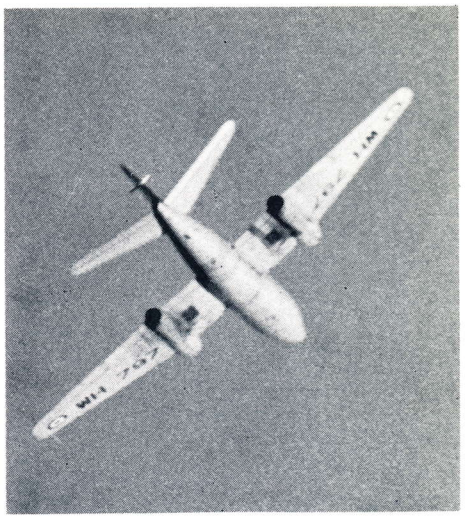
MARCONI RADAR

No. 4 1975

Echo

The internal newspaper of Marconi Radar Systems and its people



Target aircraft in contact with our control.

MRSL'S OWN FLIGHT CONTROL CENTRE—

Engineering Division has set up a system for evaluating the radar performance of aerials which must be unique in the electronics world.

Each new aerial must be tested with a flying target. Obviously this cannot be done with a high speed target or missile in this area, but representative trials can be carried out with normal aircraft even though this involves manoeuvring in the vicinity of busy air routes.

Nothing daunted, the Division set up its own air traffic control centre with direct lines to main airports and in particular to the National Air Traffic Control Centre.

This was accomplished by drawing from our own resources. We have the equipment, and there are engineers on the staff who do similar work when demonstrating our products to civil and service air chiefs from all parts of the world.

Control procedures

Accordingly, when flight trials are on, Robin Webb of Systems C takes over as Air Traffic Control Officer with Ken Smith of Engineering working in liaison with him, and is responsible for setting up all air traffic control procedures for the trials.

When flying starts communications are a remarkably clear-cut organisation. Robin, at the radar displays in our control room is connected by telephone to the civil ATCC and the airports and to Ken Smith at the trials engineering centre; and he is in contact by radio telephone with the aircraft. He positions the aircraft, and, at the scheduled time starts him on the trials track, takes him away at the end of the run and then puts him on again for the next one. He is in constant contact with civil ATCC and the aircraft to maintain trouble free conditions for the trials, though the aircraft is responsible for his own clearance with civil ATCC.

From Ear To Ear

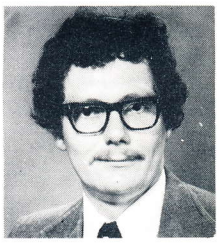
Meanwhile, Ken can overhear Robin in his left ear, for he, too, is monitoring the aircraft. He listens to the engineers' intercom with his right ear and, as preparations progress, keeps everyone alerted.

Helicopters also figure in these trials as there are many variations—at different heights and speeds. But, every run is monitored by means of MRSL's own flight control organisation.

Above: *Our air traffic control room with Robin Webb of Systems C at the displays.*

Below: *Ken Smith of Engineering,* left, *and Robin Webb meet in the control room.*

Leicester candidate for top project



David Griffiths, Commercial Manager at Leicester, is one of thirteen people who have been chosen for the second GEC programme for the development of senior managers. Participants are drawn from GEC Companies, the Civil Service, Trade Union and other organisations and have a variety of experience.

The programme lasts for six months during which time each participant undertakes a major project, either within another organisation or in his own job.

David joined The Marconi Company at Chelmsford as a graduate trainee in 1966 after gaining a degree in history at Cambridge University. He moved to Leicester in 1969 to take up an appointment as Commercial Manager and in recent months has assumed additional responsibility for Radar Sales.

Our new system for the men who aim missiles

Royal Naval missile aimers are to be trained ashore with our television picture generator system—Tepigen. This new simulation concept was developed by us in collaboration with the Admiralty Surface Weapons Establishment and we have now received a contract to manufacture it from the Ministry of Defence, Procurement Executive.

Control by television

On many new vessels, missiles are controlled not from visual sights above decks but from television displays below. Tracking radar keeps the television camera pointed at the target, while the operator observes the missile position from its flare, and controls it manually into coincidence with the target. The time of the whole operation from launch to impact is so short that good aiming requires natural aptitude and a very high degree of special training.

Tepigen, using the new techniques of Computer Generated Imagery (CGI), is particularly suited to this kind of training as it presents the visual element in a form which instantly interacts with the operator. Most of the visual training systems in use at present generate the operator's picture by pointing a television camera at a scale model of the scene and obtaining by means of servos, lenses and mixing circuits the desired size, aspect and position of the model in the field of view. If the picture has to show several independently-controlled 'vehicles', a separate camera and servo mechanism is required for each. Tepigen, on the other hand, presents a picture on a TV display which is wholly generated by computer. The synthesized picture is constantly composed afresh at television frame rate and can be provided in colour or black-and-white.

Tepigen is capable of application in many fields and has a promising outlook. Investigational work at Leicester on this equipment covers ship, aircraft and vehicle handling, industrial design film animation and educational projects.

Tepigen under the eye of Andrew Doughty, a Leicester computer applications engineer.

Engine-nearing

Progress of new power-plant

The diesel power unit of the new emergency generating plant for Writtle Road Works arrived on a low-loader. With the skill for which Pickford's men are noted this enormous engine was levered off the loader onto blocks, lowered onto steel rollers running on steel-plate tracks, and winched into position on its bed, inch by inch, crossing the feeder trench en-route.

Below: *On its way. This shows how the engine was jacked up and positioned so that the rollers could be placed under it.*

Below right: *Nearing the end of this operation; the engine is winched in on its 'skates' with the aid of a winch-post built into the foundations. It will line up with the generator mounted on the block in the foreground.*

Chris Bagguley of Field Services

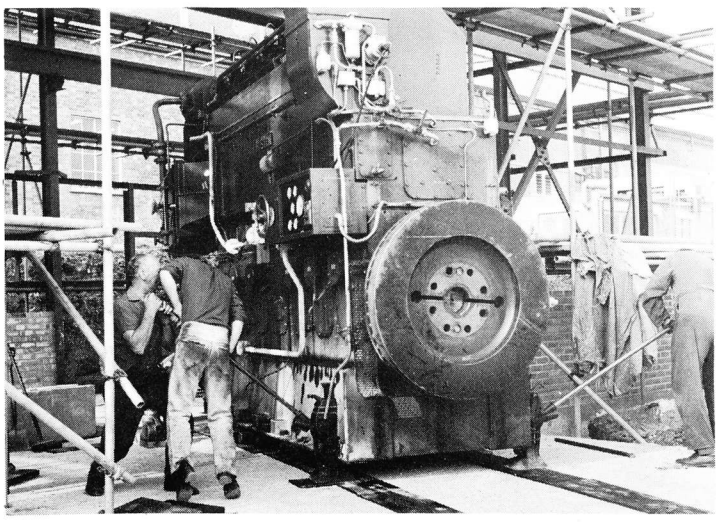
It is with great sadness that we record the death of Chris Bagguley in a car accident in Jordan. He was one of the 'characters' of Radar Division, and had given many years of loyal service. His energy and enthusiasm were of a very high order—his nickname of 'Speedy' aptly described the vigour with which he tackled each new job as it came along. He ran the Fur Hat task in Sweden with skill and ability, to be followed by 'Linesman', at West Drayton and a spell in South America, and now the Middle East. Chris brought a truly professional approach to Field Service activity and was liked and admired both by the customer and his colleagues.

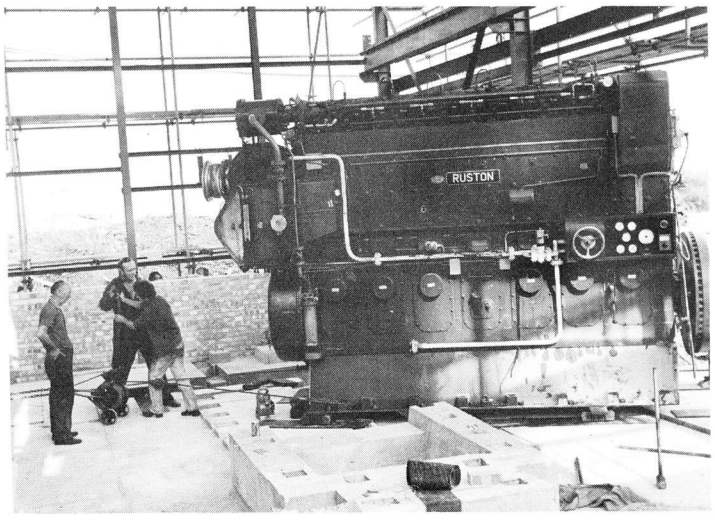
He will be sadly missed by us all and we send our condolences to his family in their tragic loss.

J.W.S.

The Minister sees for himself

The Minister of State for Defence, The Rt. Hon. William Rogers, M.P. saw some of the new projects being carried out for the Ministry of Defence when he visited Marconi Radar at Writtle Road. He also saw some of the latest developments in radar technology. Here, above, Barry Trewern of Radar Sales, right, is talking to the Minister, second from left, about the 'Prowler' radar which is so light that it is man-portable. Behind are John Sutherland, Managing Director, Marconi Radar Systems, left, and Nigel Ellis-Robinson, the Company's Development Manager.





How expert are the experts?

Five teams of MRSL people took part in a competition arranged by the Company as a test of skill in company management. The winners directed their 'company' so efficiently that it made £10 million profit and won for each of the team a prize of a £10 book token.

Each team of three—a company—started from the same position: their opening balance sheet. Then in following accounting periods (rounds) decisions had to be taken on the methods of running the company and the use of available resources for the production and marketing of its product.

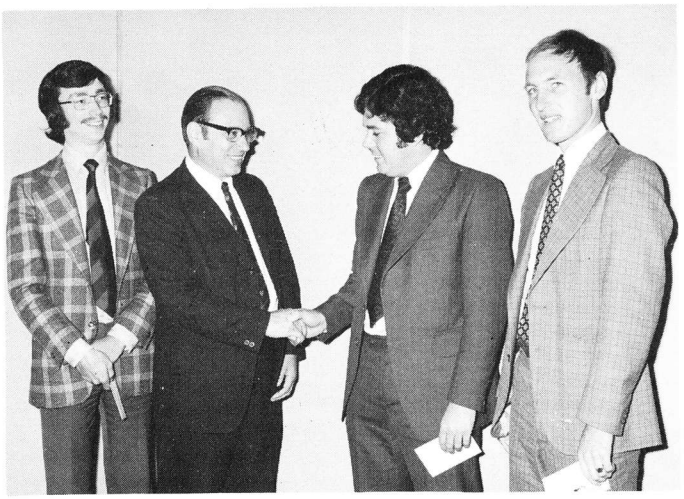
Decisive action

Decisions made and action to be taken with the objective of building up the most successful company were recorded and posted to the computing centre which analysed them and prepared a report. This included marketing statistics, sales analysis, production data, transport account and balance sheet. The report was sent back to the company who then dealt with the next phase of their progress.

The competition was designed for MRSL by the organizers of the 1975 National Management Game sponsored by the Financial Times, the Institute of Chartered Accountants, and International Computers Ltd in association with the Institute of Directors and the Confederation of British Industry.

The 'company' prizewinners

Right: *The winners of the company management competition being presented with their* £10 *prizes by the General Manager, Chelmsford, Roy Simons,* second from the left. *The team were,* left to right, *John Lucas, Senior Production Engineer; Derek Harbour, Chief of subcontracts and John Knight, Section Supervisor, Works Accounts.*



Important but unpalatable facts

The points I raised in the Editorial in the last edition of *Echo* are so important that I feel I must go further in pointing out the particular effects of inflation on our business. In this respect we are in just the same position as every average household in this country. The cost of our everyday work in Marconi consists primarily of wages and materials for manufacture plus the so-called 'indirect' overhead cost of providing all the many facilities necessary to support and sustain the business as a whole.

Life blood

In arriving at a price for our customer, we estimate all items very carefully, add our best forecast of the inflation in costs during the course of the contract, a margin for the development of new products, and an element of profit. This profit is the life-blood of the business which must be ploughed back in new plant and machinery to replace ageing facilities, and to 'service' the capital already invested in the business—not forgetting that over half goes immediately in corporation tax. Much of our business is fixed price and of several years duration. If our original estimates have allowed insufficient for inflation of costs and overheads or the job takes longer than we predicted, then the profit margin will be rapidly eroded, the necessary cash will not come, and indeed we may even fail to recover our costs, with disastrous results. We must therefore seek every possible way to reduce and control expenditure.

Personal responsibility

I am spelling these facts out to you in detail to underline the reality and urgency of this message. I want every Marconi Radar man and woman to feel personally involved; we must get the work done on time up to the required standard and work hard and effectively; we must cut our waste and conserve power so that our overheads are kept down. I suspect that in some areas more than fifty per cent of the work is done by less than fifty per cent of the people—this isn't good enough, everyone must pull their weight. We operate in a stimulating and highly competitive market, which means we must always fight for new business, but we have an attractive product range and if we can do everything to ensure that all our work is done at competitive costs then this will ensure that our selling price is right and we shall flourish.

John Sutherland, *Managing Director*

Egyptian chiefs at Leicester

A party of four senior Egyptian naval officers, headed by Vice-Admiral Mohammed Fouad Zikri, Commander-in-Chief of the Egyptian Navy, and Rear Admiral Ashraf M. Refaat, Chief of Naval Operations, visited Leicester recently to spend a day there as guests of the Company. They were accompanied by Captain Mahmoud Medhat and Captain Shawki Khamis.

The first port of call was Blackbird Road, where Works Manager Owen Jones gave a brief introduction to manufacturing facilities and then led a tour of the factory. Moving to New Parks the visitors, accompanied by Peter Way, Director and General Manager, Leicester, were able to follow a programme of presentations and demonstrations of subjects which included the Sapphire lightweight gunfire control system, the 800 Series surveillance and tracking radars, project control and implementation, maintenance of ships' systems and equipment, training aids and simulation, and control engineering for submarines and surface vessels.

Left: *Pictured during the Egyptian tour of Leicester's Blackbird Road factory are,* left to right: *Owen Jones, Works Manager; Vice-Admiral Mohammed Fouad Zikri, Commander-in-Chief Egyptian Navy; Rear Admiral Ashraf M. Refaat, Chief of Naval Operations; Peter Way, Director and General Manager, Leicester; and Commander Keith Day, British Naval Attache, Cairo.*

Two skins for any weather

We really don't know how lucky we are with the weather on our little island these wet winter days. Go overseas to places where mobile S600's have been installed and you stand to be boiled alive, buried in snow, or just blown away and soaked.

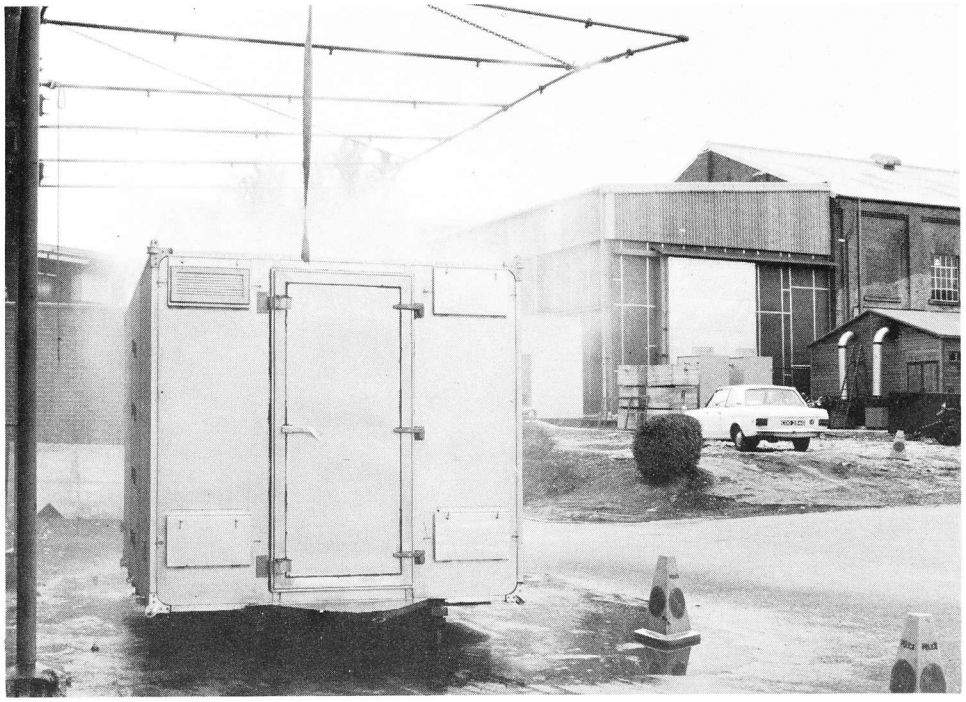
This thought is driven home most forcefully when looking at the cabins being built over in A block. These are the cabins which house the men and equipment of the radar convoys: the mobiles which can up sticks and follow the battle, or give air traffic control wherever strategically required.

Men and equipment go together. A radar operator operates radar—he lives with it; he needs a modicum of comfort, and his equipment requires protection.

Cabin team going strong

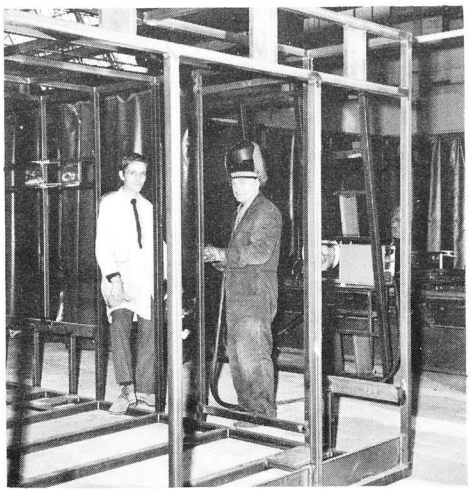
The cabins are built for the job. They have two skins which are lined to keep in the warmth as well as to keep out the heat and to provide full electrical screening. They are treated inside to prevent 'sweating', and they are provided with heating and are air conditioned. The prototype went through environmental test, and every one produced is taken down the yard and soaked for three hours in an artificial rainstorm to make sure that it is watertight.

Our cabin fabrication team now occupy a large wing of A building. They have just finished off one order for twenty-four and started another order almost immediately. When that has been completed there is an order for twenty-eight more.



Straight out of production, on rain test. All new radar cabins are subjected to water jets representing tropical rain for three hours before being painted. In the background is the hot-and-cold wet-and-dry chamber of Environmental Test Dept.

Right: *Materials for the cabins are brought from stores and stacked ready for use in fabrication section, A block. Eric Hall is taking square tubing to cut it into specified lengths for making frames.*

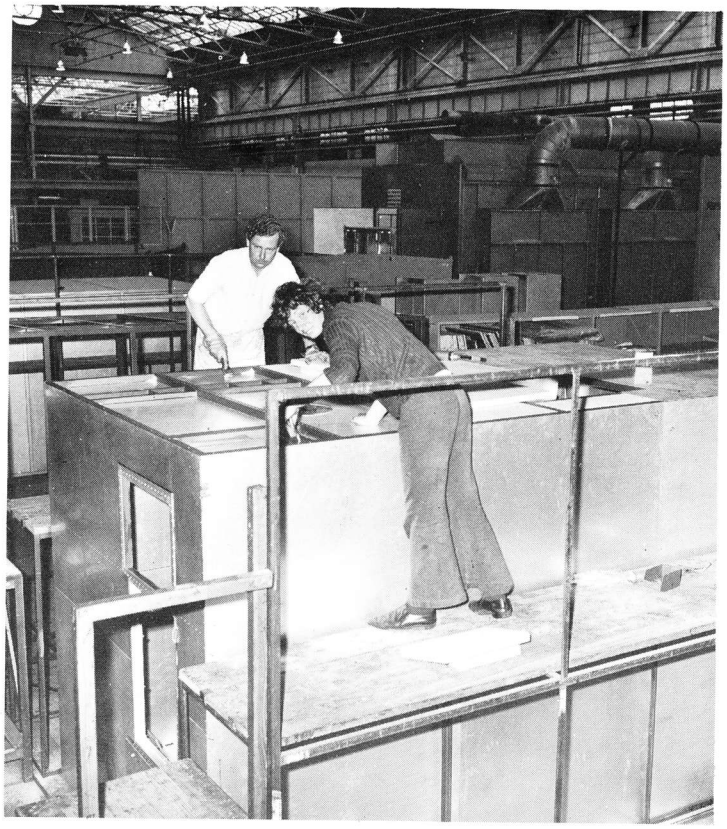


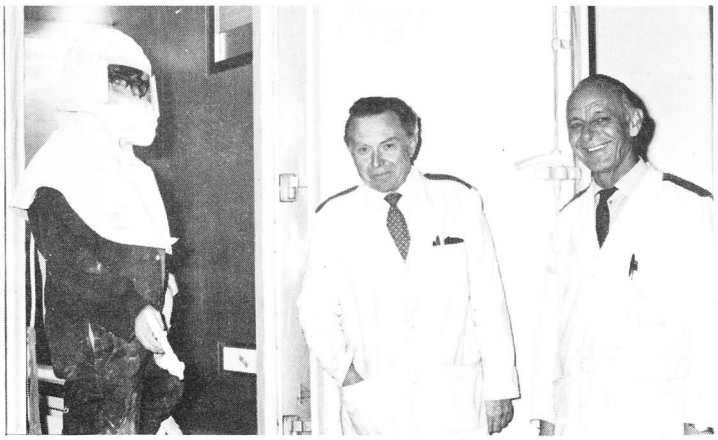
Far right: *This shows how the welded sections of the frame fit together to form the skeleton of the cabin.*

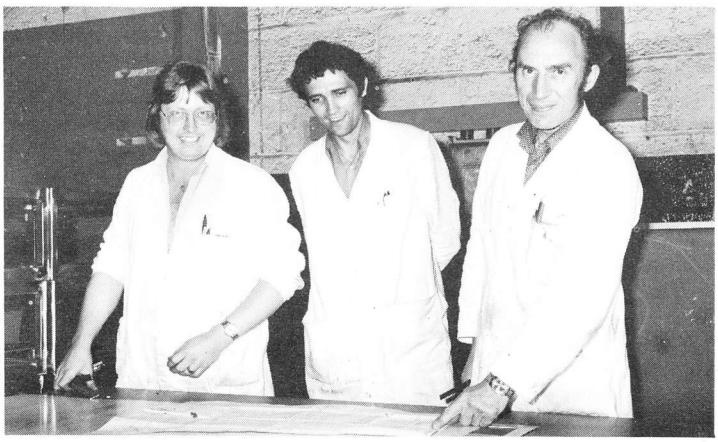
Below: *Ted Wales welding lengths of tubing to form the frame of one of the sides of a cabin. All the welding is done on this platten; and the frames are hand built—no jigs—by means of a straight edge with diagonal checks. Ted uses a gas shielded arc with a moving wire feed so that each joint is a continuous weld.* On the left, *is Dick Gates, Chargehand of welding.*

Opposite page, top left: *The framework is next given an inner and an outer skin and insulating material is inserted between them. Dave Theobald, Leading hand, is responsible for this, and here, assisting him is Stephen Geer, Trainee. Fabrication's enormous paint spraying chamber and some of its air ducting can be seen in the background.*

Top right, opposite: *The paint spraying chamber takes a complete cabin with room for the operator to manipulate his gun. A swift flow of air settles the spray mist and excess paint is carried away by running water under the floor.*







Above: *The first painting process is to give the interior an Arpax anti-condensation coating to protect equipment and crew. The moonman is Dave Baldock, with Don Barber, Chargehand paint area, centre, and Ted Dexter, Foreman, cabin fabrication.*

Three inspectors: left to right, *Dave Jennings, John Pudney and Dave Fleming. In front of them is a punched panel, the first of a run on the Wiedemann tape controlled press. These three inspect the cabins during fabrication and again after final assembly.*

Award for suggestion

An award was made to Stan Campbell for a suggestion he put forward when he was Principal Quality Engineer. Here presenting the award to Stan, centre, is Fred Robertson, Quality Manager, left. On the right is Ron Bernhardt, Manufacturing Facilities Manager, who represents MRSL on the local suggestions and inventions sub-committee.

Stan Campbell noticed that some of the panels of S600 transmitters were discarded when the transmitters were installed in mobile cabins.

The transmitters are batch manufactured and more of them are now sold for mobile than for static work. As a result of his suggestion changes will be made and panels and manufacturing expenses saved.

New Personnel Chief

Our new Company Personnel Manager, Ben Wells, right, who has taken over from Terry Murphy, with Paul Kirkland, Senior Personnel Officer, Writtle Road. The Training, Recruitment, Industrial Relations and Welfare departments at Chelmsford, Leicester and Gateshead are all in Mr. Wells' province.

The changeover

Below: *When Terry Murphy, Personnel Manager, left the Company he was given a briefcase by his colleagues presented by Roy Simons, General Manager, Chelmsford,* right. *In the picture are: Maureen Nichols, just behind Terry to the* left*; and to the* right, *Ann Blinman, Maureen Steigmann, James Harrison, Dorothy Roberts and James Vallee, all of Personnel Department.*

Best wishes from Gateshead

When Roy Cantwell left Gateshead to come south to Writtle Road, colleagues at Gateshead presented him with dinner and tea services, and the apprentices made him a pipe rack. Left to right *Bill Henderson, Works Manager, James Burton and Roy Cantwell.*

Engineering — A way of life?

Once again the Chelmsford Engineering Society has planned a season of lectures which should be attractive to many people. For example here are some of the subjects: modern electronic valves, the Wankel engine, matrix displays, the Tarbela dam, precise navigation of aircraft, and on a Ladies' Night, the manufacture of glass.

Overall interest

Our Managing Director, speaking at the inauguration of the new session, the end of his term as President of the Society, said: 'The Society is specifically not restricted to professionally qualified engineers; its object is to promote an interest in all aspects of engineering. We try, once or twice in our programme to have lectures of general interest also to the ladies, and hope to see as many of them as possible with us.

'The engineering industry of this country', he said, 'with its excellent export record in the past, and its potential for expansion of exports in the future, can be one of the prime factors in our economic recovery. We must attract bright young men and women into our profession and our industry by convincing them that it is an exciting, challenging and interesting way of life.'

The new President of the Society is Bob Coulson, Managing Director of the English Electric Valve Company. He was installed by the Chairman of the Society, Donald Clarke, who is Chairman of the Chelmsford District Council.

First-class qualifications

Two young engineers, Christopher Bovey of MRSL and Patricia Bartley of EEV, received awards from the Society for training records and academic prowess.

Christopher Bovey, as a Marconi apprentice, took his degree in electronic engineering at Southampton University where, in his final year, he worked on a project associated with opto-electronic communication and graduated with first-class honours. He joined Field-Services in September and is at present studying at Marconi College.

Patricia Bartley graduated from University College, London, with an honours degree in physics. She joined EEV four years ago and during the last eighteen months has been primarily responsible for the development of a J-band reflex klystron.

Prizewinners

Left: *The winners of the Chelmsford Engineering Society's awards of the year, Christopher Bovey,* left, *and Patricia Bartley, with the retiring President of the Society, John Sutherland of MRSL,* right, *and, next to him, the new President, Bob Coulson, of EEV. In the centre is the Chairman of the Society, Donald Clarke, Chairman of the Chelmsford District Council.*

Marconi Radar at Greenwich

Marconi Radar Systems was well represented on the GEC-Marconi Electronics stand at this year's Royal Navy Equipment Exhibition at Greenwich, pride of place being given to Leicester with its special responsibility for naval systems.

Demonstrated publicly for the first time was a fully-engineered version of the Steg simulator, which enables an operator to be trained at his own radar display at minimum cost, while the S800 Series of lightweight surveillance and tracking radars was displayed in model and graphic form.

From the Control Systems Department came a working model demonstrating the principle of degaussing and the immunity it provides in mined areas, together with a graphic display of a wide range of ships' systems and equipment.

Chelmsford exhibited the Locus 16 distributed data processing system providing computation, communication and display drive in a compact low-cost package.

Outside the exhibition hall but within easy reach of the stand the Company had also installed its own Portakabin, where presentations and discussions were held with many visitors during the course of the week.

Above right: *Old friends meet at Greenwich. Commander Archie Orr of Leicester* left *talks with Rear Admiral K. G. Ager, Head of the Admiralty Interview Board. The two men were naval ratings together in the early* 1940's.

Left: *The GEC-Marconi stand at the Royal Navy Equipment Exhibition.*

High flying Sally scores again

Sally Donne, Leicester's intrepid airwoman, who when she comes down to earth is a clerk in 909 Contracts at Blackbird Road, recently came away from the Guernsey International Air Show with two top awards.

As a member of the Leicestershire Aero Club's team, Sally was one of only half-a-dozen women among the 67 entries from all over Europe. Flying a Cessna 150, she won the Bucktrout Cup for outstanding merit and the John Grierson Cup for the poem she wrote about her flight.

Competitors flew from their clubs to the island and then took part in spot landing trials at Cherbourg and Lessay, with marks being awarded for accuracy. The Leicester team of six aircraft won four of the seven

Sally Donne

awards, including the top team prize, the Robin James Cup.

Sally is a true flying enthusiast. 'I think my interest was sparked off by an uncle of mine who used to fly from Stoughton airfield.' she says. 'The Leicestershire Club has its headquarters there and about seven years ago I became a member myself and learned to fly. Now it's my only hobby. If I'm not actually flying, you'll nearly always find me at the ground helping out in one way or another!'

At present Sally is organising a Hallowe'en fly-in which will be attended, among others, by her friends from Guernsey. Next summer she hopes to 'do' the Malta rally and the Cognac rally—one on the way out and the other on the way back.

Gift for handicapped children

The Marconi (Leicester) Charities Committee recently made their first major gift to a local charity when they presented twenty special seats to the Menphys Centre at Wigston, Leicester. The seats are for use in the centre's mini-bus which transports handicapped babies between the centre and their homes.

The Marconi Charities scheme, formed in April of this year and financed solely by weekly contributions from Marconi Radar people at Leicester, has so far raised over £300.

The Menphys Centre at Wigston provides facilities and professional care to aid and support mothers and families with handicapped babies. The centre provides a special day nursery where, in addition to caring for the babies, the professional staff helps the mothers to carry out an individual programme of play and stimulation. All the babies are under three years of age and it is believed that the nursery is the first of its kind in Britain.

Below: *Safely tucked up in their special new seats are some of the handicapped babies who attend the Menphys Centre at Wigston, Leicester. With them in the mini-bus are members of the Marconi (Leicester) Employees Charities Committee—from* left to right: *Jim Baines, Len Groom, George Skipp, Les Smith and Bob Middlemiss.*

A Shetland Skate

Ray Bradley, a foreman at Gateshead, went to the Shetland Islands for the Viking Championships held at Lerwick. With two companions from the Whitley Bay Sea Angling Society he fished in the skate championship, one of the main events of the Lerwick fishing festival.

Only eleven skate were caught that day, but the Whitley Bay men came first, second and third in the competition, Ray third with a 115 lb. fish.

Ray and his friends flew up to Lerwick from Newcastle, changing planes at Aberdeen, approximately a four-hundred-mile trip. He usually has a few days fishing during his holidays, and he and his wife have been to some out-of-the-way places together. One year they went to Stromness in the Orkneys. They are planning to go together to next year's Lerwick festival.

Above: *Ray Bradley of Gateshead with his prizewinning fish caught off the Shetlands at the Lerwick festival.*

Dive for life

Two men got into difficulties in dangerous undercurrents when swimming during rough weather at South Shields. A team of three lifeguards went to their aid and one of the two was brought ashore alive. The other was drowned.

Gary Stirling, an apprentice at Gateshead Works, was one of the brave lifeguard rescue team. He and his colleagues were taken to hospital and given treatment for severe jelly fish stings.

Meet the Champ!

Bill Bagnall, who works in Mechanical Assembly at Leicester's Blackbird Road factory, often has spots before the eyes—but puts it to very good account! Here he is proudly displaying some of the individual and team trophies he has won at dominoes over the last few years. Bill, who has completed 29 years' service with the company, claims that there is a lot more to the game of dominoes than meets the eye. 'Played properly it calls for quite a bit of skill and judgement', he says.

Bill Bagnall, Mech. Assembly, Leicester.

Successful flower show

This year's annual show of flowers, fruit, vegetables and wine organised by Leicester's Ex-Service Association attracted a record number of 469 entries. Open to all GEC people, their families and associate members of the Social Club, the event was held in the Blackbird Road works canteen and the trophies were presented by Works Manager Owen Jones.

The open challenge cup was won by Sidney King, of Mechanical Assembly, who also accepted the inter-departmental cup on behalf of his department. Sidney was also the winner of Section One (vegetables and fruit).

Section Two (flowers) was won by Jack Coleman, of New Parks, while Section Three (cookery and home crafts) went to Mrs. P. J. Bennett, wife of the Manager of Test and Inspection, Blackbird Road.

'Jock' Burns, who recently retired from Blackbird Road, topped Section Four (wines) and also carried off the W. O. P. Jones trophy for best wine in the show.

Additional prizes this year were £2 donated by the Ex-Service Association for the best exhibit in each section, and a wine goblet donated by Alan Dobbs, Foreman, Mechanical Assembly, for the most points in Section Four.

Sidney King, Mechanical Assembly, receives the open challenge cup from Works Manager Owen Jones at Leicester's annual flower show.

Squash Team

The MRSL squash team who played MCSL for the Radar Challenge Trophy presented last year by John Sutherland, Managing Director, MRSL. Left to right: *Geoff Richardson, Ted Ball, Brian Clarke, Bob Holloway, Nigel Cutmore. MCSL won 3 games to 2. Both Tom Mayer and Rhys Williams won their games. Geoff Richardson, Chief Accountant, MRSL, is Chairman of the Marconi Squash Club.*

Editor: L. W. B. Miller, MAIE, St. Mary's House, Victoria Road, Chelmsford, CM1 1NY. Tel. 0245-53221 ext. 394, int. 511
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