MAJOR ADVANCE IN SPECIAL EDUCATION

Monash University is to have a new child training centre for use in special education. Its establishment is largely due to a gift of $100,000 by Mr Henry Krongold, a Melbourne businessman.

In recognition of the gift, the University will call the building the Dinah and Henry Krongold Child Training Centre, after Mr Krongold and his wife.

The centre, which ultimately will cost about $300,000, will greatly expand the Monash Faculty of Education's work with children who have learning disabilities.

[Previous issues of Monash Review have mentioned the Faculty's work in this field: in March, 1973, there was a report on Professor Marie Neale's contribution, and in July, 1973, a report on Merrill Jackson's teaching aid.]

The centre will be built alongside the education faculty and the existing Elwyn Morey Child Study Centre, which includes a kindergarten. The floor plan on page 2 shows the several functional, professional areas.

It is hoped that construction will begin late this year and be completed in 1974. The balance of the cost will be met by a grant approved by the Minister for Social Security (Mr W. Hayden) under the Handicapped Children's Assistance Act.

The Krongold Centre will be under the control of a staff headed by Professor Marie Neale, who has won an international reputation in the field of special education.

The centre will contain five principal areas:

- For motor development and coordination: there is much evidence that manual and verbal skills are improved when better motor coordination is achieved.
- Experimental and diagnostic rooms.
- Areas devoted to difficulties in receiving, expressing and interpreting speech.
- Rooms for special instruction, creative play, domestic training and social interaction.
- Service areas — mainly consulting rooms for visiting specialists.

The Dean of the Faculty of Education, Professor S. S. Dunn, said that the centre, in addition to providing training for handicapped children, would also:

- Provide advanced training for teachers who intend to make a career in special education.
THIN AIR

The trouble with a gas is you can’t see it; even with the few that are coloured, you can’t see their molecules and their movements: you must study them in bulk.

The steam that James Watt saw coming out of his tea kettle was not gas, but small drops of liquid, a condensate.

Smoke is a cloud of small particles of solid material, each so small that it falls slowly in the air.

The gas laws, about volume and mass, pressure and temperature, density and elasticity, have been worked out over the last two hundred years by experiments and argument on gas in bulk.

From those observations, it has long been inferred—and now taken as a fact—that the regular behaviour of a gas in bulk derives from the random motion of its molecules; that the momentum of the molecules creates the pressure of the gas; that their energy of motion (based on the squares of their velocities) is its temperature.

The study of heat and thermodynamics and of gases, even of liquids and solids, through the behaviour of molecules in motion is the modern science of statistical mechanics.

But Dr. Christopher Wallace, professor of information science at Monash, wanted to see the molecules in action; to see whether the summed (statistical) behaviour of the individuals in fact gives the effects observed in bulk.

Of course impossible to do in fact, but perhaps possible in fiction, in a model?

Being a mathematician working “on paper” rather than a physicist working with things, Wallace could perhaps invent a game with imaginary particles, assign imaginary motions to them and “see” (as a matter of arithmetic) what happens next.

So he “made” a model of a two-dimensional gas (that would be difficult enough—three dimensions would be a lot more so) of up to 2000 particles in a shallow box, one particle deep, marked out in a grid of 16 x 128 squares (2048 of them).

The particles were to move from one square to another at varying assigned initial velocities. This was to be done in such a way that at any time after the start the position of each particle along and across the box, and its velocity along and across the box, would be calculable.

Certain obstacles were to be put into some of the squares, representing physical inputs or physical restraints on the gas. One set of obstacles, for example, represented heaters, others represented barriers or restrictions on the motions of the particles.

To simplify the arithmetic, velocities were to be assigned at the start in integral numbers; rules had to be devised to cope with multiple occupancy of squares: all in all, a special game of moves, with collisions forming a large part of it.

Starting off in any given way, with initial positions and velocities, the next position and velocity of each particle could be computed, and the next after that, and so on as long as he pleased—for thousands of runs if necessary.

The total energy at any move could be computed, the sum of the squares of the individual velocities, leading to a measure of temperature and changes in temperature.

Working on some of the gas laws with this model, notwithstanding its simplifying limitations and rules of play, Wallace found them well enough confirmed.

For example, after the particles had reached a given steady state of energy in the box, he was able to show that the distribution of velocities among the particles (or the numbers of particles having 1, 2, 3 etc. units of velocity) were close to what theory would expect.

What happened when you heated a gas? Into the box of 2000 particles Wallace put what amounted to heaters, and observed the increase in velocity and therefore in energy of the particles. The rise and rate of rise in energy agreed fairly well with the expected rise and rate of rise of temperature in a gas.

Wallace tried diffusion in his box. (The diffusion of one gas into another is well known: eventually each will be uniformly mixed, or distributed, with the other).

He divided the box into half with a suitable but not impenetrable barrier, and put 500 particles into one half, and set them in motion.

In due course, as expected, close to half of them had passed (diffused) through the barrier, equalising the pressure and temperature in the two halves of the box.

The final triumph: he succeeded in measuring the velocity of sound in his moving particles, his model gas. Again, he got good confirmation of the appropriate law, except, as it happened, at very low “temperatures”.

Wallace sums up his experiment by saying that the behaviour of “even his very simple deterministic gas model conforms closely to the predictions of statistical mechanics”.

But, as Wallace ruefully points out, he had no box, he had no particles. The whole thing was a put-up job; a long and repetitive program on a computer!
INDIGENES UNDER THE LAW

Monash, alone among Australian universities, has a Centre for Research into Aboriginal Affairs.

The centre is concerned not with what the Aborigines were—for example, their history and archaeology—but with the practical problems facing them now, such as health, education, employment, social change.

Since the part-time director of the centre, Dr. Elizabeth Eggleston, is a lawyer, her interest is the legal status of Aborigines. Our issue of March 1971 quoted on her enquiries that showed clear evidence of discrimination against indigenes in the enforcement of white man’s law in Australia.

She recently visited the USA to find out whether things were any better there, where the corresponding minority is not the negroes, but the American Indians.

“I had expected to find the Indian situation much better than the Aboriginal one—after all, Indians have had the benefit of some degree of self-government and some form of ‘land rights’ for years. But in many ways the pattern of Indian involvement with the criminal law is depressingly similar to that of the Aborigines.”

By far the commonest offence for whites, blacks and Indians in the USA is public drunkenness. But the proportion of Indians arrested for that offence is twice that for whites.

The typical urban Indian ‘criminal’ is an alcoholic, living on or visiting Skid Row, being processed through the lower court’s production line, serving a life sentence by instalments.

On this situation, Elizabeth Eggleston makes two comments. First, most lawyers and criminologists who have considered the question believe that public drunkenness should not be dealt with by the criminal law. To concentrate on law enforcement as a method of dealing with alcoholism is inhuman, inefficient and therefore wasteful. Other measures must be adopted and adequately funded.

Her second point is this: as well as being taken out of the law, alcoholism needs to be tackled in a wider context than ‘cure’: as a symptom of the two-edged problem, the material poverty and the cultural stress of Indian—and Aboriginal—communities.

Elizabeth Eggleston explains that her interest was the urban Indians. The sign at Wounded Knee was a protest on behalf of the reservation Indians, though some from the cities joined in.

Indians, she discovered, rarely enjoy the benefit of defence in court, notwithstanding two recent and famous decisions of the US Supreme Court declaring that any indigent defendant who faces a possible sentence of imprisonment is entitled to free counsel.

Many Indians, she found, felt that the city’s legal aid agencies were not designed for them but for poor whites, blacks and Spanish-speaking peoples.

The most promising developments in Indian legal services, she found, were those that are under Indian control, and that use the services of Indian attorneys.

Owing to accidents of history, the areas in which legal services are being provided for the aboriginal minorities differ between USA and Australia. For the Indians, the need for legal aid is in urban areas; in Australia (where the need was first felt in the cities but is now partly met there), it is in the more remote rural areas.

It is in political terms that the Indians are beginning to see the answer to their urban problems of criminal justice. It is not so much racial discrimination, one of them said, as their own lack of political power. In urban Indian communities, the best hope of finding solutions rests on Indian involvement.

Aborigines and Indians, she points out, share a similar history as indigenous peoples largely dispossessed of their land by invading Europeans. They now find themselves a small minority in a society dominated by people of a different culture.

This common history appears to be more significant than the attempts in either country that have so far been made to improve their position.

PUBLISH OR PERISH

Though Monash does not have a University Press as a publishing house, the University, through its publications committee, does assist authors to publish their works.

The Committee’s secretary, Mr Reuben Havin, says that it is just ten years since the committee first met and began the University’s academic publishing program.

Since then, with the aid of financial grants, the committee has ensured the publication each year of some seven or eight books and monographs.

Among those now going through is a series of monographs from Monash’s Centre of Southeast Asian Studies. The first, on the Indonesian Communist Party and Land Reform, appeared last year. The second, on the 1971 Indonesian elections, should come out at the end of 1973.

Examples of other recent works published with the help of the Committee include studies on the Mallee-Wimmera Complex, Monetary Relations, Jews in Australian Society (in collaboration with Macmillans), and Language Contact.

The Committee also provides financial assistance to three academic journals published within the University: Australian Journal of French Studies; RAMUS, Critical Studies in Greek and Roman Literature; APEIRON—a Journal in Classical Studies.
CREATED HE THEM

Anyone who has read Konrad Lorenz's "King Solomon's Ring" will know that the behaviour of animals has become a serious study en route to the study of man as an animal.

In Monash's psychology department, Dr. Stella Crossley has a special interest in behaviour genetics—that is, the influence of heredity, of genetic changes, on the behaviour pattern of animals. (Other work in behaviour is to be found in the zoology and physiology departments.)

To get a sufficient and significant body of data on a given species, you need not only a large number of specimens within a generation, but equally importantly, a large number of generations and of genetic differences between them.

The classic choice falls on a small, harmless, two-winged fly, about 5mm long, Drosophila melanogaster, commonly known as the vinegar fly, which develops from egg to adult in nine days. In the 1950s the mating dance was discovered as a characteristic behaviour pattern of this fly, simpler than but comparable to patterns in higher animals, including vertebrates, that Lorenz was studying.

Crossley uses the wild (genetically stable) type of this fly as her basic "animal", followed by mutants artificially induced by irradiation. Her interest is whether mutants behave differently in the courtship dance; whether the differences in behaviour are due to or are affected by changed or defective qualities in male or female. In short, do genes influence behaviour?

Her method is to observe a pair of flies in a small cell under a low-power binocular microscope. Two observers, each using one of the eye-pieces, observe the pair, one noting the motions of the male, the other of the female. (Crossley's main contribution was to observe both members; previous workers tended to concentrate on the male.)

In her early work, Crossley developed a shorthand symbolism to represent the distinguishable movements for both male and female, movements that could be recorded quickly enough (every 1 1/2 seconds, timed by a metronome) and in sufficient detail to render them countable, and therefore analysable.

In the more modern style, their pages and pages of pencilled shorthand have been supplanted by a simple press-button time-event recorder, with sufficient keys to cover the expected variety of moves. By counting the movements, a pattern of events can be constructed, and the repetition of events shown on a diagram against time.

With the genetically stable wild type, the base material, a consistent pattern emerges—not necessarily strictly cyclical or repetitious, but a clearly recognisable pattern nevertheless.

With the mutants, things change: breaks occur in the cycle, the breaks of varying length, with different and more random behaviour turning up in the breaks.

Having noted a significant difference in the behaviour of the mutant, the difficulty now is to find what is it in the mutant that causes the difference: is the mutant sexually reluctant, or tired or even incapable? Perhaps it cannot see its mate properly; or it has changed or lost its sense of smell; or perhaps it has been changed so as to mate better in the dark than in the light.

Crossley has examined these possibilities one at a time, and is left with the explanation that the immediate cause of the misbehaviour is defective vision, and that this defective vision is identified with the action of a single gene.

The early psychologists readily believed that heredity influences physical characteristics: height, weight, colour of hair, colour of eyes. But they were reluctant to accept that genes influenced behaviour, especially human behaviour. In man, learning was considered to be sufficient to explain all differences in behaviour.

Now, Crossley's studies show clearly enough that genes do influence the behaviour of animals. Is man, as a animal, any exception?

CONTINUING EDUCATION

For some time the University has been convinced that it should do something about "continuing education"—for persons outside the usual courses and curriculum.

To that end, a Centre for Continuing Education was set up earlier this year, with Dr. Jack McDonell as its first director.

Since, as McDonell points out, continuing education is a combination of "what the client wants" and what the university can offer, its content is wide, and its detail not altogether clear until people start knocking on the door.

In the broadest sense, the centre hopes:

- To assist in the organisation of activities that use the particular resources and expertise of the university in meeting the educational needs of adults.
- To promote a wider range of those activities.
- To explore new techniques for extending this service.

McDonell is starting by making his own enquiries on "the demands of the market"; to see where and what are the ideas that could be worked up, the activities that could be run, and the most effective educational methods and media.

He hopes to promote on-going activities of all kinds by providing the administrative and organisational assistance to get them going; for example, bringing people up to date on courses they have already done 10, 20, 30 years ago; or introducing professionals to new developments in their own or adjacent fields.

So, the director invites readers of Monash Review, who may have any interest whatever in some aspect of continuing education, to write to him with their suggestions or enquiries, however hopeful, however optimistic, or however unlikely.