to repeat the course, not only for women, but all staff.

The practical effect of the course is



Women mean business course tutor Denise Black (centre) surrounded by her students.

that more women are applying for team leader positions; three have been appointed and more are expected to follow shortly. Jacqui Jones, personnel officer at Hotpoint said: "We hope this will lead to many more women taking responsibility for their own training and career advancement."



# Partnership lifts off

**THE Express Lift Company, Northampton and nearby Hopping Hill Primary School have won this year's Gardner Merchant award for excellence in education-business partnerships in the category for individual schools and businesses.**

The link between the school and company began in 1988 when nine year old pupil, Leanne made the assertion "girls can't be engineers." Her teacher, Jean Felton, set about finding a female engineer who would convince the children that girls could be engineers if they wanted to be. The local Chamber of Commerce suggested she try The Express Lift Company and a visit by one of the company's female apprentices was arranged. The visit was such a success it led to a series of technology-based projects linking the school with the company.

Although the liaison began as an

equal opportunities initiative, the objectives have developed and broadened and each year the partnership has involved a different project. These have included designing and building working models of lifts, kites, gears and gear-boxes.

This year's project was to build a wind-powered vehicle which would travel one metre. The brief was designed to integrate with the school curriculum and small groups of children teamed with an apprentice from the company. Each group had to design a vehicle which could be made within a limited budget, to

develop an awareness of the financial constraints in industry. They then had to build and test their vehicle. The testing stage gave the groups the chance to discuss problems and share experiences.

Apprentices are selected to take part in projects as part of their self-development training. "It was amazing how technical some of the children's ideas were and how much they actually knew," said Stephen Piper a second year apprentice. Whilst Richard Lord, another second year apprentice agreed it was "an education for everyone involved."



*Pupils evaluate their project with Richard Lord, apprentice (centre) and Dave Austin, training supervisor and mechanical engineer (right) from Express Lifts.*

Janet Stephenson, training officer at Express Lifts said: "The partnership works extremely well for both parties, giving the children an early opportunity to experience engineering whilst at the same time

meeting requirements within the national curriculum. For the apprentices, it gives the opportunity to experience and develop a range of managerial and supervisory skills in a real life situation."

## OPPORTUNITIES IN GEC-MARCONI

### GEC-Marconi Communications, Chelmsford

#### Systems engineer military division

Based in the tactical engineering department, the job involves:

1. System design including definition of system architecture for bids and contracts, specification of equipment performance and interfaces. Production of system level and equipment specifications.
2. Assistance to the tactical technical manager in the interpretation of market needs into product definition and pv proposals.
3. Definition of engineering work content and collection of engineering estimates. Production of engineering content for proposals.
4. Attending technical and field trials.

Candidates will preferably have a degree or HND in electronics. Recent graduates would be considered.

To apply for any of these three posts please forward your cv to: Val Cranston, GEC-Marconi Communications, New Street, Chelmsford, CM1 1PL.

#### Senior software engineer

Based in the information technology department and reporting to the software engineering and network manager, responsibilities will include:

1. Ensuring that software engineering tools and methods used are consistent with company strategy.
2. Investigating and evaluating new software engineering tools and methods.
3. Providing support to software engineers in the use of approved software engineering tools.
4. Advising network users of current strategy and future trends.
5. Providing and maintaining appropriate procedures and guidelines for the use of software engineering tools and methods.

Applicants will be graduates with a wide experience of languages, applications

and methodologies. Experience of embedded systems for real time applications would be an advantage.

#### Chief mechanical engineer, antenna systems

The successful applicant will be responsible for the civil engineering design and mechanical structure of the company's antennas, feeders and other related products; and the safety of the structures and the technical aspects of installation work. Heading a small team and reporting to the chief engineer, antenna systems, the role will entail detailed engineering work.

Applicants should be chartered, mechanical or civil engineers, with several years relevant experience.

### GEC-Marconi Dynamics, Oldham

#### Unit procurement manager

The successful candidate, responsible to the procurement director and unit general manager, will:

1. Ensure that all procured items are obtained to the required timescales, costs, terms and conditions and, in conjunction with the quality department, the required quality levels.
2. Directly negotiate major sub-contracts and supervise where appropriate.

Applicants should have had several years experience as a senior procurement manager and of running a procurement department with major multinational purchases.

Apply in writing to Kathy Woodward, GEC-Marconi Dynamics, The Grove, Warren Lane, Stanmore, Middlesex, HA7 4LY.

### Marconi Radar and Control Systems, Frimley

#### Microwave development engineers

Successful applicants will join a highly committed team responsible for developing millimetric components and systems.

Applicants must be qualified to at least HND level, but ideally will be a graduate with a microwave MSc. They must be expert in microstrip and waveguide technology and be familiar with software tools such as Super Compact, Spice and Touchstone. A good understanding of antenna technology is also important as are sound planning and resourcing skills and practical design experience.

Apply to: Margaret Clarke, senior personnel officer, Marconi Radar and Control Systems, Chobham Road, Frimley, Surrey GU16 5PE.

### GEC-Marconi Research Centre, Great Baddow

#### Research engineer

Based in the communications technology division, responsibilities include the design and development of advanced mixed analogue-digital integrated circuits on semiconductor process technologies, including CMOS, Bipolar and GaAs.

- Assessment of the feasibility of the requirement specification in terms of cost, performance and available technologies.
- Development of system architecture from requirement specification.
- Liaising with the customer and setting-up of interfaces with silicon vendors for manufacture.
- Study and development of advanced

tools and front-end technologies for system specification and modelling.

Applicants will have: a degree in electronics, computer science or computer systems engineering; experience in design and implementation of mixed analogue-digital integrated circuits and in programming in C and/or Pascal, and knowledge/experience of the use of industry standard CAD tools and workstations and Analogue HDLs.

#### Mechanical engineering manager

This is a new position and will report to the assistant director (engineering). The successful candidate will have a staff of

approximately 20 mechanical and installation engineers and be responsible for the department's technical achievement, resourcing, cost and programme planning.

Applications are invited from graduate mechanical engineers, preferably chartered, with a proven track record of successful design and staff management. The candidates must be familiar with computer techniques allied to CAD/CAE.

#### RF Modeller/EMC Specialist

This position in the optoelectronics and interconnect division involves EMC/RF simulation and consultancy work in the design resource (optoelectronic and in-

terconnect division, MADL). The workload includes running the EMC Simulation Club (a pv programme evaluating software for various EMC requirements) and completing a JORN programme to model the EMC environment of a receiver bunker. Other aspects of the workload might include general modelling and design of microwave electronics and structures for the microwave optoelectronics team.

The successful candidate would be expected to have a 1st or 2.1 in maths, physics or an engineering discipline with experience in EM fields or EMC. A familiarity with Unix on SUNs is also required and a good working knowledge of such modelling packages as MDS, HFSS, STRIPES or NEC would be a great asset.

### GEC-Marconi Software Systems, Borehamwood

#### Software engineers

Opportunities for software engineers with a minimum of 2 years Ada, preferably combined with Yourdan and Teamwork.

Based at Borehamwood or Gateshead you could also work on projects off site.

Send your cv to: Sue Ward, GEC-Marconi Software Systems, Elstree Way, Borehamwood, Herts WD6 1RX.

**APPLICANTS (men and women) with suitable qualifications are invited to apply for the above vacancies.**

**If you are interested in any of these vacancies you can obtain further information by telephoning the unit personnel department.**

To apply for any of these three posts, write to: Mrs F M Holloway, GEC-Marconi Research Centre, West Hanningfield Road, Great Baddow, Chelmsford CM2 8HN.



# GEC-Marconi Defence Systems sets the PACE

**GEC-MARCONI Defence Systems (GMDS) is undertaking a total quality management initiative called PACE (People Actively Committed to Excellence). GMDS employs 3,500 people and has implemented PACE throughout its sites in Portsmouth and Stanmore.**

PACE involves continuously reviewing policies, procedures and working practices in order to ensure that all business objectives are met. In particular, it focuses on achieving continuous improvement throughout the organisation with the objective of meeting, or exceeding, customer expectations.

## Mission and philosophy

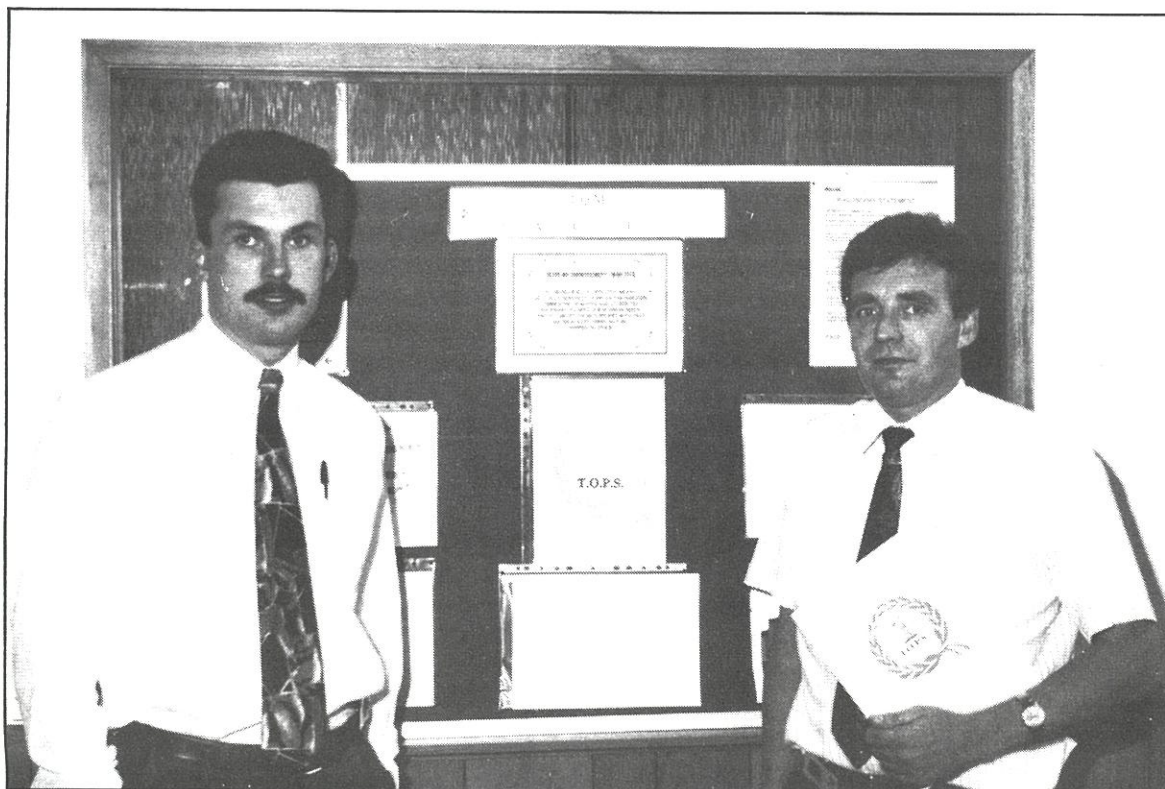
PACE was conceived at the end of 1991 and is an important part of the GMDS response to the changing and increasingly competitive market in which the company operates. It was considered vital that the initiative had a 'top down' approach, with senior management being committed and fully conversant with the concept of total quality management (TQM) before the programme's launch to the whole workforce.

The first stage was to conduct 'top team' workshops to establish the PACE mission and philosophy. These workshops involved managing director, David Tennet and other company directors. A fundamental principle is to aim for continual improvement and the target to be nothing less than 'the best'. PACE was established on the basis that the 'top team' would evaluate all business processes and continually strive to secure improvements throughout the whole of GMDS.

## Training

The next stage was a management implementation programme with senior and middle management receiving comprehensive training. As a result of this a number of 'trainers' were identified from the ranks of senior and middle managers. Their role was to familiarise all employees with the PACE programme.

Over an eight month period all GMDS employees were fully briefed on PACE and how they would be involved. The principles of TQM were introduced with the emphasis on everyone having a customer. Even though few employees have direct contact with the market place, everyone delivers something, or provides a service to someone within the company.



Neil Clark and Martin Challacombe, the Portsmouth members of the Supplies Development Team. The GMDS Stanmore member (not shown) is Trefor Salter.

The training also provided a forum where everyone could discuss openly how they felt about TQM in relation to the company. With few exceptions, the verdict was: "It makes sense - let's do it."

## Organisation

The building blocks are now in place with the PACE policy board, comprising the company directors, providing overall guidance and resources and sponsoring major task teams. Site steering teams were also formed. These comprise directors and other executive managers from each business area who lead the programme locally through the sponsorship of improvement teams. Improvement teams are formed from volunteers within a function or department who work continually at optimising the effectiveness and efficiency of their area of work. Task teams have been set up to look at top-level business processes, examples of which include winning business, risk management, supplies management and design for manufacture. The teams evaluated processes, measured their current effectiveness and identified improvement needs. This work is continuing.

The PACE logo (below) resulted from a company wide competition. The guidelines were that the design should be simple, able to be reduced to tie pin size and cryptic. There were 56 entries of which the design by John Dixon, safety officer at Portsmouth, was judged to be the winner. The logo is a P superimposed upon an ace. The ace of clubs signifies the quality 'club', membership of which is the company wide aim. Many employees can be seen wearing their badges which identify them as having contributed extraordinary effort towards the PACE programme.



## Case study

One particular activity that PACE has focused on is managing supplies within the company. The supplies development area has established one of the most successful

improvement teams in the company, with close collaboration between Stanmore and Portsmouth. To enable all areas to be aware of its activities the team has organised various presentations and communicates regularly on progress.

Much time and effort was spent rationalising the Company Approved Suppliers List. The team recognised that many GMDS products have a high percentage of purchased parts, in some cases as much as 90 per cent. It is important, therefore, that they ensure quality, reliability and continuity when suppliers are selected. The supplies team at Portsmouth have commenced a programme of supplier development rather than simply applying the traditional 'lowest quote' approach. The ultimate aim is to establish mutually beneficial partnerships whereby preferred suppliers become an integral part of the design and manufacturing process. Recently, one of the company's printed circuit board suppliers, Thomas Walters, gave a presentation to key design and manufacturing personnel. The presentation had two objectives. Firstly, to give GMDS a better understanding of the printed circuit board manufacturing process, its capabilities and

limitations; and secondly, for Thomas Walters to understand GMDS' needs in terms of quality and delivery performance.

The presentation was attended by GMDS staff from Portsmouth and Stanmore. "New product development will utilise the experience gained and will result in early supplier involvement to ensure that quality and producibility is 'designed in'. This will eliminate many of the all too frequent manufacturing problems with which we are familiar", said Martin Challacombe of the supplies quality improvement team.

## Recognition

As PACE teams increase in number, an award scheme has been introduced. Every three months a quarterly award is given in each of the three main business areas. Any improvement or task team that has shown six months of consistent improvement is eligible for consideration. There is also to be an annual award identified as the Managing Director's Award for the best award winner of the year.

## The future

David Tennet, the managing director of GMDS, made the following statement which sums up the future of PACE. "Total quality management is part of our normal business activities - it must not be seen as a 'bolt-on'. That is why all improvement activities must align with the mission and objectives of the company and must be targeted to produce savings and improved ways of working. At present much of our work is concentrating on developing the right environment through careful steering and on re-defining our key business processes where necessary. We need to continue to work hard to generate commitment and support from the top to the bottom of the organisation. It will probably take another twelve months of hard work to establish the 'critical mass' necessary for success. After this, company wide continuous improvement will be unstoppable".



# GPT is GEC National Business Game winner

**THE GEC Management College, Dunchurch was the venue for the finals of the 1993 GEC National Business Game.**

This year over 50 company sponsored teams entered, all of whom successfully completed the seven decision stages.

The game offers a valuable training opportunity to all its players within the framework of an exacting and entertaining competition. Participation encourages a fuller understanding of business practice and allows teams to develop a wide range of skills including team work and decision making within a company.

In the game, teams with a maximum of five members manage their small manufacturing company over a simulated period of 15 months. During the seven months actually needed to complete the game, the teams are required to make complicated decisions on the interrelated aspects of sales, production, stock control, finance and other elements which constitute normal business operation. These decisions are then faxed to the business game administrator at Dunchurch where they are processed and results issued which determine the position of companies for the next trading period.

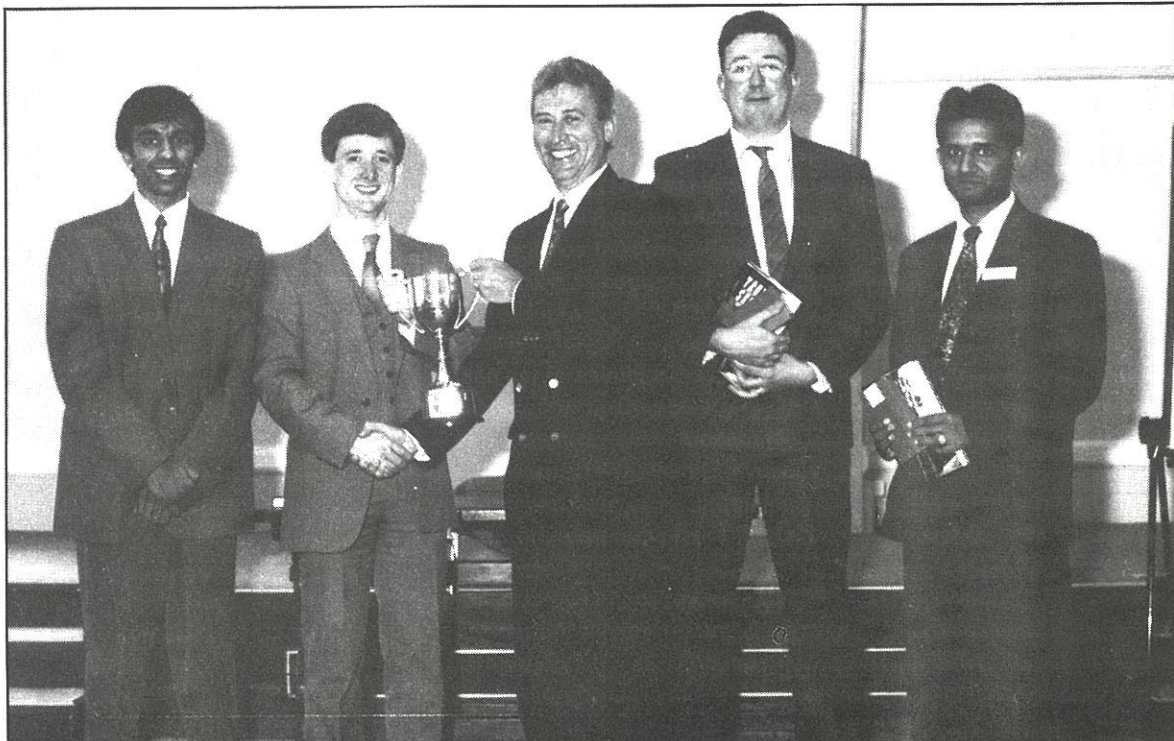
The top five teams at the end of the game were from GPT, Coventry;

Avery Berkel, Warley; GEC-Marconi Underwater Weapons Division, Waterlooville; GEC-Marconi Avionics, Rochester and GEC-Marconi Avionics, Milton Keynes.

These five teams were invited to Dunchurch where they were required to make further decisions about running their companies. The teams were also asked to prepare a budget forecast for the next trading year. Planning for the finals is not always straightforward as the programme is never disclosed in advance and, as in real life, the market can prove a little volatile at times.

The weekend culminated in a budget meeting chaired by David Scahill, managing director of GEC Meters, where the directors were asked to comment on, and sometimes defend, decisions taken over the past year.

This year's overall winner was the team from GPT, Coventry. The team from GEC-Marconi Avionics, Milton Keynes was considered to have given the best account of themselves at the budget meeting. David Scahill presented the prizes which included copies of 'Troubleshooter 2' by Sir John Harvey Jones for the four winners and engraved pens for all the finalists.



The winning team from GPT, Coventry with David Scahill, managing director, GEC Meters. From left to right: Ashok Kholia, Tim Owens, David Scahill, Paul Gautrey and Manu Mistry.

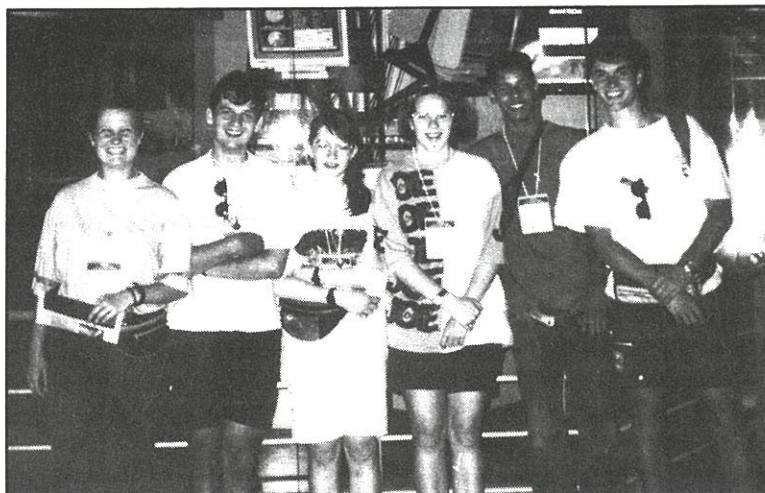
## Avery Berkel scholar

THE Avery Berkel Scholarship has been awarded to Oxford University undergraduate Sarah Meikle, who is studying for a BA modern languages degree. The award will help Sarah through her four year course, including a study year spent in France or Germany. The scholarship is awarded annually by Avery Berkel and is open to children of employees taking a first university degree. Below: Sarah Meikle (left) receives her award from Avery Berkel Group managing director Michael Stayeart (right). Also pictured are Sarah's parents Wendy and John Meikle.



## Space age students

**MATRA Marconi Space, Portsmouth recently sponsored the United Kingdom delegation at the sixth Young Astronaut International (YAI) conference which took place in Daejeon, South Korea.**



The 'Star-Quest' pavilion at Korean EXPO '93 gives a vivid impression of our future in space. From left to right: Roslyn Nisbet, Sean Madden, Alyson Calder, Hazel McAndrews, Edward Taylor and Lee Fredricks.

Matra Marconi asked Lee Fredricks, a student sponsored by the company, if he would like to join the party. Lee and six other students, made up the delegation who visited the Korean EXPO '93 site which was used as the high-tech backdrop to the conference.

YAI was launched in 1986 by an American journalist, Jack Anderson who approached Ronald Reagan with his idea to unite the young people of the USA and the former Soviet Union through a space orien-

tated programme. Since then, young astronaut organisations have been formed in many countries including Japan and Korea.

Lee said: "The highlights of the three day event were an impressive opening ceremony in which we were treated to many traditional Korean cultural performances. There were also several presentations by astronauts and cosmonauts which included question and answer sessions and tours of the amazing Korean EXPO '93 site."

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# Raising funds on the run

**CHRIS Parkes BEM of GEC Plessey Semiconductors (GPS), Doddington Road in Lincoln has raised over £16,000 for the Imperial Cancer Research Fund (ICR).**

Seven years ago Chris had cancer himself and his daughter, Susan decided to run in a local half marathon to raise money for the fund. Chris promised that he would run the next year to raise money if he was able. He recovered and kept his promise. In fact for the past six years Chris has run in the race with a group of supporters and together they have managed to raise between £2,000 and £3,000 each year.

This year Chris had to organise a fun run himself as the council half

marathon was stopped. He got together a team of 28, many of whom were GPS employees, for a run along the river bank in Lincoln.

## Research equipment

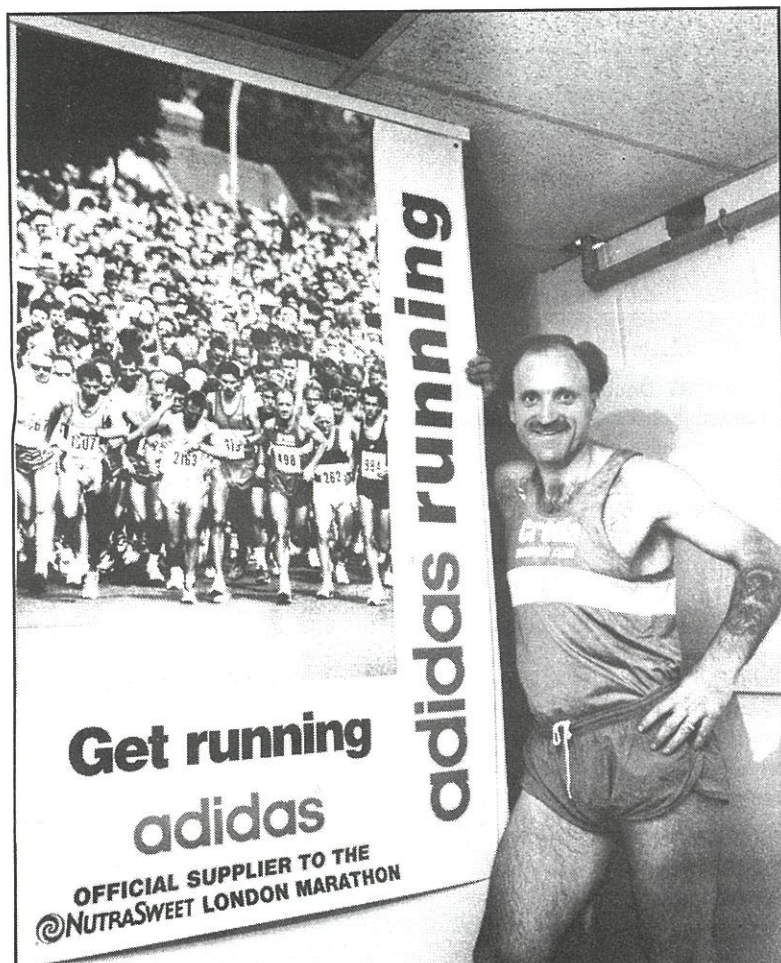
The money raised by Chris and his friends over the years has bought a piece of research equipment called a histostainer and is used by the ICR team in the rectal unit at St. Marks Hospital. The equipment is used to differentiate between normal and

abnormal cells suspected to be cancerous and will benefit many people through early detection.

The histostainer cost £16,400 and bears a plaque acknowledging its donation by Chris. This he describes as "a thank you to us all". "£16,200 has been raised and presented towards it and we will eventually raise that final £200," Chris promised. Chris would like to thank all his friends in GEC, especially those involved in the running and fundraising over the years.



Chris is pictured (far right) leading the runners in the fun run he organised earlier this year. Fourteen of those who took part were GEC employees.



Phil Greer in Creda strip beside the Adidas poster on which he appears.

## Creda front runner

NEXT time you see an Adidas advertisement in your sports shop, look for the Creda vest on one of the front runners. It's Phil Greer of Assembly at Blythe Bridge.

The picture was taken at the Potteries Marathon last year, when Phil was sponsored by colleagues at Creda to stay with the leaders as long as possible. As a result, he raised over £600 for the children's ward at the North Staffordshire Hospital. Little did he realise that his run would be immortalised by the Adidas photographer.

This year Phil entered the 'chariots of fire' event which aims to help handicapped youngsters. Phil and two other runners took it in turns to push local lad Daniel Bolton in his wheelchair.

They came first, winning Daniel and his family a holiday at Eurodisney. On top of that over £300 was raised for the children's ward at North Staffordshire Hospital. But the generosity of Creda employees didn't end there. To make sure that Daniel's whole family had a wonderful time at Eurodisney over £240 was raised in raffles.

## December Crossword

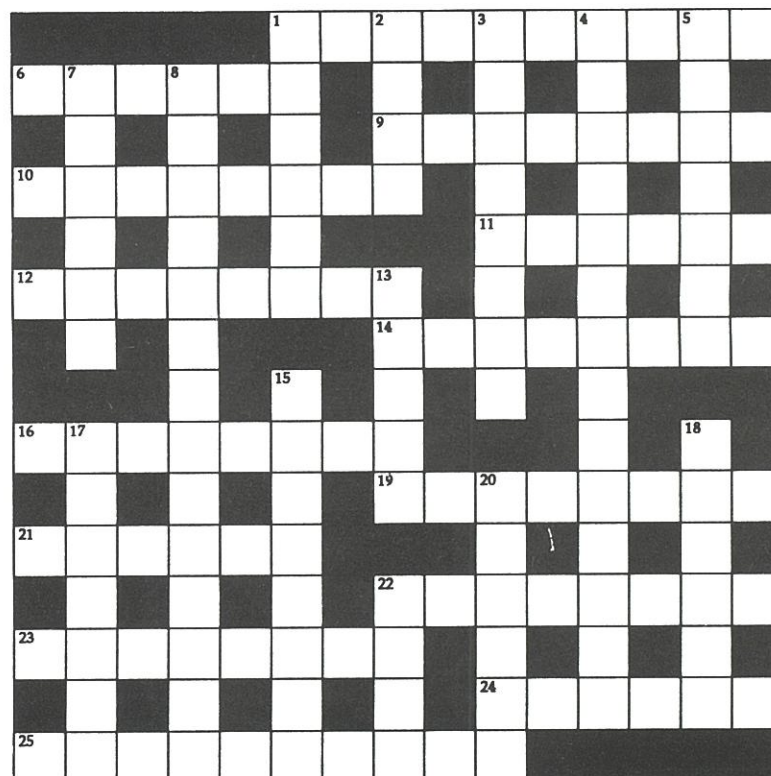
This issue's crossword winner will receive a model 6610P compact microwave oven from Hotpoint.

### ACROSS

- Turf events in Berks a northerner cares about (5,5)
- Proper American cooking stove (6)
- Grabs the can upset aboard ship (8)
- Look for the Cockney tradesmen (8)
- A department store primarily needing experts (6)
- The cleaner, Sam, I fancy has attractive personal qualities (8)
- Need a pit prepared when the sea's ebb and flow is minimal (4,4)
- The natural ability of a quiet bird you'd say? (8)
- Went to be mended (8)
- Someone taking a dip hit the girl (6)
- Former Arab activists of the far left may be investigated (8)
- Fast drivers who are mostly depressed and confused (8)
- Cuban who contributes to America's troubles (6)
- One prepared to take another's part (10)

### DOWN

- Firm leaves little mats on the table for the flowers (6)
- Swear when finding copper on ship (4)
- Forcibly remove the reckless youngster (8)
- Assortment of bones in tin cart - our forefathers perhaps? (7,7)
- Refused, after losing head, to be thrown out (7)
- Hooligans remove the top of pigs' favourite equipment (6)
- Possible supper-dish American chose when flying over last June (8,6)
- Range has gone out, but there's still some heat (5)
- US coins found in digs (8)
- Drama produced by writer could be about an adventurous tot (4,3)
- Playing opposite Renee, performing in a superficial show (6)
- The Vatican makes father fast (6)
- Victim of fraternal trickery in Adelaide, S Australia (4)



### ENTRY FORM

Name .....

Address .....

.....

.....

Company .....

### DEADLINE: 18 JANUARY

A copy of your crossword together with this entry form should be sent to: Topic, GEC plc, Stanhope Gate, London W1A 1EH. Please mark your envelope December crossword.

### SEPTEMBER SOLUTIONS

**ACROSS:** 1. Scream; 4. Ashamed; 9. Red lights; 10. Laden; 11. Pleat; 12. Sentences; 13. Shelter; 15. Hewing; 17. Patent; 19. Bootleg; 22. Trousseau; 24. Easel; 26. Brass; 27. Osteopath; 28. Eternal; 29. Beheld;

**DOWN:** 1. Stripes; 2. Ridge; 3. Aristotle; 4. Absinth; 5. Halle; 6. Medicinal; 7. Danish; 8. Chaser; 14. Elaborate; 16. Wholesome; 18. Trefoil; 19. Bounty; 20. Galahad; 21. Stable; 23. Susan; 25. Spare.

### CROSSWORD WINNER

The first all-correct entry drawn at random from the September crossword entries came from Mark Buchanan of GEC-Marconi Underwater Systems, Templecombe.



# CLASSIFIED COLLECTION

## HOLIDAYS

**FLORIDA**, Kissimmee. Our modern fully furnished four bedroomed detached house (sleeps ten). Fifteen minutes major attractions/Disneyworld. Large private screened and heated pool. Cable vision, stereo system, air conditioned. Fitted kitchen plus more! Children welcomed. Assistance with travel arrangements. Booking 1994/5. Tel: 0279 434534.

**SARIERA** Beautiful Costa Brava fishing village featured on Cliff Mitchelmore's first 'Holiday' programme. Large apartment to rent. Sleeps seven close to beach. Rooftop barbecue. Ideal self-drive destination. Help given with flights, ferries etc. Discounts for Topic readers. For details: 0392 881363.

**DEVON CLIFFS** Sandy Bay, Exmouth. Three bedroom, nine berth caravan situated on one of Haven Holidays best sites. Free pools and entertainment. Prices approx. 25 per cent. below Haven's list. Extra discount for Topic readers. Mrs Duxbury, Hele, Exeter EX5 4PZ. Tel: 0392 881363.

**TURKEY** Fethiye. £49 per person, per week, bed & breakfast. Including transfers to small hotel overlooking Mediterranean at Calis beach. Unbelievable, but true. Flights arranged if required, discount insurance car hire etc. Highly recommended for cheap gold, leather and spices. Further details: 0392 881363.

**TORQUAY** Daylesford Hotel, 60 Bampfild Road, Torquay TQ2 5AX. Small and friendly with all facilities. Short, level stroll to the beach, promenade and abbey gardens. Reduced rates for OAPs and children. Tel: 0803 294435.

**FLORIDA/ORLANDO** Meadow Woods. Fifteen minutes from Disney World. Two bedroom, two bathroom, fully air conditioned villa. Sleeps four/six. Free golf at two clubs, swimming, tennis and club house facilities. £275 per week. Tel: 0745 833426.

**CYPRUS** Protaras (Figtree Bay) villa and apartment. Close to sandy beaches. Use of super pool/complex. Near town, lovely restaurants and all amenities. Assistance with flight booking. Tel: 0245 322583.

**FLORIDA** Five minutes from Disney World. Privately owned three bedroom villa on friendly estate with free use of swimming pool, tennis court and children's play area. Near all major attractions. Sleeps six - £300 per week. Tel: 0424 842885.

**NERJA** Southern Spain. New detached villa with gardens and terraces. Two bedrooms (sleeps four) plus studio apartment if required. Best beaches and tennis facilities nearby. Price from £100 per week. Tel: 0892 528517.

**TENERIFE** South. Amarilla Golf and Country Club. One bedroom apartment, sleeps four, fitted kitchen, living room, bathroom, balcony, fully furnished. Golf, swimming pools, tennis, horse riding, shops, bars and restaurants on the complex. Assistance with flights and transport to and from airport/apartment. Tel: 0295 710523.

**ISLE OF WIGHT**, near Freshwater. Privately owned two bedroom bungalow. Sleeps up to six, full amenities. Two minutes walk from beach. Ideal for relaxing break. Contact Becky on: 0483 715480 after 6pm.

**FLIGHTS! FLIGHTS! FLIGHTS!** World wide destinations for business/leisure. Car hire/insurance. Also **FLORIDA** Villa rental available. Open seven days

until 9pm. Phone Rite Price: 0438 368150.

**DEVON CLIFFS** Sandy Bay, Exmouth. Six/eight berth caravans on Haven Site. Prices well below site prices. Weekly cost includes admission to pools, clubs, free gas and electricity. Privately owned and maintained by us. For full details and prices tel: 0963 362101 evenings.

**MINORCA** Detached villa with private swimming pool. Three bedrooms sleeps maximum eight people. Fitted kitchen. Lounge/diner. Two bathrooms, private gardens. Two sun terraces. Close Ciudadela. Ten minutes walk to beach/coves. For brochure: 0634 867183.

**MINORCA** San Jaime - Son Bou. Beautiful two mile fine sand beach. Apartment with private swimming pool set in gardens. Two bedrooms sleeps up to six people. Electric cooker/fridge, bath and shower, two sun terraces. Tel: 0245 471600.

**FRANCE** La Palmyre, near Royan. Modern villa comfortably accommodates six. Two bedrooms, living room with kitchenette. Swimming pool and tennis courts. Good walking and cycling, sandy beaches, shopping precinct, zoo and restaurants approx. 2.5 miles. Ferry bookings and insurance available. Telephone: 0276 28792 (answerphone). Topic readers can book their '94 hols at '93 prices.

**YORKSHIRE DALES** Grassington, Chapel Fold Guest House. Converted chapel offers en-suite accommodation in comfortable surroundings. Arched windows, Victorian cooking range, oak beams. Good home cooking. Superb surrounding countryside. Easily accessible to Herriot country. Telephone: 0756 752075.

**YORKSHIRE DALES** Grassington. Bed, breakfast and evening meal. Eileen and Alan Thompson invite you to share their idyllic 17th century riverside cottage. Recently restored retaining oak beams, flagged floors. Large attractive garden, ample parking, home cooking. Private fishing, friendly welcome. Tel: 0756 752463.

**PORTUGAL** Algarve, near Vilamoura. Have an early sunshine holiday in a large private villa set in 2.5 acres; with super pool, patios and barbeque. Sleeps four en-suite, possibly six. Maid service. Thursday bookings. Villa from £300 weekly. Telephone: 0788 571395.

**PORTUGAL** near Estoril. Start 1994 in a luxury private villa set in beautiful gardens with barbeque area. Sleeps four, two bathrooms. Opening on to terrace and pool. Five mins. walk to beach. Sunday bookings. Villa from £400 weekly. Telephone: 0788 571395.

**SOUTHERN BRITANNY** Private self contained fully equipped mobile home on three star site. Swimming pool, shop, snackbar, 600 yards to sandy beach. Near La Baule and St. Nazaire. For details: 0661 860261.

**WINTER WEEKEND BREAKS** in cosy Yorkshire Dales cottage in very quiet location. En-suite, tv, tea making, log fires. Large English breakfasts. B&B

£32 per person for 2 nights. Telephone: 0729 830538.

**FRANCE** La Baule. Modern studio to rent with kitchenette, with private swimming pool. Five minutes to sea front. Sleeps four. Available in July, August, September 1994. Telephone: 010 33 40 01 11 13 after 7pm.

**FAR WEST CORNWALL** Charming listed granite cottage between St. Ives/St. Just, near coast and secluded sandy beach, big garden. Ideal for walking, fishing and golfing. Sleeps seven, available all year. From £195 per week, including central heating, electricity and linen. Colour brochure: 0492 640667.

**LANZAROTE** Own thirteen weeks (with an escritura) for the cost of three weeks timeshare in sunny Lanzarote. Let out to family or friends every year or just enjoy year round temperatures 70F to 80F. Pool, sea view over old harbour. Telephone: 0243 376792.

**SNOWDONIA** Transfynydd village. Comfortable, well equipped, two bedroom stone cottage. Sleeps four/six. Cot provided. Pets welcome. Good walking and fishing locally, convenient for exploring rest of North Wales. Available throughout year £80-£160 per week. Winter mini-breaks £40. Telephone: 0489 574626 for details.

## PROPERTY

**COVENTRY** Double stone bay, three bedroom house. GCH. re-wired, new bathroom suite, carpets and curtains, recently decorated. Garage, good sized gardens front and rear, quiet location. Near city centre, shops and schools. £51,950. Telephone: 0203 715371.

**FRANCE** La Baule £175,000. Ideally located on the beach near casino and luxury hotel and walking distance from centre, TGV station, market, tennis club. Apartment for sale: living room with loggia (sea view), two quiet bedrooms (garden view), kitchen, bath, parking. 70 sq. metres, fourth floor. Telephone: 010 33 1 46 97 77 12.

**LINCOLN** Swallowbeck area. Spacious, quality built three bedroom, detached house. Lounge, dining room, large breakfast, kitchen, cloakroom, bathroom with separate shower cubicle, GCH, integral garage, unoverlooked mature garden. Good cul-de-sac location, convenient for all amenities. £68,500. Telephone: 0522 691428.

**RICHMOND PARK** Dukinfield, Cheshire. Four bed detached house with integral garage, 24ft lounge/diner,

brass/marble living flame fireplace, family room with patio doors to rear garden, fully fitted kitchen. Utility room, cloakroom, master bed-en-suite, bathroom, gardens front and rear. Central heating, alarmed. £85,000. Telephone: 061 3440810.

## FOR SALE

**FRAME TENT** eight berth. Very good condition, used only once. Fully waterproof. Two double bedroom compartment. £120 ono. Three berth ridge tent, very good condition. Used only three times, fully waterproof. £35 ono. Call: J Johnson 0708 852212 evenings.

**ICE SKATES** Hockey boots Beaura 22 Turbo, size 9. All leather, used only twice. £30. Telephone: 0708 852212.

**SCIMITAR** GTE 1972 partly restored with galvanised chassis, stainless exhaust etc. Exchange for classic British motorcycle in any condition or for sale at best offer. Telephone: 0733 252701.

**TECHNICS** Ex 5 organ. Excellent condition £550 ono. Call Andrea on: 0257 268339.

## MISCELLANEOUS

**METAL DETECTOR** wanted by GEC employee. Must be in good condition. Call: John Cahill on Stafford 223211 ext. 4032.

**WANTED** Teletext/Zonephone telephone handset. These were part of the 'Rabbit' type system Ferranti set up to allow subscribers to make phone calls at motorway service stations without carrying cash or having to find a phone box. The service was not very popular and is no longer operating. Please contact Gareth Clatworthy on Leicester (0533) 321141 in the evenings.

**WORLD WAR II** airgraphs, airletters and military related envelopes and cards wanted by private collector. Please telephone Lawrie Rensson on 021 3082260 evenings or weekends.

**WIRELESS ENTHUSIAST** seeks unwanted valve receivers for restoration and private collection. Crystal sets, 1930s American models and UX valves especially sought. Details please to A C Stubbings, 7 Church Road, Saxilby, Lincoln LN1 2HH. Telephone: 0522 702601 evenings and weekends.

**OLD STATIONARY ENGINES** required by collector for restoration, preservation and show. Oil, petrol and gas engines, or parts for same - magnetos, oilers, carburetors, etc. Telephone: Ray Hooley, Lincoln 0522 682406.

## Bird watch challenge

**THE British Trust for Ornithology (BTO) has issued a bird challenge to discover business sites which are good for birds. The ultimate challenge is to find the site with the best variety of species recorded in 1994.**

Birds are a conspicuous, and a ubiquitous, part of the natural surroundings and readily adapt to exploit many different habitats. The aim of the challenge is to highlight the usefulness of business and industrial sites for birds. It also acts as a means of focusing the interest of staff, on site, in the natural environment of their work place.

Local members of the BTO are likely to be available to help with the simple recording systems laid down in the challenge. A series of briefing sessions are to take place at the Trust's HQ in Norfolk. At

these, the recorders for sites entered in the challenge can learn, at first hand, how to participate. Attendance will be helpful but is, by no means, essential and full written instructions are available.

So far various industries are represented amongst those that have taken up the challenge. These include the chemical sector, oil, gas and water. The entrance fee varies with the number of employees who work at each site.

For further details contact Dr Nick Carter, tel: 0842 750050 or by fax on: 0842 750030.

Send your classified advertisement written clearly in block capitals (a maximum of 40 words) to: *Viveka Thomas, Topic, The General Electric Company plc, 1 Stanhope Gate, London W1A 1EH* by **18 January 1994** giving your name, address, telephone number and, where appropriate, your GEC site. Only one insertion per ad is permitted. Insertion is not guaranteed but every effort will be made to include your advertisement as soon as possible. GEC employees, their families and people who have retired from the company may advertise free of charge. For others, the cost is 50p per word. Please make all cheques payable to The General Electric Company plc.

Topic takes no responsibility for any misrepresentations or inaccuracies in classified advertisement or for any breaches of obligations by classified advisers. Readers are recommended to take appropriate professional advice before entering into obligations.



# 1993 annual dinner

THIS year's Overseas Club annual dinner, held at the Benn Hall in Rugby, was attended by 256 members and guests. Lord Prior, chairman of GEC and president of the club, welcomed the guest of honour and principal speaker, Lord Parkinson. Lord Nelson, Pierre Bilger, chief executive of GEC ALSTHOM and Jim Pawsey, MP for Rugby were amongst the many other guests.

Lord Prior said that before attending the dinner he and Lord Parkinson had taken the opportunity to visit GEC ALSTHOM's Newbold Road and Mill Road sites. He pointed out that the substantial investment in these factories had transformed them into modern and efficient businesses of which the company could be proud. He added GEC had many fine businesses like GEC ALSTHOM and GPT with excellent products and determined management which should enable them to take the opportunities available in Europe and the rest of the world.

In his response, Lord Parkinson agreed that the company was well placed to take advantage of the opportunities ahead. Before proceed-

ing, he congratulated John Lippitt on his appointment to the Board of GEC. He then went on to say that there were many problems ahead for British industry but pointed out that there was cause for optimism. Whilst withdrawal from the ERM had been a bonus, current interest rates were not helping industry. The economic recovery was fragile and

world-wide. Lord Parkinson concluded by saying that he too had appreciated the excellence of the Rugby factories and that he believed the company was a great asset to the country.

Richard Reynolds, chairman of club council, concluded the speeches by reminding those present that the principal aim of the club was to foster good fellowship between members and with their customers across the world. The club currently has approximately 5,000 members. He believed that the club's role was appreciated by the company and thanked Stanhope Gate for its support. The year had seen a change of officers and he thanked John Lippitt, Peter Watson and Jack Watkinson for their service.

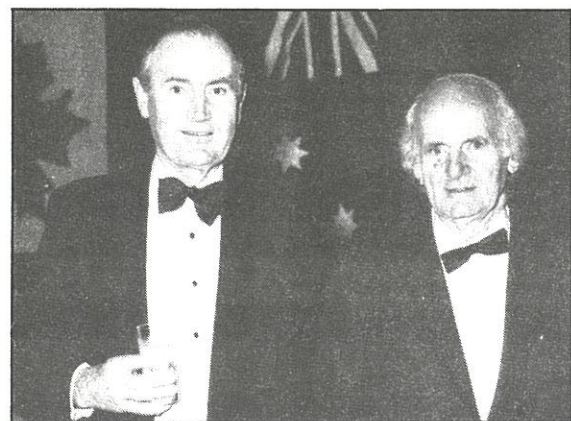
Richard Reynolds welcomed Don Bartho, the secretary of the Australian centre, who was on a visit to the UK. He also reported that a fax had been received from Jake Crompton

conveying the best wishes of members in South Africa. He then thanked the council members and centre secretaries for their support and hard work.

After dinner, Lord Prior and Lord Parkinson spent some time with apprentices nominated by each UK centre. These were honoured guests of the club council, invited to commemorate the formation of the Overseas Association in Manchester by graduate apprentices from South Africa and Australia in 1925.

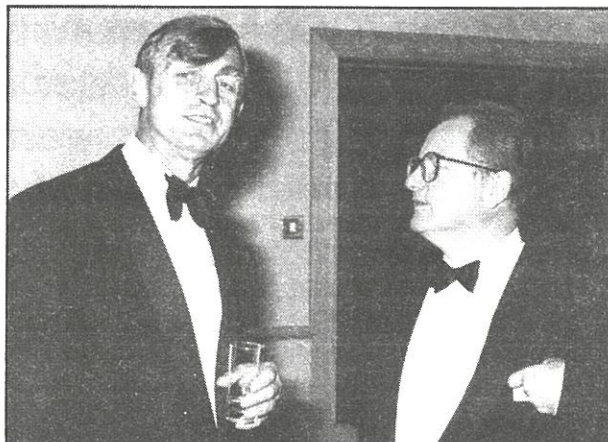


Pictured above from left to right: Lord Nelson, Jim Pawsey, MP for Rugby, Lord Parkinson, Lord Prior and Richard Reynolds, chairman of club council.



Don Bartho, secretary of Australian centre (left) with Peter Watson (right).

needed a boost by further cuts in interest rates. Lord Parkinson expressed the view that the European Community needed to concentrate on making the single market a reality rather than debating the wider aims of the Maastricht Treaty. He also said that he believed agreement on the current round of GATT negotiations was essential and would create further market opportunities



Richard Reynolds, chairman of club council (left) with Pierre Bilger, chief executive GEC ALSTHOM, Paris (right).



Lord Prior with the apprentices.

## News from around the centres

### HONG KONG

Members of the Hong Kong centre held a dinner at the Hong Kong Club. James Chiu, managing director of GEC HK introduced the evening's speaker Douglas Gadd, chairman of GEC ALSTHOM. In a wide ranging review Mr Gadd updated members on recent performance of the GEC ALSTHOM group and its aspirations for the future with particular emphasis upon China and the countries of the fast growing Pacific Rim.

### SOUTH AFRICA

Eighty members in Johannesburg recently held a dinner. Tony Charles, a former managing director of GEC South Africa proposed a toast to which Wessel Barnard, a member of the Electricity Control Board and former Johannesburg City Electrical Engineer responded. Both had served their graduate apprenticeship at English Electric, Stafford. Terry Smith, construction and service director from Turbine Generators, Rugby was a guest from the UK.

### AUSTRALIA

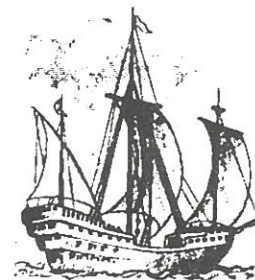
Don Bartho, hon. secretary of the Australian centre was a guest at the Club's annual dinner in Rugby. He is giving priority to updating the membership list and we are pleased to note a resurgence of club activity throughout all the States.

Bill Brazenell writes from Melbourne, this year's dinner was held recently at the Yarra Valley Country Club in Melbourne and thoroughly enjoyed by the 46 members present. These included 13 members of GEC-

Marconi Systems who are working on the JINDALEE project. Terry Soame was the guest speaker and he gave a talk on the project. Ross Rogers hosted the guests making everyone welcome. John Tungate proposed a vote of thanks to the guest speaker.

### 1994 Club diary

Club diaries have been despatched to all members. If you have not received your copy please write to the secretary of club council.



### OVERSEAS CLUB DIARY

**Club Annual Dinner**  
3 Nov. 1994 The Brewery, London.

**Inter Centre Golf Tournament**  
12 Sept. 1994 Cambridge Moat House Golf Course, Barr Hill.

### CLUB SECRETARY

**Council:** D J Twigger, GEC, 1 Stanhope Gate, London, W1A 1EH  
Tel: 0203 565588

### CENTRE SECRETARIES

**Chelmsford:** A D Christelow, EEV Chelmsford, CM1 2QU  
Tel: 0245 493 493

**Coventry:** A. Nixon  
GPT Ltd  
New Century Park  
Coventry CV3 1HJ  
Tel: 0203 563784

**Lincoln:** Mrs C Weston,  
GEC Semiconductors  
Carholme Road, Lincoln,  
LN1 1SG  
Tel: 0522 565 538

**London:** J H Forster, Marconi Defence Systems, The Grove, Warren Lane, Stanmore, HA7 4LY  
Tel: 081 954 2311

**Manchester:** N C Phipps  
GEC ALSTHOM  
Power Plants  
PO Box 131, Trafford Park  
Manchester M60 1AH  
Tel: 061 875 2955

**Portsmouth:** Mrs P M Clarke-Jervoise  
Marconi Underwater Systems, Waterlooville  
Tel: 0705 260 024

**Rugby:** P C Moore, CEGELEC Projects  
Boughton Road, Rugby  
CV21 1BU Tel: 0788 563 563

**Stafford:** C C Riley, GEC ALSTHOM  
Turbine Generators  
Lichfield Road, Stafford  
ST17 4LN  
Tel: 0785 223 211

**Hong Kong:** K M Steele  
GEC of Hong Kong Ltd  
Tel: 5-8938282

**Canada:** B Shangrow, GEC ALSTHOM  
Int. Canada, Mississauga  
Tel: 416 624 8300

N Holmes (UK rep)  
2 Heathwood High Street  
Tadworth  
Surrey KT20 5RB

**Australia:** A D Bartho  
GEC Marconi Systems  
Meadowbank NSW  
Tel: 02-809 9700



# Stafford anglers clinch title again

THE River Welland between Spalding and Crowland was the venue for the 1993 GEC/GEC ALSTHOM Employees National Angling Championship; no fewer than 23 companies took part. Although conditions were good, the river fished well below par, with only 85 of the 252 anglers weighing in.



The winning team, T&D Protection & Control Red, Stafford pictured left to right: (back row) D Bell, M Bates, W Howells, who presented the trophies, K Hassal, (front row) H Wild, B Bunker and J Cavser.

GEC ALSTHOM T&D Protection and Control 'Red', Stafford proved better than all the rest by winning the trophy yet again. The team tied on points with GEC ALSTHOM Turbine Generators, Stafford both having 190 points, but Protection and Control won by having a bigger team weight. GPT Telephone Cables 'A', Dagenham were third with 182 points.

Terence Norris who fished for GEC ALSTHOM Metro Cammell 'B', Birmingham, a new company to the competition, took the individual trophy with three bream weighing 17lb 4oz. Anthony Chowns of GEC Meters 'B', Stone was second with 11lb 11oz and Barry Hercocock EGT 'D', Lincoln third with 9lb 11oz.

The organising committee from

RESULTS	
<b>TEAMS</b>	
1	GEC ALSTHOM T&D Protection & Control 'Red', Stafford 190 points 10lb 12oz
2	GEC ALSTHOM Turbine Generators, Stafford 190 points 9lb 7.5 oz
3	GPT Telephone Cables, Dagenham 'A' 182 points
4	GEC ALSTHOM T&D Protection & Control 'Blue', Stafford 180 points
5	Hotpoint, Peterborough 'White' 161 points
<b>INDIVIDUALS</b>	
1	T Norris GEC ALSTHOM Metro Cammell, Birmingham 'B' 17lb 4oz
2	A Chowns GEC Meters, Stone 'B' 11lb 11oz
3	B Hercocock European Gas Turbines, Lincoln 'D' 9lb 11oz
4	S Potter GEC ALSTHOM Large Machines, Rugby 8lb 15oz
5	K Hassal GEC ALSTHOM T&D Protection & Control 'Red', Stafford 7lb 12oz
6	R Palmer Redring, Peterborough 6lb 9.5oz
7	A Dean Hotpoint, Peterborough 'A' 6lb 8oz
<b>SECTIONS</b>	
A	R Shropshall GEC ALSTHOM Metro Cammell, Birmingham 'A' 5lb 14oz
B	A Dean Hotpoint, Peterborough 'A' 6lb 8oz
C	G Wing Hotpoint, Peterborough 'White' 8oz
D	T Norris GEC ALSTHOM Metro Cammell, Birmingham 'B' 17lb 4oz
E	S Potter GEC ALSTHOM Large Machines, Rugby 8lb 15oz
F	R Palmer Redring, Peterborough 6lb 9.5 oz

EGT, Lincoln would like to thank GEC and GEC ALSTHOM for their continued sponsorship of this event and Bill Howells manufacturing director of GEC ALSTHOM T&D Protection and Control for presenting the trophies. Thanks also to Ron Crowson of Hotpoint and the stew-

ards. The 1994 competition will be held on the River Trent at Burton Joyce, on Saturday September 24th 1994. Enquiries for entries should contact Tony Pickering, Sheet Metal Shop, European Gas Turbines, PO Box 1, Lincoln LN2 5DJ before the end of February 1994.

## Just champion

GEC-MARCONI Avionics now boasts a bona-fide British champion in Paul Buchanan, a senior technical author with the South Gyle's support division in Edinburgh.



British Fly Fishing Champion 1993 - Paul Buchanan.

Earlier this year, Paul was one of a five-man Scottish team which took part in the Home International Fly Fishing Championships on the River Wharfe in Yorkshire. Not only did Scotland win the competition overall, but Paul finished in first place and became the British River Fly Fishing Champion for 1993.

Paul said: "We went down to Yorkshire two days beforehand to acclimatise. It was home water for the English and their team had qualified on that stretch of river. They had some real stars from the fly fishing world and we went expecting to get absolutely hammered!"

"The fishing took place over four sessions on two separate parts of the river. Each competitor had a controller with them at all times. No fish was killed, each was measured and returned alive. Twenty points were awarded per fish and one point

## Mountain climb

**AFTER just three days training, Roger Kingston was not particularly well prepared for the 19,000 feet climb to the top of Mount Potosi in Bolivia. Having been editor of Topic several years ago, neither did he match the necessary criteria!**

At 6.00 am, on the day of his ascent he teamed up with a guide and two undergraduate mountaineers ("real ones", said Roger) and their team.

The climb started from a reservoir at the back of the mountain with a two hour trek up rock and scree; the team then spent four hours climbing through deep snow. After a sleepless night the trek continued. Unfortunately a blizzard prevented the team from

reaching the summit and with only 1,000 feet to go, they were forced to turn back.

Roger said of the experience, "Very disappointing as I was going well, but the guide was right. No-one else climbed the peak that day, and when we went down there was new snow lying right back to base camp."

Roger's climb raised a considerable sum of money for the Malcolm Sargent Cancer Fund.

per centimetre of each catch. I took 11 fish and scored approximately 400 points."

A qualified trout fly fishing instructor, Paul spends some of his spare time teaching others the skills that won him the championship. Recently he appeared at the Gosford Park Game Fair in East Lothian, teaching children how to cast, and he also runs a class at the local

Meadowbank Sports Centre.

The company's fly fishing club in Edinburgh sets a high standard and has qualified for this year's Scottish club championship finals. New members are welcome, whether beginners or experienced fishermen and women. For more information contact Paul, who is club secretary, on 031 332 2411 ext. 2508. G-Net: Access + 709 2508.



# The GEC archives move to Great Baddow

After many years of storage in separate locations in Wembley, the GEC archives have been moved to the GEC-Marconi Research Centre at Great Baddow and have become the responsibility of Tony Walkden, editor-in-chief, GEC Journals.

Tony has used the archives extensively for the GEC Journals since 1988 when he started the '100 and 60 years ago' historical sections in GEC Review. More recently they have provided pictures for GEC's corporate brochure and the historical section of *Topic*. Tony spoke to *Topic* about the archives.

**Q: What are the GEC archives?**

Tony Walkden: They are not to be confused with the Marconi Museum; that is quite separate and deals only with the history of the Marconi Company. The GEC archives started as a collection by Hugo Hirst, managing director of GEC from 1900 until his death in 1943. Gustav Byng (formerly Binswanger) had founded what later became GEC in 1889, by starting an electrical shop in Victoria Road, London in 1883. Hirst, who later became Lord Hirst of Witton, joined him in about 1885. They moved to new premises at Great St Thomas Apostle Street in 1886, now regarded as the date when the seeds of GEC were sown.

**Q: Is this the only collection of historical GEC documents?**

TW: There are several other excellent collections of documents and artefacts being maintained by GEC units in the UK and overseas. We hope to create a database to log these collections so that we can rapidly track down information on behalf of the many enquirers and researchers who contact or are referred to us. Unit collections should, of course, remain where they are as long as they have willing curators.

**Q: How do you propose to set up this database?**

TW: I have two requests: first, please would units/curators let me know of the existence of site collections - documents, photographs, tapes, films, audio and artefacts. Second, if there is any historical material that readers feel should be looked after by the GEC archives, or if anyone is planning to scrap what would be

useful historical material, please let me know.

**Q: Can anyone have access to the archives?**

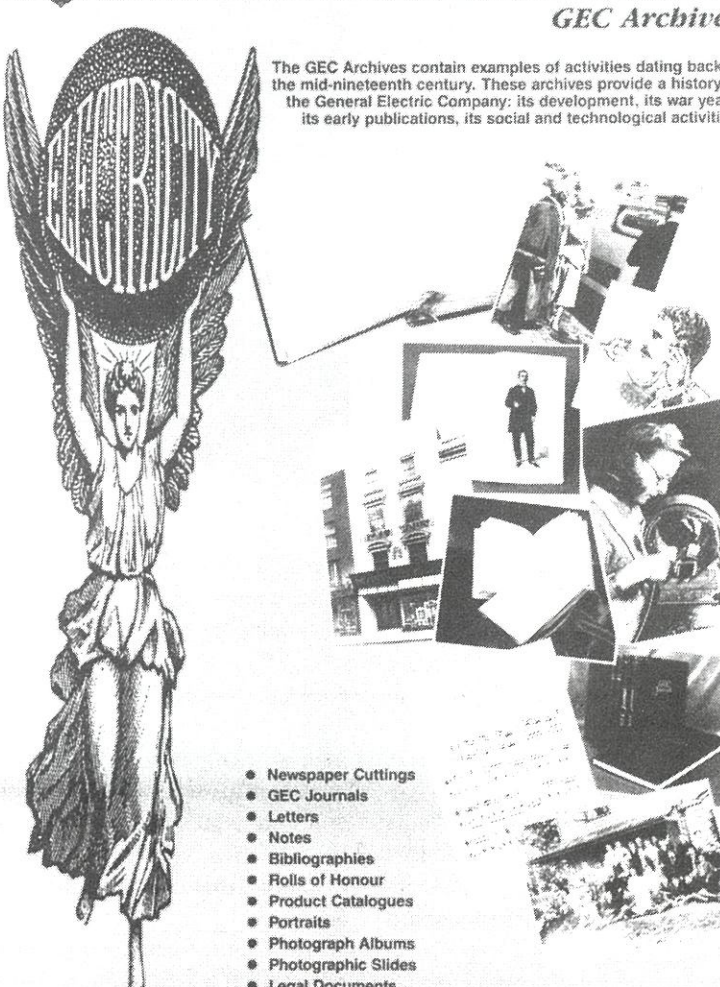
TW: This is to be an active collection and we shall need help to add to and to make the best use of the GEC archives. The archives will be open to serious students of GEC history and other visitors by appointment. Overseas customers, especially from the Far East, are often impressed with GEC's long history. If you have a good reason to examine something, please give me a call at GEC-Marconi Research Centre, Great Baddow, G-Net: Access +333 3396.

*Pictured right is a display board that gives a flavour of the archive's contents. The earliest catalogue is dated 1887, although the history of many of the companies that now make up GEC goes back to the early 1800s. There is even sheet music from 1904 for 'The General Electric Company March'! Recent acquisitions include a 1900s GEC Leclanché cell and a 1923 GECophone crystal radio set.*

**EDITORIAL AND PUBLICATIONS**

*GEC Archives*

The GEC Archives contain examples of activities dating back to the mid-nineteenth century. These archives provide a history of the General Electric Company: its development, its war years, its early publications, its social and technological activities.



- Newspaper Cuttings
- GEC Journals
- Letters
- Notes
- Bibliographies
- Rolls of Honour
- Product Catalogues
- Portraits
- Photograph Albums
- Photographic Slides
- Legal Documents

GEC-Marconi  
Contact: A J Walkden  
Editor-in-Chief  
Extension: 3396

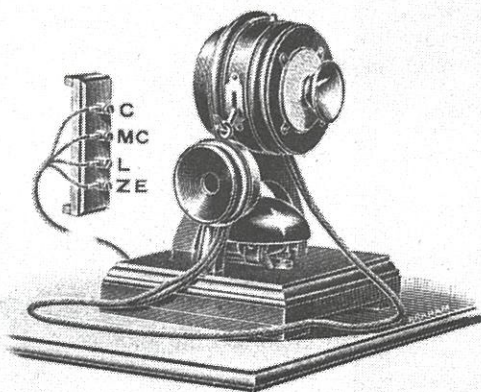
## 240 years service



SIX employees of GEC ALSTHOM T&D Protection and Control, Stafford recently celebrated having completed 40 years service with the GEC group. Managing director David Buckless presented them with gifts they had chosen. Pictured above from left: Derek Minard, Bill Howells, managing director David Buckless, Jim Elsmore, David Pearson. Seated are: left, Chris Otley and Brian Emberton. George Cull, Roy Harrall and Peter Stephenson also received 40 year awards but were unable to attend the special presentation evening.

## Topic looks back

### TELEPHONES.



As in every other branch of life, so in the Medical Profession, the Telephone cannot fail to be of service as a labour-saving instrument.

**For a Surgeon** to confer with his partner in an adjoining room, or give directions to his Druggist or Coachman.

**For Hospitals.**—Doctors and Nurses speaking from one wing of building to another, or between different Wards.

**For Institutions** wherein patients suffering from infectious diseases can speak to a distance without fear of contagion.

**For Bedside use,** as illustration.—The patients can ring up and speak without rising from their bed, invalid chair, &c.

**Portable and Wall** Combinations of all kinds always in Stock. See separate Catalogue **K**.

Pictured above is a telephone GEC manufactured 100 years ago. Today GPT supplies some of the most advanced telecommunications systems.



# The 1993 National Employees Competition

**THE eleventh GEC National Employees' Competition, held at the National Agricultural Centre, Stoneleigh, was once again a resounding success.**

This year's competition was memorable for many reasons, not least of which was the rain. However, the weather did not dampen the spirits of the 37 teams which took part in the event's demanding mental and physical activities.

The competition, designed and organised by the GEC Management College at Dunchurch, tests the ability of teams to work together and think creatively. In particular the competition requires teamwork under stressful conditions, lateral thinking, problem solving, planning, decision making and leadership qualities from individuals.

An added ingredient this year was the introduction of the learning journal. The purpose of this was to encourage reflection and review after each task to ensure that learning was transferred back to the workplace.

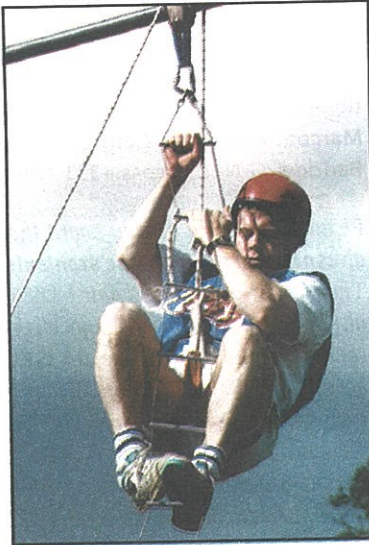
The competition briefing began with an ice-breaker session of synchronized swimming, human knots and finally the 'Great Lap Sit'. This set the tone for the weekend's activities - enjoyable, but serious hard work.

The 37 teams each comprising six company representatives competed in three zones each offering a different challenge: water-based, land-



Blue 80 GPT, Beeston (above) attempting the Crane.

Blue 55 GEC- Marconi Defence Systems, Stanmore (right) attempting the Beanstalk.



based and aerial.

Awards were made in three categories: Avery Berkel, Warley won the mixed team trophy, GEC Plessey Semiconductors, Lincoln, the male team award and GEC-Marconi Avionics, Edinburgh won the veterans' class.

The top three teams from each category faced a final event to determine the overall winners for 1993, who were presented with their prizes by Sara Morrison, director of GEC.

Team 44 Avery Berkel, Warley (right) were winners of the mixed category. Team members included Gary Hawkins, Richard Parsons, Angela Buckley, Russell Griffiths, Robert Wilder and Stuart Williams.



Team 18 GEC-Marconi Avionics, Edinburgh (left) were placed first in the veteran category. The team was Graeme Douglas, Stephen Edmiston, John Mitchell, Gary Deegan, Alan Somerville and Colin Munro.

Team 43 GEC Plessey Semiconductors, Lincoln (right) winners of the male category. Team members were Andrew Johnson, Andrew Callow, Robert Evans, Simon Bennett, David Jones and Anthony Gough.



## Chairman acknowledges success

**SUCCESS was the theme when Lord Prior, chairman of GEC visited the Sensors Division of GEC-Marconi Avionics in Basildon.**



Lord Prior receives a mounted crystal from Derek Dickinson, managing director of GEC-Marconi Avionics (right) and Mike Thornton, divisional managing director of Sensors Division, Basildon (left).

In fact there were several reasons for celebrating. Jim Mackenzie, director of Lloyds Register Quality Assurance (LRQA) was there to present the ISO 9001 accreditation certificate to the company. A commemorative certificate was also presented by Lord Prior in recognition of the Division's Prince of Wales Award.

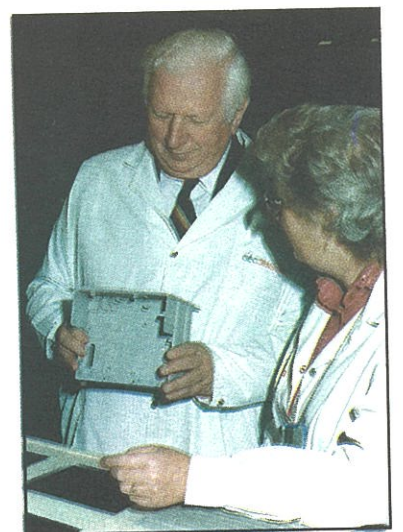
Before presenting the ISO 9001 quality certificate to Lord Prior, Jim MacKenzie emphasised to the employees that, "Quality is everyone's business". He also stressed how important the approval to international standards was in order for the company to advance in the wider world and that it had had to be "diligently earned" by the company's employees.

Lord Prior congratulated the employees on their quality assurance

achievement and spoke of GEC-Marconi's remarkable record in a tough market. He acknowledged that the company had "a tough job to do, but these awards are indications that they can do it."

He then presented a certificate to Iain Matthews of the Uncooled Infra Red Design Team in recognition of the Prince of Wales Award that Sensors Division won earlier this year for its hand-held infra red camera.

After the presentations, Lord Prior made a tour of the company's facilities with Mike Thornton managing director of Sensors Division and Derek Staples, quality director. He met many of the staff including long serving employees, top apprentices and several winners of the company's staff suggestion scheme.



Staff suggestion scheme winner Eileen Bowers discusses the making and casting process with Lord Prior. Her labour and cost saving suggestion earned her an award of £500.