



# MARCONI AVIONICS EVENING POST



MONDAY, NOVEMBER 14, 1983

INSIDE . . . YOUR EIGHT PAGE MARCONI AVIONICS SOUVENIR PULL OUT



The Lord Lieutenant signs the visitors book

## 'A double honour that we all share'



How does it work? . . . Jack Pateman with MP Peggy Fenner and Mr Leigh-Pemberton.

# WHAT A TEAM!



A proud moment . . . Marconi employees with the coveted awards.

### TEAMWORK is the key to the success of Medway's top company, Marconi Avionics.

More than 5,700 people work at the Rochester Airport factory making the company the area's biggest employer.

Bill Alexander, assistant managing director and chief executive at Rochester, says the double award brings honour to every member of the company.

He says: "Everything we do in industry is a team effort and, to succeed, every member has to do his or her job well."



Bill Alexander with an impressive stack of Queen's Awards

## A shining example

**GIANT** electronics firm Marconi Avionics has set a shining example to the rest of Medway, says the Lord Lieutenant of Kent.

Robin Leigh-Pemberton was presenting a double Queen's Award to industry for the company's achievements in exports and technology.

### Scrolls

He told 650 VIP guests at an open day and presentation ceremony at the Rochester Airport works: "We are at a critical and historic moment in the life of the Medway Towns. "I'm sure that the example and achievement of this company will show everyone that it is



FUN DAY . . . 'PILOT' MICHAEL HYDE.

possible to adapt to change and be successful." Mr Leigh-Pemberton, dressed in ceremonial uniform, was representing the Queen to present the awards and commemorative scrolls signed by the Prime Minister.

ions and silicon chips had not meant redundancies but more jobs to reduce the cost to customers, he said.

Mr Pateman paid tribute to the enthusiasm, ability and hard work of all the staff, including the 5,700 workers at Rochester.

Sir Robert Telford, company chairman, said it was a proud day for everyone connected with Marconi Avionics.

### Parts

The Rt Rev David Say, Bishop of Rochester, said guests that people in Medway should rejoice at the part the company played in maintaining local employment.

### ACCOLADE

"I would like to congratulate the whole of Maritime Aircraft Systems Division for their technological achievements and every member of the company for the effort which has enabled us to achieve our export success in 1983."

Jack Pateman, managing director, says the awards are the ultimate accolade for Marconi Avionics.

He says: "A company like ours needs to innovate in order to remain competitive in world markets."

"Our ability to do so depends on the skill and dedication of every member of the company and on every part of our work being well done."

"Everyone in Marconi Avionics, whether directly engaged in new technology or exports or not, can justly take pride in the honour of the Queen's Award."



Seeing how the company works.

MORE PICTURES ON THE CENTRE PAGES

[www.rochesteravionicsarchives.co.uk](http://www.rochesteravionicsarchives.co.uk)

**NEWS EXTRA**

**They're off — with wine and cheese!**

THE FIRST Great English Wine and Cheese Race starts in London tonight when six London taxis set off from Parliament bound for the European Parliament in Strasbourg laden with the best of British produce. The race has been organised by UK Conservative Euro-MPs to coincide with the annual Beaujolais Nouveau dash to Britain — to show the rest of Europe that English wine and cheese is among the best in the E.E.C.

**Pay limit under attack**

UNIONS today outlined plans to smash the Government's three per cent pay limit in the public sector. They will step up measures which led to breaches of previous pay targets.

**TAX ROW AHEAD**

MINISTERS are braced for an Opposition attack on the Government's failure to fulfil its election pledge to cut taxes.

Neil Kinnock, during his campaign for the Labour leadership, highlighted the increased burden of taxation.

This is a theme likely to be developed by Shadow Chancellor Roy Hattersley when he replies to the Chancellor's autumn economic statement on Thursday.

The plans, drawn up by the TUC's public services committee, stress the importance of a common pay settlement date.

The committee said efforts made to achieve a more co-ordinated negotiation of claims played a key role in successes since 1981.

Other aims include moves towards a 35-hour week, six week's holiday, earlier retirement and cuts in overtime.

The Government's pay target of three per cent has been rejected as "totally unacceptable".

**Hover bover**

INDUSTRIAL action by 60 French hovercraft engineers at Calais and Boulogne continued today, keeping all flights between Britain and France grounded. The action is over a pay claim linked with redundancy payments. The hovercraft are operated by Hoversped.

**Noele improves after operation**

ACTRESS Noele Gordon left intensive care today. Her condition has continued to improve since a two-and-a-half cancer operation on Saturday.



Miss Gordon, 60, former star of the TV serial *Crossroads*, returned to her room at the private Nuffield Hospital in Birmingham today. Her condition was said to be very comfortable.

The operation was performed after tests diagnosed she had stomach cancer.

**Call to ban tipping in hotels**

CHARGING for service and touting for tips in hotels and restaurants should be abolished, says the *Good Hotel Guide*.

The practice has become "institutionalised begging or extortion" says Hilary Rubinstein, editor of the 1984 *Guide*, published today.

The imposition of service charges, regardless of the quality of service provided, is so preposterous a method of extracting more from a customer that it is extraordinary to think that it was not instantly laughed into oblivion when first introduced. "As for tipping, it degrades both the giver and the receiver and discredits the management which encourages it," she says.

Next year the guide plans to denote hotels taking steps to end tipping and service charges.



The Lord Lieutenant and civic dignitaries inspect a display



Marconi anti-submarine equipment is fitted to this helicopter.

**A REAL FAN**



The ladies of the company show visitors a popmobility routine in the canteen.



Tester Anthony Barrier explains his work



Jennifer Hamlin tries out some design equipment.



Kent Wing ATC on parade outside the main buildings.



Debbie Soames receiving one of the Queen's Awards.

# QUEEN'S AWARDS AFFAIR

## Thousands take a look round

Story: PAUL CHANTLER

CROWDS helped Marconi Avionics celebrate its double Queen's Award to Industry. An estimated 15,000 people visited the electronics company's Rochester Airport works for the company's first open day in eight years.

Workers and staff had all been asked to nominate families, friends and neighbours who would like to look round. The company then issued personal invitations.

Spokesman Malcolm Moulton told the Post: "We're sorry that we couldn't open the doors to everyone but this event is as public as we can make it."

On Saturday all major departments and divisions held individual exhibitions and conducted tours around workshops and offices with many exciting demonstrations and displays of the advanced electronic flight aids developed and produced at Rochester.

Visitors saw a smart corporate exhibition displaying the many and varied uses of the company's products. There was also a historical section with 19th and early 20th century equipment produced by Marconi's predecessors, Elliott Brothers.

### Whole company

Queues of people waited to look round a full scale exhibit of an RAF Nimrod aircraft of a similar type to those fitted with submarine detection equipment made at Marconi Avionics.

The Royal Navy displayed a Sea King helicopter down in from Culdrose Air Station equipped with the anti-submarine gear that has helped win the company the Queen's Award for Technology. All the equipment is made by workers at Rochester.

On the lighter side, there were displays of popularity and a performance by the company's brass band. The highlight of the open day was the presentation of the double award and commemorative scrolls by Robin Leigh-Pemberton, Lord Lieutenant of Kent, at a VIP ceremony in the works canteen.

Debbie Soames and Keith Manning received the award for technology on behalf of the Rochester-based Maritime Aircraft Systems Division which developed the submarine detection equipment. Anne Dimmick and Ivor Francis were presented with the export award on behalf of the whole company.

Among those watching were four MPs including Peggy Fenner and Andrew Rowe, the Mayor of Rochester upon Medway, Cllr Adrian Rowther, Terry Duffy, president of the engineering workers' union, police, fire and council officials as well as company executives. Jack Paleman, managing director, told them here had been enormous and technical revolution in the last 16 years.

Pictures: FRED WINNING



Production foreman Arthur Daniel shows David Pearce, 13, a circuit board.



Production foreman Brian Moore shows engineer Martin Broodbank's family some complicated wiring.



Visitors to the exhibition watch a new unit undergoing vibration tests.

## Burglars bungled cruiser hiack

TWO youths tried to take a £17,000 cabin cruiser from moorings on River Medway but couldn't start it, a court heard. Jeremy Ives and Mark Gould, both 19, of no fixed address, met at a probation hostel.

Each was sentenced to 18 months youth custody, at Maidstone.

Judge John Streeter said they committed blatant and deliberate offences. Now they had to face the penalty.

They had been sent to the Crown Court by Medway magistrates for sentence for offences of attempting to take away the cabin cruiser at Strood, burglary and theft at Essex and stealing a £4,000 car in Chingford.

### Offences

Ives asked for fourteen other offences to be considered, and Gould sixteen.

Gould further admitted that he committed the offences after an 18 months prison sentence imposed at Chelmsford Crown Court in February had been varied to two years probation by the Court of Appeal in August.

Robert Ward, prosecuting, said that police were watching vessels moored on the Medway at Strood. Officers went aboard the cabin cruiser and found Ives and Gould. Efforts had been made to start the engine.

Mr Ward said the burglary referred to a cafe in Essex when cigarettes and cash were stolen. A car which was stolen from Chingford was recovered on the night the youths were found aboard the cruiser.



THIEVES walked off with a safe containing jewellery and cash worth more than £11,000 from a house at Pophill Drive, Chatham, during the night.

The gang who lifted the 24-inch safe from its mounting, also took a video from the lounge.

The family living there run a jewellery business from home.

THIEVES stole a basket of seafood from a vendor's car at The Poacher's Pocket, Walderslade Road, Walderslade.

A CAR roof was smashed at The Tiger Moth Pub, Maidstone Road, Rochester.

JEWELLERY worth £340 was taken from a house in Tabruk Way, Chatham.

A VIDEO and jewellery worth £3,000 was taken when a house at Kingswood Road, Gillingham, was entered.

GOLF clubs worth £48 and an umbrella were taken from the Black Lion Sports Centre, Gillingham.

## COUNCIL'S CASH HITS CEILING

APPLICATIONS for house renovation grants look likely to be frozen after a meeting of Gillingham council's health and housing committee tomorrow. The Government has placed a ceiling on the amount local authorities can borrow next year.

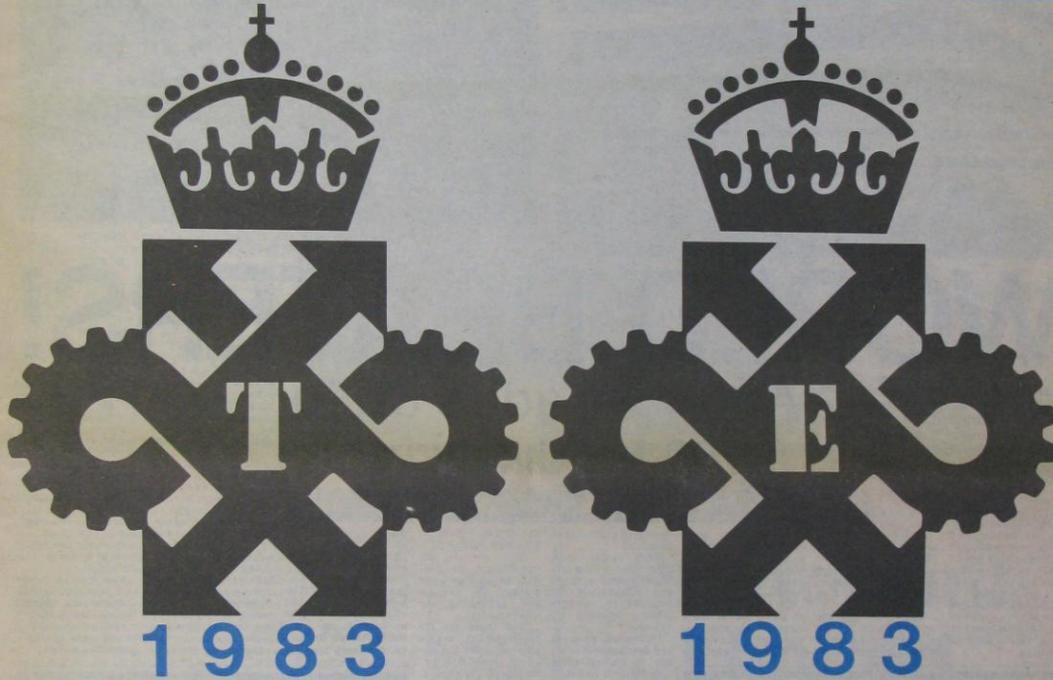
This means the council cannot afford this year's applications, budgeted at £1,400,000. They had planned to carry part of the cost into next year's allocation.

A report to be considered by councillors says: "This money would usurp a very large proportion of that year's allocation."

"The committee may wish to consider placing a moratorium on all house renovation grants except those for registered disabled."

The Government originally encouraged councils to give grants by placing no limit on the amount they could borrow, but it has now been announced that next year this freedom will stop.

# Look what we've done together.



The Queen's Award to Industry is a proud distinction at any time. Two awards in one year – the ninth and tenth won by the Company – represents exceptional performance indeed.

### INNOVATION AND TEAMWORK

The frontiers of knowledge, the very top end of high technology is our business.

Innovation is our lifeblood. We compete in the toughest markets in the world. To succeed here everyone's job must be done well.

And everyone should take pride in these awards.

Our workforce throughout Britain and overseas; our suppliers and sub-contractors – more than 160 in the Rochester area alone; the public services and local communities which provide the infrastructure on which our very being depends; and the communications media that serve us all.



The National Coal Board needs to measure the level of coal in deep storage bunkers. Marconi Avionics J-band radar has proved just right for this important job.

This year's Queen's Award for Technological Achievement was won by Maritime Aircraft Systems Division for acoustic, processing and display systems on the RAF's ASW Nimrod – the most advanced submarine hunting aircraft in the world.

### TRADITION OF EXCELLENCE

We are one of Britain's leading exporters of capital electronics equipment. Seventy countries buy our products. And we are Europe's foremost producer of electronic systems for aircraft.

150 different types of civil and military aircraft are equipped with Marconi Avionics systems for automatic flight control and automatic landing; advanced 'fly-by-wire' and 'fly-by-light' systems for detection, processing and display of data; systems for navigation, communication and stores management; gyroscopes and advanced sensor packages – these are just a few of the areas in which we have established a worldwide tradition of excellence.

The new European Airbus is equipped with our 'intelligent' electronics system to control its powerful wing flaps and leading edge slats.



West Midlands County Council's MAGEV magnetically suspended transit system relies on a Marconi Avionics doppler velocity sensor for speed measurement.

### FROM SKY TO SEABED

But high technology is not confined to aviation. In ships at sea, in land vehicles, in quarries and mines and on the sea bed, Marconi Avionics innovation and know-how is being put to useful service.

In radar, X-rays, neutron and laser systems, closed circuit television, thermal imaging and automatic test equipment, our teams are hard at work.

And now, our advanced electronic controls are operating at the bottom of the North Sea, bringing promise of a new and brighter future for marginal offshore oil and gas fields.

Our advanced electronic controls are in operation on the giant BP Magnus platform and at the seabed satellite wells up to 7 km distant.

**Innovation and teamwork. Two national traits that blend to perfection at Marconi Avionics.**



The Queen's Award for Export Achievement  
The Queen's Award for Technological Achievement  
to Maritime Aircraft Systems Division

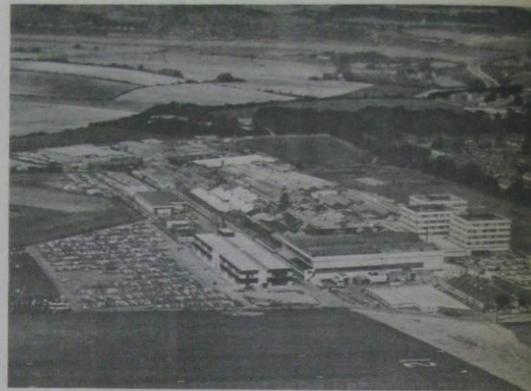
# MARCONI AVIONICS

**ORGANISED TO INNOVATE**

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[www.rochesteravionicarchives.co.uk](http://www.rochesteravionicarchives.co.uk)

# MARCONI AVIONICS



Marconi Avionics' headquarters at Rochester as seen from the ground and the air.

# WORLD BEATERS!

MARCONI Avionics makes world - beating high technology for use on land, at sea and in the air — wherever advanced electronics are needed.

More than 6,700 people work at the company's Rochester Airport headquarters, making it Medway's biggest employer and the largest engineering business in Kent. The company has pioneered and produced a greater range of flight aids than any other firm in the world and has customers in more than 70 different countries.

It has now won the double Queen's Award to Industry — for Export and Technology — for the second time. Export business is a major part of what goes on at Rochester and the total value of sales has been boosted to its highest - ever level. Major contracts are won against tough worldwide competition with other companies

## And it all adds up to 5,700 Medway jobs

PAUL CHANTLER reports on an amazing success story

overseas where Marconi has to offer the best price, performance, delivery, quality and back-up to customers. More than 150 types of civil and military aircraft are equipped with the major aviation electronics systems

developed and made at Rochester. They range from complete automatic flight control systems and autopilots for airliners to complex mission systems for defence. Innovation, research and development is the key to understanding why Marconi Avionics' products are so successful. Engineers working at laboratories in Chatham are making use of advanced technology and new ideas.

Then there are the all-important people who look after the factory buildings, transport, telephone, telex and mailing systems as well as those in catering, reception, security and secretarial services. All of them have been honoured by the Queen's Award to Industry. Since the last award was presented five years ago, 3,000 more jobs have been created throughout the company. Not only does the company create new jobs for people with ex-

isting skills, there are also new categories of jobs to keep ahead of changing technology. There is a big emphasis on training. The annual intake of 16 and 17-year-olds has gone up by half this year thanks to the Government's Youth Training

Scheme. This is in addition to the regular numbers of school leavers taken on as craft and technician apprentices and as other trainees. Skilled training departments ensure that classroom, laboratory and on-the-job training is properly conducted and supervised and is backed up by college courses when necessary. About one in ten of the staff will always be undergoing full-time training of some sort to meet the growing demands of advanced technology. Supporting the com-

munity does not simply end with creating jobs at Marconi Avionics' own factory. There are 160 different suppliers in Medway producing parts for Marconi Avionics equipment and about £2 million worth of business is put their way. And the company also runs Rochester Airport and has helped develop it over the past decade. Now it is an important communications, business and training centre for aviation, helping develop business and industrial interest in Medway.

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**System that helps talent**

ONLY top management make decisions in most big businesses with commands filtering through to the workforce. But there are important decision-makers throughout Marconi Avionics — thanks to a streamlined system of self-contained departments, or divisions. Each division is a 400-strong business in itself. There are 12 at Rochester, each responsible for its own products and customers. All are backed by the corporate facilities of GEC, Britain's biggest engineering company. These include advanced research and worldwide representation. Highly-motivated teams carry out design, development and production of sophisticated equipment. The system encourages talent and enables the company to make better products tailored to the customer's needs.

**L.G. SCOTT & SON LTD ARE HAPPY TO CONGRATULATE MARCONI AVIONICS ON THEIR EXCELLENT PERFORMANCE DURING 1983 RESULTING IN TWO QUEEN'S AWARDS TO INDUSTRY**

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MARCONI AVIONICS

ROCHESTER



# Picking out sound from the sea

## A SHOAL OF SHRIMPS IS NOISIER THAN A SUB

THE acute hearing of an owl sitting in a tree can pick out the subtle sound of its prey above all the other noises in the wood.

A computerised owl is what has won the Marconi Avionics its Queen's Award for Technological Achievement. The problems of finding and tracking submarines from the sounds they make is a vital part of maritime defence. But it is technically tricky because of the high level of background noises at sea. And nowadays a shoal of shrimps can be noisier than the propellers of the nuclear submarines of the 1980s.

### Security

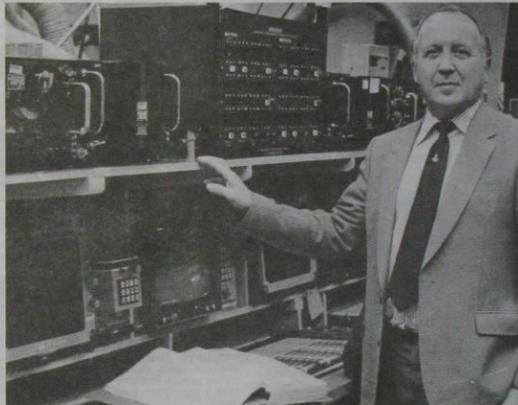
The massive Soviet fleet — exceptionally quiet and operating at great depths — poses a major threat to Britain's security but Marconi's development and production of a family of airborne detection systems means that now no submarine is completely safe. The sophisticated system starts with sonobuoys which suspend sensitive hydrophones, dropped into the sea by an aircraft. They usually form a pattern so that one aircraft can cover a wide area and keep pace with a fast moving submarine. All the sounds of the sea are received

together. The problem is to analyse all the signals rapidly, separate all the sounds and spot a submarine. Marconi's AQS 901 system reads the 'signature' of submarines. It works by splitting, analysing and accumulating frequencies, recognising regular rather than random sounds. The information is presented almost as soon as it is received to operators on a screen and on a print out for permanent record.

The high technology equipment has been developed and produced by the efforts and skill of the 400 workers in Marconi's Maritime Aircraft Systems Division, in Rochester.

The company is the world's major supplier of the anti-submarine systems at home and abroad. So far more than 100 have been made for the RAF, Royal Navy and Australian air force.

Laurie Hampson, division marketing executive, is coy about the cost of each piece of equipment but estimates it as "quite a few Spittfires". He says: "I'm a total ignoramus when it comes to putting these things together but even I can see that they are beautifully engineered."



Laurie Hampson with the AQS 901 anti-submarine system, built at Rochester and installed in RAF Nimrods.

The basic 901 system fits in aircraft like the RAF's Nimrod maritime reconnaissance plane which is almost a flying radar station. There is also a smaller, lightweight system, the 902, for helicopters such as the Sea King.

### Aircraft

Now there is a new piece of equipment being tested, the 903, for the next generation of fixed wing anti-submarine aircraft and helicopters.

It is currently being modified according to air force specifications. Officers have visited

the Rochester works to see the prototype in action. They say what they want it to do and the engineers try to do it.

Mr Hampson says: "It's a constant evolution. As people identify more requirements, our engineers try to change the system. Development never stops. There are always things you can do to make it better."

The equipment is a major factor in helping to find the needle in the acoustic haystack — an important milestone in anti-submarine warfare.

## A PROUD RECORD

THE Queen's Award is an industrial battle honour and the ultimate accolade for a British firm. It is rare for any organisation to win both an export and technology award in the same year — but Marconi Avionics has now achieved the double honour twice.

The company is now the proud holder to ten Queen's Awards — a tribute to the success of the team in some of the world's toughest and competitive markets. The awards are made for outstanding achievements in industry which will benefit the nation as a whole.

They began in 1965 and, each year since then, the Queen has conferred the award on a select number of industrial concerns in recognition of their export success or technological innovation.

Awards are granted by the Queen on the advice of the Prime Minister, who is helped in choosing the companies by an advisory committee drawn from industry, commerce, government departments and trade unions.

The awards are made each year on the Queen's personal birthday, April 21, and presented by the Lord Lieutenant for the county from where the company operates.

### MARCONI AVIONICS'S PROUD RECORD

- 1967 Technological Innovation
- 1968 Export Achievement
- 1969 Export Achievement
- 1970 Export Achievement and Technological Innovation
- 1971 Export Achievement
- 1975 Technological Innovation
- 1978 Export Achievement
- 1983 Export Achievement and Technological Innovation

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congratulates

## Marconi Avionics

on its 2nd Double Award

for Export and Technological Innovation

As a supplier for over a quarter of a century, we are proud to have contributed to the growth of a Company that is now the largest industrial employer in Kent, has brought over 5,000 jobs to the Medway area and is a world leader in avionic systems.



Some of the team who helped develop the AQS 901 anti-submarine system which is being modified for air force service.

[www.rochesteravionicarchives.co.uk](http://www.rochesteravionicarchives.co.uk)

# MARCONI AVIONICS

## Fighters head up to better flying

MOTORISTS can drive a car perfectly well without constantly watching the speedometer or the fuel gauge. But pilots of fighters flying at supersonic speed need to refer to their instruments all the time.

So Marconi Avionics pioneered the development of the head-up display which now figure prominently in most modern fighter cockpits.

The company is now the world's foremost producer of head-up displays and thousands have been supplied to air forces in this country and abroad.

Displays produced for the military aircraft market have helped win the Queen's Award for Export Achievement.

They account for a major part of the company's overseas sales and have now been in

front-line operational service for about 20 years.

They are made by the 400-strong workforce in the Airborne Display Division at Rochester and won the Queen's Award for Technology 12 years ago.

The idea is to give the pilot "see-through" vision.

Images of all his important instruments are projected in front of his eyes using an angle piece of reflective glass while all the time he can still see the outside world ahead.

The display combats eye strain by showing bright, easy-to-understand symbols and information about height, speed, course and weapons.

### Images

Multi-million pound orders throughout the world have made head-up displays the company's biggest success story worldwide.

Joe Smith, divisional production manager, explained that the displays have to be strong enough to withstand a high-speed bird strike.

He says one display takes about four or five months to put together ready for the customer.

The latest advances with head-up displays use holograms and infra-red developments to increase the angle of view and make night operations safer.

This equipment is the most advanced in the world. It was flight tested last year and is expected to go into production shortly.

Another development is helmet mounted

displays for fighters which use image intensifiers to allow the pilot to see at night.

Marconi Avionics also produces complementary head-down displays for fighters which let the pilot fly by TV camera.

It puts the outside world and the same instrument information given by head-up displays on a small TV screen at the pilot's elbow.

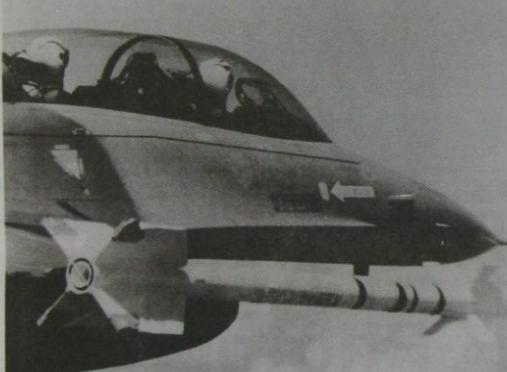
A low-light camera fixed on the nose of the plane lets the pilot "see" ahead in total darkness.

It can be linked with a computer so that the pilot can feed in information on a keyboard and "discuss" solutions to his flight problems.

Research is now in hand for the development of colour displays



A head-up display lets fighter pilots fly their planes safely and accurately without having to look down at their instruments because they can see the necessary information presented as symbols



A US Air Force F-16 fighter clearly showing Marconi Avionics' new wide-angle head-up display which uses holograms. The rear seat pilot is monitoring the same information on a head-down display. The picture was taken while the equipment was being flight tested at Edwards Air Force Base, California.



Some of the workers in Marconi's Airborne Display Division at Rochester responsible for developing the world-beating helmet mounted

CONGRATULATIONS TO THE MANAGEMENT AND STAFF OF

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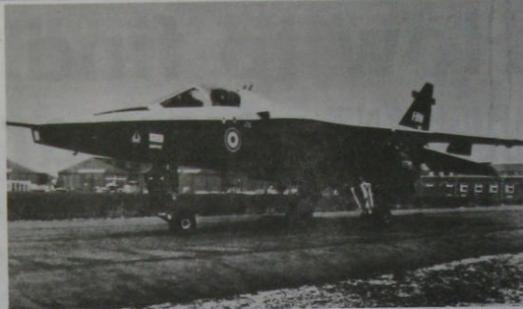
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**MEDWAY**

# MARCONI AVIONICS

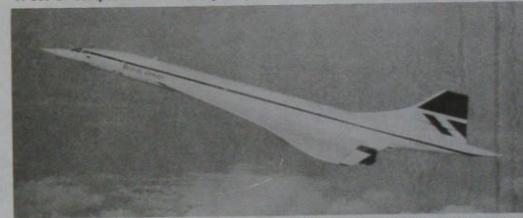


## Planning an even greater future



A Jaguar strike aircraft fitted with Marconi's "fly by wire" flight control system. A set of computers continuously adapt

the electrical signals by which the pilot flies the aircraft, making it more stable and easy to handle in all flight conditions.



Concorde, still the world's most operationally advanced passenger carrying

airliner, is equipped with Marconi Avionics' automatic flight control system

h the view ahead, re is a pilot's eyction of how liport would look ne of Marconi up displays fit-6 fighter.



ping and producing ad-up displays

**THE Americans made up the word avionics as a short way of saying aviation electronics.**

Almost all the work carried out at Marconi's Rochester factory is to do with civil and military flight aids.

Marconi products have been chosen by aircraft makers and airlines since flying began.

Now more than 150 types of aircraft worldwide are equipped with these major avionics systems.

Pioneering work in communications and navigation continues today. Advanced technology is going into the systems and equipment being chosen for the aircraft of tomorrow.

### Autopilot

Autopilots were developed after World War II and throughout the 1950s and 60s. Now they are extremely sophisticated with automatic landing, flap and slat control systems.

The company is proud of its involvement with Concorde, still the world's only supersonic passenger carrying aircraft. The computerised automatic flight control system is the most operationally advanced of its kind produced.

It is capable of flying "blind" in fog and allows the pilot to make a "hands off" landing.

But Marconi executives think there will never be a day when a civil airliner flies without a pilot. Passengers just will not trust it.

The company believes in the executive ability of the pilot to monitor what is going on and to decide what needs to be done.

High technology, they believe, should be used to make the aircraft perform better and make it easier to fly.

This sort of air frame avionics - electronics incorporated into the aircraft design and regarded as standard equipment - is the first of four important spheres of the industry.

Mission avionics are systems developed so that the plane can carry out a specific and useful function. The customer says what he wants the aircraft to do. This includes electronics for air - sea rescue, submarine detection and radar reconnaissance.

Routine avionics are aids and instruments to help get aircraft from one place to another easier. These include instruments, navigation and radio communication.

### Tactical

Finally, tactical avionics means weapons and their control for air forces to use in battle.

The future of avionics looks even more promising, with an even greater use of independent electronics systems which can think for themselves, leaving pilots to carry out their executive role and fly the plane more effectively.

And Marconi engineers are anxious to live up to their worldwide reputation of "You tell us what you want and we'll try and do it."



The latest European Airbus to enter service, the A310, is equipped with "intelligent" electronics to control its powerful wing slats and trailing

edge flaps, used to help landing and take-off. The electronics prevent the wrong operation even if the equipment fails to operate correctly.

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# MARCONI AVIONICS



## How to find your way around

### BRILLIANT DESIGNS IN GUIDANCE SYSTEMS

COULD you find North in the middle of a sandstorm and without a compass or radio?

The land navigation system made by Marconi Avionics can — two minutes from the moment it's switched on.

A 'strapdown' gyro sensor — rigidly mounted to the body of any vehicle — automatically detects the earth's rotation and a micro-computer does the rest.

The gyroscope technique has been pioneered in Europe by Marconi and is used in a range of missiles and torpedoes as a robust, accurate missile guidance system.

#### Performance

These systems are much more reliable than the gimbaled platforms they replace and are being used in the Stingray air-launched torpedo and the navy's new Spearfish torpedo.

Electronics systems developed and produced by Marconi are as many and varied as the way the equipment is used.

Progress in performance, economy, safety and operational

effectiveness is increasingly due to Marconi's avionics systems.

• Fly by wire is a technique for high performance aircraft in which the pilot signals the controls electronically.

The signals are continuously processed in a highly reliable set of digital computers.

The effect is that aircraft designed for top performance can be made better for the pilot to handle.

• The new European Airbus is equipped with Marconi's 'intelligent' electronics system to control its powerful wing flaps and leading edge slats.

• The unique helicopter air data system measures airspeed and direction — including hovering flight — using a single, swivelling probe and micro-computer.

Marconi executives regard it as a brilliant invention and are surprised it has not received a Queen's award for technological achievement in the past.

• Marconi's multi-



Alan Essex, manager of Marconi's Gyro division, with some 'strapdown' guidance and navigation systems for the Royal Navy's Stingray and Spearfish torpedoes as well as land navigation and

for use in remotely piloted aircraft.

It involves using a set of rugged, sub-miniature gyroscopes and accelerometers — each about thumb size — and micro-computers.

mode VHF radio for aircraft is widely used both in Britain and overseas.

It is the first of its kind to bridge the communications gap between

airplanes, ships, lifeboats, coastguards and other land-based services.

• Kits of air data computers have been

developed and produced for the US Air Force so they can make up specific equipment to their own requirements.

There are four basic designs of equipment to fit in 27 different types of plane.

• Machan is an experimental pilotless aircraft which is helping

to develop battlefield surveillance skills.

A propeller-driven aircraft powered by a chain-saw type engine, it is launched by a pneumatic catapult and recovered by parachute.

Machan carries a digital flight control system and other

sophisticated avionics including a surveillance camera and data link.

• Unique ground-speed sensors are fitted to Boeing 737 airliners used by British Airways and Lufthansa as part of their fuel saving flight management systems.

## £2m work given to Medway

A HIERARCHY of national and local suppliers provides Marconi Avionics with components for its sophisticated flight aids.

More than 160 subcontractors in Medway receive £2 million worth of business every year.

The company's policy is to regard suppliers as members of the team, once they meet the tough standards which customers demand.

Executives want to use the presentation of the double Queen's Award to Industry as a chance to say thank you to all the suppliers for their contribution to the company's success.

Marconi Avionics contributes to many national and local activities which are allied to its business.

Social clubs and individual workers play an important part in community affairs.

The Marconi Avionics National Gliding Championships were held at Lasham Airfield earlier this year and attracted a record number of high-performance gliders.

The company is encouraging research into a new branch of electronics, leading to future innovations in data processing and information displays.

A 'chair' is being sponsored in Molecular Electronics at the School of Industrial Science, Cranfield Institute of Technology. It supports five years of research.

Nearer home, Marconi sponsors an open lecture each year by an eminent speaker on an avionics topic at the University of Kent at Canterbury.

Excellence is encouraged at all stages in developing careers in high technology.

Cash prizes go each year to the individuals or teams who qualify for the Haskett Trophy for engineering achievement.

Members of the company's head-up display team were cited by American publishers McGraw Hill as a top engineering team ranking alongside the space shuttle astronauts.

This is in addition to the accolades received by executives who are eminent technologists.

And Marconi Avionics is also a proud holder of a Pit For Work award for helping many workers overcome disabilities.

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# MARCONI AVIONICS



Spanning 50 years of technology — a World War I Vickers Gun Bus and a VC 10. The dials and instruments on

the restored gun bus were made by Elliott's. The VC10 has a flight control system made by Marconi Avionics.

# How Elliott's hit the big time

ELLIOTT Brothers is the name which many Medway people still use when talking about Marconi Avionics.

The old name was dropped only last year but the history of the firm goes back to 1800.

William Elliott, whose sons were the brothers in question, opened a shop in The Strand, London, selling "philosophical instruments".

Before the end of the 19th century, Elliott altimeters were being used by the early balloonists. By 1909 aeroplanes were equipped with Elliott flight instruments.

Meanwhile transmitting and receiving apparatus made by radio pioneer Guglielmo Marconi's company was being tried out in aircraft.

### Changes

By 1919 the world's first commercial communications system for airplanes — the AD1 — had been installed.

Elliott Brothers developed independently, eventually becoming Elliott Automation, a powerful industrial influence in the World War II, which pioneered major technological changes in the 1950s and 60s.

There was no connection with Marconi's until 1967 when the two firms merged in response to Government pressure for fewer and bigger companies.

The following year, the combined company was taken over by GEC, now Britain's biggest industrial employer.

Eventually it was re-named Marconi Avionics because of its electronics, radar and radio activities.

A brass plaque in the foyer of the Towers reception building at Airport Works, Rochester, bears the name Elliott Brothers London Limited and commemorates the company's small beginnings.

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Work with a secret aspect

LITTLE of the work connected with military aircraft at Marconi Avionics is top secret.

But the equipment made by the company is often programmed with secret information by military customers.

Anything that is secret is confined to specific security-controlled areas and told only to a small number of staff on a "need to know" basis.

The amount of innovation means that Marconi engineers are often researching new techniques and pieces of equipment that could become secret in future.

But executives say they are more worried about commercial secrets spilling to their rivals than state secrets.

# Congratulations to Marconi Avionics

in achieving  
Two Queen's Awards  
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*We wish them every success for the future and look forward to our continued association with them*

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MARCONI AVIONICS



# Aircraft that will obey a command

FIGHTER pilots will soon be able to TELL their cockpit computers how to fly the aircraft.

Direct Voice Input units are capable of recognising phrases made up from a vocabulary of 200 words.

The futuristic system is being designed and developed in Marconi Avionics' Flight Automation Research Laboratory in New Road Avenue, Chatham.

Experimental flightworthy prototypes are now being produced so that a proper flight trials programme can begin.

The system operates in conjunction with a head-up display and helps provide two-way communication about navigation and operation between the pilot and the plane's electronics.

"vocal" feedback from the aircraft control system to the pilot.

The unit has been built and is now being tested at an American air force base for intelligibility.

The idea is to ensure that the computer has understood the instruction. It has received by audibly confirming the action it took.

The speech recognising unit is just one of the inter-active systems being developed by Marconi Avionics.

There is a safety system already in production and fitted to most British civil aircraft which "shouts" a ground proximity warning.



The fighter cockpit that hears and obeys is an advanced stage of development at Marconi Avionics. This picture, taken in the Flight Automation Research Laboratory, shows a simulated cockpit fitted with

Direct Voice Input, where the pilot can talk to the plane. There is also a system which talks to the pilot, a safety system called the Ground Proximity Warning System, installed in most British civil airliners.

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### Workload

Laboratory staff say the most difficult thing about the project is not making the equipment understand the human voice but making people use their embarrased self-consciousness when they talk to a machine.

Direct Voice input helps reduce the pilot's workload and leaves his hands free - especially useful when operating with high G-forces.

Soon the aircraft will be able to answer back.

An advanced speech synthesis system, developed by the Hirst Research Centre, is being exploited by the laboratory which has great potential for

ROCHESTER Airport owes its origins and much of its fashion to Short Brothers, which established Kent as the cradle of the British aircraft industry in 1909.

But the development of the airport continued long after Short Brothers moved to Belfast.

Today it is the hub of Marconi Avionics' business in aviation electronics and is one of the reasons why the company has been so successful.

The airport combines

three functions. First it is a site for expanding industry in Medway, creating a substantial number of jobs every year.

### School

Second, it provides a business link for local companies with their customers.

Third, it remains a vital amenity for people in Medway.

The business from which Marconi

Avionics has grown took root from 1947 onwards.

From small beginnings, Avionics expanded to fill the airport factory buildings, including the historic Airport Works and Flying School.

A key to its growth has been the airport business link to European customers.

Between 1962 and 1977, Marconi Avionics operated some six million passenger miles from Rochester, carrying specialist teams to work with customers - a fact which justifies a fleet of three company business aircraft.

The airport reached a crossroads in 1977 with the expiry of the lease.

Pressure for much-needed industrial development conflicted with the need to keep

the runways open for business and social use.

Medway Borough Council appointed Marconi Avionics as managers: the job was to keep the airport operational for an interim period while development plans were drawn up.

This avoided an irreversible decision to build on the runways.

### Land

Before long, plans were drawn up which meant full employment in the hangar, flying training being restored and air taxis encouraged for home and export business.

Meanwhile, land was offered for industrial development by the council.

Marconi Avionics still runs the airport today as a commercial concern and employs all the staff.

## Airport helps new firms to grow

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# MARCONI POST AVIONICS



Terry Duffy (left), president of the engineering worker's union, talks to VIP's.



Bill Alexander, Post editor  
David Jones.

## A DAY TO REMEMBER FOR A GREAT FIRM



Corporal Viv Thomas explains a navigation system to Nicola Holme, 13, whose father is a production engineer.



Some of the 650 VIP guests in the Marconi staff canteen for the presentation ceremony.



Keith Manning and Debbie Soames who were chosen to receive the awards.



Boys from Maidstone Grammar School during their tour of the company.



Visitors inspecting some of the equipment used to make head-up displays.



Leigh Bard, ten, runs through a computer program.



Laurie Hampson, marketing executive being interviewed live on BBC Radio Kent.

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