

# GEC IS WORKING



## GEC 82

Britain's Largest Private Employer – 145,000 in Britain; another 44,000 elsewhere.

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

No one needs telling that there's a recession. We can see the effects all round us. Three million of them. It's not a happy state. But it isn't just in Britain. In almost all the industrial countries, jobs are being squeezed; trading is difficult; people are worried. Governments also are trying to keep the wealth of their nations intact whilst fighting the corrosive effects of inflation. It's not easy and nobody knows the complete answer, but recent years have given the world's leaders – and all of us – many painful lessons. Britain has had its fair share of shocks, but here in the GEC we've done our best, not only to cushion them, but to fight back.

Here are three of our stories.

**TURBINE GENERATORS**

The oil crisis of 1973 did more than treble the price of petrol. It sent the cost of electricity up again, just as people began to find better ways of saving energy. Industry stopped booming. Extra electricity wasn't needed. The result was that Britain's optimistic plans to generate more electricity to meet increasing demand began to look wrong.

At that time, 80% of GEC Turbine Generators' business was in Britain. The future suddenly looked menacing. So GEC began to mount a powerful assault on the international export market. (Just as well it did too, for GEC hasn't had a single order from the Central Electricity Generating Board in the last eight years!) The only home order received in this period was from the South of Scotland Electricity Board for two 600MW turbine generators for the Torness nuclear power station.

The international market is tough. There is world over-capacity for building large steam turbine generators and over a dozen major manufacturers have been fighting for the 25,000 megawatts of orders which are placed each year. GEC alone has capacity for more than 5,000 megawatts per year.

Hence competition is fierce; prices are very, very competitive; only the most efficient can survive.

**RECESSION & GEC**

How has GEC survived?

It has invested a lot of money in new machinery – over £60 million in fact – with £14 million of sophisticated equipment

turbines are proving very reliable and GEC has doubled its share of the world export market for large steam turbines, moving smartly up from eighth place in the world league to become joint leader with Mitsubishi. In 1982, GEC Turbine Generators has been awarded a Queen's Award for Exports. For the third year in a row.



viewed internationally, the business, though it is... the spot the considerable corporate financial muscle of GEC seems to... ability

*This picture appeared in the Financial Times earlier this year alongside an article which described how GEC Turbine Generators had developed products to capture overseas markets. Left to right are Jim Cronin, assistant managing director and finance director, Bob Davidson, managing director and David Calderon, assistant managing director and engineering director of GEC Turbine Generators.*

going in this year. It has designed its products so that they can be made faster, cheaper and be more reliable.

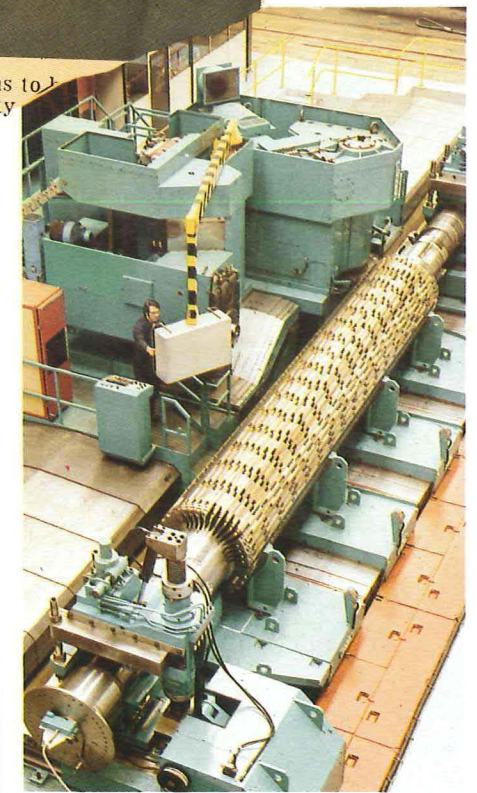
Easy to say, but not easy to do. Yet GEC has cut the building time from four years to less than three. And it is still coming down. £2 million a year is being spent on training Turbine Generators' people to become yet more skilful and adaptable to better methods of production.

The result?

The teamwork is paying off. 90% of GEC Turbine Generators' orders now come from overseas; the order book, including other power station equipment, is over £1,250,000,000 and growing; the new

**MARCONI INSTRUMENTS**

When markets are buoyant, Marconi Instruments' complex test equipment is in great demand in the radio, telecommunication and electronics industries. The company has a successful history of manufacturing new products in advance



A new, computer-controlled machine tool for the machining of generator rotors installed at the Stafford factory of GEC Turbine Generators.

**RECESSION & GEC**

of firm orders, so that it can respond quickly to its customers' needs.

When markets are dull, Marconi Instruments is vulnerable – just like other enterprises. In 1980 the recession really began to hit its customers in Britain; exporting was difficult because the high value of the pound made the prices of British goods look expensive. Defence cuts didn't help either.

The outlook was sombre and Marconi Instruments faced a £3 million shortfall in its sales for the year. One response would have meant hundreds of redundancies leading to shut-downs and the permanent curtailment of production capacity. Sometimes there's no option, for if markets for products have gone, then pretending they'll come back is self-deception.

The management decided that there was another option, hard as it might be. Its "fight back" plan was explained to



everyone in the company. The writing was on the wall. Keynotes were "get the future right" and "minimum redundancies".

**RECESSION & GEC**

They made three decisions. Hotpoint would rapidly improve its after-sales service from third-rate to first-class. Product reliability would be raised. Some products would be imported from Germany and Italy and sold under the Hotpoint brand name until Hotpoint could invest in new factories and new products.



Steve Burke, manager of Hotpoint's South London Service Region pictured in Acton. Hotpoint employs over 700 field service engineers in the United Kingdom.

It meant pay increases being deferred, and for hundreds of Marconi Instruments' 1525 staff, there was nine months of short-time working. Some 50 people unfortunately did have to leave but, on the positive side, more money was spent on product design, new equipment was installed and sub-contract work from other GEC companies was brought in as a temporary measure. Now a series of world-class new products are being produced with more modern factory equipment. It's not all roses, but Marconi Instruments did complete the 1981/82 year on target, with employees who know more than ever before, that being internationally competitive involves everyone in the fight to win business.

**HOTPOINT**

Eight years ago, Hotpoint's new management faced a falling share of the market and a reputation which was declining.

Improvement in after-sales service was dramatic. Within six months, Hotpoint began to achieve its present performance where its service record is one of the best in Europe.

Reliability rose when the new management eliminated piecemeal work in the factories. Shopfloor workers were given conditions previously confined to staff. Management offered more than it was asked to prove that commitment and trust was a two-way matter. A profit sharing scheme was started.

For three years Hotpoint imported 80% of its refrigerators and 20% of its washing machines whilst investing nearly £20 million in its British factories. New equipment and buildings were constructed at Peterborough – resulting in extra jobs. An additional factory is being built at Rhyl, near Hotpoint's washing machine factory at Llandudno.

The Italian-made refrigerators and washing machines have now been replaced by British-made products, thus reducing Britain's imports by £18 million a year.

Hotpoint is profitable; it's strike-free; it's now Britain's largest producer of "white goods". Says Chaim Schreiber, Hotpoint's managing director, "The secret of our success is the sense of commitment which all our employees have to the company and which, in turn, Hotpoint has to our retailers and to the public".

Stories like these are being repeated all over GEC. Better equipment, better products, better productivity, better communications, better quality, quicker delivery to customers – all are helping GEC and its employees to weather the recession.

The facts on the next two pages show what has been achieved.

Inflation is still with us, worse luck. As costs and prices keep going up, the figures for GEC's turnover, exports, profits and pay all keep rising too. But when we adjust for the effects of inflation, is GEC really growing? Are its wages and salaries really increasing? Is the volume of GEC's business rising or falling? What is really happening to GEC's exports?

Below we display the figures for recent years in two ways. The first way is traditional and shows that, year by year, the

# GEC'S FACTS

figures for turnover and exports, pay and profits, all grow aided by inflation. Then we show the same figures adjusted for inflation\* They show growth too, though at a slower rate.

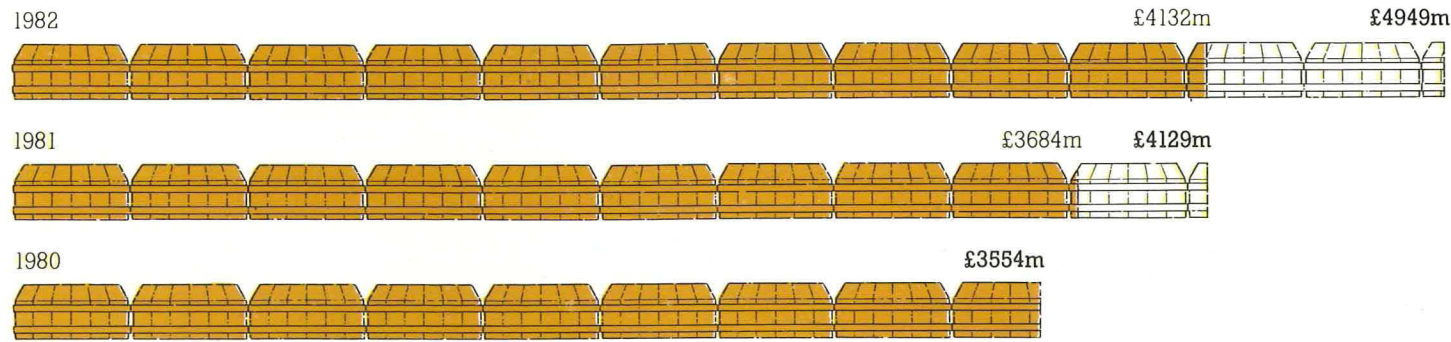
Turnover and Exports have been adjusted by an average of the Central Statistical Office's industrial indices weighted to reflect GEC's mix of activities. This method has been chosen because GEC's costs and prices have not risen as fast as the Retail

Price Index. Copper, for instance, has come down in price. During the last two years our industry index for GEC has escalated by 20% compared with a rise of 29% in the retail price index.

*\*What we have done is to adjust pay and profits by the change in the Retail Price Index — usually called the cost of living index — because the real value of pay and profits is what they can purchase.*

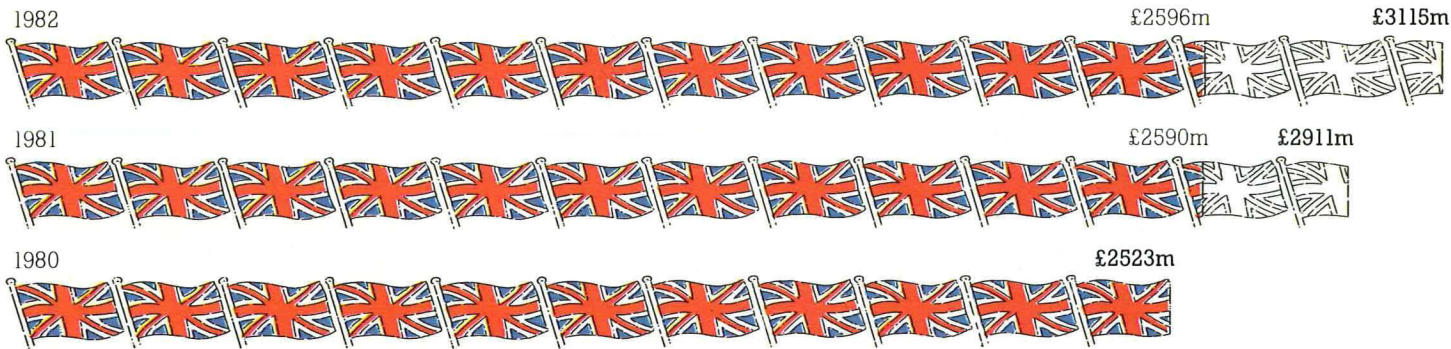
**GEC'S WORLDWIDE TURNOVER** Includes GEC's share of associated companies and

also arm's length turnover between GEC companies.



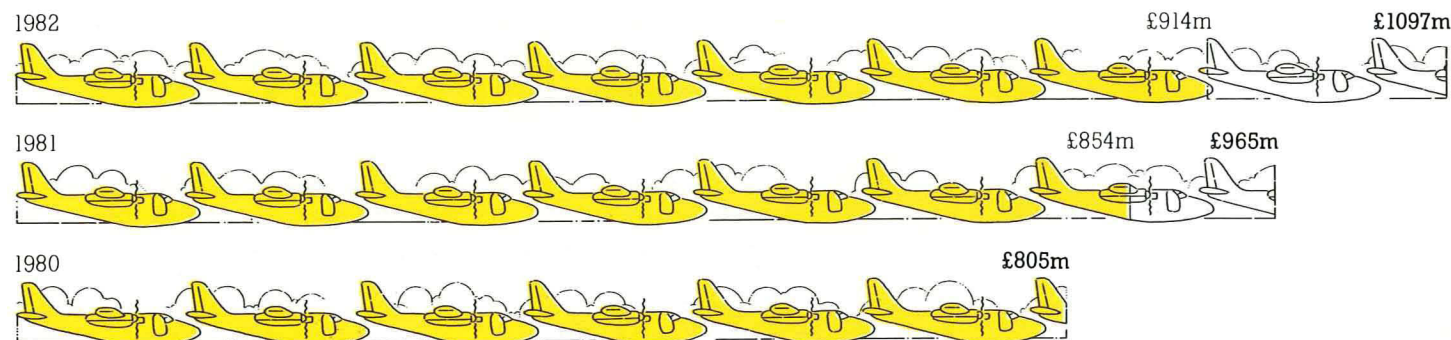
**GEC'S SALES FROM UK OPERATIONS** Includes arm's length turnover between

GEC companies; but excludes GEC's share of associated companies.



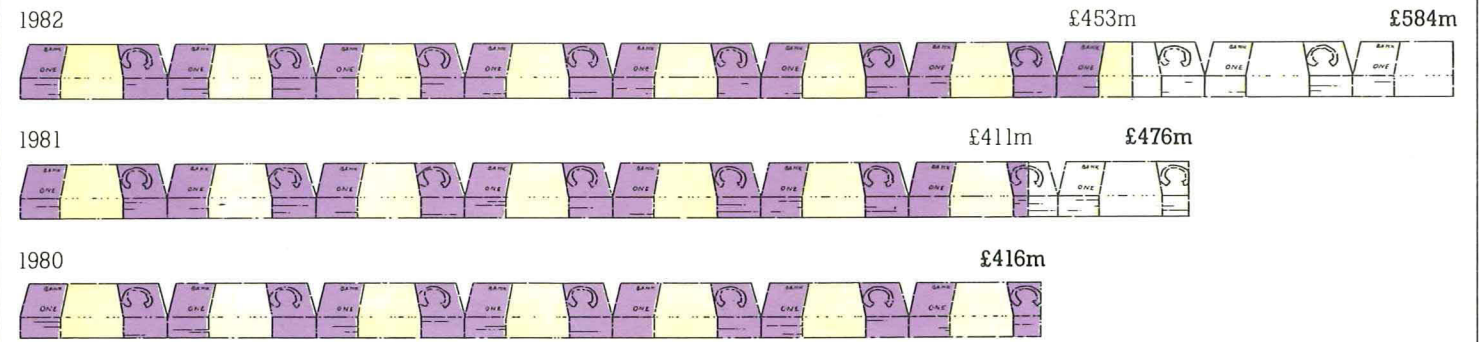
**GEC'S EXPORTS FROM UNITED KINGDOM** These figures are encouraging as UK sales have been maintained and exports have

increased 14% since 1980 even after allowing for inflation.



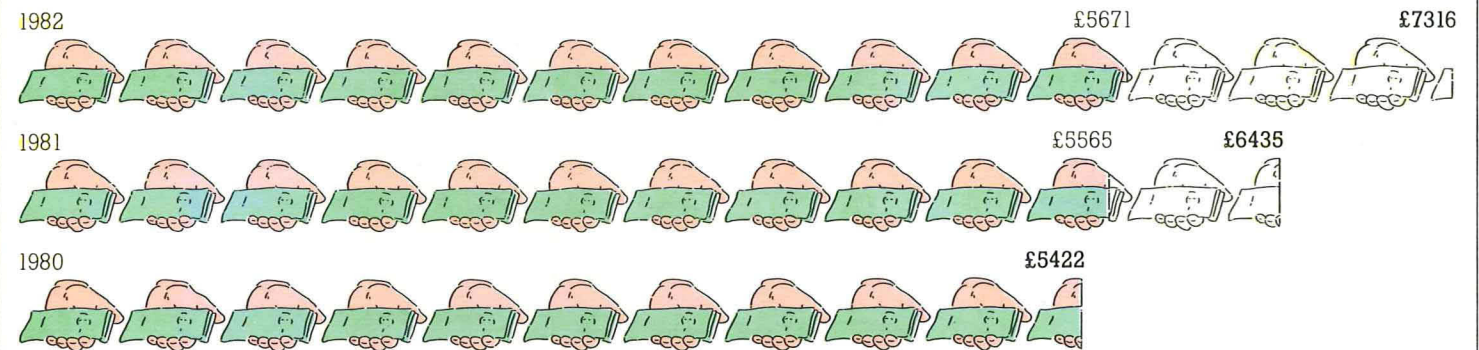
# GEC'S FACTS

**GEC'S PRE-TAX PROFITS** When we remove the effect of inflation, GEC's profits have grown only a little. It just shows how tough world competition is, and how difficult it is to maintain margins in real terms.



**GEC'S UNITED KINGDOM PAY PER EMPLOYEE** Average pay hasn't fallen; it has gone up by over 4½% from 1980 to 1982 after allowing for inflation. The pay figures

include the Company's costs of National Insurance and contributions to pensions and are shown per employee.



**GEC'S EMPLOYEES** Some of the fluctuations are due to GEC buying and selling businesses. Others are due to the rising and falling need for people as GEC's products, processes and technologies have changed. GEC has done better than many other British firms in protecting employment by winning new orders and making better products more efficiently. The numbers employed by GEC could be bigger. Even now, some of our units are short of skilled people.

UK
1982
145,000
1981
156,000
1980
153,000



WORLDWIDE
1982
189,000
1981
192,000
1980
188,000

## NMR

We have grown used to stories about British inventions which have languished in Britain and then been developed successfully abroad. It is nice to record the reverse – an American invention which is well on the way to producing some remarkable results.

Nor is this some modest little affair. The technique is potentially an advance in medical electronics as important as the development of X-rays – which are used extensively in medical diagnoses. The famous body scanner invented a decade ago uses X-rays.

The new instrument diagnoses certain diseases by using a principle which had won Nobel prizes for its discoverers – a principle called Nuclear Magnetic Resonance, or NMR as it is known. The prizewinners had discovered that certain types of atomic nuclei – including those in living tissue – give off an identifiable signal when placed in a strong magnetic field and energised by radio waves.

In the early 1970's, American researchers suggested that the principle could have medical uses, for the signals from hydrogen atoms reveal the dispersion of body fluids and fats without bone structures getting in the way.

Development soon began in Britain, for the prospective advantages were obvious.

Not only might this new technique offer much improved definition of soft tissues in the body but, as the developers expected, it is particularly valuable in pin-pointing diseases in the brain and the spinal cord. For instance, it can provide better detection of multiple sclerosis and there is some indication that it may be able to show abnormalities in the brain in small children.

Medical researchers are always looking for better diagnostic methods which do not require the body to be invaded by probes or materials and which do not affect tissue by their use. NMR is "non-invasive" and there is no evidence that it causes changes in the patient. Hundreds of people have already been examined by this new technique.

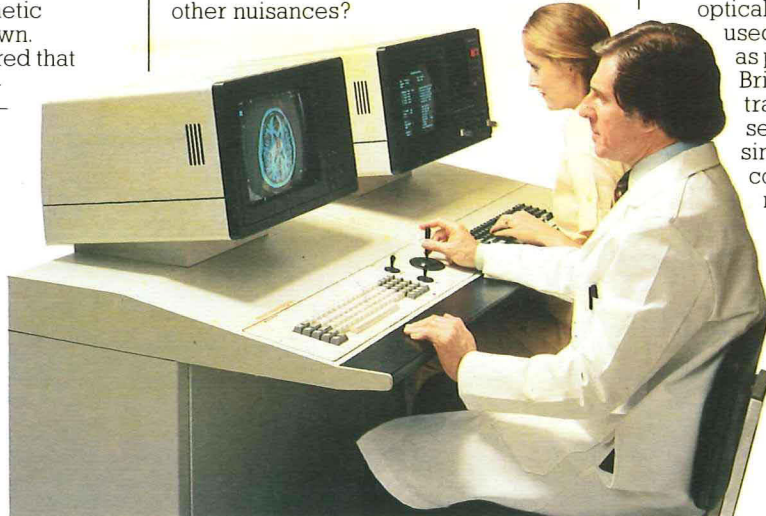
GEC is backing NMR and has set up both a research laboratory and a production line at Wembley. Exports start this autumn. Competition will be tough. The technique has sufficient potential for other manufacturers in Britain, Europe and the USA all to be developing NMR machines. Through its medical company, Picker International, GEC intends to place itself firmly as No 1 in this exciting new technology.

# NEW IDEAS IN GEC

## OPTICAL FIBRE

If ever an invention has turned up just at the moment it was needed, then optical fibre has shown perfect timing. Without it the prospects for improving our telephone system – let alone all our other communication systems – would be poorer.

It is all very well our wanting more telephones, more television channels, more data transmission and more opportunity to seek information actively and to send our own signals back, but how was it to be achieved – particularly when we also want better quality signals together with less interference with cross talk and other nuisances?



*As details of a human brain are revealed by an NMR scanner they are displayed upon a screen for interpretation by medical staff.*

Before optical fibres were developed, the prospect was daunting, for radio signal bands are crowded and the cable ducts under our pavements are often full of bulky and expensive copper cables. Digging up roads to lay bigger ducts to take yet more cables would have been costly and difficult.

Optical fibre does not suffer the electromagnetic interference which occurs with copper cables. So cable lines can be laid alongside railway tracks without every passing electric train causing a problem. That makes optical fibre particularly useful for railway signalling. GEC optical cable is already in use in the London Underground.

Being light weight and spark-free, optical fibres also have many uses in aircraft. Optical fibre does not suffer interference from power lines – indeed one route for optical fibre could be to run it inside the earth cable of Britain's high voltage electricity grid!

But the most obvious benefit is one to which GEC has applied itself. Copper telephone cables require amplifiers every few miles

in order to keep up the signal strength. The amplifiers need a power supply and many of them are buried in far from ideal

conditions under our pavements. We all know how telephones can be affected after heavy rainstorms have flooded some of the ducts.

Optical fibres can eliminate many of these problems because, as a result of research in GEC, British Telecom and elsewhere, signals can now be sent over sufficient distance without amplification so that most of the amplifiers will not be needed, and those which are still needed can mostly be housed in secure, dry conditions inside telephone exchanges and power stations.

GEC has developed advanced monomode\* optical fibres which are already being used in normal working conditions as part of a joint experiment with British Telecom which has transmitted 560,000,000 pulses per second (equivalent to nearly 8000 simultaneous telephone conversations) in a single cable nearly 20 miles long. The problem of improving communication systems in homes and offices now looks much easier than it did – thanks to optical fibre.

\*Monomode: An optic fibre cable with a slim central core which enables light signals to be sent over greater distances.

## GADFLY ROBOT ARM

The human arm is a wonderful thing. But if you decide to try to design a robot arm along similar lines, the robot does exhibit one major disadvantage. Just as the human wrist is slimmer than the elbow-joint, which is itself smaller than the shoulder joint, so robot joints become thicker and thicker as they get further and further from its "hand". It's not surprising, for each successive joint has to carry more weight, more cantilever overhang, as the distance from the working "hand" increases. The joints are in series.

GEC's new Gadfly robot arm is quite different. Each joint is individually mounted from the base so that the joints operate in parallel. The whole design can be lightened because each succeeding joint no longer has to carry all the weight of the rest.

The result is that the Gadfly robot arm is potentially cheaper and can position itself more accurately, more rigidly than many other robots. Not only that, but it has the capability of operating up to twice as fast as traditional robot designs – a key feature in improving robot performance. Originated in the Marconi Research Centre, the new device has considerable potential for more sophisticated uses than existing robots can achieve.

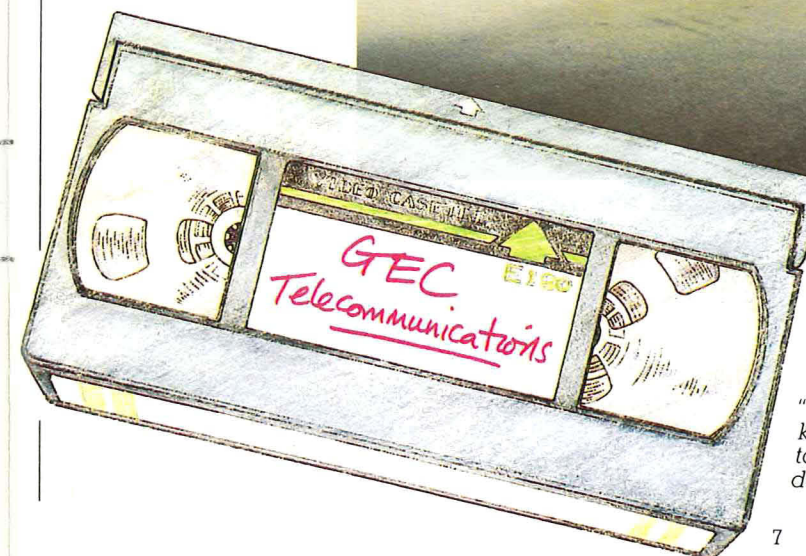
Communications in GEC are still getting better (not before time, some would say).

More and more units are showing that both management and employees gain when there's a more open sharing of information about prospects and problems, products and processes, plans and practices – all the many things which make up the rich mixture of working in and helping a business to succeed.

GEC is, in fact, better than many companies in Britain, where employees' business understanding is very often woeful. Given that peoples' livelihoods depend on the survival and success of their employer, that's not very smart for them and their families, let alone for the employer.

One unit which has been working hard to improve communications is GEC Telecommunications Ltd – and where more appropriate, given that transmitting information is its speciality?

For several years, GEC Telecommunications has been building new ways of keeping employees in touch with the business. There have been regular Briefing Groups in which company information is cascaded down through the organisation to all employees. Twice each year, the Managing Director also initiates and leads a major briefing session.



*The lights burn late for a discussion at GEC's management training college in Rugby.*

*"Video film helps keep employees in touch with developments."*

# COMMUNICATIONS IN GEC

Recently, GEC Telecommunications made its own video film using its own equipment and its own personnel so that employees could learn more about developments

their regular briefing sessions.

Two way communication has, of course, been handled not just through the vast range of day-to-day contacts between managers and other workpeople, but via trade union negotiating committees and departmental and site meetings. In order to enhance mutual understanding, GEC Telecommunications has for years run joint Trade Union and Management Training courses in which groups of 20 to 30 managers and Trade Union representatives mix together on a residential course for up to a week. Discussions on such matters as the effects of new technology on all aspects of the business often continue well into the night as people jointly explore the ways in which GEC Telecommunications will develop.

Other GEC Units have their own methods of communicating with their employees but the progress of some has been less than satisfactory. In 1980, the GEC film was shown to all employees and a survey carried out to check employees' knowledge and feelings about their employment and about GEC. Business knowledge was patchy. Few employees knew very much about the finances of GEC. The notion of "added value" – which underpins the justification for our being employed at all – was scarcely understood below management level.

This year, we will be conducting a further survey to see how much improvement there has been in the last 24 months. We hope to be pleasantly surprised, for if people don't understand the basic facts about their unit as a business, the chance of their participating, or wanting to participate, in the wellbeing of that business must be meagre. We don't think that it is sufficient for employees just to rely on their managers. Understanding the business that employs us is a vital part of securing its future.



The growth in GEC's sales, its exports, its profits and its pay demonstrate that GEC has been a successful company. Its resources, its order book and its people's skills show that GEC is strong right now. If we can keep up the level of effort and application, we can face the future with confidence. But where are we going? What do we hope to achieve? And what do we have to do to achieve it?

Our aim in GEC is simple. We want to do better. Better products; bigger sales; better profits; better pay and more jobs – in short, more prosperity; better quality; more satisfied customers and more job satisfaction in using our talents to the best of our abilities.

What we need to do is equally straightforward – to use our resources with the utmost efficiency in a fiercely competitive world. It is not just money which is internationally mobile, moving round from country to country. Investment in products and machinery is also mobile. Factories are built where they can be made to pay. Businesses flourish where gas and electricity are cheap, not dear; where taxes are light, not heavy; where people's skills are high, not low; where new technology is embraced, not spurned; where people welcome new methods, not restrict them; where labour costs are low; and where productivity is high. These are the foundations of success.

The alternative is bleak. It would require Britain to pretend that the rest of

# PRODUCTIVITY & PROSPERITY

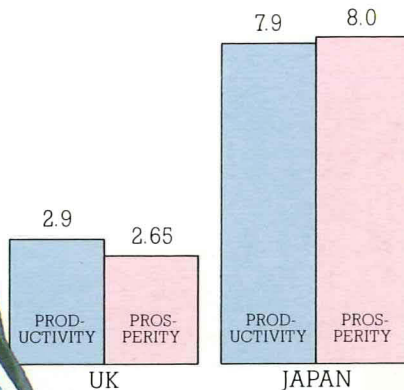
the world doesn't exist and to cut down

**PRODUCTIVITY 1960-1980**  
(Industrial Production Index per person per hour in manufacturing industry)

**UK +2.9% pa    JAPAN +7.9% pa**

**PROSPERITY 1960-1980**  
(GNP/GDP adjusted for changing prices)

**UK +2.65% pa    JAPAN +8.0% pa**



Source OECD Statistics

international competition by controlling imports and the movements of capital, hoping that other nations wouldn't retaliate. If they did, we'd be sunk. Britain needs those export markets to pay for our imports of food and the materials and goods which give us our living standards. Not only that, but higher standards of living in the world have grown hand in hand with the growth of international trade. Reducing international trade would offer us less choice, higher prices and fewer new products. We would go backwards. It would be a grim prospect.

The productivity route is obviously better – and we can see it at work. It's called Japan. What the chart shows is that productivity and prosperity go hand in hand. There's nothing surprising about that, for wouldn't we all expect that people who work more effectively would be better off as a result? The puzzle is that we have to keep reminding ourselves of this simple fact.

GEC has got the message. Our policy is crystal clear. We intend to go on competing on a world scale. We invest. We invest in Britain. We build better products. We develop people's skills. Our people want to work yet more effectively, to be yet more useful.

The achievements of GEC are the achievements of its people and, as GEC prospers, so do its employees.

