Biological Sciences

At times, when the problems of luring the chemists to Canberra seemed insoluble, some senior members of the University suggested deferring the proposed chemistry school and promoting a school of biological sciences instead.

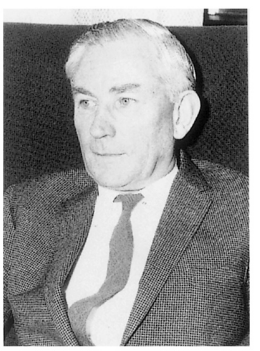
Sir David Rivett of the CSIR had argued for a biological science school as early as 1946, but Coombs had overruled him on the grounds that it was safer to get the four original schools well established before introducing new ones. The idea was raised again in 1961 by the Australian Academy of Science. The Academy, founded in 1954, was itself largely the creation of ANU and CSIRO scientists. Lately ensconced in an igloo-shaped building just outside the campus, it enjoyed a symbiotic relationship with the University, giving ANU academics who were also members of the Academy an opportunity to play a prominent part off campus in scientific initiatives which might have a direct impact on the ANU. At the time the school of biological sciences was being discussed, Frank Fenner was the Secretary (Biological Sciences) in the Academy, and therefore well placed to exert the necessary pressure.

The main argument for a school of biological sciences was simply expressed in a letter to Fenner from several biological Fellows: while astronomy and space research were receiving large sums of money, Australia's flora and fauna were being grossly

neglected. The Academy responded by setting up a Flora and Fauna Committee, whose members included Fenner, Ennor and Huxley; and as a result of its report Fenner drafted a letter for the President of the Academy to write to the Vice-Chancellor, Huxley, urging the creation of a research school of biological sciences and pointing out that Australia's flora and fauna were 'unique, to a greater degree even than the southern heavens'. Fenner then handed the letter to Huxley, who was at this time his opposite number in the Academy, as Secretary (Physical Sciences). Huxley quietly put it into his top drawer lest it get in the way of the chemistry proposal, an object lesson in the dangers of not sending mail through official channels.

But there was sufficient enthusiasm for the initiative, especially among the professors of the John Curtin School, to keep it alive. In order to develop a detailed plan, Fenner, now on leave in Cambridge, approached David Catcheside, Professor of Microbiology at the University of Birmingham, who had lately been considered as a likely prospect for a proposed chair of Genetics in JCSMR. In 1963 Catcheside accepted the chair, along with the formal title of Adviser of the projected school. Unlike the earlier Advisers and the three chemists, he was not Australian or New Zealand born, but four years in Adelaide as Professor of Genetics had established his Australian credentials. He was also older than the other Advisers at the time of their appointments, although he looked and sounded younger than his 54 years. While some regarded his work as a little old-fashioned, meaning that he was not directly engaged in DNA research, he was enthusiastic about his subject and had shown no signs of decreasing productivity.

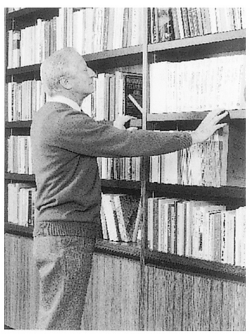
Over many years, Catcheside had become convinced of the need for an integrated approach to the biological sciences, based on genetics as the core discipline. Although his Birmingham chair was in microbiology, its purpose was to bring together genetics (especially microbial genetics) and biochemistry in what could later be seen as a sort of precursor to the study of molecular biology. The function of biology, he said, was 'to explain the nature of life'. Traditionally, biologists had approached this task in diverse ways, and often quite independently of one another. They were concerned with animals, plants or microbes, with emphasis on particular groups or activities. They focused on individual organisms or whole populations. They employed different methodologies, broadly categorised as descriptive, biochemical, biophysical and genetical. As a result of this diversity, biology was divided into many separate and largely independent specialisms, such as embryology, anatomy, ethology and taxonomy, and others that were defined by the organisms that were the object of their study.



David Catcheside at the time of the inauguration of the Research School of Biological Sciences in 1967.

Yet biologists were coming to realise that they all had a great deal in common. 'Living organisms', said Catcheside, 'consist of a limited range of special molecules, especially large ones such as proteins and nucleic acids, which are built up from a limited number of small basic molecules which are strung together in various orders... The whole range from molecules to population is a continuum, which it is the purpose of biology to understand as a whole.' He therefore argued that the new school should abandon the traditional specialisms in favour of an integrated attack on four specific problems, each of which needed to be developed in Australia: the relation between molecular structure and function, with special reference to proteins and nucleic acids; the mechanisms of

development and differentiation; the dynamics of populations; and animal behaviour. The first two of these were at one end of the biological science spectrum, the second two at the other. As with the Research School of Chemistry, the school would have no departments and no boundaries, permitting easy adaptation to new research interests. Catcheside delivered a warning: the success of the integrated school would depend on staff and students in the various areas taking a lively interest in one another's work.



Ralph Slatyer, Professor of Environmental and Population Biology.

Compared with the Chemistry school, the Research School of Biological Sciences (RSBS) progressed smoothly to a subdued inauguration in 1967. Catcheside, with most of his department, moved across from the John Curtin School as Professor of Genetics and first Director of the school, and professors were promptly appointed with expertise relating to two of the four selected fields: Ralph Slatyer, who was Chief Research Scientist in the Division of Land Research at the CSIRO, accepted a chair in Environmental and Population Biology; and Dennis Carr, Professor of Botany at Queen's University, Belfast, came to a chair in Cellular and Developmental Biology.

Within a year it was clear that, while the idea of an integrated school might be sound in theory, it was extremely difficult to put into practice. Each of the new professors had his own research program, which bore no necessary relationship to what was happening in other parts of the school. And each was determined to see that his research area received its fair share of the available resources. Carr argued that differences in terminology and methodology among the various branches stood in the way of adequate communication, making integration all but impossible.

These problems were compounded by accommodation arrangements. Where the chemists had insisted on the need for a single building at the outset, Catcheside thought the building could wait. As a result, the staff were scattered—Slatyer in RSC, Carr in a timber block near JCSMR, Catcheside and his own small group in another part of the timber building, and the rest of Genetics in JCSMR—and people from distant groups rarely had the chance to talk to one another, even if they had wanted to.

Catcheside tried to forestall the inevitable, arguing that it was easier to create a departmental structure than to break it down. But less than two years after the school's inception, he had to accept that the existing informal divisions were departments in all but name, and that therefore they might as well be given the same degree of budgetary autonomy that departments enjoyed in other schools. So the four original research 'problems' were converted to departments of Genetics, Developmental Biology, Environmental Biology and Behavioural Biology, supplemented by two units (a term recently introduced in other parts of the University) of Molecular Biology and Taxonomy. Before long, two new departments were added, in Neurobiology and Population Biology. Catcheside continued to argue that integration was the way of the future; but by the time of his retirement in 1972, the departments and units were well entrenched. Although a new Director, the former Master of University House, Sir Rutherford Robertson, and a new permanent building, mostly occupied by 1973, helped in different ways to bring it together, a later review committee described the school as a set of watertight compartments, some with imperial and separatist heads.

Why had Biological Sciences failed as an integrated school where Chemistry had

evidently succeeded? Part of the answer lay in the nature of the respective disciplines, the one relatively coherent, the other divided into any number of sections and subsections which had evolved over many decades. Then there was the practical matter of dispersed accommodation. But most of all, Biological Sciences suffered from the structural weakness that the Chemists had avoided, of having a director of a non-departmental school. Catcheside's job was almost impossible. And he was not the person for an impossible job. Birch and Craig, though very different from one another in manner and style, were as one on the things that really mattered, and together they made a formidable team. Catcheside, while strong in his opinions about the benefits of integration, lacked the assertiveness and leadership skills to give them effect, especially in the face of determined opposition from one of his professors.

Sir Rutherford (Bob) Robertson, second Master of University House and second Director of RSBS.

Although Catcheside lamented the failure of his integrated structure, the respective departments were achieving a great deal. By 1975 the school had 65 academic staff and 50 research students, working on living matter ranging from the smallest organisms to humans. The report for that year described major achievements in all departments, referring to 'the exciting atmosphere in which advances in much of our knowledge are made'. The Department of Neurobiology was working on problems of vision and hearing in insects and crustaceans, which had relevance throughout the animal world. The Environmental Biologists were conducting research into the process of photosynthesis. The Behavioural Biologists, exploring the mechanism of memory, had discovered a class of biochemical inhibitors which blocked a specific process in brain cells and in so doing blocked short-term memory in fish, chickens and humans. The Geneticists were investigating how nitrogen is brought by bacteria from the air into the soil. The Developmental Biologists were using an electron microscope to analyse the fine structure of plant cells, while the Molecular Biologists were seeking to understand the mechanism of protein synthesis. The Department of Population Biology, although mostly concerned with the dynamics and genetics of insect populations, was beginning an analysis of a large sample of medical records from Sydney in order to study the inheritance of susceptibility to certain diseases in humans. All this was fundamental research, aimed at understanding biological principles, but often within easy reach of practical applications.