A surgeon from the Monash Medical School at Prince Henry's Hospital has performed a medical first in Australia. He has removed a patient's kidney, repaired it on outside apparatus, and then returned it to its rightful place.

Mr. David Scott led the work, assisted by Mr. Ken Myers. Both are surgeons and senior lecturers in Monash's department of surgery at Prince Henry's. Their special interest is in kidney transplants. Over the last 15 years, Scott says, some 15,000 transplants have been done around the world, 1,500 in Australia, 300 in Melbourne, 50 at Prince Henry's.

The kidney had to be kept alive during the recent operation; so it was linked to a perfusion machine, the machine used for storing kidneys when transplanting from one patient to another.

The essence of the perfusion machine, Scott says, is that it keeps circulating blood plasma through the kidneys, though at a temperature of 10 degrees Celsius instead of the normal 37. In that way the demand on the kidney, its working rate, is reduced to five per cent of normal. It really amounts to cold storage level of activity.

The operation was possible at Prince Henry's because it owns and operates Melbourne's only perfusion machine, which stores the kidneys required for Melbourne's transplants at some five or six centres.

The patient was a man, 45 years old, who had "an aneurism of a branch of the renal artery"—that is, a swelling of an artery leading to the kidneys. (An earlier word for the kidneys was the "reins", hence renal.)

Normally, Scott says, a kidney with this defect would be removed because of the risk of a rupture of the aneurism.

In this instance, he said, it could be repaired provided the repair was done on the bench.

This technique, Scott says, is no more than an extension of known techniques of preservation by perfusion, using the patient's own organ, hence the notion "auto-transplantation". Since the transplanted organ is the patient's own, it cannot be rejected.

Scott and Myers, starting at 8 a.m., removed the defective kidney and transferred it to the bench on the perfusion machine. There they put a patch on the defective artery, using a piece of the patient's vein.

By the time the kidney was re-installed and connected up, and the operation completed, it was 8 p.m.

In the meantime the patient relied on his one remaining good kidney—he could in fact have gone all day with no kidney.

The patient was discharged from Prince Henry's two weeks later, with both kidneys functioning well.

Scott points out that the combination of circumstances that calls for this technique is relatively rare: the usual choices are (a) repairing in the body, and (b) removing and substituting a transplant, with a risk of its being rejected.

The operation has been done twice in the USA, where Professor Fred Belzer pioneered it in San Francisco.

For this, the first in Australia, Scott was ready with the equipment, but had to wait until the patient presented with this kind of problem. "We might expect to use the technique only two or three times a year," he added.

"We will be able to use the technique on other diseases of the kidneys such as stenosis (narrowing) of branches of the renal artery, or with early cancers of the kidney.

"The concept of bench surgery also has application to heart surgery, especially to difficult congenital abnormalities.

"This has not yet been tried anywhere in the world, but it is a possible application, although there are many problems to be overcome first.

"We hope the technique will be developed in other major centres," he said.

"Recognising the shortage of kidneys from donors, we need to restore every kidney we can, so that we can minimise the number of patients who might need dialysis and subsequent transplants."
**BRAILLE OUTLET**

Blind operators of phone switchboards and of typewriting machines are known to be skilled and successful.

A programmer in Monash's Computer Centre, who is blind, has come up with a read-out extension of computer systems that delivers the results from the program in braille, so that he can read the outcome of his own programs.

He is Tony Brown, a Monash graduate in electrical engineering.

Brown explains that a computer can do no more than it is told in the program; that he (Brown is able to write a program for a given purpose, using computer language and common letters and symbols; and that he can type that program into the computer through the usual keyboard at a computer's terminal.

(A computer has as many terminals as you please, Brown has one in his office.)

In due course, the computer sends back its answer through the terminal's typewriter, the answer being in symbols, English language, plotted points on charts, or in numbers.

But that's no good to Brown: since, in ordinary type, he can't read it.

So he set out to design and build a unit that converts the computer's output at the terminal into braille that Brown can read.

In this he was helped, as to "logic" and design, by Dr. Cliff Bellamy, director of the computer centre, and by a grant from the William Buckland Foundation for hardware and the making and assembly of it.

**AN INTERNATIONAL YEAR**

For Monash, 1974 has been a year of unprecedented activity in the fields of international scholarship, research, and the exchange of information. No longer is Australia at the far end of the world's educational, scientific and cultural lifeline.

Conferences in the faculties of law, engineering and science have attracted hundreds of visitors from a score of countries. Among them have been some of the world's most eminent authorities.

As well, there has been a constant flow of academics, researchers, writers and thinkers spending periods ranging from a few days to several months working alongside, lecturing to—even learning from—Monash's own staff and students.

**Engineering:**

In May, more than 300 engineers and acoustics experts attended a week-long international conference on Noise, Shock and Vibration organised by Monash's department of mechanical engineering on behalf of the University, the Australian Acoustical Society and The Institution of Engineers, Australia.

The visitors included speakers from 10 overseas countries and all states of Australia. The resulting published papers now are being widely quoted in the specialist and popular press.

**Professors Ron Barden and John Crisp of mechanical engineering were the organisers.**

Again, last month, mechanical engineering (with Associate Professor R. H. Brown in charge) played host to world experts at an international conference on Production Technology. Specialists came from UK, USA, Japan and several European countries. They included Dr. M. Eugene Merchant, research director of Cincinnati Milliron, USA, who delivered the 1974 Harold Armstrong Lecture.

Brown's system incorporates the terminal and its keyboard; a braille typewriter whose keys are operated by computer signals; and a local mini computer that has several functions:

- To monitor the out-going messages from the terminal, and the incoming messages from the main computer.
- To translate those messages from computer language to braille language.
- To emboss either message in braille through the braille typewriter.

Besides those controlling functions, the mini computer can (without going through the main computer) do the usual run of arithmetical operations found in the modern small calculators—now used by engineers in succession to their beloved slide rules.

With these braille-writing facilities, the user of the terminal would receive in braille from the main computer its acknowledgement of his program; in that way he can check on the accuracy of the program to be worked on.

Brown considered that the number of computer programmers who were blind, and so could use this facility, would at present be small—perhaps 10 or 20 in Australia; nevertheless here is a tremendous extension of their abilities.

But many more blind people, he says—from students at school to professionals—could use the computing properties of the mini computer as well as its braille output in the course of their studies and work.

Brown emphasised that 'his' apparatus, on the one hand absorbs the conventional terminal and its keyboard into his unit, but on the other hand requires no changes whatever in the hardware of the main computer.

Science:

Mathematicians, it appears, have a consuming interest in the two specially magical numbers, 0 and ∞ (zero and infinity).

At any rate, a group of mathematicians spent two or three weeks at Monash earlier in the year discussing NOTHING (as the local press said)—that is, ZERO, "and other abstract nonsense". The discussion was led by many notable logicians from overseas.

That was at Logic '74, a special event designed by Professor John Crossley of Monash's mathematics department, in conjunction with the annual summer research institute of the Australian Mathematical Society.

Still in the area of science, Monash's department of zoology in the past couple of months has mounted an intensive series of lunchtime seminars featuring about 16 world-ranking ornithologists and biologists.

The speakers were visitors to the XVI International Ornithological Con-
SEEDS ANCIENT AND MODERN

Monash has recently acquired a seed with a long and famous but uneventful history.

It is a melon seed that was stored, along with other foodstuffs and artefacts of fabulous value, in King Tutankhamen's tomb at Thebes in Egypt, in about 1350 BC.

After sundry breakings in, the tomb was finally opened by modern archaeologists in 1922. In just about 3400 years nothing happened to that melon seed.

The seed was sent by the British Museum in London to Dr. Neil Hallam of Monash's botany department, well known for his study of the viability of seeds.

Hallam has prepared it for detailed analysis and testing, including examination with the electron-microscope.

At this stage he is prepared to say:

- It is a melon seed, though he cannot say what variety or species.
- It is not viable—its embryo cannot come to life on wetting.
- He expects to find that the internal structure is still clearly recognisable as melon seed.

Before coming to Monash, Hallam worked at the Unit of Developmental Botany at Cambridge University, a unit of the Agricultural Research Council.

There he had access to the neighboring National Institute of Agricultural Botany which kept samples of cereals harvested each year in England since about 1870.

Hallam, working on those seeds of increasing age, has described how the embryo of a viable seed comes to life on wetting, and how the fine structure of a non-viable seed degenerates on wetting into a non-functional mixture.

Eleven of the common cereals, rye is the first to lose its capacity to grow, after about four years—wheat a good deal longer.

But he has found that the fine internal structure of the grains changes little if properly stored, even though the embryo may have died, perhaps long ago.

Ancient grains of wheat from Egypt, older than the melon seed by 1000 years and more, when examined at the Cambridge research unit a few years ago, "showed an amazing amount of fine structure still preserved."

While Hallam would not expect the ancient wheat and melon seeds to be viable, he is not able to say "whether the destruction or breakdown of cellular fine structure is due to preparative treatment before storage, or due to time itself."

Some mysteries remain about the treatment and history, or possibly the provenance of these ancient seeds.

Manchurian lotus

Take Hallam's lotus seeds from Japan.

In 1921 a Japanese botanist, excavating in Manchuria, said he found some lotus seeds at a site which he estimated to be 400 years old (later carbon dating suggested 1000 years).

When he planted the seeds, and others said to be 3000 years old, he said that they germinated and grew into healthy plants.

By devious means, involving a colleague from Monash who visited Japan in 1972, Hallam acquired some of those lotus seeds.

Seed No. 1 Hallam planted: it germinated and grew, but later died.

No. 2 he cut and sectioned for examination under the optical microscope and the electron-microscope.

No. 3 he sent to his unit at Cambridge (of which he is still a corresponding member) for intense biochemical studies.

Nos. 4 and 5 are being held for further study.

Here indeed is mystery: against all expectation, lotus seeds said to have been hundreds, perhaps two or three thousand years old, are said to have germinated—one did, in Hallam's laboratory here.

True, says Hallam, the lotus has a very hard, dense seed coat, that would resist wetting and splitting, as our seeds of acacia and eucalyptus are known to do for up to 150 years. But surely not for hundreds and thousands of years.

Now, a hint has been dropped that those lotus seeds are only about 100 years old.

Why, you may well ask, doesn't Hallam, or someone, do a carbon dating on them? Because, he says, you need about 50 grams in your sample for carbon dating; that would take about 70 seeds—he only has five. So he cannot make that kind of independent check on age.

Hallam remarks that the problem of evidence and of identification versus hearsay and circumstance is an occupational hazard that besets the investigator of the ageing process.
THE PLAY'S THE THING

To Dennis Bartholomeusz, senior lecturer in Monash's English department, a play, like a musical score, is created to be played, not merely to be read. Drama is a thing done.

One who reads the playwright's work must carry in his imagination the stage and the theatre for which it was written. Since the play's the thing, what the audience sees and hears is the author's play interpreted through the imagination of the players.

Over the last 300 years, Bartholomeusz says, Shakespeare's plays have been presented, and therefore interpreted in many different ways by many famous players and their companies: Macbeth, for example, in London alone, has had over 100 major interpretations from 1611 to the present day. Yet players come and go, and their works lie interred with their bones.

What Bartholomeusz set out to do, for Macbeth in the first instance, was to resurrect the interpretations, or possibly to shake some skeletons out of cupboards: to discover how the text was brought to life in different ways over the years, or trifled with, or perhaps changed beyond recognition.

Evidence is surprising

Going back 100, 200, 300 years, what evidence could he possibly find that would indicate how the lines were spoken and played, what movements and gestures, what clothes and settings, lighting and music were employed? A surprising amount of evidence, he says, if you dig deep enough.

A prime source, Bartholomeusz said, could be the several companies' prompt books—the prompt book being a scissors and paste version of the text with room for diagrams and detailed directions; these were usually written in the director's or prompter's own handwriting.

Some 150 major prompt books of a single tragedy like Macbeth are known; all the major known prompt books for all Shakespeare's plays have been catalogued. A Garrick's prompt-book of King Lear was recently discovered in Melbourne.

But, as Bartholomeusz points out, though the prompt book gives instructions, the performance may not follow those instructions.

Prompt books must therefore be tested against contemporary descriptions, reviews in the literary magazines and in the daily press, and against comments in private or published correspondence.

A rich source of detail, too, was a company's account books, where sets, costumes, properties, music and lighting were listed and costed.

Paintings and portraits, and sketches in the illustrated papers give some indications of the contemporary scene; then the camera, the phonograph record and their successors, and now the video tape that records the whole performance.

Bartholomeusz committed his discovery and analysis of the evidence on Macbeth to a book of 300 pages Macbeth and the Players (Cambridge University Press, 1969); it covered the period from 1611 to 1964, and included recent interpretations by Gielgud, Olivier, Guinness, Richardson and Eric Porter.

Confining the study to a single play, he said, brought the interpretations into focus, still further sharpened by concentrating on the two principal characters, Macbeth and "Lady M."

Macbeth and the Players brought Bartholomeusz a wide reputation, a Fellowship at the Folger Shakespeare Institute in Washington DC, and a visiting associate professorship at the University of Illinois, in 1972.

In Monash's English department, Bartholomeusz has injected his methods into directing performances by students and staff in the Alexander Theatre: King Lear in 1966, Coriolanus in 1973.

For Coriolanus last year, he organised the students in groups to make their own discoveries of methods of presentation, and to make recommendations for their own production.


Bartholomeusz reminds us that Jacques Maritain once said "poetry is the secret life of all the arts" and that Shakespeare's plays contain some of the most expressive poetry ever written. Understanding a play like The Winter's Tale, he says, can never be only a technical or scholarly affair; it must be a creative act.

THE MONTH AT MONASH

Melbourne readers of Monash Review are invited to watch for this heading in "The Age" at the turn of each month. (Reprints are available from the Monash Information Office.)

The advertisement lists all the lectures, concerts and entertainments at Monash that are of general interest and are open to the public.

It began in September, 1972, with a promising 20 entries. Now, after just two years, it offers some 30 or 40 entries, roughly in the proportion of five in the Alexander Theatre, 10 performances in Robert Blackwood Hall, and 20 lectures, films and seminars of various kinds in various theatres.