

# HEWLETT *hp* PACKARD

EPG Systems



Components



Medical



Calculators



Analytical



Instruments



Distance Measuring



Data Systems



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## Hewlett-Packard History

With computers and electronic products performing tasks which two decades ago were still in the realm of science fiction, it is apt that some of Hewlett-Packard's earliest products went into making Walt Disney's "Fantasia", one of the first-ever full length cartoon features.

Founded at Palo Alto, California, in 1939, Hewlett-Packard went into business with a single product, the Model 200A Audio Oscillator. Eight of these units were sent to Hollywood for work on Walt Disney's milestone film.

Both film and oscillator today are little more than history, having been overtaken by advanced technology and events.

Hewlett-Packard Australia Pty. Ltd. is one of those events. A wholly-owned subsidiary of the American parent, the company was established in Melbourne in 1967. It now has branch offices in most Australian capital cities and in New Zealand.

The Australian firm's growth is nothing less than spectacular — from a modest start in 1967 to a \$13 million turnover 6 years later, and an anticipated \$40 million by 1980.

Since the days of "Fantasia", the Hewlett-Packard family has grown in size until there are currently more than 3,000 of the company's products marketed throughout the world.

The company has manufacturing facilities in many parts of the world, with sales and service centres in 65 countries. Hewlett-Packard can be found almost anywhere there are qualified people to operate its equipment.

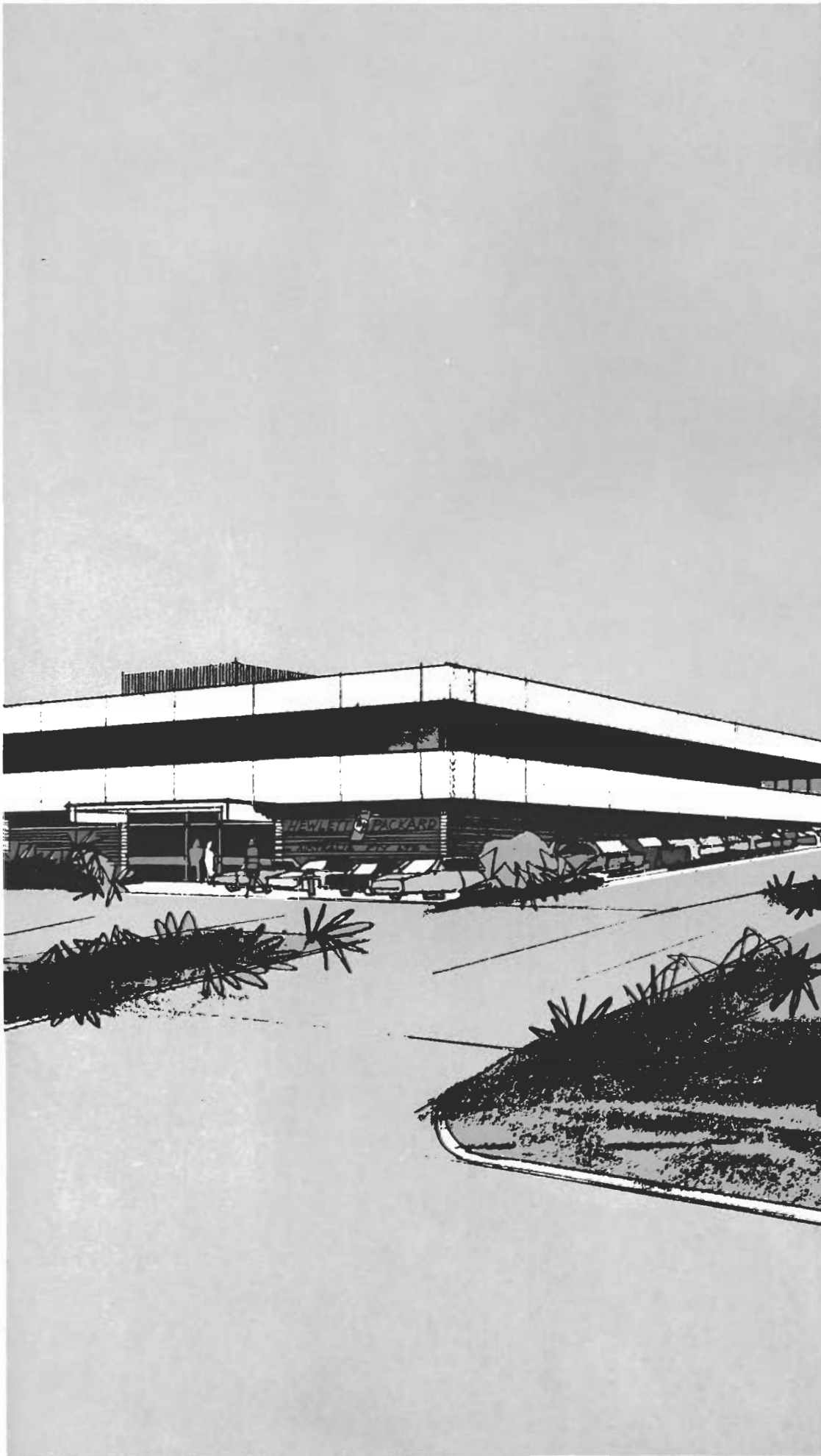
The expertise of those people has changed since 1939. The specialised nature of the company's early products was reflected in the electrical and electronics engineers and technicians who bought and operated them. Customers changed a little in the early 1960s when Hewlett-Packard entered the medical and chemical analysis fields. They have changed again with the company's entry into the sophisticated area of computers.

Today, Hewlett-Packard's customers are as diverse as the products themselves, covering every field of activity from space exploration, to medical research, and on to environment protection, manufacturing, banking and beyond.

As technology penetrates further into the future and the need for precise tools of measurement and computation grows apace, Hewlett-Packard will play an even larger role in the development of Australia.

Mr. David Packard, (left) Chairman, and Mr. William R. Hewlett, President, Hewlett-Packard Company.





If something untoward happened at Hewlett-Packard Australia Pty. Ltd., some organisations would suddenly be in serious difficulty over payrolls, accounts and stock control; some babies might have a difficult time being born; the speaking clock telephone might go awry; hospital patients could suffer; communications both within Australia and via satellite could become precarious; some scientific projects and tests would be useless...

Hewlett-Packard equipment is put to so wide a range of different uses in so many environments that it is often difficult to imagine just what the company does. This brochure is an attempt to show some of those activities and to give an idea of the types of equipment produced. Essentially, Hewlett-Packard makes equipment for measurement and computation. But it is not until one sees the diversity of products that the full definition of the words becomes clear.

As a wholly-owned subsidiary of its American parent company, Hewlett-Packard Australia Pty. Ltd. has the strong backing of an international technical operation. Design and production facilities are fully integrated. This support ensures not only the highest degree of technological advancement, but also a complete and almost instantaneous after-sale capability.

Hewlett-Packard can answer virtually any technical need in the fields of measurement and computation. And with the growth of Australia, Hewlett-Packard's role can only grow with it.

Mr. John A. Warmington, Managing Director, Hewlett-Packard Australia Pty. Ltd.

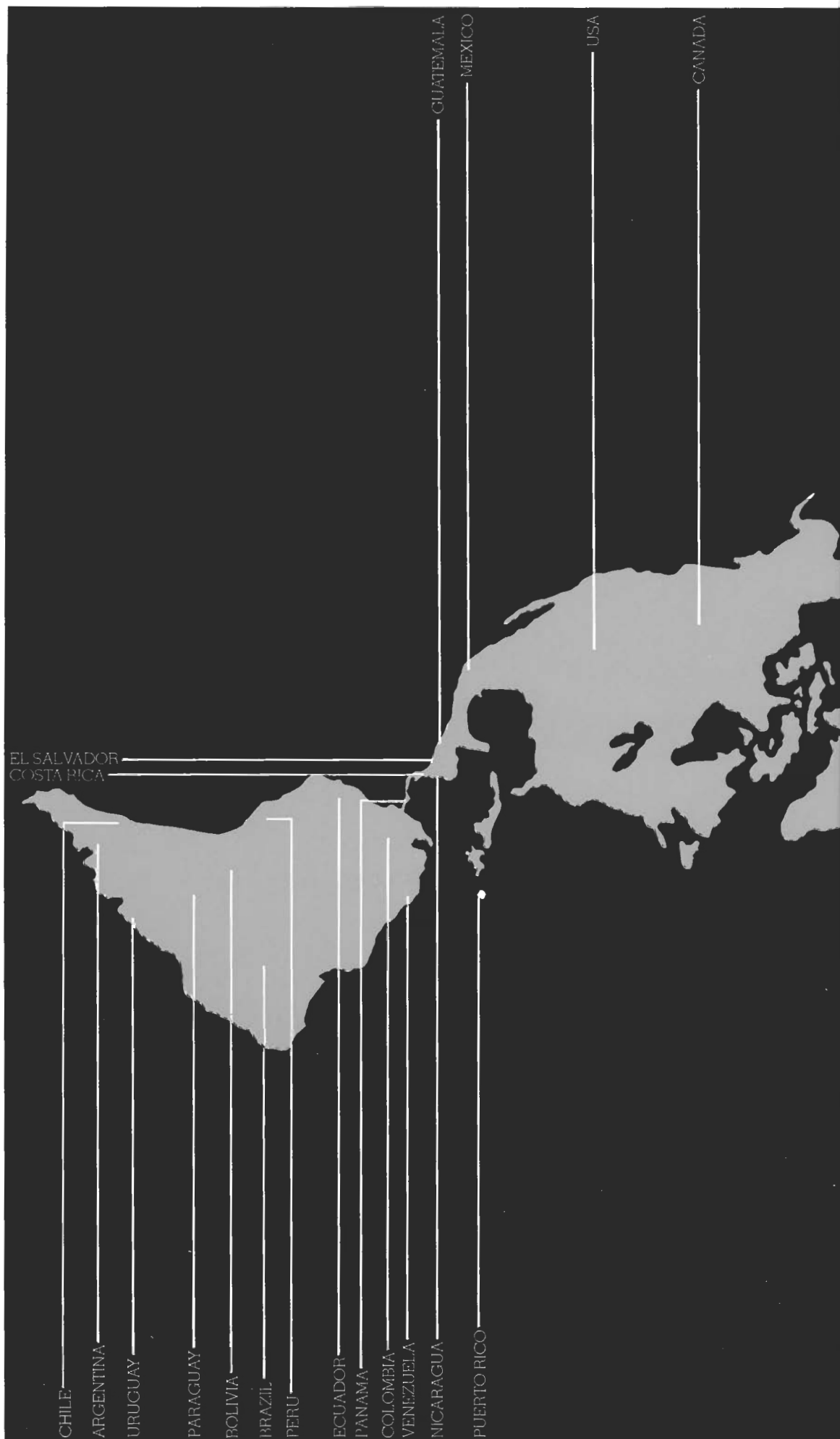


Hewlett-Packard is truly an international affair. Although the corporate headquarters are located in Palo Alto, California, its international links are in fact world wide.

There are 21 manufacturing divisions in all, including five outside the United States — these are located in Scotland, the German Federal Republic, France, Singapore, Japan and Malaysia.

Sales and service operations are literally world-wide and on all the continents. Sixty-five countries are host to 172 centres at which Hewlett-Packard customers can have their needs and requirements dealt with.

Such a large supporting operation is necessary because of the company's strong after-sales backing. Long after an initial purchase is made, customers of HP products are kept up to date with all new developments and receive emergency replies should they require them.





Hewlett-Packard Australia Pty. Ltd. itself deals with a huge geographical area. HP customers, scattered throughout the region, are serviced from most of Australia's capital cities and offices in New Zealand.

Although no manufacturing is carried out in the Australasian region, rapid shipping and communications mean that customers as widely diverse in location as Darwin and Adelaide can receive an immediate response from the parent company in Palo Alto and the manufacturing divisions located in Europe, the United States and Asia.

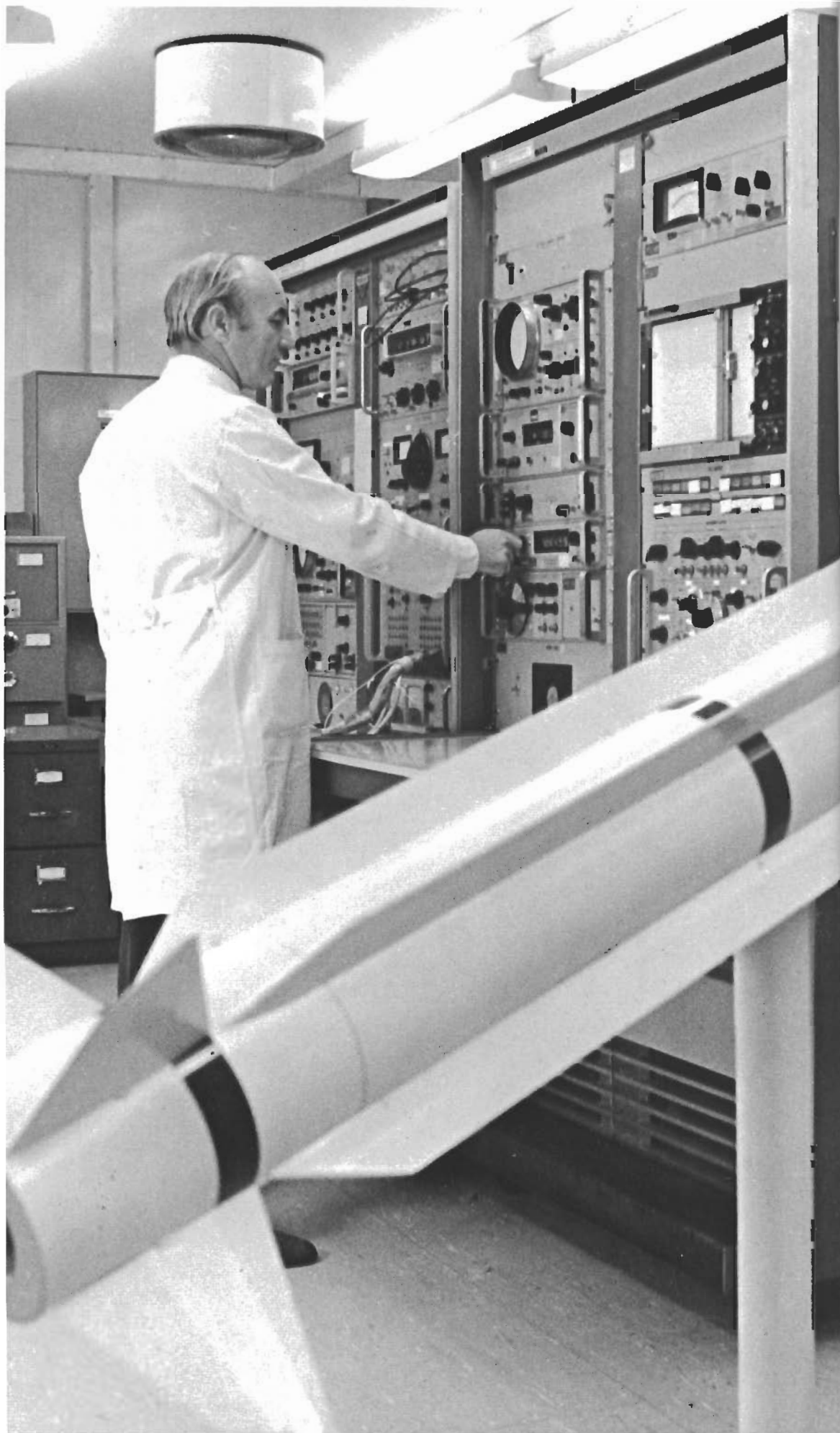
As growth continues in HP's rapidly-expanding fields, it must be expected that soon even more of the familiar 'HP' signs will be sprouting as there are more customers to purchase some of the company's better than 3,000 products.

## Hewlett-Packard EPG Systems

A key Australian defence installation is the Guided Weapons Repair Facility near Sydney, and it is there that one of Hewlett-Packard's most esoteric products is located. The unit is an Electronic System project, representing what is among Hewlett-Packard's (and Australia's) most highly advanced designs.

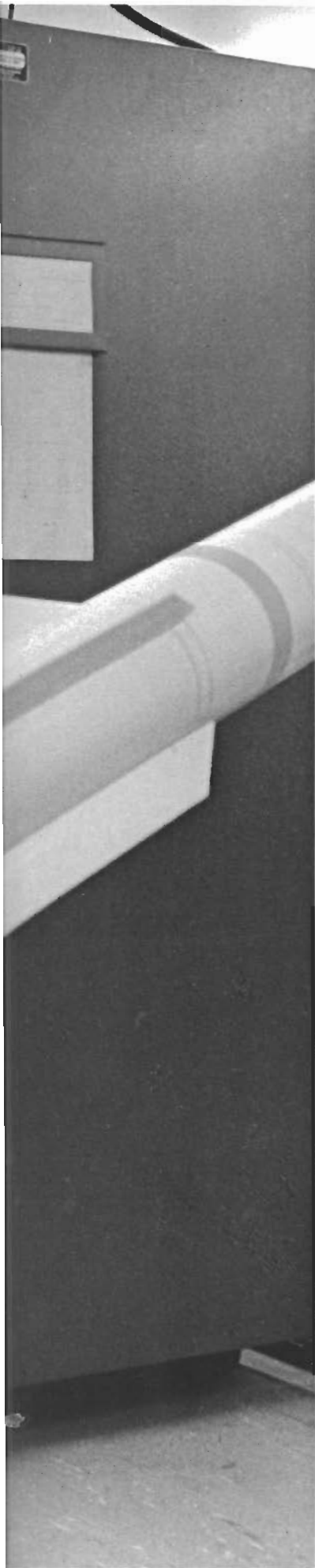
EPG Systems are extremely sophisticated measuring units. They consist of standard measuring instruments which are linked into programmable operations. Not only do they record the minutest change in whatever is being examined, they can automatically refer to a given set of criteria and even activate corrective procedures should the differing results go beyond certain pre-set limits.

Pure science, government projects and certain industrial



HP equipment caters to Australia's defence with the Guided Weapons Repair Facility at St. Mary's, in New South Wales. Hewlett-Packard instrumentation is used to help maintain the short-range Tartar missiles vital to the country's security



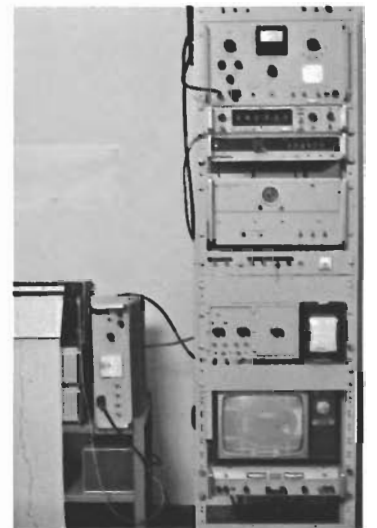


situations are all applications in which EPG Systems are being used.

An EPG System is at work in the National Standards Laboratory in Sydney. Others help Australia's telephone speaking clocks remain on time — including a Cesium Beam unit at Hewlett-Packard's Melbourne Headquarters, which is linked into the government system. Hewlett-Packard is the only private operator of a Cesium Beam unit in Australia; the others are all controlled by various Federal departments.

EPG Systems in Australia are still fairly limited. Nevertheless, as the need for precise measuring tools — with a self-correcting capability — increases with the development of scientific and related activities, such units will become increasingly vital in many areas of the country's technical and industrial life.

Absolute exactness in time-keeping is essential in a world demanding precision in every capacity. Hewlett-Packard cesium beam equipment is used by the Australian Post Office and at HP itself as part of a multi-station network to ensure that time-keeping instruments are kept within milliseconds of each other and with time signals as well.





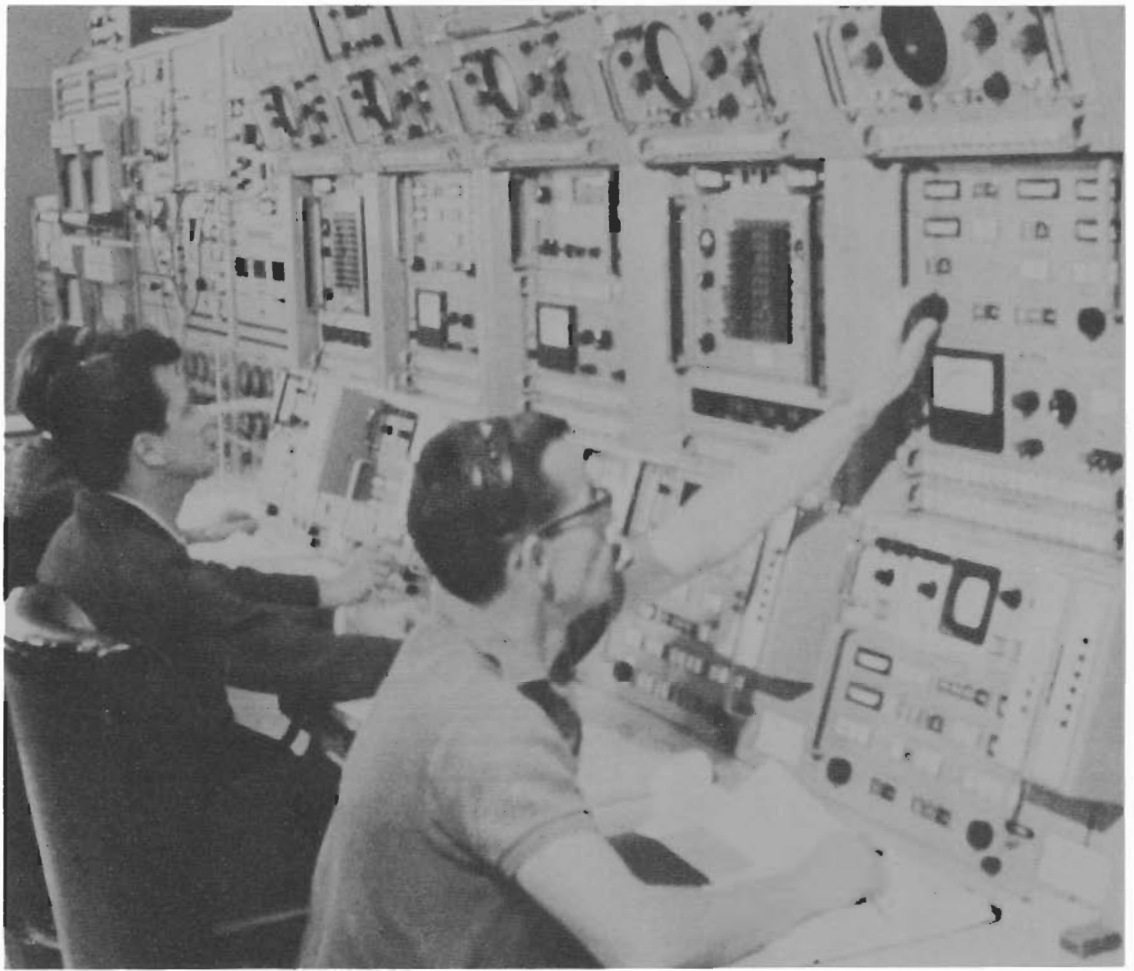
## Hewlett-Packard Instruments

Instruments have long been the backbone of Hewlett-Packard's output — and this is reflected in Australia where measurement in all its forms has been the company's primary business.

Hewlett-Packard's instruments play a large part in keeping lines of communication open in the country's bleak north. Microwave Link Analysers are at work for the P.M.G. ensuring that the Darwin/Mt. Isa link remains on an operational basis. Other instruments help monitor microwave antennas, two-way radios and assist in the business of intercontinental satellite communications.

Depending upon his selection of instruments, a Hewlett-Packard Australia Pty. Ltd. customer can measure voltage, current, resistance and frequency. He can also supply known signals to receivers or passive devices, measure the strength of signals, monitor signals in a variety of ways and he can plot or display a signal with reference to time or to another signal.

Because, through transducers, an endless number of



Australia's Honeysuckle Creek tracking station near Canberra plays a significant role in tracking and guiding space vehicles — including the Apollo moon craft. Hewlett-Packard instruments are vital in establishing the precise synchronisation needed for the communications and navigation phases of the missions.

HP instruments monitor the volatile ion gun located at the Royal Melbourne Institute of Technology. The gun is used to implant atomic particles in metals which are used in the manufacture of printed circuits — some of which appear in HP's own range of pocket calculators.



physical variables can be converted into signals for electronic measurement, Hewlett-Packard instruments are being used throughout Australian industry in production and quality control. In addition, products of the Instrument Division are playing essential roles in scientific and engineering research.

Instruments are also a factor in the original equipment manufacturers' market, where the Division's products are used as component parts, peripheral devices or subsystems in their own equipment. New designs of cathode ray tubes and a variety of power supplies for use in customers' products are two areas where Hewlett-Packard is a vital factor in equipment production.

Instruments are constantly being re-designed and adapted to meet the often unique conditions found in Australia where reliable equipment is so important. This work, combined with the almost limitless variety of applications, ensures that the Instrument Division plays a significant role in all facets of Australian community life.

Two-way radios are an important link in the operations of the Victorian Civil Ambulance Service's special vehicles which deal with serious cardiac cases. Radios from Plessey Pacific are given final test-bed checks in the company's Melbourne factory before installation in VCAS ambulances. HP tracking generators, oscilloscopes and other instruments are used to ensure that the radio equipment is up to the highest standard.



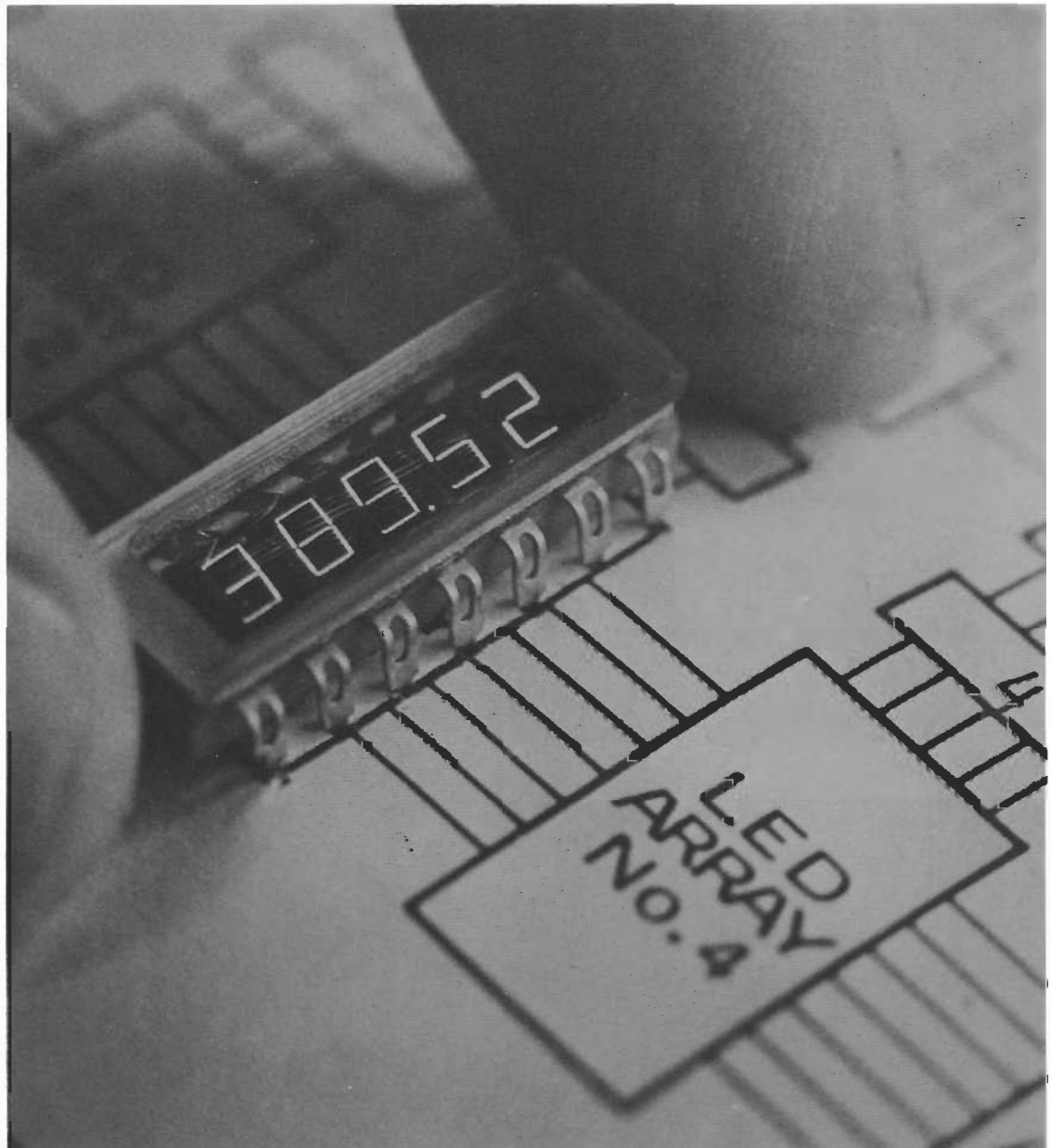
## Hewlett-Packard Components

The last time you rode in a taxicab, you may have looked at one of the relative newcomers to the Hewlett-Packard spectrum of activities. Solid-state displays, one of the component range, have been installed by a taximeter manufacturer to ensure that the exact fare is clearly displayed. The displays are also found in digital clocks, calculators and cash registers.

Stemming from the necessity of supplying components to meet Hewlett-Packard's own component needs, their distribution is now an important part of the Australian company's operations.

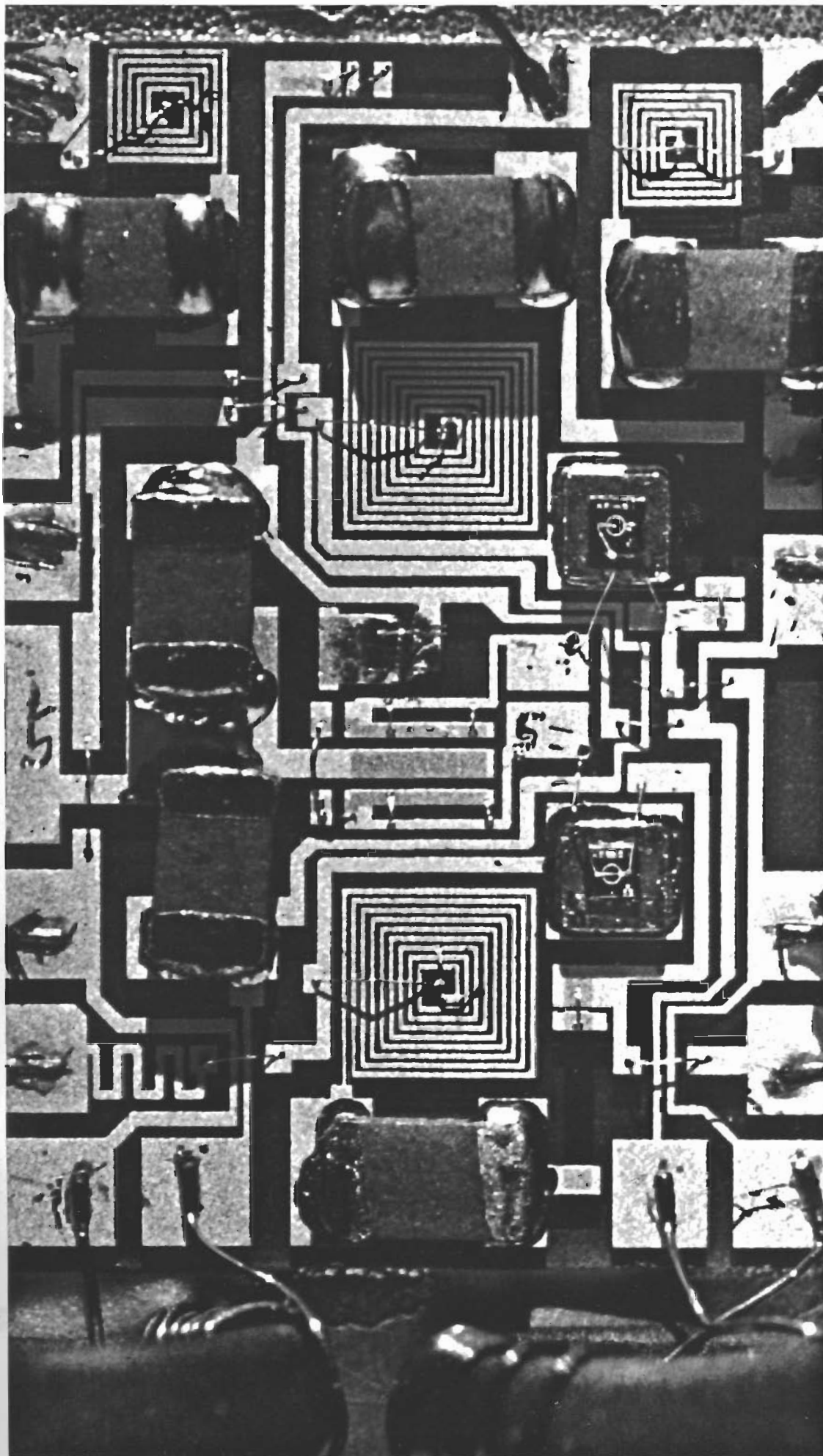
The current range of components includes diodes, transistors, thin-film circuits, solid-state displays, optoelectronics and both bipolar and MOS integrated circuits.

Hewlett-Packard's microwave components are found in numerous areas of Australia's telecommunications industry. Switches, modulators, microwave transistors and amplifiers are but a few of the products found in projects from coast to coast.



Solid-state displays are an increasingly used product of the Components Division. They are being seen in cash registers, taximeters and instrument read-outs. They are accurate and impossible to mis-read -- meaning a help for the consumer as well as the shop-keeper, driver or technician.

Hewlett-Packard  
Monolithic Solid-State  
Numeric Indicators



As outside demand grows and Hewlett-Packard's own requirements increase with continuing development, the component field will be yet more significant for the company. With it, the specialised design applications for Australian needs on levels throughout the community will continue to be developed.

Hewlett-Packard components are of such variety and multiplicity that they appear practically anywhere. This printed circuit is a backbone of many types of instruments, among them numerous HP products. Its compactness and ease of application mean a constant demand on the Component Division.



## Hewlett-Packard Analytical

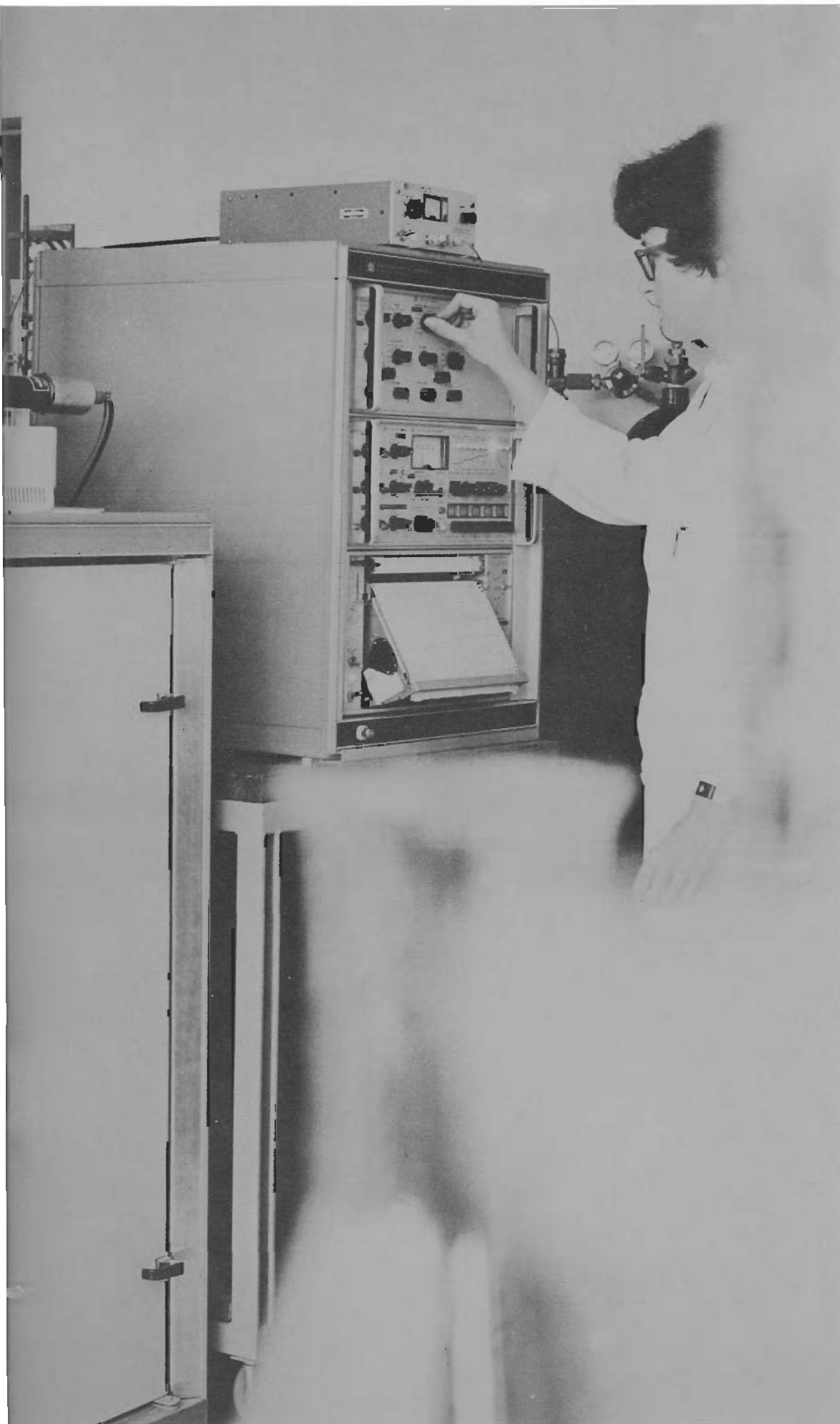
A Brisbane policeman makes an arrest; the suspect carries something looking like drugs. What is it? Identification of doubtful substances is an area where Hewlett-Packard Australia Pty. Ltd. is a well-known name through its Analytical Division. This is demonstrated by the Government Chemical Laboratory in the Queensland capital. Of course, the work goes beyond the drama of drug detection and criminal investigation. Many of Australia's social and environmental problems are among those examined by the Division's equipment—including air and water pollution, medical research, as well as production control in industry.

In Australia, as overseas, much of the Analytical Division's work is in the areas of gas chromatographs and associated products. Gas chromatography is a rapid and accurate means of chemically analysing unknown substances.

In addition to the myriad of industrial and governmental applications of the Analytical



A Hewlett-Packard Gas Chromatograph unit is used in I.C.I. Australia's Central Research Laboratories at Ascot Vale, near Melbourne, to determine residue levels of chemicals under trial for possible use as pesticides in addition to detailed analysis in support of company research projects.



Division's work, a growing place in the sports world has developed as well. A Hewlett-Packard chromatograph system monitored the use of drugs by athletes at the 1972 Munich Olympics and similar systems have been installed at a number of race tracks to deter the doping of horses.

The gas chromatograph on its own is an impressive piece of equipment, especially when coupled with the mass spectrometer system and a computer. It provides an effective method for separating a mixture of unknown compounds, determining how much of each is present in the mixture and positively identifying each compound. The system is able to do the job faster and more accurately than any other known method. Drug screening, crime detection, chemical analysis and research are but a few of the fields in which the mass spectrometer system is proving its worth.

With new emphasis upon heavy industry and research in Australia and a huge demand for precise, rapid information, the products of the Analytical Division are in increasingly higher demand.



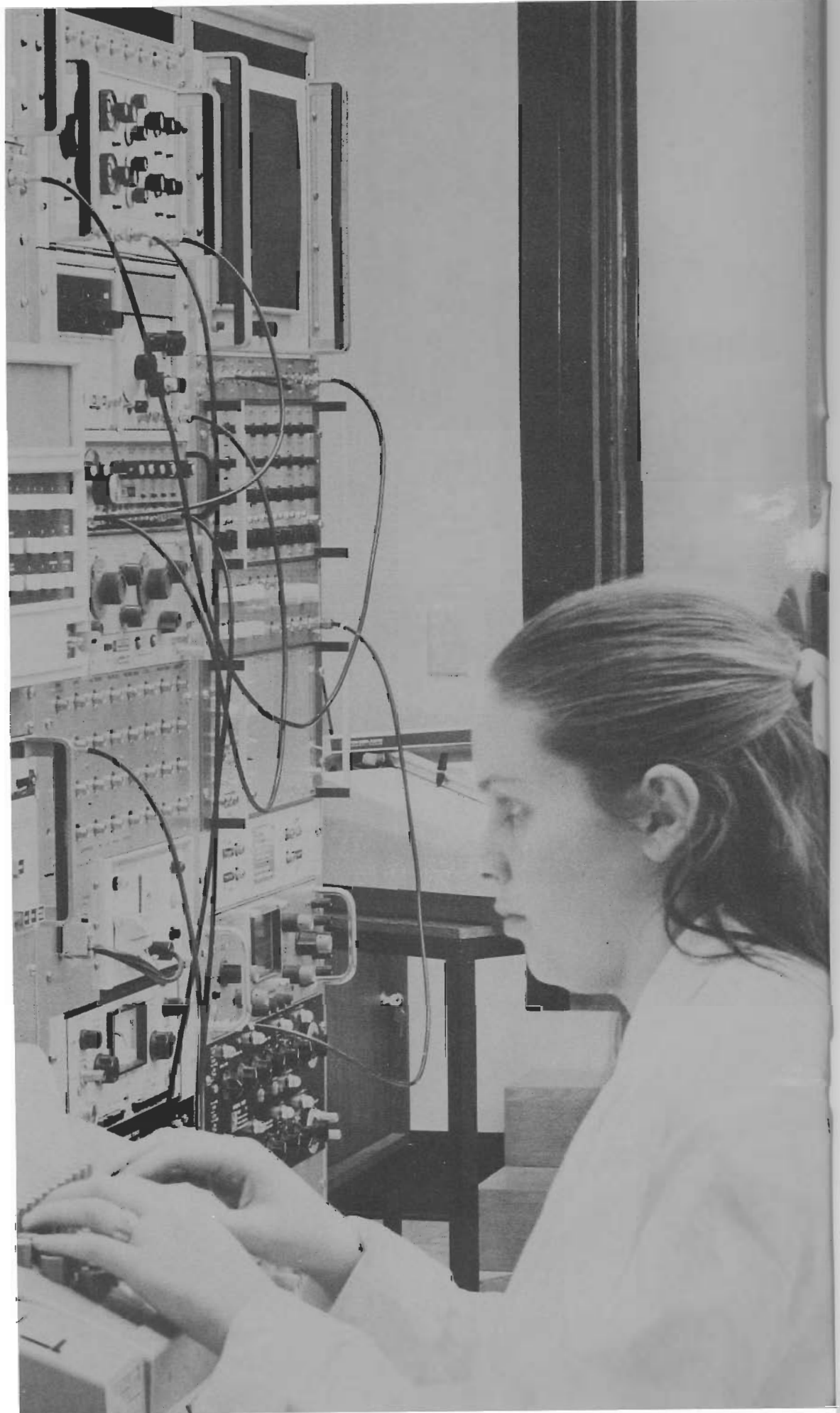
## Hewlett-Packard Data Systems

Data Systems produced by Hewlett-Packard are being found in increasing numbers across a broad spectrum of Australia's business, educational and technical life.

Data Systems essentially are basic computer systems which perform any number of computational functions. The systems are equipped with memory devices and various peripheral products such as print-out teleprinters.

The key to Hewlett-Packard's computer family is the HP 2100 Series. These are small digital computers used with company test and measuring instruments in systems applications. They also serve as the key elements in the company's time-shared systems.

In addition to scientific problem-solving, time-shared systems can handle an immense variety of processing functions — among them order processing, inventory control, sales analysis, vehicle identification, production scheduling, financial reporting and management training. In



Treating deaf children and teaching them to live normal lives is part of the work done at the Department of Otolaryngology at the University of Melbourne. The Department uses a Hewlett-Packard data system with computer link to provide an information basis for further research.





Australia, their use in these fields in widely diverse locations is increasingly common.

In 1974 a new computer system was released with the HP 3000. This system can simultaneously handle time-sharing, multi-programmed batch and on-line terminal operations — each in more than one computer language. This opens the door to even more varied computational functions performable by Hewlett-Packard Australia's Data Systems.

The company can supply an impressive range of peripheral equipment for use with the Data Systems. These include disc memories, magnetic tape units, high-speed plotters and card readers.

Data systems are playing an ever-increasing role in education. At this school in the Canadian province of British Columbia, a Hewlett-Packard computer system has a terminal in the classroom so students can use the equipment as an active learning tool. Students need only prepare their questions on special cards read by an optical card reader. The answer is then printed out in seconds.

## Hewlett-Packard Calculators

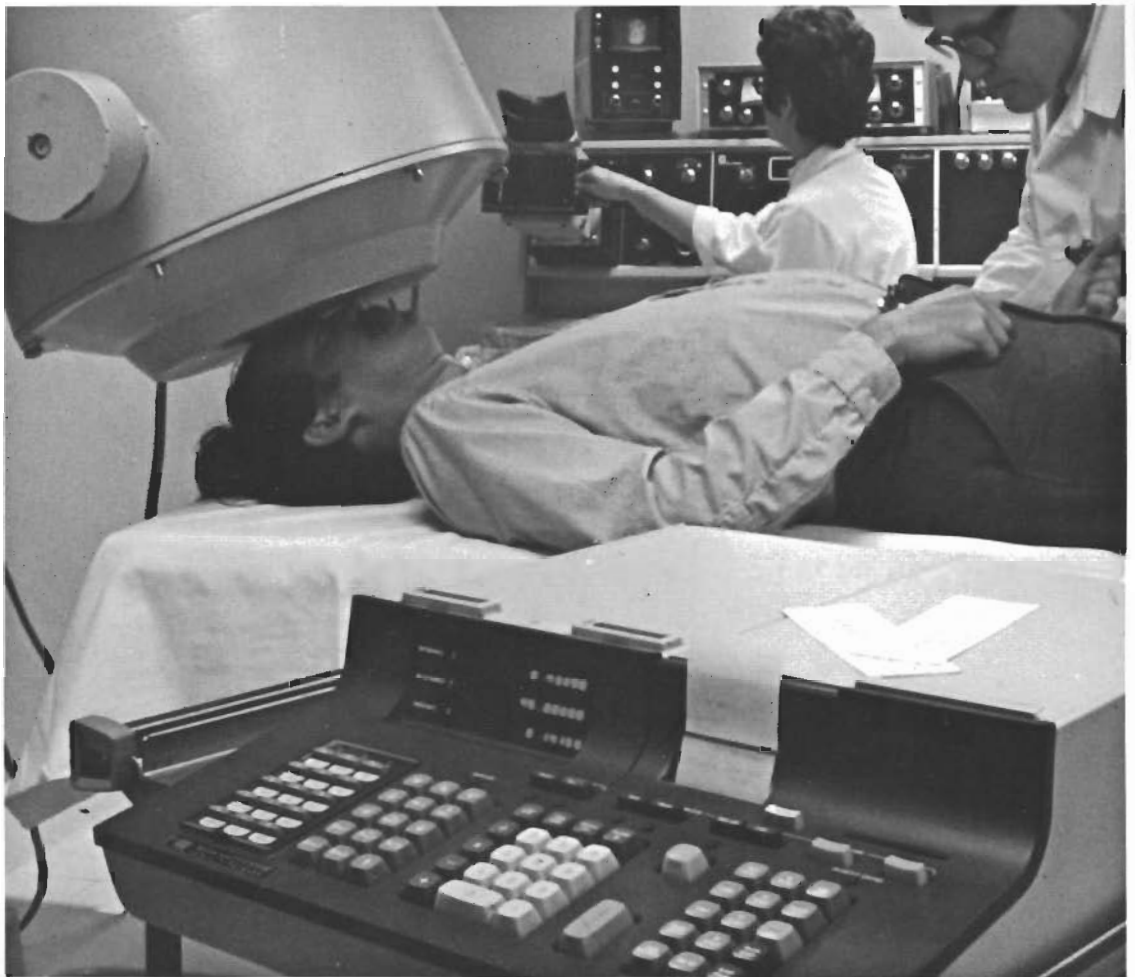
In Australia, as almost everywhere else, the growth of data products has been phenomenal — and calculating equipment is an important part of that growth. Calculators and ancillary equipment make up one of the fastest growing areas of Hewlett-Packard's expansion.

Some of Hewlett-Packard's most impressive products are small, nine ounce calculators, the seemingly innocuous HP-35, HP-45 and HP-80. These units, depending on model, perform all arithmetic, trigonometric and logarithmic functions, as well as several other mathematical and financial calculations, and do it all with unprecedented speed and convenience.

There are bigger Hewlett-Packard calculators as well. The HP 9821 Series desktop models gave the line algebraic capability when they were introduced. They are designed to work with Hewlett-Packard test and measuring instruments and can serve as the basis for a computer-orientated system. The 9830 model allows the operator to communicate with it in BASIC language, which is similar to English.

This is the first of the 9800 Series of Programmable Calculators — the Model 9810. It features optional plug-in blocks that can expand its memory and extend its performance. It is being used here to compute needed information for the physician as he treats a tumor.

An HP 9830A desk-top calculator and a 9866A Printer, in Melbourne, help to keep track of the complex transactions of Esanda Limited, the personal and commercial finance organisation of the Australia & New Zealand Bank.





## Hewlett-Packard Distance Measuring

The complexity of field projects makes earlier methods of measuring distance often impractical or obsolete. Hewlett-Packard's electronic distance meters now make possible rapid measurements which were once time-consuming and costly.

Surveying, construction, architecture, exploration, agriculture and science — all are within the compass of their application.

The meter's unique qualities were demonstrated before the 1972 Summer Olympics in Munich. A Hewlett-Packard unit ensured the successful construction of the 808,000 square foot, tent-like roof over the main stadium. The speed and accuracy of the distance meter made it possible to build the form-free roof in the limited time available.

In Australia, the role of the Hewlett-Packard distance meters grows accordingly as massive construction and development continues apace.

The Hewlett-Packard Distance Meter is one of the most effective surveying tools in use today. It can determine distance to an almost unequalled exactness. Here, one is ready before being put to work.



A Victorian water authority office uses an HP 9810A desk-top calculator and digitiser in Melbourne to trace hydrographic charts.

Hewlett-Packard's wide range of pocket calculators include the HP 35, the HP 45 and the HP 80. They are individually suited for the disciplines of various fields and are widely used in many areas, including engineering, commerce and pure science. Their compactness and instantaneous response in many mathematical functions explains why they represent one of the company's most successful products.



## HP and the Future

As man tries to push back the frontiers of knowledge, Hewlett-Packard will be represented in the future, which the company is even now helping to change. HP plays a large part in pure science technology with all of the disciplines well provided for in terms of equipment and instrumentation.

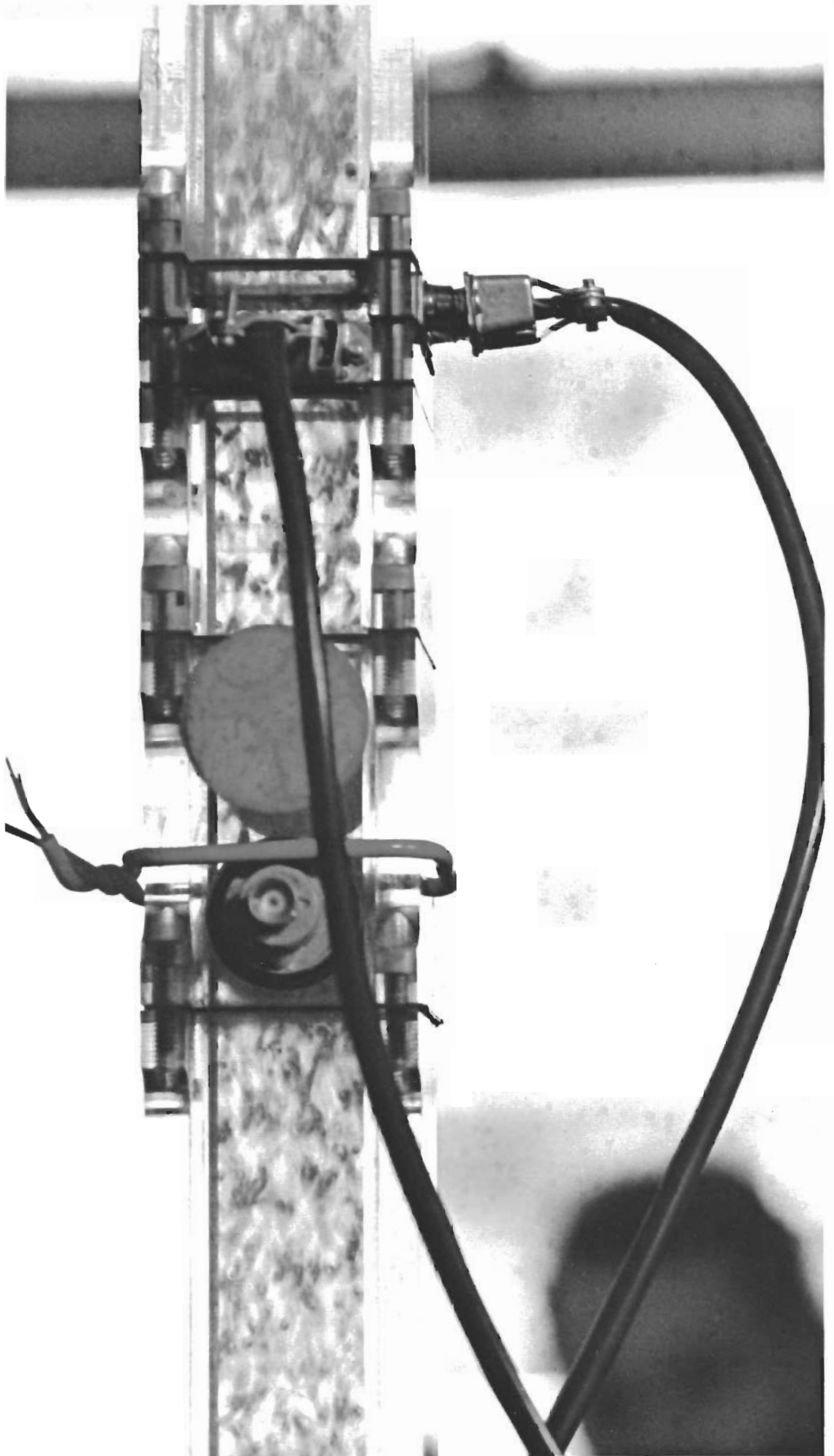
The ability to work amidst new levels of scientific activity demands entirely new techniques and entirely new forms of equipment. Hewlett-Packard's design engineers are hard at work to meet the challenge and to anticipate new scientific needs.

The latter half of the 1970's may well be characterised by a search for new energy sources. The horrific uncontrolled energy released in the hydrogen bomb is now the object of careful scrutiny in an effort to bring it to heel.

Some of the work in this field is being carried out at the Atomic Energy Commission in the Sydney suburb of Lucas Heights. Hewlett-Packard equipment consisting of a Correlation/Bubble Chamber System linked to computers gives the A.E.C. engineers improved technical support in very precise and intricate experimentation.

Whatever the need, whether it be for a business trying to compute its buying needs or whether it is for scientists trying to harness thermo-nuclear energy, HP equipment and technicians will help to make it possible.

Hewlett-Packard instrumentation plays a major role in the work of the Atomic Energy Commission's Lucas Heights, N.S.W. facility. A brief look at the future is suggested by this Correlation/Bubble Chamber system monitored by HP equipment.



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