LOGICA ANNUAL REVIEW

1989

logica

Talbot *Leaf of a Plant* c.1839

front cover: Man Ray *Le Violon d'Ingres* 1924

back cover: Webb *Day for Night* 1988

Contents

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In the twenty years since its founding in 1969 Logica has made its mark on the computer software and systems industry. We have achieved a record of growth, a worldwide spread of operations and a reputation for quality that are impressive by any standards. We have also been involved in some of the key developments in our field - developments that have had a real impact on the advancement or the application of technology, and sometimes on the world at large.

We feature some of these landmark projects in this year's Annual Review alongside descriptions of our recent work. Particularly noteworthy is the number of early clients with whom we continue to work successfully today. Logica is proud to have won the loyalty and support of so many of the world's major organizations as its clients.

The commitment and excellence of Logica's staff have also been essential ingredients in the company's success. In the staff section of the review, we concentrate on the approach to career and management development that has enabled Logica to maintain over two decades both momentum for growth and a strong corporate culture.

As a focus for our twentieth birthday celebrations this year Logica is sponsoring ***The Art of Photography,*** a magnificent exhibition which opened at London's Royal Academy of Arts in September 1989 after visiting the US and Australia. The superb images with which we illustrate our Annual Review have been selected from this important exhibition which spans the 150 years of photography. We are extremely grateful to the artists, lenders and Royal Academy staff for their cooperation.

Review of the year

PERFORMANCE

Logica celebrated the twentieth anniversary of its founding with turnover of £180 million, up 32% on the previous year. Pre tax profits, which included the first full year's contribution from the acquisition of Data Architects in the US, were £18.8 million, a growth of 28%. Earnings per share were 20.0p, up 10%. At year end the number of staff employed worldwide exceeded three and a half thousand.

The company continued to generate a positive cash flow during the period and year end net cash increased by £3 million to £18 million.

The directors are recommending a final dividend of 2.1p per share net, making 3.1p per share net for the full year, up 35% on the previous year.

THE YEAR AT A GLANCE		
Turnover	£180m	+32%
Pre tax profit	£18.8m	+28%
Earnings per share	20.0p	+10%
Dividends per share	3.1p	+35%

OPERATIONS

The *UK* operations achieved good organic growth and expansion in many market sectors, particularly finance, defence, and energy and utilities. However in some sectors it proved difficult to sustain the same level of growth as a few major projects wound down.

The strongest sector in the UK was finance, where we continue to benefit from our very wide range of capabilities in this complex marketplace. Against a difficult background, defence work showed a clear upturn, with particular concentration in communications, command and control. We saw yet further development of our leading position in the water industry and began our first major electricity project. In government, the continuing trend towards competitive fixed price procurement has resulted in some major successes, although the preliminary work required to identify risks sufficiently clearly for both client and supplier leads to very protracted procurement cycles.

Continuing our strategy of establishing regional centres of expertise, we acquired the staff of RTZ Computing Services and now have a specialist team working on share registration systems and a new Bristol office. Our office in Aberdeen continues its successful specialization in the offshore energy market, and from Stockport we are focusing on telecommunications, industrial, and retail finance systems. The Cambridge R&D facility has seen particularly strong demand for its specialist skills in knowledge based systems. Further projects in speech recognition and human computer interaction under European and UK wide research programmes underlined its major role in these important fields. More powerful general purpose products made it appropriate to complete our move out of special hardware manufacture with the closure of our Barnet factory.

A marked trend this year has been the growth of large projects in sectors such as finance, manufacturing and utilities, where clients retain a strong in house information systems capability. We are seeing a tendency to initiate joint development teams for major new systems of central importance to the client's business. In particular, key contracts for clients such as Barclays, National Westminster and Ford of Europe point to growth in the development of large administrative systems.

Elsewhere in Europe, a number of the operating companies, especially those in the Netherlands and West Germany, showed very strong growth. Several markets experienced high levels of activity across *continental Europe*. Our communications system work ranged from an electronic exchange development for Télic Alcatel in Belgium to the SMART reservation network in Sweden. In the transport area, we are involved in harbour and shipping projects in the Netherlands and Germany and airport projects in the Netherlands and Italy. Retail finance work, largely based on ON/2* products, continues successfully in several areas, and in Sweden is providing the foundation for an expanded client base. We also won several strategically important contracts, for example, for Gasunie in the Netherlands, and for the Swiss Stock Exchange, to specify overall design for major new large scale systems.

In its first year as an integrated unit, Logica Data Architects in *North America* began to realize the benefits of the enlarged group. The products side of the business continues to thrive with extended functionality and new customers for BESS®, the first European sales for the BankMaster/ProfitMaster™ range and the sale of the UK-developed X.400 kernels to Tandem being particularly noteworthy. The client project to build a UNIX** version of the C3 subscriber management system was a good step forward, but the slow takeup of the telecommunications products generally was disappointing.

Within our main sectors in North America we observed some particular themes: in financial services, a strong move to the integration of services and systems, both to control risk and to provide

services more efficiently; in computer vendors, heavy emphasis on connectivity, distributed systems and integration; in telecommunications, demand from Bell operating companies for expertise and products for customer and network support services.

Although performance of the merged operations fell short of our best expectations, we achieved our strategic objective of establishing a substantial base in North America; Logica Data Architects is making a powerful contribution to our worldwide business in areas such as insurance, message handling and telecommunications. The merger has also been very successful in terms of staff integration.

Both revenues and staff grew strongly in *Australia and the Far East.* In Australia we now have over 200 staff and broadly based business in Sydney and Melbourne. The most important sectors in these areas are now finance and computer manufacturers, with opportunities opening in utilities. In Canberra we continue to move our federal business more towards system supply and integration.

Given the changed climate after events in the People's Republic of China, some general nervousness might be expected in Hong Kong. There has been no evidence of any adverse effect on prospects so far, but recruitment and retention of experienced local staff is becoming more difficult in the lead up to 1997. Logica's international consultancy skills are particularly attractive in this market place. Promising new work in the telecommunications sector was won during the year. Elsewhere in the Far East region we continue to build business principally around our financial product offerings, particularly ON/2.

Although we have no established base in Japan, Logica subsidiaries have continued to win substantial contracts from Japanese firms both in systems development and research work.

CORPORATE DEVELOPMENT

Given the increasing need to manage business in our markets on a global basis, and to devote concentrated resource to acquisition and investment opportunities, we decided during the year to establish a new high level management group to work across all our operations. The new group, Corporate Development, is led by three main board directors. With effect from 1 July 1989, it has been working with senior managers in the subsidiaries to put extra effort into exploiting the significant resources and experience of the company as a whole to grow our business. Other areas of concentration for the new group include strengthening links with computer vendors and maximizing product and systems kernels business.

At the same time board level responsibility was assigned for each of the regions described above. In this context the establishment of a role to give further emphasis to the coordination of business in continental Europe is particularly significant.

PROSPECTS

At the time we announced our interim results we predicted that the pace of growth in the software and services market would slow somewhat from the very high rates of the last decade. Evidence of this trend has emerged over the last six months but it is also clear that there are excellent opportunities for companies operating on a global scale.

From a number of perspectives, Logica is extremely well placed to exceed industry growth levels. Across the European Community, legislation in the early 1990 s will remove both physical barriers to the distribution of goods and movement of people, and trading barriers in sectors such as financial services. With our broad spread of operations, and capabilities in areas such as goods movement, electronic data interchange, transport and banking communications, we are ideally placed to provide services to companies who wish to take advantage of this expanded marketplace. The harmonization of telecommunications standards and liberalization of PTT operations, both in Europe and elsewhere, will likewise create extensive opportunities as competition and demand for new products and services increases. Governments are at last committing substantial resources to environmental issues, and Logica's experience in satellite observation and sensing, and in systems to monitor and/or control water, oil and radiation is particularly relevant. Automating the use of transportation and infrastructure is another area where our expertise matches requirements for environmental management well.

In the global dimension, more international companies are identifying the need to tackle major administration and communications systems on a worldwide basis. Although recent mergers and acquisitions in our industry are resulting in larger entities, few are as well established in local markets and as integrated on a company wide scale as Logica.

The rate of change in our industry and in our markets provides us with a considerable challenge. We remain confident in Logica's ability to meet that challenge and continue strong growth.

Staff

Logica's staff profile has changed remarkably little over the twenty years of the company's existence. As in 1969 the typical Logica staff member is in his late twenties, has at least one degree in a numerate science, joined either direct from university or after a few years in another job, has worked on a range of small and large projects in a variety of roles and is enjoying not only the demanding work but also an entertaining social life.

Although in the intervening years the company has grown dramatically both in size and geographic spread, has gone on to work on even larger, more complex projects, and has developed a sophisticated infrastructure to support management and technicians, the culture is close to that of the early '70s. Often cited as a key to its success, Logica's ability to progress and grow quickly while maintaining a consistent style results from two main factors: a genuine commitment to careers and a well honed approach to management structure.

This year we have seen a further refinement of career management with the development of the career path guide in the UK. Incorporating an approved version of the Professional Development Scheme established by the British Computer Society, this will assist staff and their line and career managers to identify training and work opportunities to support career aspirations and acquire, if desired, recognized professional qualifications. Such qualifications will gain considerably in importance across Europe with the relaxation of European boundaries in the 1990s.

The career management system in Logica is based on flexibility, variety and individual concerns. Advancement focuses on developing managerial, technical and/or business applications skills, in many cases in several subsidiaries and countries, rather than stepwise progression through a rigid hierarchy.

This approach has proved to be both attractive for new staff and supportive of the organizational structure. In an increasingly competitive arena, we recruited a record number of 216 high calibre graduates. As in the past, most of this year's intake have degrees in computing, mathematics, engineering or related scientific fields. Some 10% however are graduates from arts or other non numerate courses.

Many of these graduates, as well as the more seasoned recruits, will gain experience in management roles as the company grows. Since the outset, Logica has built its organization on small units of around 30 people with a high degree of autonomy and profit centre responsibility. The opportunities for both business growth and personal development are high for the managers of these units, 60% of whom have been in post for two years or less. This group is the pool from which more senior management posts are filled, providing broad experience and stability at higher levels.

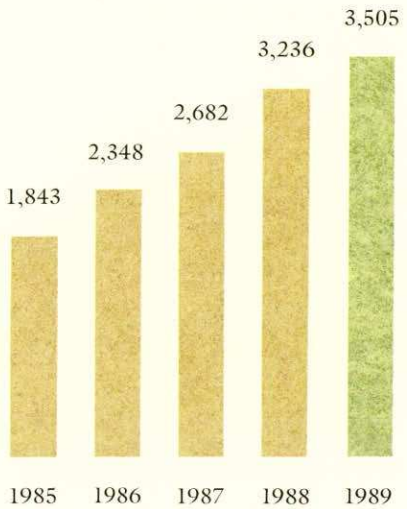
Fourteen of the 40 or so staff in place at the end of Logica's first financial year have remained with the company. Half are now main board or subsidiary directors, and half have other types of high level management or consultant posts. This pattern of retaining high quality people across a range of senior positions is one that has also been a feature of Logica's successful acquisitions, and particularly holds true in North America with former Data Architects staff.

Many companies in our industry are experiencing major reorientation and restructuring. Logica's formula of attention to individual career paths and establishment of responsive but consistent management structures seems to bring out the best in an excellent set of people. Its relevance seems as valid today as it did twenty years ago.

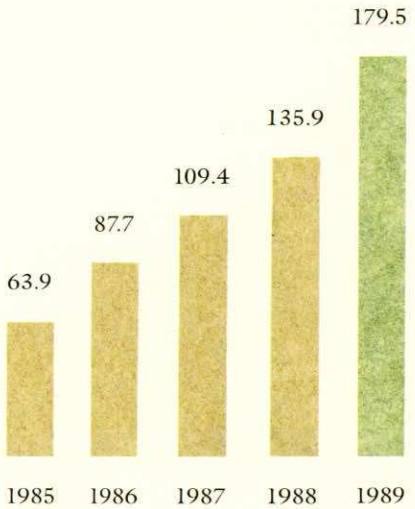
Weegee *Coney Island Beach* 1940

Business analysis

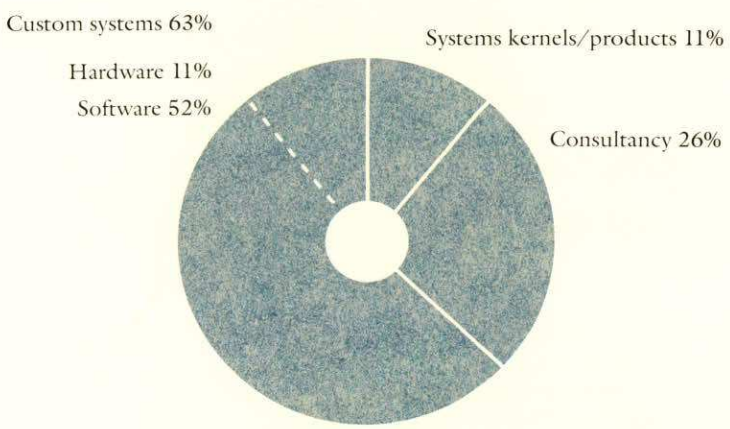
STAFF NUMBERS



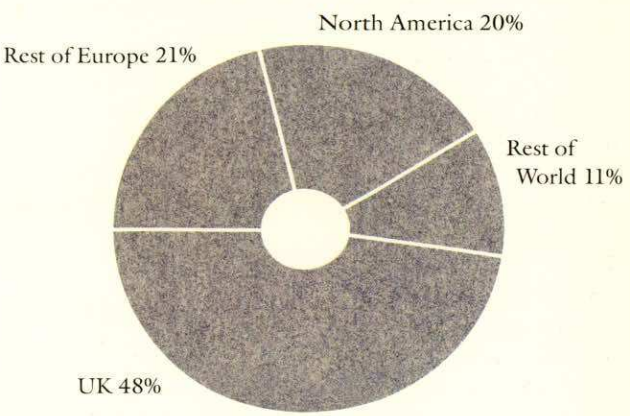
TURNOVER (£ MILLIONS)



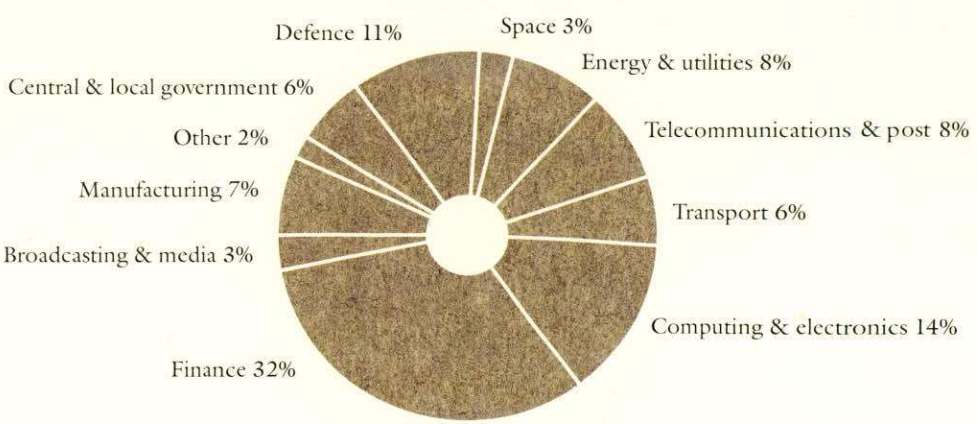
ANALYSIS BY ACTIVITY



ANALYSIS BY CLIENT LOCATION



ANALYSIS BY MARKET SECTOR



Gardner *Abraham Lincoln and his Son Thomas (Tad)* 1865

Research and development

Logica's continuing programme of research and development is an essential element of our commitment to the future and a vital ingredient for maintaining business strength and providing a top quality service to clients.

Specializing in four key areas - software engineering, human computer interaction, speech technology and knowledge based systems - our research centre in Cambridge develops new tools, techniques and skills to add value to systems development and implementation work going on throughout Logica. This central research body, enhanced by specialist groups around the company, ensures that we are at the forefront of integrating advanced technologies into working systems and using tools which assure reliable and cost effective software for our clients.

We also have a continuing development programme to enhance and extend our product and systems kernels range. Logica products range from ready-to-install packages, which may comprise software and hardware, to kernels and software platforms which can be tailored to individual client requirements.

The reuse of tried and tested components, allowing cost reductions and improved reliability, is a key aim of the software industry. One area where we are expanding our research activities is object orientation, a paradigm for designing and implementing systems which offers considerable promise for achieving higher levels of reuse. Another area is formal methods - mathematical techniques for the precise specification of systems - which are being used, for example, in building safety critical systems.

Good user interfaces are vital in improving the effectiveness of computer systems. This year we consolidated a number of strands of earlier work and documented a human computer interaction methodology to be available throughout Logica.

During the year we began work on three new projects in the area of speech technology, part funded by the ESPRIT programme of the Commission of the European Communities (CEC). The largest of these is SUNDIAL (Speech UNderstanding and DIALogue) in which we are leading a consortium of 12 partners across Europe to develop computer systems that can be accessed by speech over the telephone. Potential applications include home banking and travel information systems. We are also working on a novel technique for verifying the identity of individuals using their spoken voice - an effective security device for use in these applications.

Further work started in the year includes a project, as part of the CEC DELTA programme, to develop a framework for future distance learning systems, and the first phase of a project for the UK Government's Advanced Robotics Initiative to build a Surgeon's Assistant Robot. The robot will use artificial intelligence techniques and feature a sophisticated user interface and sensors to assist in the planning and execution of delicate surgical procedures.

We prepared and submitted a number of competitive research proposals for funding under the UK Government Information Engineering Directorate programme, which replaces Alvey. We have been very successful and several projects will be underway by January 1990. These include research into neural networks, user modelling, formal methods, maintenance of large knowledge bases and the application of knowledge based systems to design.

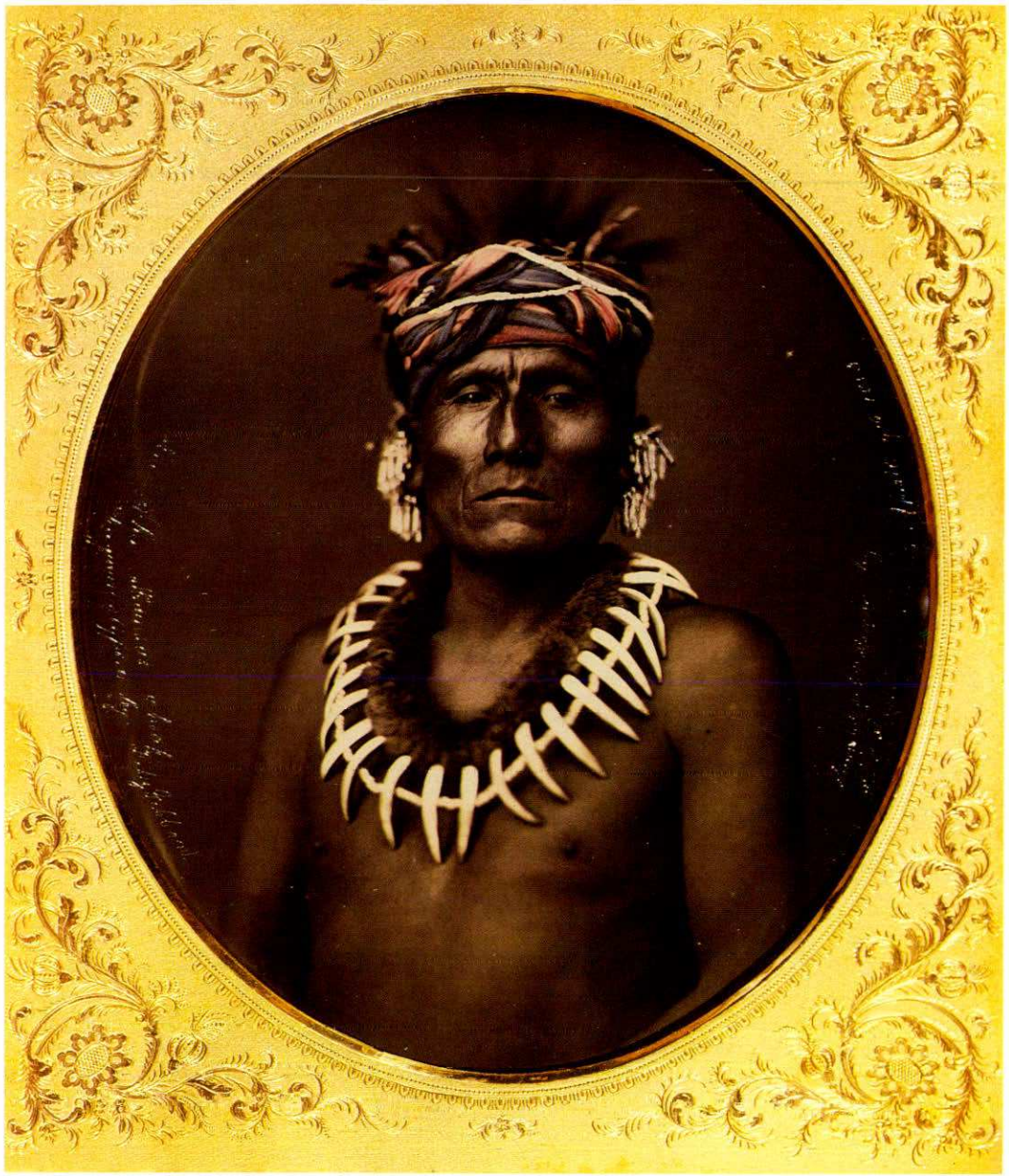
The trend towards globalization means that companies rely increasingly for effective communications on international networks linking a wide range of different computer systems. Logica has continued to work on network management systems and the new generations of communications protocols.

Development of our CPLEX.400™ message system continued with the introduction of further features of the 1988 CCITT X.400 recommendations. Both the Message Store and a 1988 Message Transfer Agent were successfully developed and delivered to clients during the year.

During the year our Communications Control Center (C3) system, which enables privately owned telecommunications networks to be monitored, controlled and administered from a central site, has been redesigned to meet new market opportunities. As part of our activity we have been developing a UNIX based version of the system with an improved user interface.

Planned future enhancements, patterned on previously implemented projects, include collection and processing of network equipment alarms, traffic data analysis and transparent communications between C3 and remote network equipment.

The Logica Transaction Director software product, whose potential has already been realized in implementations for two international financial institutions, will form the basis of extensive future product development activity. A Tandem based systems integration platform, the product allows applications running on differing hardware platforms to function together to solve business



Fitzgibbon *Kno-Shr, Kansas Chief* 1853

problems. It provides comprehensive message switching facilities and links a myriad of input/output devices to user applications. We believe there is good potential for the product across all business sectors.

In financial systems products, development work has continued on BESS, our modular global funds transfer system. The new features implemented during the past year, and the continuing responsiveness to customer needs, mean that this product, now ten years old, has a life extending well into the next decade. Current developments include work to improve the product's user interface by integrating colour graphics facilities running on Apple Macintosh hardware.

Development started during the year of FASTWIRE 2000, the entry level system for SWIFT II, launched in September 1989. Based on our FASTWIRE™ message switching product, FASTWIRE 2000 can link to both S.W.I.F.T. and telex networks and, by catering for lower volume users, expands our market base.

In dealer support, we modified our FASTRADE™ product to suit the changing needs of the market, and launched FASTRADE GTE, an applications platform that can be tailored to individual requirements.

We also enhanced our BankMaster/ProfitMaster™ offering for interest rate risk analysis and financial management. We developed a generic front end system, now marketed as BankMaster Plus, to provide easy manipulation of data. We are currently porting BankMaster to a UNIX operating environment to run on PCs.

Management consultancy

Strategic planning, management of growth and business control are the key issues that occupy top executives in keeping their companies strong, profitable and competitive. The close link between business change and growth and information technology strategy means that addressing these issues is an increasingly complex process, compounded by rapidly developing technology.

Logica's management consultants are in the advantageous position of being able to draw on Logica's extensive resources and expertise in systems design and implementation. We offer a wide range of strategic planning services, carried out in full knowledge of the latest available technologies and their business implications. Our management consultants come from all sectors of industry, combining senior management experience with a clear understanding of IT.

International blue chip companies from all market sectors have drawn on our services, complementing their own resources and benefiting from our independent viewpoint. Many of our projects have been to provide consultancy in the wide ranging field of corporate planning and strategy. Recent examples are our work for the ***World Bank,*** for whom we identified advanced communications services which could be considered suitable for implementing in developing world countries, and our project for ***Shell Internationale Petroleum Maatschappij BV*** in which we recommended management and technical measures and procedures to ensure the security and control of a new international network. In a further corporate IT planning project we advised ***Nestlé Australia Limited*** on business and organization issues, in particular the impact of the company's decentralization process, recommending

Clausel ***Untitled*** c.1855

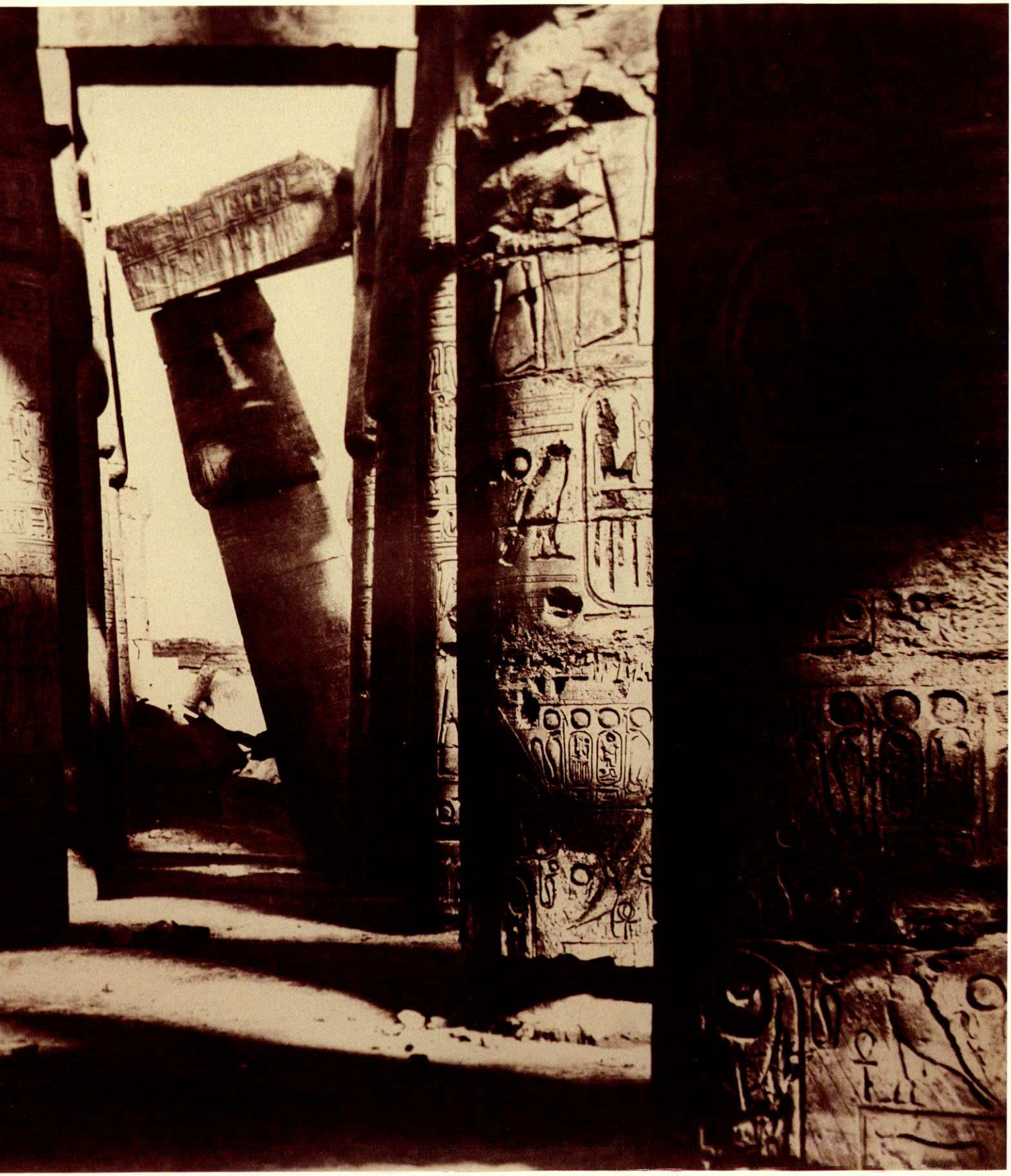
appropriate IT support. Our strategy study of the ***Swedish Post Office's*** electronic mail service will assist in its further development and increase its competitive position.

Business performance reviews, involving the informed analysis of existing procedures and systems, are a further major area of activity. In a series of projects we assisted the ***National and Provincial Building Society*** in analysing its requirements for retail branch systems and flexible product administration systems. We carried out a review of the society's voice systems and helped it to test and implement a nationwide packet switched network to provide data transmission facilities between all branch regions and head offices. As part of the work carried out by our Italian office for the manufacturer ***Industrie Pininfarina spa,*** we assessed existing business performance, recommending stock reduction through project management oriented information systems and improved product and materials management.

As organizations grow and change there is a need to review existing management structures to ensure they continue to meet business needs. Our clients value independent advice in this area and we have carried out a number of projects making recommendations on organization structure. These include our work for the ***Commission of the European Communities*** in Belgium whose proposed Community Trade Marks Office is to provide for the registration and administration of the future Community Trade Mark. On the basis of the latest legislative texts we identified the procedures that will need to be carried out by the Community Trade Marks Office, proposed an organization to support these procedures and planned for the optimum use of new technologies. For the ***Istituto Italiano di Credito Fondiario spa,*** a long established Italian building society, we made recommendations for changes to organization structure and for the use of information systems.

We regularly carry out necessarily confidential assignments for major international computer and communications companies. Our work in this area includes acquisition and merger investigations, market entry studies, new product marketing strategies and competitor appraisals.

Although management consultancy is undertaken as an independent activity within Logica, many clients go on to appoint us to design, specify, project manage and implement related systems. This ensures that our management consulting advice is based on an awareness of the practical realities of implementing our recommendations.



Le Gray *Karnak: Pillars of the Great Hall* c.1859

Finance

With good levels of growth, finance continues to be Logica's largest sector. Our enviable strength in the main financial centres, enhanced by the now integrated operations of Logica Data Architects in the US, confirms us as a leading supplier in an industry where more and more clients operate on an international basis. Our spread of expertise across all aspects of finance - from corporate finance to investment systems - has meant that we have withstood any market downturns caused by the stock market crash in 1987.

Logica started work in the UK finance sector in the early 1970s with the internal network for Barclays Bank and internationally with the feasibility study for the global network for S.W.I.F.T., both of which are among our current clients. In the past year the fifth anniversary celebrations of the Clearing House Automated Payments System (CHAPS) were marked by the development of an expert system for Citibank to assist in CHAPS gateway maintenance and the update of the gateway software for the Bank of England. Through significant large systems implementation projects in more recent years, like the global banking information system for Barclays Bank and the core system replacement for National Westminster Bank, we have affirmed our ability to play a leading role in systems developments which are fundamental to a bank's overall business.

Our message handling products FASTWIRE and BESS, running on Digital and Tandem hardware respectively, have enabled us to consolidate our position in the international market with sales to, among others, Credit Suisse, Bank of England, Bankers' Trust, Citibank Hong Kong, Credit Lyonnais, Westpac Banking Corporation, Industrial Bank of Japan and Nippon Credit Bank.

ON/2, our retail transaction processing product, was joined this year by an electronic point of sale (EPOS) terminal networking product, StoreNet/2*, also originally developed by US company Shared Financial Systems. ON/2 has seen a high level of sales around the world with clients including LINTASARTA in Jakarta, BPI in the Philippines, Littlewoods and Lombard Tricity in the UK, and Auriga AB in Sweden.

For the Swiss ***Association Tripartite Bourses,*** an association whose members are authorized to trade on the floors of the Zurich, Geneva and Basle Stock Exchanges, we have designed and specified a high speed order matching system supported by networks of PC based workstations. These will complement the existing floor trading.

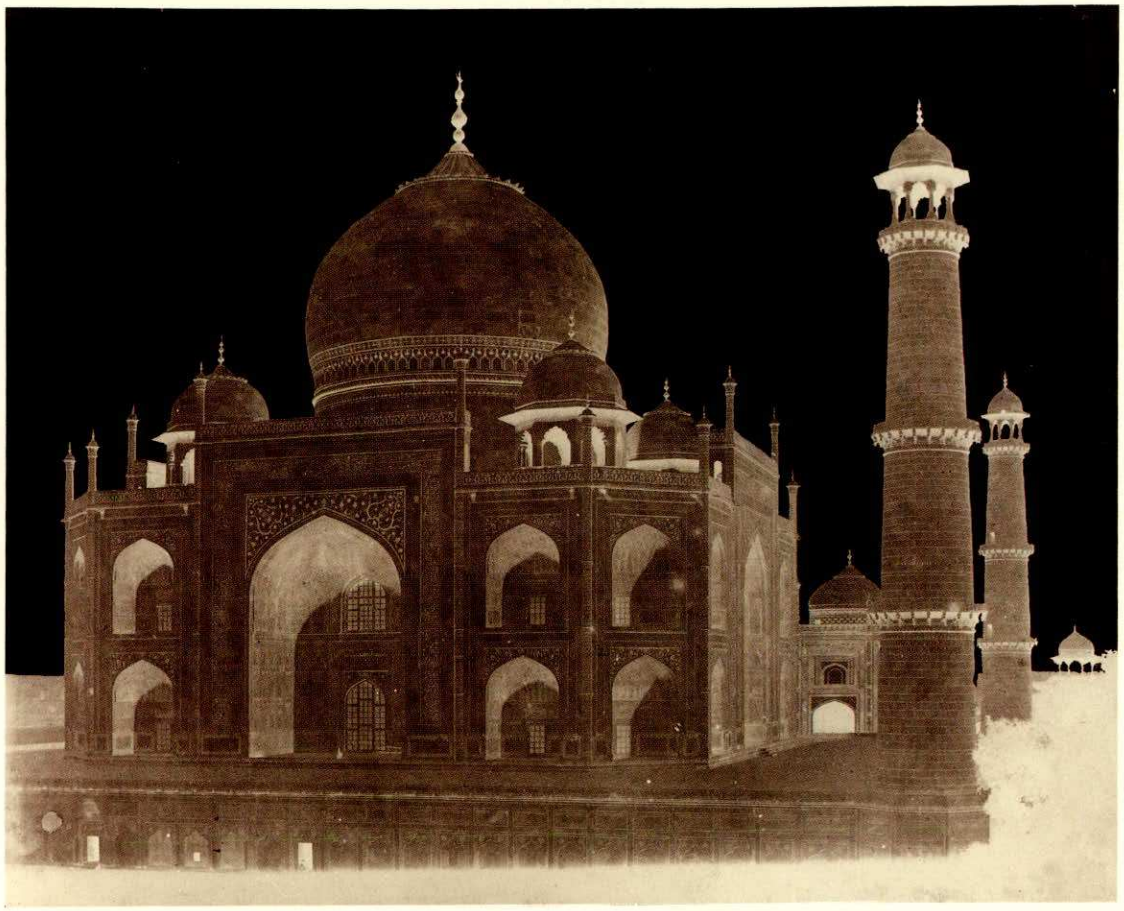
Open interfaces in the banks' dealing rooms and back offices and for third party information providers will enable dealers to buy and sell stock at any time of the day, increasing efficiency and competitiveness. The system is to be implemented in phases with the first phase, to handle straight bonds, due to be completed in early 1991.

In the past year we completed on time and to budget the trade confirmation system, SEQUAL, for the ***International Stock Exchange*** in London.

Logica is developing a replacement share registration system for Lloyds Bank's subsidiary ***Lloyds Registrars*** in a £700,000 contract. The new system is being developed by a 25 strong team based at our newly created investment services division in Bristol.

Lloyds' aim is to have a new registration system that can process business interactively for more than ten

Fenton *Still Life* 1860



Murray *The Taj Mahal* c.1856

million accounts. The system will include company and unit trust registration, the maintenance of a register of shareholders, share transfers updating, distribution of earnings and dividend payments and a number of capital tasks such as rights issues. A flexible means of updating and maintaining records will be provided by the sophisticated database at the heart of the system.

The first sale of the new addition to our retail finance product portfolio, StoreNet/2, was made to ***Auriga AB*** of Sweden, a bureau whose main business is using OCR readers to lift information from credit card transaction slips. The transactions are processed in Auriga's clearing system and forwarded to the card issuers. The company handles 60% of all credit/charge card transactions in the Swedish market.

The StoreNet/2 product, which networks EPOS terminals, will enable Auriga AB to expand its services so that customers will be able to take advantage of the online credit card debiting facilities to increase the efficiency of their businesses.

National Westminster Bank has contracted Logica to assist in the redevelopment of its domestic retail banking operations' central computer systems. In supporting what is becoming a more market oriented operation, the project will improve the efficiency of the bank's primary IT systems and provide the flexibility to respond to technological and business changes.

One of the most complex, long term developments undertaken by the bank, the system will take more than 1000 man years to complete.

A further implementation of a core system, this time for ***ANZ Bank*** in Australia, will enable the bank to introduce sophisticated financial products to meet the needs of the customers of the 1990s. The system, based on IBM mainframe computers and Hogan*** banking systems, will replace ANZ's existing branch accounting system for domestic retail banking.

The entire project - from systems design to installation and conversion - will be managed by Logica and involves a joint team of over 100 staff from ANZ and Logica's offices in Australia and the United States.

Other clients this year include:
American Express·Bank Brussels Lambert·Computercentrum C. v.d. Velden·Commercial Union Assurance Company of Australia Limited· Den Danske Bank·EPSS·First Savings Bank of Sweden· G Bank·Grenswisselkantoren·IDUNA/NOVA-Versicherungen· Istituto Bancario San Paolo Di Torino·LIFFE·Midland Bank·Morgan Guaranty Trust Company of New York·N M Rothschild and Sons Limited·Oslo Stock Exchange·Pengeinstitutternes Betalingssystemer·State Bank of New South Wales·State Bank Victoria·S.W.I.F.T. Service Partners·Toro Assicurazioni.

Central and local government

With a view to providing better value for money to taxpayers, government bodies are investing in computer systems to increase the efficiency and productivity of their operations. In what is an important and growing sector for Logica, we are working on a diverse range of projects - from large administrative to image processing systems - drawing on a variety of skills.

Logica has a long history in the sector stemming from the administrative system in 1970 for the Driver and Vehicle Licensing Centre (DVLC) in Wales, which is still running. We drew on this experience in a similar system for the Hong Kong government in 1974. A further landmark was our work for the UK Registrar of the Public Lending Right, which allows authors to receive royalty payments when their books are used in public libraries. Our feasibility study in the late 1970s was followed by a system to analyse data collected from a sample of libraries.

At the same time we started work for the Australian government, a longstanding client, and the health sector in the UK, which is currently increasing its expenditure on computer systems. More recently we built for the UK Department of National Savings the new ERNIE system, which generates prize winning premium bond numbers and a system to automate the Swedish State Lottery.

A landmark in advanced technology areas was the DHSS demonstrator project which we started in 1984 as part of a consortium led by ICL. In the project, completed this year, emerging computing technologies were demonstrated and evaluated and the potential for delivering decision support systems, based on complex legislation, was shown.

We now have established relationships with a wide range of government bodies in Australia, Belgium, the Netherlands and the UK. In recent years we have carried out projects in the Netherlands for several police departments, ranging from audits on large complex databases to long term assistance for the new police data communications network. The impending Single European Act has already increased the need for new computer systems.

A significant area of future business is likely to be in the provision of large administrative systems. Our expertise in developing such systems, first demonstrated in the DVLC project, was drawn upon in 1987 when we supplied the Department of Economic Development in Northern Ireland with a turnkey management information system. In the past year we started work on a £2.7 million turnkey project to design and build an information system for the Valuation and Lands Office in Belfast.

A development for the UK Government ***Training Agency's*** AI Applications to Learning Initiative enables computer based course material to be produced very much faster than by previous methods. In building the HyperCard† Intelligent Training System (HITS), Logica used innovative techniques to construct tools for preparing and presenting courses.

HITS allows subject specialists and training staff without programming skills to create and deliver material. The system's course compiler allows material in the form of books and lessons to be freely interchanged across the world. The delivery system monitors each student's progress, sets tests and provides feedback. HITS adapts to the teaching needs of its users and allows them to browse through the syllabus material, receive tuition and sit examinations.

In Hong Kong, under contract to Tandem, we developed an external systems interface for the ***Hong Kong Police.***

The Logica interface enables operators of the Hong Kong Police Enhanced Command and Control Computer Systems (ECACCS) to access and switch among the ICL based Vehicle and Drivers Licensing System, the Concurrent based Criminal Record System and the Beeline based Police internal network. Operators can use these three external systems via any ECACCS terminal as if they were operating native terminals.

Over the next few years, many of the UK fire brigades will need to replace their mobilizing systems. To assist them in this, Logica carried out a £200,000 study for the United Kingdom ***Home Office*** to produce model documentation and a series of comprehensive guidance manuals.

Fire brigades use mobilizing systems to accept emergency calls and to deploy the necessary resources to deal with the emergency. Many of these systems are computer controlled and are becoming increasingly complex as they incorporate new technologies. The manual will be used by the fire brigades in specifying new systems, establishing project management procedures and planning the procurement, commissioning and acceptance processes.

Following our extensive experience in secure systems, we have been granted a licence to provide a security evaluation resource by the ***Communications Electronics Security Group (CESG),*** the UK national authority for the certification of computer systems which process classified data. The CESG Licensed Evaluation Facility (CLEF), provided by Logica, is

available to government projects, the computer industry and other clients who want their secure computer products and systems to be evaluated.

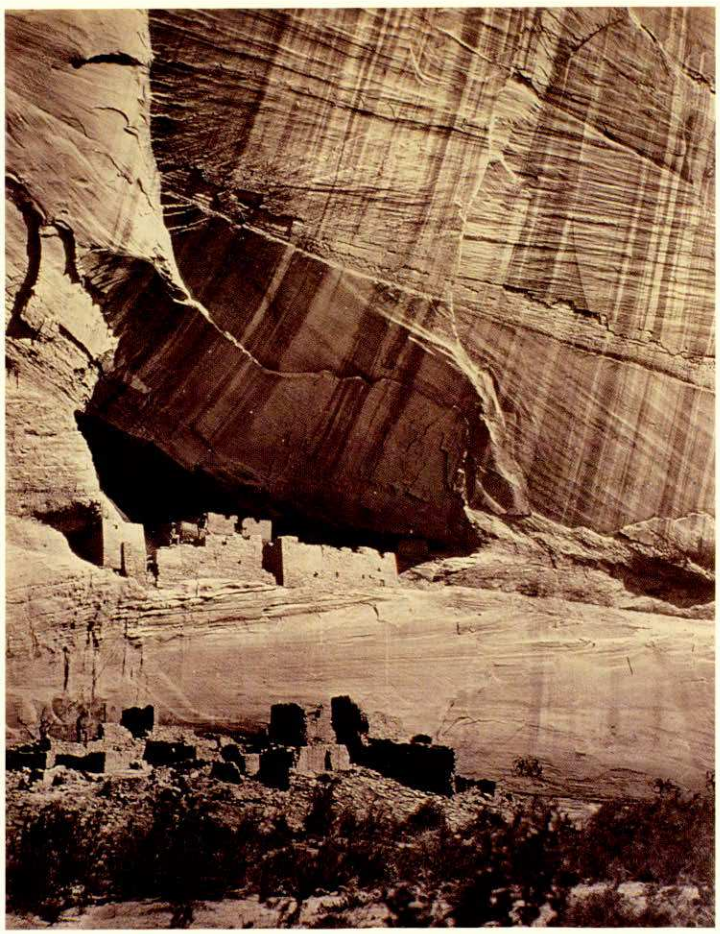
Evaluation is essential for systems which process classified or commercially sensitive data or where there is a need for high levels of trust in correct operation, for example in safety critical systems. In addition to the service provided in these areas, Logica also offers guidance on risk analysis, security requirement definition and addressing security issues of existing systems.

A CLEF evaluation enables vendors to seek CESG certification, endorsing the security features of their products for use in Government.

Logica's dual approach to computer assisted fraud control, front end prevention and back end detection, has already been effectively employed in projects for, among others, the National Crime Authority and the Transport Accident Commission. The South Australian ***State Government Insurance Commission (SGIC)*** is drawing on this experience in a system aimed at controlling fraud in all aspects of insurance.

In the system for the SGIC, fraud profiles and knowledge based systems provide front end processing to aid in the detection of potentially fraudulent claims prior to payout and in avoiding bad risks in the first place. Claims selected by the front end system are subsequently investigated by means of a cross reference analysis system which stands apart from any corporate systems. In addition, a case management subsystem assists the investigators and legal counsel in preparing and carrying out prosecutions. An inbuilt high degree of security and access control prevents internal corruption.

Other clients this year include:
Australia: Department of Employment, Education and Training, Government Publishing Service, NSW Attorney General's Department, NSW Department of Industrial Relations and Employment, Valuation Office·Belgian Ministry of Public Works·Dutch Ministry of Education·European Community: Commission of the European Communities (CEC), Court of Justice, Court of Auditors, Secretariat General of the CEC·Hong Kong Urban Council·New Zealand Treasury·Swedish State Lottery·UK: British Council, Cabinet Office, Central Computing and Telecommunications Agency, Department of the Environment, Department of Social Security, Department of Trade and Industry, Foreign and Commonwealth Office, GCHQ, Ministry of Agriculture, Fisheries and Food.



O'Sullivan ***The Ancient Ruins of the Cañon de Chelle, New Mexico*** 1873

Space

During the year we won significant new contracts and a number of long term projects came to fruition. Space business increased in Belgium and Italy and in the US we won a contract for Intelsat to study operations planning software. Our long running association with the European Space Agency (ESA) continued with, among others, a contract to provide software for a pilot Europe wide information network for the space science community.

Our first project in the space sector came in 1970 when, in collaboration with SESA, we were commissioned by the European Space Research Organization (later to become the European Space Agency) to recommend a ground system for a satellite to communicate with aircraft. An international, collaborative undertaking using advanced technologies, this project set the tone for much of the work we have since carried out in the sector. A major milestone in the intervening years was the Giotto project, in which we developed ground control software for the satellite which intercepted Halley's comet in 1986. Looking to the future, onboard software for the Columbus project will play a major part in the international space station to be launched in the late 1990s.

Towards the end of the last financial year, our work for the European Space Operations Centre (ESOC), a longstanding client, focused on preparation for the launch of Hipparcos. In consortium with Grupo Mecanica del Vuelo of Madrid we also won a five year contract to develop flight dynamics software for the Orbit Attitude Division of ESOC. We have been involved in the development of such software, a highly specialized area, since 1979. Our position as specialists is now confirmed.

Our involvement with the European Space Research and Technology Centre has continued at a significant level throughout the year. We have carried out work in a variety of areas, including mathematical modelling, spacecraft dynamic interface simulation, rendezvous and docking simulation, spacecraft data handling requirements and communications standardization. We are also carrying out space related work in the telecommunications and defence sectors. For the UK Ministry of Defence, a major area of activity is the procurement and implementation of ground terminals for use with the Skynet-4 satellite launched in October 1989. Towards the end of the year, we were awarded a contract to construct and implement system level tests for a complete ground communications network in Western Europe.

Another growth area is remote sensing, the need for which has never been greater than in the environmentally conscious 1990s. The UK Earth Observation Data Centre, featured below, will collect data using the ERS-1 satellite.

Steichen ***Balzac, the Open Sky, 11 pm*** 1908

At a time when international collaboration on multi disciplinary studies of the earth and space is increasingly common, Logica is to provide the software for a Europe wide science information network. The software will be part of the first implementation of the ***European Space Agency's (ESA)*** European Space Information System (ESIS) which will connect the local communications networks and space databases of six major European research centres. Future versions of ESIS will connect to an even wider range of centres.

In addition to providing access to the archives, electronic mail, bulletin boards, newsletters and directory services will enable users to obtain up to date information on science missions across the world and send correspondence electronically to a wide network of other users. The system will facilitate research, save duplication of effort and improve communication among the international space community.

ESIS represents a first step towards enabling scientists to access remote databases and to communicate with their colleagues as easily as if they were in the same building. Future developments will support such scientists far into the next century.

During the year we worked on all of the ESA spacecraft programmes; a number of these projects drew on Logica staff throughout Europe.

For the ***European Space Operations Centre*** in Darmstadt, Logica teams have been involved in the design and implementation of major systems for the control of the Hipparcos, Eureca and Infra-red Space Observatory missions. A complementary activity has been the development by Logica of the Spacecraft Control and Operations System (SCOS) kernel, which provides services common to all space missions. A number of satellites, which will be controlled by ESA's new Distributed Mission Support System for launching and controlling spacecraft, will benefit from SCOS - in particular the Eureca and ERS-1 satellites.

Staff from our Italian office undertook two studies to ensure the appropriate development and implementation of the SCOS kernel. The first study looked at possible additional functions, including telecommand and enhanced telemetry management, and how they might be distributed between the Digital VAX††† host computer and the Sun workstations. The second study evaluated the possibility of inserting a subsystem into the kernel to interface between the earth stations and the control centre.

In a project for ***ESA***, staff from our Belgian office were selected to design a data preservation system for acquiring very high speed data. We are evaluating the available and planned products of tape recorder manufacturers in Europe and North America and are recommending a recorder concept capable of dealing with the enormous volume of data that future missions, such as Columbus, will generate.

The United Kingdom Earth Observation Data Centre (EODC) will make an important contribution to the study of the global environment when it is commissioned in 1991. As a member of a consortium, Logica will carry out facilities development for the centre under the direction of the leading development contractor ***Software Sciences.***

The data centre, to be located at Farnborough, will process, archive and distribute data from Europe's remote sensing satellite, ERS-1, due to be launched in 1990. Areas to be covered include land use management, geological surveys and pollution monitoring.

Logica is to implement the software for a number of different elements of the data centre. These include: the radar altimeter to provide data on ice, wind and ocean currents; the wind scatterometer to help monitor global wind speeds; the interactive image processing facility to give access to and manipulate images produced from satellite data; and communications systems to ensure the widest possible access and the most efficient service to all users.

It is anticipated that during the 1990s the EODC will handle data from the Polar Platform. As subcontractor to ***British Aerospace***, Logica is to define the onboard software system for the Polar Platform; in a parallel contract we led a team of UK and Norwegian companies to define the ground segment requirements. An important aspect of this study has been the initiation of discussions with TRW on requirements for the nature of the interface between the NASA and ESA Polar Platform ground segments.

Other clients this year include:
Aeritalia·Aerospatiale·BHP Aerospace and Electronics Pty Limited·British National Space Centre·Dornier GmbH·Eutelsat·Marconi Space Systems·Matra Espace·Max-Planck-Institut·MBB-ERNO·Royal Aerospace Establishment·Science and Engineering Research Council·Selenia Spazio·Telespazio·Trasys

Energy and utilities

Logica has strengthened its position in the past year as a major provider of operations and information management systems to the water, oil, gas and electricity industries. We have won a number of significant contracts which will continue to play a large part in helping to reduce costs and increase efficiency. Our relationships with two major UK water authorities - Anglian and Yorkshire - have been consolidated with a series of new contracts in preparation for privatization. The impending privatization of the UK electricity industry has also provided us with important opportunities to further our experience in this sector. In gas, we were awarded a £5 million control systems contract by British Gas for four of its twelve regions. We are working in the Netherlands on the next generation of the Dutch national gas pipeline management system for Nederlandse Gasunie.

The predecessors to these systems, also built with Logica support, played a large part in establishing our position in the sector. The gas management system for British Gas in the early 1970's, Logica's first large fixed price contract, was followed by a later generation system for Gasunie in 1981. This work, based on Digital VAX equipment, continued the development of our MASTER CONTROL™ supervisory control and data acquisition products. MASTER CONTROL software has been developed over the years to fulfil the need for integrated operations management systems across the energy and utilities sector and has enabled us to provide competitive systems solutions to a wide range of clients.

The water sector is also an area that has seen significant growth in recent years. Our relationship with Anglian Water, stemming from our first turnkey contract in 1983, has developed to the extent that we are now involved in the supply of most of its operations systems. Our work for Anglian has formed the basis of similar relationships with North West Water and Yorkshire Water, to whom we are supplying the latest MASTER CONTROL technology for integrated operations management.

In oil, work has been carried out over the years for Britain's North Sea offshore operations, largely from our Aberdeen office. This has ranged from production management and reporting systems to the personnel tracking system which has evolved from work with Conoco and Total Oil Marine.

With our experience of developing some of the most advanced operations management systems in the world, and of providing consultancy to help energy and utilities companies make efficient use of information technology, we expect to increase our international business in these sectors.

The large contract for ***British Gas*** involves supplying operations management systems to control the gas supply networks of four of its twelve regions. These regions control a total network of 50,000 miles of gas pipeline, supplying over five million customers in a total area of 20,900 square miles. Assisted by these systems, economical and continuous gas supplies to customers, even under extreme weather conditions, are assured.

The systems will be based on our MASTER CONTROL software which is already used by British Gas to control the National Gas Transmission System. Gathering information from a range of regional telemetry equipment, the systems will keep British Gas staff informed of the current state of the gas supply networks, including pressures, flow rates, temperatures and equipment states. Control facilities will enable valves and regulators to be adjusted as required.

In order to match varying regional demands on the national network, operators must ensure appropriate levels of gas are stored in holder stations and the pipeline network itself. Analysis of both up to date information and historic data on similar scenarios will assist such operator decisions.

We have also started work on the next generation of the Dutch national gas pipeline management system for ***Nederlandse Gasunie***. The new system integrates the functions of four major systems previously delivered by Logica, and will provide new features and significantly greater capacity and performance to meet Gasunie's future needs. The fixed price software development project is scheduled to last two and a half years and the team, comprising both Logica and Gasunie staff, will peak at around 60 people.

A Data Collection System (DCS) supplied by Logica to ***Mobil Oil Australia*** has upgraded refinery operations monitoring and improved access to production data by means of local area networks. Important refinery data is now readily available to staff and to Mobil's production optimization software. This will enable improvements in productivity to continue well into the next decade.

The DCS, which forms part of Mobil Oil Australia's Integrated Refinery Information System, integrates the otherwise incompatible components of Mobil's existing management systems. These include the mainframe at its Melbourne headquarters, the refinery monitoring and laboratory facilities and the refinery PCs used by technical staff.

Logica is to develop a computerized river flow forecasting system for the Yorkshire region of the ***National Rivers Authority*** in a contract worth over

Evans *'A Sea of Steps', Wells Cathedral: Stairs to the Chapter House and Bridge to Vicar's Close* 1903

£250,000. It will be used to assist in environmental concerns such as flood warning, river control, drought management and pollution control throughout the Yorkshire region.

When the system is delivered in 1990, it will be the most advanced operational river flow forecasting system in the UK, and will put the National Rivers Authority at the forefront in the use of computerized river basin management procedures.

Logica carried out a joint study with ***Anglian Water*** for a region wide digital mapping system. The system will have the ability to maintain up to date computerized records of property and plant - buildings, water towers, pipes, pumping stations, valves and so on - in an exact and easily comprehensible form.

The system is capable of replacing paper based records which are used throughout the region. Logica has assisted Anglian Water in the evaluation of an existing pilot digital mapping system and has made recommendations for the implementation of a new system. This will enable operators to access data on the nature and history of plant as well as its location.

In a contract for ***Eastern Electricity Board (EEB)*** we supplied a pilot telemetry control system. The system controls a section of the electricity supply network at the Distribution Technology Park in Colchester, a new Electricity Supply Industry venture led by the EEB. Based on our MASTER CONTROL systems kernel, the system provides for the remote monitoring and control of equipment installed on the 11kv rural electricity distribution network and will enable faster reporting of fault locations and rerouting of the supply to avoid them.

Other clients this year include:
BP·British Coal·CEGB·Colne Valley Water Company·Dutch Cooperative of Energy Production Companies·Electricity Council·Halliburton Geo Consultants Limited·Heerema·Jason Geo Systems·KSEPL·North West Water·Shell·Southern Water

Manufacturing

In the pursuit of greater quality, higher productivity and rationalized product development programmes, companies in the manufacturing industry are making substantial investments in new computer systems. Most manufacturing companies have systems to fulfil some or all of the functions in the lifecycle, from design through parts ordering and stock control to production. The recent challenge has been to integrate these systems successfully to provide ever more efficient management information and production tools.

With plans for change and progress in business inextricably linked to IT strategy, organizations are seeking to build long term relationships with companies like Logica who can provide a complete consultancy and systems implementation service. The Ford Motor Company, for example, recognizing our increasing understanding of its business and the support we have provided over the last four years, has nominated us as its strategic partner in systems development.

Logica has established itself in the manufacturing sector with a number of key projects. Our advanced computer integrated manufacturing system for Dunlop's automated rubber mixing mill in Manchester is one of the most sophisticated manufacturing facilities of its type in Europe. The real time computer system to monitor and control the flow of components through Rank Xerox's photocopier assembly plant in Venray, the Netherlands, has greatly reduced average component storage time. Our quality surveillance system for Jaguar Cars has played a valuable part in assuring the quality of the Jaguar XJ6. We continue to provide a range of systems to the manufacturing industry internationally.

Logica has been working for the ***Ford Motor Company*** since 1986 on projects ranging from a highly complex new product launch timing system, ELECT, to an airline reservation system for Fordair, Ford's own airline. Logica acts as an extension to Ford's European Systems Office and not only carries out systems design and integration but also helps to identify Ford's requirements.

Working in joint Logica/Ford project teams, there are currently over 70 Logica staff working in Ford's offices in Basildon, England and Cologne, West Germany. The first phase of the ELECT system, to coordinate the procurement and manufacture of parts for new model launches and engineering changes across Europe, is commencing implementation and we are also involved in phase two, which covers production facilities and tooling.

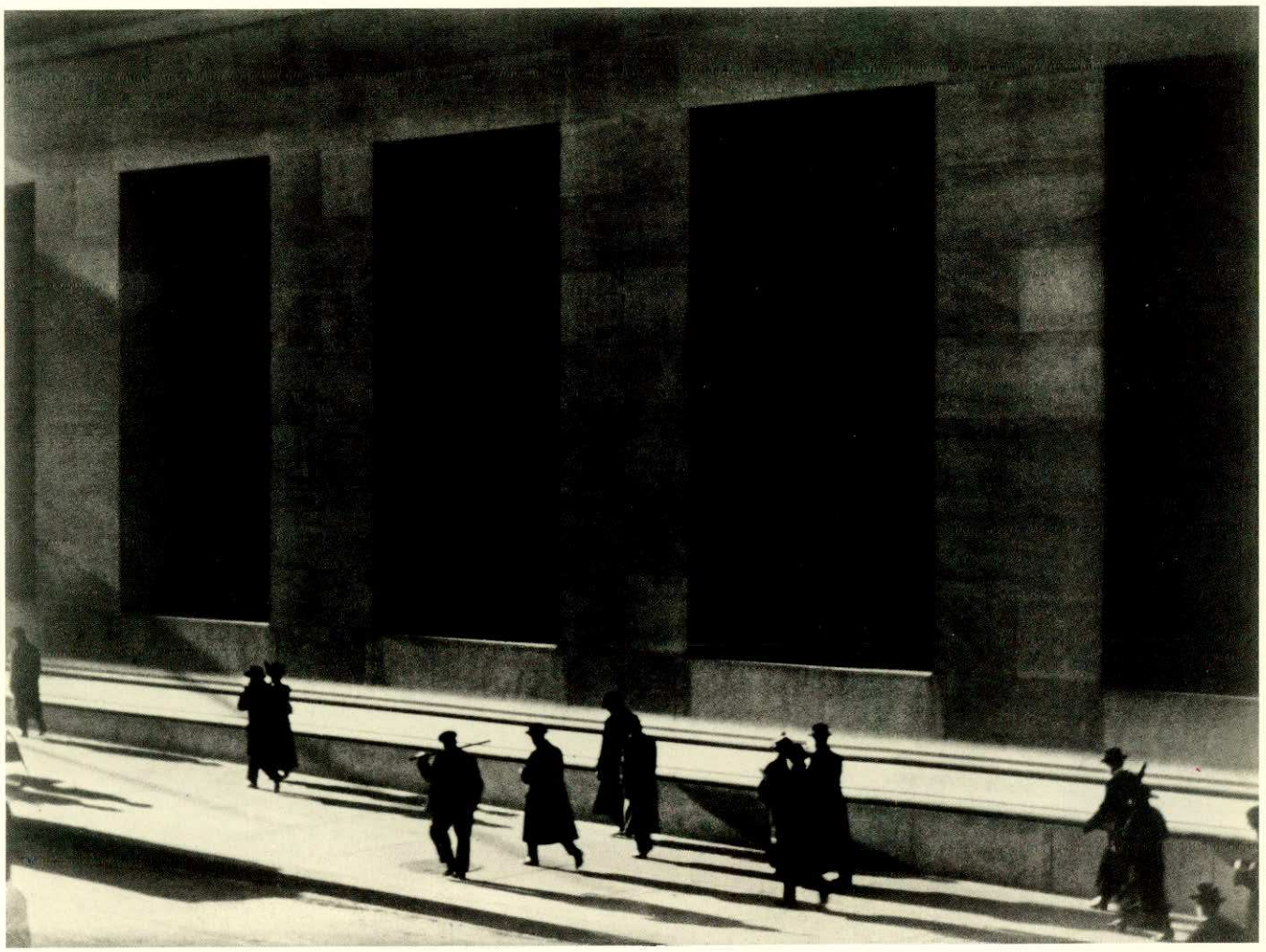
Further contracts won in the past year include joint project work with Ford on the reimplementation and further development of Ford's European vehicle accounting system and the extension of a European purchasing system to support service parts.

Given the position of the Netherlands as the world's biggest exporter of flowers, the role of the Dutch flower auction ***Verenigde Bloemenveilingen Aalsmeer (VBA)*** is an important one. In a project for VBA, the supply, auction and post sale distribution of flowers is to be automated.

The system consists of three layers dealing with auctioning, logistics, and administration and billing. Logica's role in the project is to develop all the software for the logistics layer, which controls the distribution of purchased flower lots to the buyers' location in the VBA building. The distribution area to be managed by the system is the size of 75 soccer fields.

A specific requirement of the logistics layer is to manage the throughput of sale transactions, which currently averages 5000 per hour, rising to 6500 per hour in 1996. Because of pressure on the client, the Logica part of the system was built within very tight timescales, while complying with the specifications and quality standards.

Rodchenko *The Critic Osip Brik* 1924



Strand *Wall Street, New York* 1915

Wiggins Teape's Aberdeen paper mill will soon have one of the most advanced computer integrated paper manufacturing and stock control systems in Europe.

Logica is developing software to integrate sales order processing, capacity planning and work tracking systems with packages monitoring stock and material usage.

Our experience in computer integrated manufacturing (CIM) is also being drawn upon by high technology machining systems manufacturers ***Pegard Productics SA*** in Belgium. Logica is providing Pegard with project management and development support for its new software product PSM (Pegard System Management). PSM pilots production on a flexible machining line and supports production scheduling, control and monitoring and automatic part and tool flow. The first installation of PSM will be at the Caterpillar plant in Belgium.

The latest version of the McCormack and Dodge package for management control, distributed by Logica General Systems in Italy, has been sold to Italian fashion company the ***GFT Group.*** The system will enable GFT, one of the world's leading fashion houses, to analyse its accounting data taking important external factors, like the time of year and the type of collection, into consideration. Its integrated accounting system will facilitate brand management in a business where product ranges change very frequently.

Other clients this year include:
Air Products·AKZO Nederland·Alcan Australia Limited·Aldel·BASF·Bloxwich Engineering Limited·BOC Group·Caterpillar·Du Pont·Falck·Fiat Group·Gist-brocades·Kaufring·Nestlé Australia·NPBI·Pirelli·Scott·Solvay·Technical and Procurement Services Limited·Van Gils Intercontinental·Wellcome

Transport

At a time when our existing transport infrastructures are pushed to the limit, transport authorities are relying on computer systems to help improve safety and increase the throughput of traffic. With transport issues high on the political agenda, Logica systems – such as those to alleviate traffic congestion – should have a direct impact on the travelling public.

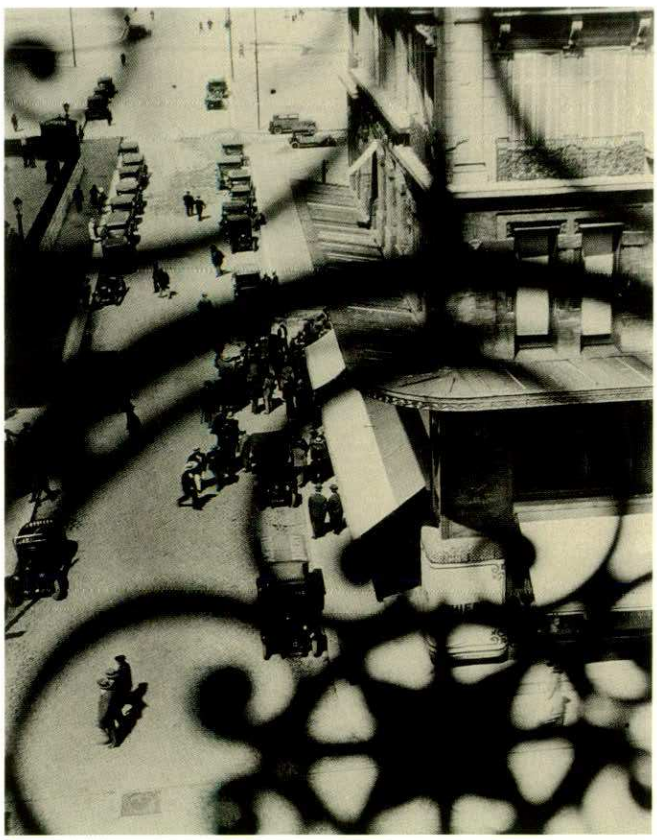
Logica's history in the transport sector has been a long and varied one. Reservations systems have spanned the 20 years of our operations. Since the project in 1969 to design and build the European end of a US hotel reservations system, we have developed, among others, the general gateway system for the Scandinavian Multi Access Systems AB (SMART) distribution network, to handle airline bookings, hotel reservations, car hire and rail and ferry bookings, from the majority of Scandinavian travel agents.

In urban railways a significant client has been London Underground Limited. In 1988, after nine years' involvement, the implementation of our central systems software and special station control units for the London Underground ticketing system began under a subcontract to Westinghouse Cubic Limited. Our part in the pilot electronic road pricing scheme in 1983 in Hong Kong was our first experience of systems designed to alleviate traffic congestion. A significant future opportunity in this area follows the decision by the UK Department of Trade and Industry to negotiate with GEC on the terms of a licence to install and operate an Autoguide electronic route guidance system in London. Logica worked closely with GEC during the preparation of the proposal and is well placed to receive sizeable orders for work on this system.

As for the present, the airline industry, aiming to provide a more aggressive travel and transportation service, holds perhaps the greatest potential for Logica. Our work covers the spectrum from reservation and travel systems, like that for the Galileo consortium, to projects, like that for the UK Civil Aviation Authority, to improve the effectiveness of air traffic control computer systems.

A Logica project will assist the UK ***Civil Aviation Authority (CAA)*** with its proposed Central Control Function (CCF), designed to increase the aircraft handling capacity of the London Terminal Control Area.

Logica is analysing and documenting the work to be carried out by the air traffic controllers within CCF and will specify data transfer requirements for CCF, concentrating on the data and voice communications systems necessary to support controllers and other users.



Moholy-Nagy ***Marseilles*** 1929

Improving the usability and effectiveness of the CAA's air traffic control computer systems is the aim of a further study as part of a planned upgrade to operations room facilities at the CAA's oceanic air traffic control centre in Prestwick, Scotland.

The team of human computer interaction (HCI) specialists from Logica is working closely with CAA staff in Prestwick, interviewing operators and watching the way they currently work. Using its HCI analysis and design methodology, and assisted by a series of prototype systems, Logica will identify user requirements for future implementation.

Logica is providing project management and technical support services to ***Galileo***, a business venture formed in 1987 by Aer Lingus, Alitalia, Austrian Airlines, British Airways, Covia (a subsidiary of United Airlines), KLM Royal Dutch Airlines, Olympic Airways, Sabena Belgian World Airlines, Swissair and TAP Air Portugal. Galileo's new generation of computerized reservation and information systems will provide opportunities for travel agents to improve turnover, productivity, customer service and sales management.

The system will enable agents to call up availability and make and confirm bookings through airlines,

car hire companies, hotel groups and other companies participating in the system. The system ensures this is carried out in a neutral manner, geared always to the needs of the customer.

Logica is involved in strategic and architectural planning, project management, software engineering and quality assurance. We are also assisting in implementing a major data communications network, and in supporting the initial migration of approximately 50,000 workstations to this new network.

The greater efficiency brought by Logica systems to the port operations at Bremen and Bremerhaven has improved the competitive position of ***Bremer Lagerhaus-Gesellschaft (BLG),*** the port's operating company. Having completed the first phase of the Van Carrier Optimizing System (VCOS), to control the receipt, storage and delivery of containers arriving at the landside of the port, Logica is now analysing the requirements for the waterside phase.

By adding waterside to landside aspects, BLG will be able to automate its entire container operations, increasing efficiency and speed of customer service. VCOS will issue the quayside cranes with instructions for loading and unloading the ships. The system will make sure the containers are loaded in such a way as to make them easily accessible at subsequent ports of call.

Other clients this year include:
British Airways·DSM Transport Company·Dutch Ministry of Transport·ECT·EMO·Hollandse Signaalapparaten BV·INTIS·Schiphol Airport·Nedlloyd·SMART

Cartier-Bresson ***On the Banks of the Marne*** 1938

Computing and electronics

Logica's relationship with the major computer manufacturers is complex and multifaceted. We work together as partners on joint bids, act as main contractor or subcontractor on systems integration projects, and advise on the selection of hardware in our role as consultants.

However, a substantial and growing area of our business is that in which we undertake development on behalf of computer manufacturers, building systems or applications software to form part of their product ranges. With the general recognition that growth in the information technology industry will come increasingly from the supply of applications solutions, all the principal vendors are investing to extend software product portfolios.

Logica has been working for the industry of which it is part, supplying skills and expertise and accepting responsibility for total product development, for 15 years or so. We are now able to offer not only a wide range of applications skills across all industry sectors, but also considerable experience in the design, development and support of product quality software. We have established relationships on this basis with major manufacturers such as Digital, IBM, Olivetti, Tandem and Xerox in Europe, the US and Australia. Examples of our work are detailed below.

A new agreement between Logica's US subsidiary and Tandem typifies industry recognition of the importance of systems integration. We are responsible for software development and project management of systems integration projects in financial services, telecommunications and other industries.

In the US we continued development for ***IBM*** of the System/88® International Funds Transfer System (IFTS) to enhance functionality and provide FEDWIRE support capabilities. IFTS represents a significant development for IBM, combining fault tolerant System/88 hardware with funds transfer software for banking and communications applications.

IFTS has already been installed at several customer and IBM internal locations. It provides message switching interfaces to CHIPS, S.W.I.F.T., FEDWIRE and telex networks. Further developments to IFTS are currently being undertaken. Software engineering tools and methods are used throughout the project life cycle to increase efficiency.

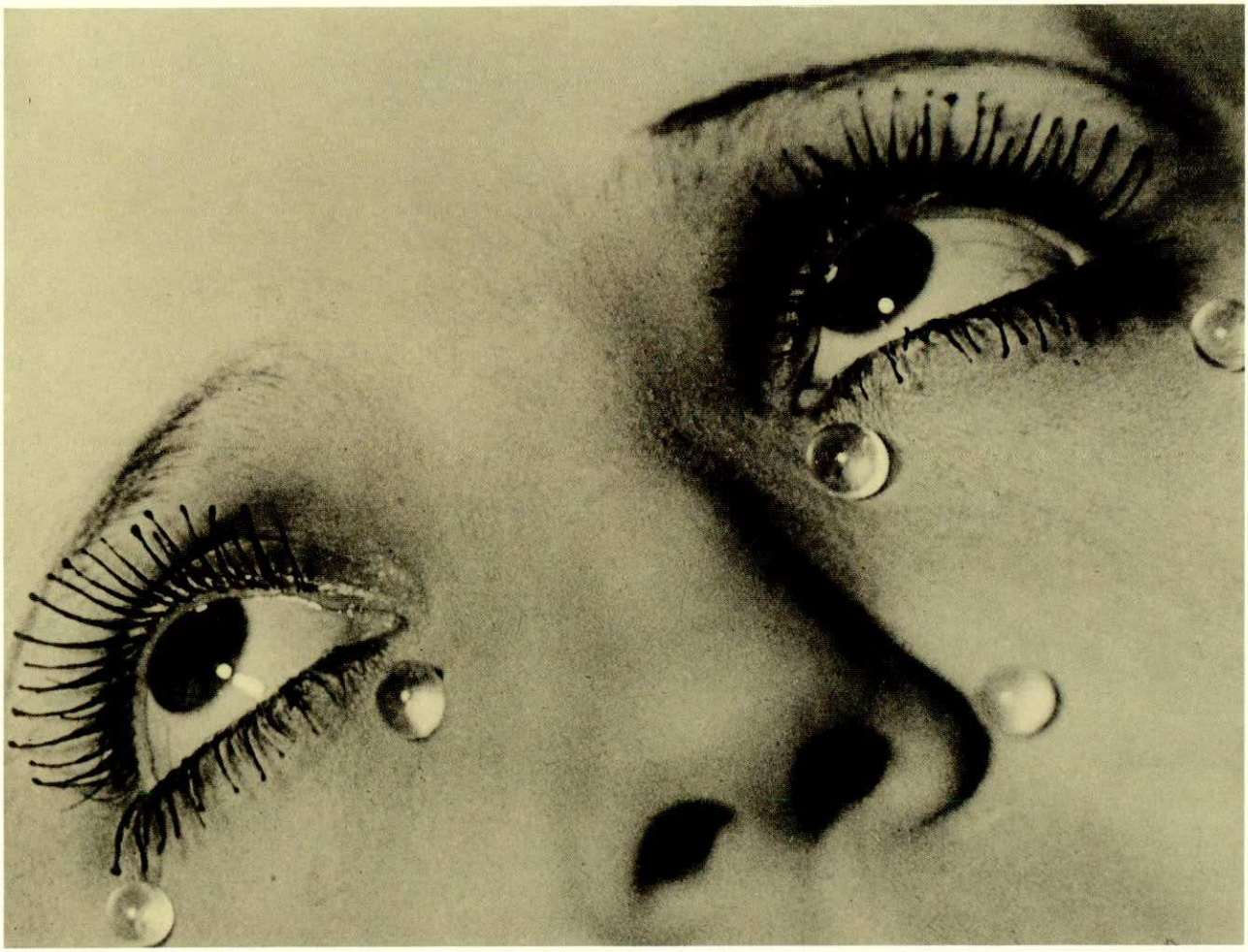
Developed by Logica in the UK, IBM's CICS OS/2 product enables users to run applications developed for IBM's mainframe Customer Information Control System (CICS) on IBM PS/2® and PC products. Logica took the existing prototype CICS Application Programming Interface and designed and implemented a number of enhancements to support communication between local and host machines.

In Australia a team of Logica staff worked in conjunction with the IBM Australian Programming Centre on a new addition to the IBM NetView® family.

Projects being carried out by Logica with IBM in Australia involve development of both host and personal computer products. These products form a cooperative processing system designed to support personal computers and PS/2 computers in a corporate network. The work includes all aspects of software development from feasibility analysis, design, coding, testing and preparation of manuals through to production.

In Denmark we assisted IBM Denmark to develop a spool system (Print Service Facility-PSF) for the IBM-4700 financial controllers. With an extensive range of features aiding the manipulation of print data in a mixed environment of workstations, the IBM PSF product will support a number of IBM-4700 printers, as well as printers connected to IBM PS/2s.

Kertész *Chez Mondrian* 1926



Man Ray *(Larmes) Glass Tears* c.1930-33

In an agreement to develop ***Tandem's*** X.400 product, we are porting CPLEX.400, our message handling software, to Tandem's GUARDIAN□□ operating system environment. The new product will be marketed to telecommunications, finance, manufacturing and other industries.

Our expertise in X.400, combined with Tandem's fault tolerant modularly expandable system environment, will enable Tandem to offer a product particularly well suited to a market where high availability message processing in a multi vendor environment is a key business requirement.

In a project for ***Rank Xerox (UK) Limited*** we have developed facilities allowing Digital VAX minicomputers to act as file servers for the Xerox Network Services (XNS) community. The project, which has enabled Rank Xerox to extend the power of its distributed office systems, means that the wide range of high capacity storage devices available in the VAX architecture can be exploited for XNS file and document storage. Existing installations with VAX and MicroVAX hardware will be able to transform their systems into XNS file servers for minimal hardware investment.

We also helped Rank Xerox in the development of a Committee Management System (CMS) to assist in the administration of local government committee processes. Comprising Xerox workstations, file server and network services and a Digital MicroVAX running a relational database, CMS allows the efficient storage and retrieval of a wide range of text and information. Details on people, the attendance and scheduling of committee meetings, committee hierarchies and document approval and forwarding procedures can be maintained on the system.

In Italy we are working for ***Digital*** on a project to increase the efficiency of equipment repairs and servicing throughout Europe. In the Reservation of Material project, Logica is developing a subsystem of Digital's European Branch Stock Control system, used in all of Digital's European branches.

The Logica system will support the servicing and repair of equipment from the point that the client call is logged to when the problem is solved. It will allocate replacement parts or field service kits for a repair, maintain the stock inventory and print out reports and delivery notes.

Other clients this year include:
Acorn Computers Limited·Cambridge Instruments Limited·Case·Fuji·Hewlett Packard·ICL Network Systems·NCR·Olivetti·Philips Business Systems·Schlumberger·Siemens·Unisys

Broadcasting and media

With the greater competition brought by widespread deregulation in the broadcasting industry, it is becoming essential for broadcasters to offer high quality services at the lowest possible cost. Logica has launched two new broadcasting automation products - PROGRAMME 6000™ and PLAYOUT 8000™ - to enable broadcasters to increase efficiency and make cost savings. Details of the first installations are given below.

The use of computers in broadcasting has been a Logica specialization since our first project for the BBC to provide up to the minute on screen results for the 1974 general election in Britain. We have been involved with the BBC in every general election since then, providing assistance with the graphic presentation of results. Also aimed at the world of television graphics is our most successful broadcasting product to date, GALLERY 2000™. One of the first commercial systems to use optical disk storage, GALLERY 2000 was sold last year to TVE in Madrid, WDR in Cologne, British Satellite Broadcasting, Scottish TV and Thames TV.

The growth of satellite television is providing Logica with new opportunities in the evaluation of receiver supply and demand, alternative methods of satellite television reception (cable, SMATV) and the different coding, encryption and subscription management systems. Examples of our work in this area are detailed below.

A Logica system will increase the flexibility and cost effectiveness of monitoring and controlling the UK ***Independent Broadcasting Authority's (IBA)*** transmitter network. Replacement computer systems for the IBA's Regional Operations Centres (ROCs) will enable supervisory staff to have fast access to data on a wide range of transmitter functions.

At the heart of the ROC systems is our MASTER CONTROL supervisory control and data acquisition software which has a long history of success in controlling industrial systems. As part of the project nearly 100 telemetry outstations, linking into the ROCs via the public switched telephone network, are being installed at relay stations throughout the UK. The ROCs will also interface to existing telemetry and monitoring systems at the high power transmitting stations.

S4C, the fourth television channel in Wales, was the first broadcaster to buy our programme planning and scheduling system PROGRAMME 6000. By covering the complete process, from programme acquisition or commissioning to the preparation of a detailed transmission schedule, PROGRAMME 6000 reduces data input time, increases availability of information and improves staff coordination.

PROGRAMME 6000 allows a database of comprehensive programme information to be built up, including details of slot and actual times, programme types and costs. The system will also generate automatically the pattern of commercial breaks.

The planning process at S4C is now a matter of building up and refining a schedule, from the first quarterly plans through more detailed weekly and daily schedules, to accurate timings of events. A finalized schedule can then be passed on to a transmission automation system, like Logica's PLAYOUT 8000, also launched last year.

The first installation of the PLAYOUT 8000 system, which links switchers, robotic tape libraries and stills stores under a single, simple point of control, will be at ***HTV*** in Wales.

BBC Enterprises drew upon Logica's knowledge of satellite broadcasting technology and market growth in a study to recommend the optimum mix of coding and encryption standards for the planned BBC service to be transmitted via the Olympus satellite.

The choice of transmission standards determines which of the satellite receivers pointing at the 19 degrees west orbital position will be able to receive BBC services. Logica estimated the future number of such receivers in Europe by examining broadcasters' service plans and manufacturers' equipment supply criteria. The availability and security of the main coding and encryption standards were also reviewed in relation to the specific business needs of the BBC.

Logica made firm recommendations for the transmission standards to be adopted and forecast the proportion of receivers using this standard that could be attracted by the BBC service.

The "Satellite Television Receivers - The European Market" report, based on an international survey of manufacturers and distributers, forecast receiver take up in all European countries. While Logica's medium and long term forecasts for UK take up were highly favourable, the 1989 forecast was far more conservative than other industry estimates. This caution has since been fully vindicated by actual market take up.

Other clients this year include:
Audits of Great Britain Limited·Axel Springer Verlag AG·BBC TV·British Telecom, Visual Systems and Services·Direct Broadcasting Satellite Systems·Lloyd's of London Press·RAI·Reuters·Swiss Teletext Corporation·TV2 Denmark·TVS

Brandt *Parlourmaid and Under-parlourmaid ready to serve Dinner* 1932-35

Telecommunications and post

As telecommunications companies respond to the opportunities presented by deregulation, expand their range of services and increase their worldwide presence, they look to international software companies like Logica to help them develop new services and to supply efficient business support systems. Logica's position around the world has been strengthened by the additional telecommunications expertise and products found in the now fully merged North American operations, Logica Data Architects. We are currently carrying out telecommunications projects in 11 countries.

Over the years Logica has established strong relationships with PTTs and telecommunications manufacturers. In 1975 we carried out a study for the Australian Post Office of the present and future demand for data communications in Australia. The study commissioned by the Eurodata Foundation in 1978 gave forecasts of data communications requirements in 17 European countries. In 1984 we assisted the French manufacturer, Télic Alcatel, one of our existing clients, to develop a new range of PABXs. For another current client, the Dutch PTT, we provided technical consultancy and project management support in the development of an integrated telephone customer information system.

Our work with British Telecom to provide the world's largest customer services system has been a further landmark for us, leading to contracts for similar systems such as that for the States of Jersey Telecommunications Board. Our command and ranging system for Eutelsat, which we started in 1987, will make a major contribution to satellite communications when the satellite is launched.

A Logica developed system, based on our CPLEX.400 product, now forms the basis of a ***Dutch PTT*** service to enable the quick and efficient exchange of customs declarations between import companies and the tax authorities. Following on from this original contract, Logica has developed a parallel system which will enable the Dutch PTT to provide a message transfer service to the business world at large.

To extend the availability, and therefore the profitability, of these networks, and to provide similar, private services to other groups of users, Logica is now carrying out enhancements to the two systems. These include additional interfaces based on a range of proprietary protocols and accounting and security facilities. In addition to the dedicated services for their target groups, the resulting systems provide gateways into the Dutch PTT X.400 network and, by extension, the world X.400 network.

Computerized customer administration and billing systems is an area where Logica has won significant contracts. Improved customer services, efficiency and control will follow a £1 million project for the ***States of Jersey Telecommunications Board.*** The new system, which will cover all land and mobile services, embraces sales and work order processing, billing and payment processing, costing and credit control, fault reporting and directory production.

A key feature of the system is an on line enquiry facility which will give administration staff and management instant access to all details relating to a customer's account. Given the number of medium sized telecommunications companies now in operation, potential for reselling the system is good.

Logica has strengthened its expertise in mobile telephony support, gained through projects like the billing and administration system for Racal Vodafone, in a system supporting the next generation of technology. The new CT2 technology is being used by ***Ferranti Creditphone Limited*** in the Zonephone service, one of the world's first digital cordless telephone services. Using Zonephone handsets which can communicate with basestations connected to the public telephone network, the service provides a high quality and cheap new service to complement the public payphone.

The customer administration, billing and sales ledger system, developed by Logica, is now in place ready for the launch of the Zonephone service in Autumn 1989. The use of an up to date flexible architecture will enable the system to expand with the take up of the service. Ferranti is selling the software as part of a turnkey CT2 system worldwide.

In Europe, we are drawing upon our experience in the emerging technology of digital signalling for mobile radios to ensure the smooth running of the planned European digital cellular radio network. In a project for the Groupe Spéciale Mobile (GSM) consortium of European PTTs and cellular operators, Logica is working with electronics test equipment manufacturer ***Rohde and Schwarz*** on an approval system. Our software simulates, in a test environment, the network signalling under changing environmental conditions. The system will protect the network, and its users, by ensuring that individual mobiles conform to the GSM recommendations.

In the US we developed an enhanced version of Logica's Service Order Negotiation and Retrieval (SONAR) system, to be installed at ***Southern New England Telecommunications Corporation (SNET).***

Capa ***D-Day, Omaha Beach, near Colleville-sur-Mer, Normandy Coast*** June 6 1944

SONAR provides a common user interface to the diverse systems which process customer orders. It prompts users to ask questions about possible service and feature alternatives which their customers may have overlooked or never even considered. The SNET system will also perform automatic telephone number assignment, support the sale or leasing of customer premises equipment and handle multiple orders from individual clients. Logica is training SNET staff to enable them to maintain the system.

Seeking to take advantage of the latest automation techniques, the Hong Kong Telecom Group has assigned its subsidiary ***Computasia Limited*** to undertake a major review of the group's information systems. As part of the project, which will result in improved data access, consistency and security, Logica will assess a wide range of application systems for use within the group. Improved system flexibility will allow the client to respond to changing business needs, thus retaining a competitive edge. System maintenance costs will be reduced.

The project team will review the overall management information system requirements of Cable and Wireless (Hong Kong) Limited and propose a strategy for implementing cost effective solutions. We will also provide support for the development and implementation of systems for operations planning, central billing and credit control and telecommunications traffic recording and forecasting.

Other clients this year include:
Australia Post·British Telecom·Cellnet·Eutelsat·GEC Plessey Telecommunications Limited·ITS·Philips Radio Communications Systems Limited·SIP·STC·Swedish Post Office·Telecom Australia Integrated Products Network Unit·Télic Alcatel·Telindus

Report of the directors

The Directors present their report together with the accounts of the Company and its subsidiaries for the year ended 30 June 1989. These will be laid before the shareholders at the Annual General Meeting to be held on 7 November 1989.

PRINCIPAL ACTIVITIES

The business undertaken by Logica companies throughout the year included:

the marketing, design, production and maintenance of custom built software and associated hardware systems

consultancy and project management in the field of information technology

the design, development, implementation and marketing of software products and the reusable elements of applications software, called systems kernels.

RESULTS AND DIVIDENDS

Turnover, at £180 million for the year ended 30 June 1989, was up 32% on the previous year. Pre tax profit, which included the first full year's contribution from the acquisition of Data Architects in the US, was £18.8 million, a growth of 28%. Earnings per share at 20.0p were up 10%. At year end the number of staff employed worldwide exceeded three and a half thousand.

The company generated a positive cash flow during the period and year end net cash increased by £3 million to £18 million.

The directors are recommending a final dividend of 2.1p per share net, making 3.1p per share net for the whole year, up 35% on the previous year. If approved, the final dividend will be paid on 8 November 1989 to eligible shareholders on the register at close of business on 13 October 1989.

BUSINESS REVIEW

A review of the development of the business during the year is given on pages 2 to 31. Included in the review are references to research and development activities and the Company's future prospects.

DIRECTORS

During the year there were no changes in the composition of the board.

Frits Böttcher resigned on 30 June 1989; for ten years he has made an invaluable contribution as non-executive director both to the main board and to Logica's operations in the Netherlands.

The interests of the directors in the shares of the company are shown below.

	30 June 1989			30 June 1988		
	Beneficial	Non-Beneficial	Options	Beneficial	Non-Beneficial	Options
P A B Hughes	2,051,600	601,375	35,000	2,051,600	601,375	35,000
D W Mann	482,400	135,708	69,966	482,400	135,708	69,966
M Cooperstein	0	0	12,500	0	0	0
A L Karney	42,196	0	49,966	44,696	0	49,966
I Macleod	24,866	0	45,000	24,866	0	45,000
B V Martin	36,761	0	45,000	39,261	0	45,000
G G Moore	10,250	0	40,403	10,250	0	27,903
C S F Preddy	30,575	0	44,966	31,375	0	44,966
C G Rowland	110,337	135,708	54,966	110,337	135,708	54,966
P D C Stevenson	125,500	0	49,808	125,500	0	49,808
N Zachary	5,000	0	12,500	0	0	0
L A Taylor	1,500,000	200,112	0	1,576,362	238,112	0
Employee Shareholder Trust	0	42,840	0	0	42,840	0

The Employee Shareholder Trust's shares are held by P A B Hughes, L A Taylor and D W Mann acting as trustees.

M Cooperstein and N Zachary have service contracts which expire on 18 May 1991. None of the other directors is employed under a service contract.

None of the directors had a material interest in any contract of significance to which the parent Company or a subsidiary was a party during the financial year.

SUBSTANTIAL HOLDINGS
The Company has been notified that funds managed or advised by Scottish Amicable Investments Managers Limited hold 7.16 per cent of the Company's ordinary share capital.

DISABLED PERSONS
It is the Company's policy to give full and careful consideration to applications for employment from disabled persons, to continue wherever possible the employment of members of staff who become disabled, and to ensure that their training and career development are encouraged.

EMPLOYEE PARTICIPATION
It is Company policy regularly to hold meetings with staff when matters concerning them and their area of business are discussed. All staff receive the annual report and accounts.

FIXED ASSETS
The changes in the fixed assets of the Company and its subsidiaries are disclosed in Notes 9 and 10 to the accounts.

TAXATION
The Company is not a close company within the provisions of the Income and Corporation Taxes Act 1988.

AUDITORS
Price Waterhouse has expressed its willingness to continue in office. A resolution will be proposed at the Annual General Meeting for its re-appointment as auditors and authorizing the directors to fix their remuneration.

OPTION SCHEMES
Shareholders' authority is sought to amend the rules of the Company's savings related share option schemes.

The Company operates two such schemes - the Savings Related Share Option Scheme ("the UK Scheme") and the International Savings Related Share Option Scheme ("the International Scheme") - under which employees of the Company are invited to apply for options to subscribe for shares in the Company, making monthly savings towards the ultimate cost of the shares.

Under the present rules of each of these schemes, the board is authorized to grant options at a 10% discount to the market value of shares at the time of grant, that is to say at 90% of that value. Until recently this was the maximum discount permitted by the legislation governing the UK Scheme, which is approved by the Inland Revenue. However, a recent change in legislation now means that it is possible to increase the discount by offering employees options at a discount of up to 20% of the market value of the shares at the time of grant.

Shareholders' authority is therefore sought to amend the rules of the UK Scheme to permit such a discount, and similarly to amend the rules of the International Scheme since the Board believes that the two should correspond so far as reasonably practicable. Resolution number 5 will, if passed, confer the necessary authority.

AUTHORITY TO ALLOT SECURITIES
Under Section 89 of the Companies Act 1985 equity securities in the Company may not be allotted for cash (otherwise than in respect of an employee share scheme) without first being offered pro rata to existing shareholders, unless the prior approval of the shareholders in General Meeting is given. The Directors consider that it is in the best interests of the Company that the relevant authority given at the Annual General Meeting in 1988 should be renewed in similar terms. Accordingly a Special Resolution to this effect is proposed as Resolution No. 7 in the Notice of the forthcoming Annual General Meeting. The proposed authority expires at the date of the 1990 Annual General Meeting and permits the Directors during this period to issue equity securities up to an aggregate nominal value of £300,000 (just under 5% of the issued share capital) without first offering them to existing shareholders.

By order of the Board

G G Moore
Secretary

21 September 1989

Consolidated profit and loss account

For Years Ended 30 June	Note	1989 £'000	1988 £'000
Turnover	1	**179505**	**135936**
less adjustment to exclude turnover of related company		7772	8556
Consolidated turnover		171733	127380
Operating profit	2	**17440**	**13866**
Interest	4	1395	872
Profit on ordinary activities before taxation		**18835**	**14738**
Taxation on ordinary activities	5	6750	5400
Profit on ordinary activities after taxation		**12085**	**9338**
Dividends paid and proposed	6	1882	1315
Retained profit for the year		10203	8023
Earnings per share on ordinary activities	8	**20.0p**	**18.1p**
Dividends per share	6	**3.1p**	**2.3p**

Consolidated balance sheet

At 30 June	Note		1989 £'000		1988 £'000
Fixed assets					
Tangible assets	9	17324		15580	
Investments	10	1033		1196	
			18357		16776
Current assets					
Debtors	12	55505		47184	
Cash and bank balances		19170		16470	
		74675		63654	
Creditors due within one year					
Bank loans and overdrafts		(1420)		(1296)	
Other	13	(37273)		(34477)	
		(38693)		(35773)	
Net current assets			35982		27881
Total assets less current liabilities			54339		44657
Creditors due after more than one year	14	(712)		(879)	
Deferred taxation	15	(965)		(732)	
			(1677)		(1611)
Net assets			52662		43046
Capital and reserves					
Share capital	17		6077		6050
Share premium account	18		9965		9534
Special reserve	18		3267		4807
Other reserves	18		2773		2179
Profit and loss account	18		30580		20476
			52662		43046

P A B Hughes
D W Mann

Directors

21 September 1989

Consolidated source and application of funds

For Years Ended 30 June	1989 £'000	1988 £'000
Funds generated from trading:		
Operating profit	17440	13866
Related company profits less dividends received	(43)	(43)
Miscellaneous items, including exchange	216	(501)
	17613	13322
Changes in working capital:		
Debtors - (increase)	(8317)	(6510)
Creditors - increase	2877	1569
	(5440)	(4941)
Changes in fixed assets:		
Purchases of tangible assets	(5015)	(5597)
Depreciation	3256	2354
Sales of tangible assets	376	47
Purchase of trade investments	(78)	–
Sales of trade investments	263	–
	(1198)	(3196)
Cash flow from operations	**10975**	**5185**
Interest (net)	1395	872
Tax paid	(7978)	(2328)
Dividends paid to shareholders	(1574)	(941)
Cash flow after financing costs and tax	**2818**	**2788**
Shares issued (net of expenses)	458	24990
Acquisition of business (see note below)	(700)	(25695)
Net inflow of funds	**2576**	**2083**
Net funds		
Net at beginning of year	15174	9393
Funds acquired with Data Architects	–	3698
Net inflow of funds	2576	2083
Net funds at end of year	17750	15174

Movements may not correspond to the change in the balance sheet amounts, due to the effects of acquisitions.

	£'000
Assets of business acquired comprise:	
Net tangible assets	97
Goodwill	603
	700

Company balance sheet

At 30 June	Note		1989 £'000		1988 £'000
Fixed assets - Investments	10		**43669**		**17703**
Current assets					
Debtors	12	2520		32328	
Cash and bank balances		1161		197	
		3681		32525	
Creditors due within one year	13	**(2880)**		**(6411)**	
Net current assets			**801**		**26114**
Net assets			**44470**		**43817**
Capital and reserves					
Called up share capital	17		6077		6050
Share premium account	18		9965		9534
Special reserve	18		23261		23261
Profit and loss account	18		5167		4972
			44470		**43817**

P A B Hughes
D W Mann

Directors
21 September 1989

Notes to the accounts

	1989 £'000	1988 £'000
1 TURNOVER		
Turnover by location of client was as follows:		
United Kingdom	85816	74464
Rest of Europe	38571	34942
North America	36264	14244
Rest of World	18854	12286
	179505	135936
Less adjustment to exclude turnover of related company	7772	8556
Consolidated turnover	171733	127380
2 OPERATING PROFIT		
Turnover	171733	127380
Raw materials and consumables	597	99
Other external charges	31069	24886
Staff costs	88678	64144
Depreciation and other amounts written off tangible and intangible assets	3256	2354
Auditors' remuneration and expenses	221	163
Hire of plant and machinery	604	414
Operating lease rentals	9655	6650
Other operating charges	20292	14909
Operating charges	154372	113619
	17361	13761
Share of profit of related company	79	105
Operating profit	17440	13866

3 STAFF

STAFF NUMBERS

Staff employed at 30 June were based as follows:

	Number	Number
United Kingdom	2025	1903
Non UK	1480	1333
Total (including related companies)	3505	3236

The average number of staff employed in the UK during the year was 1970 compared with 1842 in 1988.

STAFF COSTS	£'000	£'000
Wages and salaries	78861	56356
Social security costs	6835	5609
Other pension costs	2982	2179
	88678	64144

There are voluntary pension schemes in the UK, Netherlands, Belgium, Hong Kong and Australia all of which are defined contribution schemes. The defined contributions consist of a fixed percentage and voluntary contributions. There are no unfunded liabilities in these schemes.

DIRECTORS	1989 £	1988 £
Directors' emoluments including employer's pension contributions and benefits in kind	1356402	896863
Included in the above are the emoluments of:		
the chairman	72996	85460
the highest paid director	128989	105292

The table shows the number of directors (other than the chairman and the highest paid director) and higher paid employees in the United Kingdom, whose remuneration excluding pension contributions was within the bands stated.

	Directors		Higher paid employees	
	1989	1988	1989	1988
£ 5001-£10000	1	2		
£10001-£15000	3			
£30001-£35000			123	95
£35001-£40000			50	34
£40001-£45000		2	19	20
£45001-£50000			19	14
£50001-£55000			13	
£55001-£60000		2	1	5
£60001-£65000		3		
£65001-£70000	2	1	1	
£70001-£75000	2			
£75001-£80000	1	1		
£80001-£85000	1			

	1989 £'000	1988 £'000
4 INTEREST		
Receivable	1584	962
Payable	(189)	(90)
	1395	872
5 TAXATION		
Charge to UK corporation tax 35% (1988 - 35%)	3608	3945
Overseas taxation	50	184
Foreign tax in respect of overseas subsidiaries	2485	1786
Relief for overseas taxation	(35)	(129)
Deferred taxation	143	(486)
	6251	5300
Underprovision in respect of prior years	462	0
Related companies	37	100
	6750	5400

There are unutilized tax losses in the group amounting to approximately £2 million which may be available for the relief of the profits of certain subsidiaries in future years.

6 DIVIDENDS		
Interim dividend of 1.0p (1988 - 0.7p)	606	347
Final dividend of 2.1p (1988 - 1.6p)	1276	968
Total net dividend	1882	1315
7 PROFIT ATTRIBUTABLE TO MEMBERS OF THE HOLDING COMPANY		
Dealt with in the accounts of the Company	2077	1456

As allowed by Section 228 (7) of the Companies Act 1985, the Company has not presented its own profit and loss account.

8 EARNINGS PER SHARE

Earnings per share of 20.0p are based on the profit after tax of £12,085,000 and on the weighted average of 60,551,434 shares. Last year's earnings per share of 18.1p were based on the profit after tax of £9,338,000 and on the weighted average of 51,575,100 shares.

9 TANGIBLE ASSETS

	Short Leaseholds	Equipment and Plant	Freehold Land and Buildings	Total
	£'000	£'000	£'000	£'000
Owned assets				
Cost				
1 July 1988	4729	16662	2956	24347
Translation differences	63	367	0	430
Additions	1011	3859	57	4927
Disposals	(177)	(1072)	0	(1249)
30 June 1989	5626	19816	3013	28455
Depreciation				
1 July 1988	1483	7924	285	9692
Translation differences	40	181	0	221
Provided	373	2505	19	2897
Released on disposals	(128)	(802)	0	(930)
30 June 1989	1768	9808	304	11880
Net book value 30 June 1989	3858	10008	2709	16575
Assets under finance leases				
Net book value 30 June 1988		749		749
Net book value all assets 30 June 1989	**3858**	**10757**	**2709**	**17324**
Net book value at 30 June 1989				
Owned assets	3246	8738	2671	14655
Assets under finance leases		925		925
	3246	9663	2671	15580

10 INVESTMENTS IN RELATED COMPANY AND TRADE INVESTMENTS

Consolidated

	Related Company			Trade	Total
	Shares at cost	Retained profits	Total	Investments	
	£'000	£'000	£'000	£'000	£'000
1 July 1988	624	280	904	292	1196
Translation differences		15	15		15
Additions	0	0	0	78	78
Disposals	0	0	0	(263)	(263)
Share of retained profit for the year		7	7		7
30 June 1989	624	302	926	107	1033

The Group's share of the retained profits for the year of the related company is stated after deducting dividends received of £36,000.
All investments are unlisted.

The Company

	Group companies			Related Company	Total
	Shares	Loans	Total		
	£'000	£'000	£'000	£'000	£'000
Cost					
1 July 1988	14245	9729	23974	624	24598
Additions	0	1514	1514	0	1514
Reclassification from debtors		24006	24006		24006
30 June 1989	14245	35249	49494	624	50118
Provisions					
1 July 1988	(787)	(6108)	(6895)	0	(6895)
Released in the year	0	446	446	0	446
30 June 1989	(787)	(5662)	(6449)	0	(6449)
Net book value at 30 June 1989	**13458**	**29587**	**43045**	**624**	**43669**
Net book value at 30 June 1988	13458	3621	17079	624	17703

	1989 £'000	1988 £'000
11 CAPITAL COMMITMENTS		
Capital expenditure authorized and contracted	1574	276
Capital expenditure authorized but not contracted	358	130
12 DEBTORS		
Consolidated		
Amounts recoverable on contracts	13710	10206
Trade debtors	32109	28887
Amounts owed by related company	250	252
Other debtors	1854	1388
Prepayments and accrued income	4077	2950
Taxation recoverable	3080	2397
Advance corporation tax	425	1104
	55505	47184
Amounts recoverable on contracts include attributable profit of	2040	1658
The Company		
Amounts owed by subsidiary companies	838	30922
Other debtors	1257	304
Advance corporation tax	425	1102
	2520	32328
13 CREDITORS		
Due within One Year		
Consolidated		
Payments received on account	5517	3682
Trade creditors	6533	3605
Amounts owed to related company	6	0
Other creditors	3264	4720
Taxation and other state creditors	13234	15188
Advance corporation tax	627	438
Accruals	6449	5520
Finance lease liabilities	367	356
Dividends proposed	1276	968
	37273	34477
The Company		
Amounts owing to subsidiary companies	24	4054
Other creditors	953	953
Taxation and other state creditors	0	(2)
Advance corporation tax	627	438
Dividends proposed	1276	968
	2880	6411

	1989 £'000	1988 £'000
14 CREDITORS		
Due After More Than One Year		
Bank loans repayable over one and under five years	23	182
Finance lease liabilities		
over one and under five years	503	351
more than five years	0	56
Other creditors	186	290
	712	879
15 DEFERRED TAXATION		
Provision is made in the accounts for deferred taxation at the full potential liability as follows:		
Accelerated capital allowances	375	544
Other short term timing differences	(95)	(371)
Foreign subsidiaries	685	559
	965	732
1 July 1988	732	151
Translation differences	90	95
In respect of new subsidiaries	0	972
Provision in respect of current year	143	(486)
30 June 1989	965	732

16 OTHER FINANCIAL COMMITMENTS

There were annual commitments under operating leases as follows:

	1989		1988	
	Land and Buildings £'000	Other £'000	Land and Buildings £'000	Other £'000
Expiring within one year	1069	1011	619	686
Expiring in the second to fifth years	4021	2904	576	2174
Expiring after five years	5819	12	2747	13
	10909	3927	3942	2873

17 CALLED UP SHARE CAPITAL

	1989 £'000	1988 £'000
Authorized share capital		
80,000,000 Ordinary Shares of 10p each	8000	8000
Called up share capital		
60,768,403 Ordinary Shares of 10p each	6077	6050

During the year 266,801 shares were issued under share option schemes as follows:

Granted	Exercise price	Exercised
1984	405	16020
1985	149	53788
1985	165	52344
1986	155	144500
1986	186	149
		266801

During the year 593,800 options were granted under employee share option schemes at prices ranging from 349p to 382p and exercisable from 1991 to 1999.

At 30 June 1989 there were 2,938,200 options granted under employee share option schemes at prices ranging from 149p to 405p and exercisable from 1989 to 1999.

18 SHARE PREMIUM ACCOUNT AND RESERVES

	Share premium account £'000	Special reserve £'000	Other reserves £'000	Profit and loss account £'000
Consolidated				
1 July 1988	9534	4807	2179	20476
Exchange difference on translation of net assets at 1 July 1988			14	481
Increase in share premium account	431			
Goodwill on acquisition written off:				
Current Year		(603)		
Prior Year		(937)		
Retained profit for the year				10203
Transfers to other reserves			580	(580)
30 June 1989	9965	3267	2773	30580
The Company				
1 July 1988	9534	23261		4972
Increase in share premium account	431			
Retained profit for the year				195
30 June 1989	9965	23261		5167

Goodwill has been written off in accordance with the Company's accounting policies and has been set against the Special Reserve.

The goodwill written off for prior year relates to an adjustment to the fair value of the assets of Data Architects Inc acquired in March 1988.

19 CONTINGENT LIABILITIES

Subsidiaries have provided indemnities to their bankers in support of performance bonds and guarantees amounting to £3,811,000 (1988 - £4,187,143).

20 PRINCIPAL OPERATING SUBSIDIARIES

Logica UK Limited (Great Britain)
Logica Cambridge Limited (Great Britain)
Logica Communications and Electronic Systems Limited (Great Britain)
Logica Consultancy Limited (Great Britain)
Logica Energy and Industry Systems Limited (Great Britain)
Logica Financial Systems Limited (Great Britain)
Logica Space and Defence Systems Limited (Great Britain)
Logica BV (Netherlands)
Logica GmbH (West Germany)
Logica SA (Belgium)
Logica Svenska AB (Sweden)
Logica Data Architects Inc (USA)
Logica Technology Systems Inc (USA)
Logica Pty Limited (Australia)
Logica Technology Services Limited (Hong Kong)
Logica Technology Services Sdn Bhd (Malaysia)

At 30 June 1989 these companies were all wholly owned.

21 RELATED COMPANIES

Logica General Systems spa (Italy)
The Company holds 49.8% of the 793,550 ordinary shares of 1,000 lire each and 51.3% of the 204,350 preference shares of 1,000 lire each of Logica General Systems spa.

The business activities of this company are similar to those undertaken by the other Logica companies.

Accounting Policies

1 BASIS OF ACCOUNTING AND CONSOLIDATION

The accounts are prepared under the historical cost convention in accordance with the Companies Act 1985. They are the result of the consolidation of the accounts of the Company and its subsidiaries and also include the relevant share of the results of related companies. The group accounting policies conform with UK accounting standards and when necessary, adjustment is made to the statutory accounts of overseas subsidiaries in order to present the group accounts on a consistent basis.

2 TURNOVER

Turnover represents the value of work done for clients including attributable profit and after adjusting for all foreseeable future losses.

This is a change in accounting policy from that used in previous years where turnover represented amounts invoiced to clients net of amounts billed in advance and VAT. The change has taken place to comply with Statement of Standard Accounting Practice No.9 (Revised) and has no effect on reported profit.

The new definition of turnover equates to the amounts reported as revenue in the accounts published in previous years.

3 RECOGNITION OF PROFITS

Profit on contracts for the supply of professional services at pre-determined rates is taken as and when the work is billed irrespective of the duration of the contract.

Profit is taken on fixed price contracts whilst the contract is in progress, having regard to the proportion of the total contract which has been completed at the balance sheet date. Provision is made for all foreseeable future losses.

4 AMOUNTS RECOVERABLE ON CONTRACTS

Amounts Recoverable on Contracts represent turnover which has not yet been invoiced to clients. Such amounts are separately disclosed within debtors.

The valuation of amounts recoverable on fixed price contracts is adjusted to take up profit to date or foreseeable losses in accordance with the accounting policy for recognition of profits.

Other amounts recoverable on contracts are valued at cost or at estimated net realizable value if lower.

Cost comprises:

- professional amounts recoverable valued at the cost of salaries and associated payroll expenses of employees engaged on assignments and a proportion of attributable overheads.
- unbilled expenses incurred and equipment purchased for clients in connection with specific contracts.

5 RESEARCH AND DEVELOPMENT

Research costs are written off in the year in which they are incurred unless they are to be reimbursed by third parties. Development costs are also written off in the year in which they are incurred unless they are to be reimbursed by third parties or they result in the production of an identifiable, saleable product.

6 DEPRECIATION

Depreciation is provided at rates calculated to write down the cost of all tangible fixed assets over their estimated useful lives on a straight-line basis. The annual rates of depreciation used are as follows:

Office equipment	10%
Computer equipment	20%
Motor cars	25%
Plant	20%
Leaseholds	equally over life of lease

7 FOREIGN CURRENCY TRANSLATION

The assets, liabilities and trading results of foreign subsidiaries are translated into sterling at the rate of exchange ruling at the date of the balance sheet.

Differences arising on restatement of the net investment in foreign subsidiaries and related net foreign currency borrowings are dealt with as adjustments to reserves.

All other differences on exchange arising in the year are taken to the profit and loss account.

8 DEFERRED TAXATION

Provision is made for deferred taxation to take account of timing differences between the treatment of certain items for accounts purposes and their treatment for tax purposes. The provision is maintained to the extent that timing differences are not expected with reasonable probability to continue into the foreseeable future.

9 TANGIBLE FIXED ASSETS

Tangible fixed assets are shown at cost. Cost in this context includes the initial capitalized values of assets funded by finance leases.

Assets financed by leasing agreements that give rights approximating to ownership are treated as if they had been purchased outright. The amount capitalized is the present value of the minimum lease payments payable during the lease term. The corresponding leasing commitments are shown as obligations to the lessor. Lease payments are treated as consisting of capital and interest elements and the interest is charged to the profit and loss account on a constant periodic rate of charge basis.

10 GOODWILL

Purchased goodwill is written off against reserves in the year of acquisition.

11 RELATED COMPANY

A related company is a legal entity, not being a subsidiary, in which the group has an interest of between 20 per cent and 50 per cent and over whose commercial and financial policy decisions the group exercises significant influence. The group's share of the profits less losses of all significant related companies is included in the group's profit and loss account on the equity accounting basis. The results are calculated from the latest available audited accounts adjusted to incorporate unaudited results for more recent periods.

Report of the auditors

Report of the Auditors to the Members of Logica plc

We have audited the financial statements set out on pages 36 to 47 in accordance with Auditing Standards.

In our opinion the financial statements give a true and fair view of the state of affairs of the company and the group at 30 June 1989 and of the profit and source and application of funds of the group for the year then ended and have been properly prepared in accordance with the Companies Act 1985.

Price Waterhouse
Chartered Accountants
London

21 September 1989

Five year record

	1989 £'000	1988 £'000	1987 £'000	1986 £'000	1985 £'000
Turnover	**179505**	**135936**	**109367**	**87652**	**63917**
Operating profit	17440	13866	10545	7457	4529
Interest	1395	872	778	(649)	487
Profit on ordinary activities before tax	**18835**	**14738**	**11323**	**6808**	**5016**
Taxation on ordinary activities	6750	5400	4210	2574	2717
Profit on ordinary activities after tax	**12085**	**9338**	**7113**	**4234**	**2299**
Shareholders' funds	**52662**	**43046**	**29013**	**22831**	**18794**
Earnings per ordinary share	**20.0p**	**18.1p**	**14.4p**	**10.1p**	**7.0p**
Dividends per share (net)	3.1p	2.3p	1.7p	1.0p	0.35p
Staff numbers at year end	3505	3236	2682	2348	1843

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Sternfield ***Manville Corporation World Headquarters, Colorado*** October 1980

The artists and lenders

cover, pages 6, 15, 22
Man Ray (Emmanuel Rudnitsky) (American 1890-1976)
Alexander Gardner (American 1821-82)
Timothy H. O'Sullivan (American 1840-82)
Alexandr Mikhailovich Rodchenko (Russian 1891-1956)
The J. Paul Getty Museum

inside front cover
William Henry Fox Talbot (British 1800-77)
The National Museum of Photography, Film, Television (National Museum of Science and Industry), Bradford

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Weegee (Arthur Fellig) (American 1899-1968)
Collection of Peter Coffeen

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John H. Fitzgibbon (American 1816-82)
Gilman Paper Company

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Alexandre-Jean-Pierre Clausel (French 1802-84)
International Museum of Photography at George Eastman House

pages 12, 21
Roger Fenton (British 1819-69)
Frederick H. Evans (British 1853-1943)
The Royal Photographic Society, Bath, England

page 13
John Murray (British 1809-98)
Rubel Collection, courtesy Thackeray and Robertson, San Francisco

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Peter Henry Emerson (British 1856-1936)
Thomas Frederick Goodall (British 1857-1944)
Leonard J. Halpern

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Edward Steichen (American 1879-1973)
The Metropolitan Museum of Art, New York, Alfred Stieglitz Collection

page 23
Paul Strand (American 1890-1976)
Philadelphia Museum of Art, The Paul Strand Retrospective Collection: 1915-1975, Gift of the Estate of Paul Strand © Aperture Foundation, Inc, Paul Strand Archive

page 24
László Moholy-Nagy (1895-1946)
Yasuo Hattori

page 26
André Kertész (American 1894-1985)
Thomas Walther collection, New York

page 27
Man Ray (Emmanuel Rudnitsky) (American 1890-1976)
Jedermann Collection, NA © ADAGP Paris/DACS London 1989

page 29
Bill Brandt (British 1904-83)
courtesy Edwyn Houk Gallery, Chicago © Mrs Noya Brandt

page 31
Robert Capa (American 1913-54)
International Center of Photography, New York, Permanent Collection, Gift of the Estate of Robert Capa

page 32
David Bailey (British b.1938)
courtesy of the artist

back cover
Boyd Webb (New Zealand b. 1947)
courtesy Anthony d'Offay Gallery, London

pages 11, 15, 25, inside back cover
Gustave Le Gray (French 1820-82)
Timothy H. O'Sullivan (American 1840-82)
Henri Cartier-Bresson (French b.1908)
© Henri Cartier-Bresson/ Magnum, Inc
Joel Sternfield (American b.1944)
private collections