DAVID (DIRK) ZEIDLER (1918-1998)
BIOGRAPHY

This biography has been researched and written by Dr. Peter Yule, Research Fellow of the History Department of the University of Melbourne.

After Sir David's death, the Australian Academy of Science commissioned a memoir of Sir David for publication in its journal, *Historical Records of Australian Science* (HRAS) and online. The Academy commissions and publishes memoirs of deceased Fellows to record their contribution to Australian science. De Yule was the last of four appointees commissioned by the Academy.

Dr Yule independently researched and wrote this memoir. The Academy approved this memoir for publication in HRAS in 2005, subject to final editing, and has retained a copy in its archives. It has not been published by the Academy.

DAVID ZEIDLER AC, Kt, CBE, FTSE, FAA, MSc (1918-1998)

AUTHOR: DR. PETER YULE

Sir David Zeidler (universally known as Dirk) had the rare combination of a strong scientific research background and exceptional management skills that enabled him to bridge the gap between science and industry and make important contributions in both areas. In a speech shortly after his retirement as chairman and managing director of ICI Australia, Dirk Zeidler commented that 'the generation of economic wealth will only strengthen and become more efficient if we are effective in applying what we have already learnt from fundamental research'.[1] He joined the CSIR in 1941 aged 22, and soon after became head of the Chemical Engineering Section. In eleven years at the CSIR and CSIRO his section was notable for developing practical applications for the organisation's research breakthroughs in areas ranging from shrink-proofing wool to the extraction from mineral sands of rare earth compounds used in the production of polishing powders for optical glass. Following his move in 1952 to Australia's largest chemicals producer, Imperial Chemical Industries of Australia and New Zealand (ICIANZ), he maintained and extended the company's strong focus on research and development, while ensuring that the achievements of the laboratories were effectively used for the benefit of the company and the wider community. Constructive in everything he did, Dirk Zeidler left a remarkable record of achievement. After his death in 1998, respected business commentator Robert Gottliebsen wrote that 'Australia badly needs a modern Dirk Zeidler to lead the development of new technologies'.[2]

Dirk Zeidler's father, Otto Zeidler, was brought up in Oldenburg near Bremen in north-west Germany, where his father was a wine merchant. After several attempts to run away to sea, his family agreed that he could join the merchant navy as a trainee officer at the age of 15. He went around the world several times in sailing ships before transferring to steam ships. Eventually he rose to be a second officer on ships of the Norddeutscher Lloyd Line, before deciding to leave the sea at the age of 30 and settle in Sydney. In 1912 he married Maud Hunter, the daughter of a Sydney provisioning merchant, who had trained as a nurse at the Prince Alfred Hospital. In the same year Otto Zeidler became a naturalised British subject.

Otto Zeidler had invested his savings as a silent partner in a cartage business in Sydney, but the business failed and the family moved to Melbourne in 1913, where they lived in a rented house in Essendon before moving to Northcote in 1917. Their first child was born in 1914 and their second child, David Ronald Zeidler, was born at the Royal Women's Hospital on 18 March 1918. A third child was born in 1921. In the early 1920s the family moved to Box Hill, living in several rented houses before moving to Mont Albert in 1935. In 1915 Otto Zeidler was an able seaman on a ship trading across Bass Strait, and he later worked as a tally clerk in timber yards in Northcote and Box Hill and as a carpenter with a building contractor. His final

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[1] Sir David Zeidler, 'Research: a Facet of Industrial Productivity' in *CSIROOA Bulletin,* no. 177, winter 1980, p. 19.

[2] Robert Gottliebsen, 'Sir David Zeidler – Chief Executive', obituary in the *Age,* 25 March 1998.

employment was as a surveyor with the Gas & Fuel Corporation. He retired at the end of 1952 and died the following year at the age of 72.

David Zeidler was educated at Mont Albert Central School until the end of eighth grade when he won a scholarship to Scotch College. He often travelled to Scotch with a friend from Mont Albert, Bob Ampt, who recalls that they would take the train to Glenferrie and then 'walk or run the approximately two miles to school'. At Scotch David Zeidler came to be known as 'Dirk', apparently after his class had studied the exploits of the Dutch explorer Dirk Hartog, and the boys made a connection between the north European origins of both surnames. His family had always called him Ronald, but from this time he preferred to be known as Dirk, although he chose to use David when he was knighted.

Dirk Zeidler was always oriented towards the sciences and he completed his final year at Scotch in 1935 with honours in all subjects of a pure science course, winning a scholarship to the University of Melbourne. He initially wanted to study medicine, but his family could not support him through the six-year course and he opted for a science course instead. This was well before the era of combined degrees, but he followed a course that included many engineering subjects as well as a major in chemistry – his final year subjects, for example, being chemistry, engineering design, properties of metals and metallography. Dirk Zeidler consciously trained himself to become a chemical engineer, although this discipline was still in its infancy (the university's Department of Chemical Engineering not being established until 1951).[3]

Dirk Zeidler lived with his family throughout his university days, generally riding his bicycle the 13 kilometres to Carlton from Mont Albert. He supported himself through university with a part-time job at the factory of Australian General Electric in Richmond. At the time this was one of the most advanced electrical goods factories in Australia, manufacturing electric motors as well as consumer goods such as irons and toasters and it provided a good example of the industrial application of scientific advances.[4] During university vacations he also worked for the Metropolitan Gas Company both in its structural engineering works and as a chemist.

On completing his B.Sc. in 1938 (with honours in all his final year subjects), Dirk Zeidler was awarded the Fred Walker Scholarship for Chemistry and a University research scholarship for postgraduate studies. Enrolling for a M.Sc., his supervisor, Dr Bill Davies, asked him to follow up on work of earlier students by carrying out research into the synthesis of two groups of heterocyclic organic substances, the isoquinolines and the thionaphthenes. In the first section of his thesis he successfully explained the results of two earlier researchers, who had acylated a substituted styrene with the intention of producing an *ortho*-disubstituted benzene, which could be used in isoquinoline synthesis. Zeidler showed that, instead of the intended reaction, the attack had taken place in the styrene side-chain, not in the aromatic ring. This led to a chain of products, the last of which was the already well-known substance, benzylidene

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[3] In his application to join the CSIR, Dirk Zeidler wrote, 'My training at the University has been directed toward becoming a chemical engineer, and all subjects taken, other than those required for the Chemistry course, were engineering subjects'. Dirk Zeidler to Secretary CSIR, 28 November 1940. Dirk Zeidler CSIRO personnel file, National Archives of Australia, series 8520/12, box 278, item PH/ZEI/001. With thanks to Joy Bear and CSIRO Minerals Division for providing a copy of this file.

[4] Donald T. Brash, *American Investment in Australian Industry,* ANU Press, Canberra, 1966, p. 298.

acetone, which he identified by conventional means. The conclusion to the first part of the thesis was that the general approach was not a route to isoquinolines. Dr Davies then asked Dirk Zeidler to tackle a more difficult task, the synthesis of sulphur analogues (substituted thionaphthenes) of the indole acetic acid plant growth hormones that had been discovered only a few years before by European phytochemists. The attempt to achieve difficult syntheses was advanced work for an MSc student in 1939 when experiments could be slow and hazardous and analysis of results a lengthy process.[5] His Supervisor, Bill Davies, wrote:

> Zeidler has an excellent University record and is a first class chemist, both in theoretical and practical matters … He has solved the puzzle of an anomalous Friedel Craft reaction , and gone a long way in the synthesis of aromatic compounds related to plant hormones. Both researches have given publishable results, and Zeidler has now first-hand knowledge of a large range of organic chemistry.[6]

In March 1940 he was awarded his M.Sc. with first-class honours and was appointed a Senior Demonstrator in Chemistry at the University, while continuing his research into the preparation of synthetic phytohormones.[7]

In 1939 Dirk Zeidler read of the appointment of a young physical chemist named Ian Wark to head the new Division of Industrial Chemistry within the Council for Scientific and Industrial Research (CSIR) and late in the following year he applied for a position with the division. Ian Wark was a visionary and inspirational scientist and leader and he was to have a strong influence on Dirk Zeidler's career. Like Zeidler an old Scotch Collegian, Ian Wark had lectured in Chemistry at the University of Sydney and been a research chemist at the Electrolytic Zinc Company before joining the CSIR. Wark's philosophy in building the Division of Industrial Chemistry greatly influenced Dirk Zeidler's leadership style throughout his career. This was based on recruiting the best people and giving them freedom to pursue their research by keeping bureaucracy and rules to a minimum. Sir Alan Walsh, then a young research worker in the division, recalled that 'Individual freedom and initiative were not only permitted, they were actively encouraged: a bold failure was more highly regarded than a cautious advance. Red tape and bureaucratic nonsense were totally absent … It was as lively a place to work as one could imagine.'8 The corollary of the freedom given researchers was an absolute commitment to excellence in all facets of the work of the division.

Competition for positions in the CSIR was intense, but Dirk Zeidler's application was successful and early in 1941 he joined the Chemical Engineering Section of the Division of Industrial Chemistry.[9] Soon after, the head of the section was seconded to the Department of Munitions and Wark appointed Zeidler to fill the position, initially on an acting basis and

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[5] David R. Zeidler, Catalysed reaction of acetyl chloride and ω bromstyrene, M.Sc. thesis, University of Melbourne, 1939.

[6] Bill Davies to the secretary, Monsanto-Southern Cross Chemical Co., 11 October 1940. Letter in possession of the Zeidler family.

[7] The option of proceeding to a PhD was not available as no university in Australia offered a Ph.D degree until it was introduced by the University of Melbourne in 1945.

[8] Sir Alan Walsh, Preface to Ian W. Wark, 'The CSIRO Division of Industrial Chemistry, 1940-1952', in *Records of the Australian Academy of Science,* vol. 4, no. 2, November 1979, p. 7.

[9] Dirk Zeidler applied to join the Anti-Submarine Branch of the Royal Australian Navy during the Second World War, but his application was rejected as he was in a reserved occupation.

from 1947 permanently. He recalled that he gave Dirk Zeidler great responsibility at a young age and 'Zeidler responded magnificently'.[10]

The Chemical Engineering Section had two principal functions, 'to undertake research directed to the development of fundamental chemical engineering knowledge' and 'the pilot-scale development of new chemical processes originated in other Sections of the Division'[11] – in other words, basic research and the practical application of the results of research. Until 1945 the emphasis was inevitably on the rapid development of processes that could be applied to the war effort, but in the late 1940s the section 'developed spectacularly, with a nice balance between basic research and applied research'.[12] The number of staff also grew rapidly – from just four in early 1941 to over 80 in 1951.

The war gave a great urgency to the work of the CSIR in the early 1940s and Dirk Zeidler's Chemical Engineering Section was involved in planning and building pilot plants for the production of essential war materials using processes developed by the organisation's research. Almost all the equipment for the pilot plants was fabricated on site in the CSIR's workshops, which were also under Dirk Zeidler's management as head of the Chemical Engineering section. In spite of wartime shortages of tradesmen and materials, by July 1942 the section had completed or was working on eight pilot plants, for:

- producing phosphorus oxychloride from rock phosphate by the combined action of carbon and chlorine;
- producing tri-cresyl phosphate from phosphorus oxy-chloride for use as a plasticiser in synthetic resin nose caps for bullets and shells;
- shrink proofing woollen army socks using the CSIR's 'Freney-Lipson' process;
- shrink proofing woollen products using the 'Woolindras' process;
- the production of ethylene from alcohol;
- the production of ethylene oxide from ethylene for many uses ranging from a fumigant for the control of weevils to (when converted to ethylene glycol) an anti-freeze compound for aeroplane engines;
- producing ethylene chlorhydrin from ethylene, required for the synthesis of the anaesthetic novocaine (Zeidler's pilot plant was capable of producing Australia's entire requirements);
- Separating ergot (a drug widely used in obstetrics) from rye grain.

Later in the war one of the major projects of the Division of Industrial Chemistry, and particularly the Minerals Utilization and Chemical Engineering Sections, was on the production of chrome chemicals (vital for the war effort) from lower grade Australian chrome ores, which had been regarded as unusable for chemical use. The novel process developed used direct sulphuric acid attack on the mineral, but initial pilot plant tests proved that the process required modification and Dirk Zeidler's section redesigned and rebuilt the pilot plant

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[10] Ian Wark, 'The Division of Industrial Chemistry, 1940-1952' *Records of the Australian Academy of Science,* vol. 4, no. 2, November 1979, p. 18.

[11] CSIR Annual Report, 1947-48, pp. 90-91.

[12] Ian Wark, Nomination of David Zeidler for the Leighton Medal of the Royal Australian Chemical Institute, 4 August 1983.

to show that the new process was 'capable of competing economically with conventional methods, with the additional advantage that lower grade ores may be processed'.[13]

Another major project, undertaken in conjunction with the Minerals Utilization Section, related to the production of rare earth oxides from monazite concentrate. Monazite, a phosphate of thorium and the rare earth elements, particularly cerium, is a component of the beach sands of New South Wales. The Optical Panel of the Ministry of Munitions needed polishing powders of high quality and cerium oxide was known to have advantages as a polishing powder.

The process developed extracted all the rare earth elements from the hydroxides. Ignition of the hydroxides at high temperature produced high quality mixed rare earth oxides polishing powder. A pilot plant constructed and operated in Dirk Zeidler's Chemical Engineering Section enabled about 0.75 ton of processed material to be supplied to the Optical Panel. These polishing powders gave highly satisfactory service in Australia being used in both government and private optical establishments. Further, the hydroxides produced in the above process were also used as starting material for the production of rare earth fluorides for army searchlight carbons. The thorium that was separated from the rare earth constituents, initially as pure thorium nitrate, was used in several research projects, one of which led to the development of a new carbide-iodide process for the production of high purity thorium metal. A process developed to chlorinate rutile, a mineral form of titanium oxide and a major component of the heavy beach sands, to produce titanium tetrachloride for smokescreens, was also operated on a pilot plant scale.[14]

Dirk Zeidler had management and engineering responsibility for the planning, construction and operation of these pilot plants, and he was also closely involved with the fundamental research prior to their installation as well as the analysis and evaluation of their ultimate effectiveness. However, his only publication was an analysis of the section's work on shrink proofing wool using the English 'Woolindras' process, an alternative to the 'Freney-Lipson' process developed by the CSIR.[15] He wrote this to attract industry interest in the plant, which had been shipped from England and assembled by Dirk Zeidler's section for demonstration purposes. Later in 1942 the plant was sent to a woollen mill in Tasmania. Otherwise, like many others in supervisory positions at CSIR, Dirk Zeidler did not publish his research – partly because of pressure of work and partly out of a feeling that those who did the 'hands-on' work should receive the credit in ensuing publications. Ian Wark explained this reticence to publish when recommending Dirk Zeidler for promotion in 1946:

> He has a talent for chemical engineering research, the recognition of which has earned for him the profound respect of the other members of the division. He is among the most co-operative and self-sacrificing men I have known and every officer has had help from him. I find it next to impossible to induce him to agree to put his name on papers where he should be cited as a joint

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[13] CSIR Annual Report, 1947-48, p. 91.

[14] I.J. Bear, T. Biegler and T.R. Scott, *Alumina to Zirconia: the History of the CSIRO Division of Mineral Chemistry,* CSIRO, Melbourne, 2001, pp. 16-20.

[15] D.R. Zeidler, 'Experimental Work on the Treatment of Wool by the Woolindras Process', in *Studies on the Shrink-proofing of Wool,* CSIR Pamphlet, no. 115, Melbourne, 1942.

> author, and must now urge that he should be judged on the work of his section and of our section of the workshops staff rather than on his own publications.[16]

Wark frequently mentioned this point in reports on Dirk Zeidler's work. For example, in January 1951 he wrote:

> Zeidler simply will not put his name on papers even when, in my opinion, he should do so. Despite the fact that his name is not on them, I regard him as co-author of a recent paper by Newman on liquid-liquid extraction spray columns, and senior author of another recent paper on an acid process for production of chromic anhydride from chromite ore, this latter being a very substantial piece of work.17

A salutary lesson that Dirk Zeidler learnt from his work on wool shrinkage was the importance of patenting discoveries. The CSIR failed to adequately protect the Freney-Lipson process and consequently lost control over its future development as well as potentially large sums of royalty payments.[18] Following this, Dirk Zeidler always emphasised the importance of securing intellectual property protection. Many years later, when he was on the board of the Walter and Eliza Hall Institute, he convinced Sir Gustav Nossal of the correctness of this view. Sir Gustav recalls that:

> It was Dirk with his experience of industry, CSIRO and academia who explained that the applied research and development work which had to follow our basic research before the discovery could be turned into a medicine or something of real use was so very much more expensive, and moreover the pharmaceutical firms who were capable of that type of work, including clinical trials, always had a 'pipeline' which was much fuller than desired. Something that did not have intellectual property protection would have no chance whatever of getting into that pipeline. So he explained to me that not patenting discoveries was the surest way to consign them to the dustbin of history.[19]

Ian Wark recalled that one of Dirk Zeidler's first actions after his appointment as head of the Chemical Engineering Section was to 'nudge me into taking steps to find out what industry thought the section should do'.[20] On each project of the Chemical Engineering Section, Dirk Zeidler developed close relationships with the relevant industries, encouraging industrialists to visit the CSIR, giving advice on technical matters and learning to see issues from the point of view of industry as well as science. One visitor was Archie Glenn (later Sir Archibald) then a senior design and construction engineer with ICIANZ, who recalled being impressed by Zeidler's 'quiet manner and his attitude', as well as his willingness and ability to relate scientific theory to industrial practice.[21]

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[16] Wark to Secretary, CSIR, 31 Dec 1946, Dirk Zeidler CSIRO personnel file.

[17] Wark to Secretary, CSIRO, 30 January 1951, Dirk Zeidler personnel file.

[18] M. Lipson, 'Wool Textile Research – the early years', Paper delivered at Australian Academy of Science Workshop on the History of Science, Canberra, 1982.

[19] Sir Gustav Nossal, letter of 16 March 2004. Letter in possession of the Zeidler family.

[20] Speech by Sir Ian Wark at the Third Colloquium, CSIRO Division of Chemical Engineering, Clayton, 14 May 1975.

[21] Archie Glenn, *Things to be Remembered,* Diana Gribble, Melbourne, 1991, p. 102.

John Pearse joined the Chemical Engineering Section in 1943 and he recalls that Dirk Zeidler gave his staff great freedom to work and innovate. If he thought something was worthwhile he gave support and ensured that the facilities and equipment were made available to pursue it, not an easy task in wartime. Pearse says that he never left Dirk Zeidler's office without being shown a way to move forward. He felt that Zeidler was always thinking five years ahead – where was Australian industry heading and how could the CSIR help?[22] From a young age Dirk Zeidler had the ability to listen to his staff's ideas, sifting the practicable from the impracticable and gently discouraging the impracticable while encouraging the practicable.

After the Second World War, the CSIR began a policy of sending officers overseas to see the latest research developments and gain experience working in laboratories in Britain, America and Europe. On Ian Wark's recommendation, Dirk Zeidler was among the first group selected, and in 1947 he spent six months at the Massachusetts Institute of Technology in Boston, followed by three months visiting other North American research establishments. Wark wrote to the Dean of the Faculty of Engineering at MIT,

> While we want him to see as much as possible in the time at his disposal of the main centres of chemical engineering research and education, we would also like him to join for a period of about six months some small team engaged in chemical engineering research …
> Apart from the experimental work he hopes to do at M.I.T., Mr Zeidler sets out the main objects of his visit to the U.S.A. as follows. He would endeavour to obtain information on:-
> 1. The type of chemical engineering problems being studied at various institutions.
> 2. The methods, techniques and facilities available for the study of these problems.
> 3. The general extent of fundamental and applied chemical engineering research.
> 4. The type and size of developmental plants (pilot plants operated by such institutions as the U.S. Bureau of Mines and U.S. Department of Agriculture, and if possible by private companies).
> 5. The form and degree of co-operation between industry and research institutions undertaking chemical engineering research.
> 6. The design of chemical engineering research laboratories and laboratory design in general.
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> This is an ambitious programme, but Mr Zeidler is capable and well able to benefit from such opportunities as come his way. On the academic side he came to us with an outstanding record, and has more than lived up to it. He has the ability of the scientist to understand and investigate, and the ability of the engineer to get things done. [23]

He was regarded as one of the top students in his postgraduate course, with his principal research interest being the combustion of fuels.[24] While at MIT Zeidler made the most of the experience of being involved at one of the centres where the intellectual framework of the young discipline of chemical engineering was being developed and he made many useful contacts with prominent people in the field, notably Terence Fox and Peter Danckwerts, both later to hold the chair of chemical engineering at Cambridge University.

Following his return to Australia, Dirk Zeidler took on several new projects as head of the Chemical Engineering Section. A major effort was directed toward producing gas from brown coal. The Bass Strait natural gas fields had not been discovered and Victoria was dependent

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[22] Interview with John Pearse, 25 September 2003.

[23] Letter dated 19 June 1946, in CSIRO personnel file.

[24] Wark, 'Division of Industrial Chemistry', unpublished mss, 1983, p. 18.

for town gas on erratic supplies of black coal from New South Wales. A pilot plant was built that successfully produced high calorific gas, but the process was never taken further in Australia – though in the 1970s it attracted attention in East Germany.[25]

The end of the wartime urgency to produce immediate practical results gave the CSIR more scope to carry out fundamental research and Ian Wark recalled that Dirk Zeidler was emphatic that the Chemical Engineering Section must participate in this. The two main projects Zeidler instigated for the Chemical Engineering Section were a High Pressure Laboratory based at the University of Sydney (headed by John Pearse) and a study of the property of fluids carried out by a research team in Melbourne.

In 1951 Ian Wark wrote a report on Dirk Zeidler and his section:

> When a section has become as large as most Divisions it may be impossible for its leader to devote his time to personal research work without seriously impairing the output and quality of the research of his Section … Zeidler since his appointment has
> (i) superintended pilot plant work on a variety of projects originating in other sections;
> (ii) given training in chemical engineering principles to most of the members of his staff.
> (iii) established several "fundamental" groups in his Section, including –
> (a) High pressure laboratory group in Sydney
> (b) Adsorption separation group in Melbourne
> (c) Properties of fluids group in Melbourne;
> (iv) superintended the establishment of a fuel utilisation group which is itself fast approaching the size of other Sections;
> (v) superintended the main workshops staff of the Division …
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> At present, excluding the general workshop staff, Zeidler's Section has a complement of over 80. He keeps closely in touch with the research work of each group … The enthusiasm of his officers is to a large extent based on Zeidler's own sense of urgency about what he sets out to do.[26]

In 1950 Douglas Copland, the Vice-Chancellor of ANU, wrote to Ian Clunies Ross, the Chairman of the CSIRO, in relation to the design of the John Curtin School of Medical Research:

> Both the architect [Professor Brian Lewis] and Sir Howard Florey feel that it would be invaluable if the services of a technical man with a good understanding of scientific laboratory construction could be available to the architect in a consultative capacity in the early stages; the name of Mr D.R. Zeidler, who I understand is a member of your staff, has been mentioned in this connection and I have taken the liberty of asking Mr Zeidler whether he would be prepared to give the University the benefit of his experience and advice.[27]

This invitation led to a short secondment that gave Zeidler further experience in the design and construction of scientific laboratories.

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[25] Wark, 'Division of Industrial Chemistry', p. 30.

[26] Ian Wark to Secretary, CSIRO, 30 January 1951, Dirk Zeidler CSIRO personnel file.

[27] Copland to Clunies Ross, 13 February 1950, in Dirk Zeidler CSIRO personnel file.

Ian Wark always insisted that promotion in his division be by ability and results rather than seniority and by 1952 Dirk Zeidler was the most highly classified officer for his age in the whole CSIRO. In that year Len Weickhardt, a senior executive of ICIANZ, approached Ian Wark to ask permission to offer Dirk Zeidler a position as the company's research manager; Wark responded that 'I would be reluctant to see him go unless he was to be regarded as a potential Managing Director'.[28]

Imperial Chemical Industries was formed in Britain in 1926 when Sir Alfred Mond organised the consolidation of four major British chemical companies. The resulting company was powerful enough to join with I.G. Farben of Germany and Du Pont of the United States to divide up the world's markets until the Second World War. ICI inherited the existing Australian interests of the merger partners such as the Nobel Company's explosives factory at Deer Park and these began operating as ICIANZ in 1928. In the late 1930s ICI financed a major expansion of its Australian operations by means of a large capital raising on the Australian share market, and further capital raisings saw Australian shareholders acquire over thirty per cent of the equity in the local company. During the Second World War the company constructed a major manufacturing plant in the Sydney suburb of Botany and after the war it had another large capital raising in 1952 to finance further growth, including the expansion of local research capabilities. When Dirk Zeidler joined the company its operations spanned a wide spectrum of chemical production and it was by every measure the dominant player in the Australian chemicals industry.

ICIANZ began to develop a local research unit during the Second World War, with early projects involving manufacturing processes for veterinary and anti-malarial drugs. After the war a small group of six chemists continued this work while also beginning investigations into brown coal as a source of chemicals and the manufacture of insecticides and weedkillers. In 1952 ICIANZ committed itself to a greatly increased research effort including the establishment of a major research laboratory and Archie Glenn and Len Weickhardt, having been impressed by Dirk Zeidler on their wartime visits to the CSIR, recruited him as Research Manager.

The main task facing Dirk Zeidler at ICI was to develop a viable and active research group and establish suitable laboratories for its work.[29] In 1953 he travelled to England with his family to visit ICI factories and research laboratories and to recruit staff for his new Research Group. During this year the Zeidlers lived first at Helsby, Cheshire, close to ICI's major research centre at Runcorn, and later at Esher in Surrey.

When Dirk Zeidler arrived at ICIANZ the small research section was based in an old hotel at Deer Park. As a temporary measure, the hotel building was renovated and extended to provide additional laboratory accommodation and a new semi-technical laboratory was built nearby to house large-scale equipment. However, the strength of ICIANZ's commitment to research was shown in April 1955 when the Australian board approved the investment of £325,000 to build modern research laboratories at Ascot Vale. [30] The Australian economy had grown rapidly in the decade since the end of the Second World War and for the first time began to

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[28] Wark, 'Division of Industrial Chemistry', p. 18.

[29] K.G. Neill, *Making the Future: a History of ICI Australia Research Group,* Melbourne, 1989, p. 8.

[30] Ibid.

develop a significant manufacturing capacity. ICIANZ played a central role in this and by 1955 it was one of the five largest companies in Australia. The company always wanted to maintain its operational independence from its British parent and it saw the development of its own research capability as a means of achieving this, as well as enabling it to develop products for the local market and solutions to specifically Australian problems.

Construction of the Central Research Laboratories was completed by June 1956 and they were opened by the Prime Minister, Robert Menzies, in October of that year. The ICI research laboratories were the first major industrial research laboratories built in Australia and did much to encourage other major companies to follow suit, with Monsanto, BHP, CSR and other major companies all building research facilities in the late 1950s and early 1960s. ICIANZ's laboratories at Ascot Vale were a showpiece that attracted many visitors from Australia and overseas.[31]

Following the example of his mentor Ian Wark, Dirk Zeidler insisted on excellence and the maintenance of rigorous scientific standards, while encouraging a spirit of innovation and freedom. A feature of his management style was to drop a comment or pose a question rather than give an order, and then move on, leaving staff to ponder the matter and take appropriate action. In addition to the research projects linked to the company's operations, management allowed all scientists to spend up to twenty per cent of their time on independent projects.[32] This encouraged them to maintain their areas of academic expertise and enabled them to be available for consultation as experts in those areas. Under Dirk Zeidler's leadership there was tremendous enthusiasm and esprit de corps within the ICI Research Group and its overall performance was outstanding.

Dirk Zeidler believed that it was of paramount importance that Australian scientists and engineers understood the complex technologies of major multinational corporations such as ICI, while still seizing the opportunities for local innovation. Although his vision stretched his colleagues, he recruited well and supported his staff, guiding them around obstacles and stimulating them with ideas of his own. Unlike many of our corporate leaders, he had great confidence in Australian science and scientists.

His confidence was justified soon after the opening of the Ascot Vale laboratories when the research group invented the flame ionisation detector, an invention which 'has had the greatest external impact of all those made by ICI Australia Research to date'.[33] By the mid-1950s gas liquid chromatography had reached a point where minute quantities of complex mixtures of organic chemicals could be separated, but there were no sufficiently sensitive methods of determining the quantity of the separated substances. The ICI Research Group began a project aimed at improving organic analysis as a tool to better process control. A young researcher, Ian McWilliam, working in a section headed by Bob Dewar, experimented unsuccessfully with several devices to bombard the output vapours of the gas liquid chromatograph with electrons before successfully developing a device that measured the ionisation produced by burning the sample components with the carrier gas mixture in air.

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[31] Ibid., p. 12.

[32] Ibid.

[33] Neill, *Making the Future*, p. 14.

The device was refined during 1957 to produce a tool capable with the sensitivity to measure one part in ten million.[34]

By the late 1980s more than 100,000 detectors had been manufactured under licence from ICIANZ by over 40 instrument companies around the world and chromatographs equipped with flame ionisation detectors became a basic tool for chemical analysis in the petroleum and petrochemical industries, in medical and bio-chemical research and for pollution control. However, inexperience in patenting scientific instruments and in setting the level of royalty payments meant that the returns to ICIANZ fell far short of their potential and this reinforced Dirk Zeidler's belief in the importance to scientific research of proper management of intellectual property rights.

Dirk Zeidler also encouraged and supported George Isaak's research on atomic absorption spectroscopy. This led to an important fundamental advance in knowledge, although it was 'so specific … that no uses could be found for it, at least for a long time – and even then the results remained of academic, albeit fundamental value'.[35] It is significant though that Zeidler and ICIANZ management gave enthusiastic support to this research, even though it had no immediate commercial applications.

Under Dirk Zeidler's direction an important role for the Research Group was the formulation of chemicals for agricultural and veterinary use. Among other developments, the Research Group developed a new route to the herbicide Diquat, which had been discovered by the ICI parent company. The success of the local research, in contrast to the disappointing progress of the British researchers, was a cause of much local pride. The Research Group's organic chemists also devoted much effort to developing stable fine dispersions of phenothiazine, an anthelmintic used to control intestinal worms in sheep and cattle.

During the 1950s ICIANZ's plant at Botany began producing polyvinyl chloride and polyethylene and to support these developments the scientists of the physical and inorganic section of the Research Group concentrated much of their efforts on the characterisation of polymers. The section worked on the effect of feedstock impurities on catalyst performance and on the regeneration of catalysts. This work was directly related to the improvement of production conditions and the processing properties required by the company's customers.

In 1958 Dirk Zeidler went to the United States to study at MIT's Sloan School of Business, adding business qualifications to his scientific training, and soon after his return he was promoted to the position of Manager of the Development Department. This department was responsible for reviewing possible new investments for the Australian company and its formation coincided with a rapid, worldwide expansion of the chemical industry. One of its main projects was the question of when the company's operations would justify building a naphtha cracker to produce ethylene at lower cost than the dehydration of ethyl alcohol, which was then the starting point for polyethylene production. Production of polythene – to use the name that ICI registered, but which eventually became generic – alone could not justify such

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[34] J.E. Kolm, 'The Chemical Industry – Australian Contributions to Chemical Technology', in [Frank Eyre (ed.)], *Technology in Australia, 1788-1988,* Australian Academy of Technological Sciences and Engineering, Melbourne, 1988, p. 681; Neill, *Making the Future,* p. 14.

[35] Kolm, 'The Chemical Industry', p. 682.

a cracker, but it was reasoned that if vinyl chloride could be made from ethylene instead of the traditional starting material acetylene, this would bring ethylene consumption near to the required quantities. To provide outlets for proposed increases in ethylene consumption, Jan Kolm and his team at the ICIANZ Research Group independently developed a new route to vinyl chloride (monomer for one of the world's major plastics) via oxychlorination of ethylene and this became a joint project with ICI UK. Zeidler encouraged this initiative, in the face of some doubts in the UK, and took considerable risks to build the first full-scale plant for the ICI Group. The Australian plants for ethylene oxide (using the new Scientific Design process) and vinyl chloride came into production in 1964 and 1967 respectively. By the end of the 1960s ICI had developed a modern petrochemical complex at Botany, as the basis for a fully integrated petrochemical, plastics and plastics processing industry, 'some key elements of which rested on competitive advantages derived from Australian industrial research'.[36]

In 1962 Dirk Zeidler spent a short time as Controller (General Manager) of ICIANZ's Dyes and Fabrics Group, gaining hands-on commercial experience before returning to America to undertake the Advanced Management Program at Harvard Business School. On his return he became an Executive Director, with a further promotion to Deputy Chairman following in 1972 (the year the company's name was changed to ICI Australia). Finally, in 1973 he became Chairman and Managing Director holding these positions until reaching the company's retirement age of 62 in 1980.

In recent times most Australian chief executives have come from backgrounds in finance – promotion from chief financial officer to CEO being a common progression – but until the 1980s few accountants headed major industrial companies. Most of Australia's outstanding industrial leaders rose from the shop floor or had training in engineering or a related technical discipline: Sir Herbert Gepp, Essington Lewis, and Sir Archibald Glenn, Dirk Zeidler's predecessor at ICIANZ, being good examples. Dirk Zeidler was a rarity in rising to head a major company from a background in scientific research. Consequently he had greater awareness than most modern business leaders that research and development were central to a company's success and not peripheral activities that would be the first to suffer in any economic downturn.

As his career progressed through the ranks of management, Dirk Zeidler demonstrated in many ways the confidence that he placed in local research and development. This was seen in his support for the work of Jan Kolm's team in discovering a new route to vinyl chloride, but in addition to this development work on bulk chemicals, Dirk Zeidler encouraged work on fine chemicals such as the veterinary drug Tetramisole. This drug was discovered by Janssen, a Belgian pharmaceutical company, which did not have the resources for world-wide development and offered four major pharmaceutical companies, including ICI, a licence to whichever was the first to develop a commercial manufacturing process. It was again a team led by Jan Kolm with Asbjorn Baklien at the ICIANZ Research Group, which invented and patented the first economic synthesis for this complex heterocyclic compound. With Dirk Zeidler's support, ICIANZ built the first plant for this drug in 1965, developed a major market for it in Australia and earned royalties for operation of the process in the USA and Britain.

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[36] Ibid., p. 708.

Blending a vibrant local research effort with international developments, Dirk Zeidler led Australia's chemical industry in its transition from basic inorganic chemicals to modern petrochemical production. He always saw these changes as being of national and not merely corporate significance. The change in starting materials and technologies was accompanied by vast increases in scale that were new to Australia. The main site of this development was the Botany petrochemical complex where ethylene and propylene produced by a naphtha cracker were converted to polyethylene, polypropylene, ethylene oxide derivatives, vinyl chloride, and synthetic rubber. Dirk Zeidler and the ICI management had hoped that the Botany petrochemical complex would reach world-scale, but a combination of transport costs, the establishment by Esso and Mobil of a petrochemical plant at Altona, and, after 1973, the rapid rise in the price of oil, meant that these hopes were not completely fulfilled.

ICI Australia did achieve world scale in explosives manufacture with its nitro-glycerine plant at Deer Park. However, the manufacture and transport of nitro-glycerine was extremely hazardous and Dirk Zeidler and his colleagues were greatly interested in Canadian research on safer explosives based on ammonium nitrate. Even though the company had invested heavily in the production of nitro-glycerine, Dirk Zeidler was convinced that it had to have the best technology and he was responsible for the decision to switch technologies and begin the manufacture of ammonium nitrate explosives. This enabled ICIANZ to maintain its dominance of the Australian explosives industry and led to it taking over the explosives interests of the entire ICI group.

From 1947 ICIANZ had a majority shareholding in the leading Australian paint manufacture, British Australian Lead Manufacturers, later known as Dulux. Like other ICIANZ divisions, Dulux followed the model of importing the best of overseas technology and supporting and enhancing it with local research and development. Dirk Zeidler saw the potential of the water-based paints being developed by Du Pont and other firms and he strongly supported ICIANZ's decision to license the technology. Dulux opened its own research laboratories in 1960 and several important advances in paint technology were made there, notably the invention of 'spindrift' beads, which led to Dulux winning an export award in 1981.[37]

During Dirk Zeidler's time as a senior executive, ICIANZ's research and development activities expanded into several new areas. For example, the minerals boom of the 1960s presented the company with an opportunity to use its expertise in chemicals to develop new and better methods for extracting metal value from ores. One major project was to convert ilmenite into a rutile substitute for use in making pigmentary titanium dioxide and also to convert the iron in the ilmenite to a metallic iron co-product. Over ten years several approaches were tried with varying success, before the downturn in the mining industry in the early 1980s brought the venture to an end. Another major development was the 'Sirotherm' project undertaken together with the CSIRO. Over an extended period this was 'an excellent model of how CSIRO and industry can work together', and resulted in the construction in the late 1960s by ICIANZ of a facility at Lucas Heights where the large-scale polymerisation of triallyamine was carried out. ICI Australia built a plant at its Osborne factory in South Australia, which did not achieve the required reliability, but in 1984 the Perth Water Board

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[37] Ibid., p. 723; Gottliebsen, 'Sir David Zeidler', *Age,* 25 March 1998.

built a desalination plant using Sirotherm technology that operated successfully for a number of years.[38]

Soon after Dirk Zeidler became Chairman and Managing Director of ICI Australia, the company began planning 'the biggest expansion project in its history'.[39] This was a proposed petrochemical complex at Redcliff, north of Port Pirie in South Australia, to be built as part of a consortium with Alcoa of Australia and Mitsubishi. Designed to use feedstock from the Cooper's Basin natural gas fields, the Redcliff complex was envisaged as being over three times larger than the Botany plant and it would have given ICI Australia genuine world-scale in petrochemicals. However, the project was abandoned by ICI and its partners in 1975 after inflation had caused the capital cost to soar and the economic downturn had lowered the demand for ethylene. As an alternative, the opening of a gas pipeline from the Cooper Basin to Sydney enabled the Botany plant to be considerably expanded, with the construction of a world scale ethylene cracker and the expansion of the related petrochemical plants at the site.

The Redcliff project highlighted a major continuing dilemma for ICI Australia – the questionable economics of manufacturing products requiring massive capital investment for Australia's small domestic market. For many decades it was the accepted wisdom that the only way for Australia to develop industries such as chemicals was through high levels of protection and most of ICI's products benefited from tariffs on competing imports. By the 1970s the policy of high protection was increasingly questioned and companies had to continually justify their levels of protection to the Tariff Board. Under Dirk Zeidler's leadership ICI displayed 'excellent government and public relations skills', and the company was able to avoid the sudden withdrawal of protection that damaged many manufacturing industries.[40] At the same time Dirk Zeidler led the company to adapt its operations so that it could survive and prosper in a low protection environment.

By the end of the 1970s ICI was involved in the manufacture of pharmaceuticals, veterinary medicines, synthetic fibres, paints, explosives, mineral treatment products, dyes, pigments, detergents, heavy chemicals, plant protection products, fertilizers and a wide array of plastics. It had about 13,000 employees and spent more on research and development than almost any other company in Australia. It was the dominant firm in the Australian chemical industry and its development marked a key step in the development of the Australian economy away from a complete reliance on primary products toward a more balanced economy with a large, modern, manufacturing sector.

Dirk Zeidler's seven years as CEO of ICI was a period of great challenge for the company. Within a few months of his appointment, OPEC's control of oil production led to a dramatic rise in the price of oil. This multiplied the cost of the company's major raw material, forced the Australian economy into its worst recession since the 1930s and marked the beginning of an era of low growth and high inflation. In spite of the challenges posed by these events, ICI continued its pattern of growth between 1973 and 1980, with sales increasing from $434 million to $991 million and profits rising from $22.6 million to $66.5 million, while maintaining a high level of research expenditure and launching an enormous programme of

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[38] Neill, *Making the Future,* p. 51.

[39] Robert Gottliebsen, 'After its tariff trials, ICI faces the future', *National Times,* 12-17 August 1974.

[40] 'ICI Australia – Diversified Development' at http://www.chemlink.committee.au/orica_hist.htm pp.13-15.

capital expenditure. In February 1979 Dirk Zeidler announced a $900 million capital expenditure programme, the biggest in the company's history to that time. [41] The company also continued to increase the percentage of its sales from Australian production. When ICI was formed in 1926, 75% of its Australian sales were from imports; by 1980, the figure was less than 10%.

Dirk Zeidler had an exceptional eye for ability. He picked talented people, supported them, challenged them and built up gifted and highly motivated teams around himself. The high standards he set for himself were imparted to his staff, who responded with enthusiasm to his quiet but demanding management style. A colleague commented that 'Dirk is a hard taskmaster because his expectations of performance are measured by his own high standards, but this leadership by example had, I believe, a profound effect on those who worked directly for him and through them on the whole company.'[42]

Dirk Zeidler's wide range of talents attracted numerous invitations to serve on public bodies and company boards. He was a skilful committee member, with the ability to see to the heart of an issue, put his views clearly and persuasively, and guide a meeting to a wise and unanimous decision. He had an exceptional capacity for hard work and was able to make highly effective contributions to an extraordinarily wide range of bodies.

One of the first invitations he received to join a public body came from his old mentor, Sir Ian Wark, who was head of the Commonwealth Advisory Committee on Advanced Education from 1965. In 1968 Wark persuaded Dirk Zeidler to join the committee and he later recalled that Zeidler 'immediately won respect by his ability to identify the crucial factors in any discussion and to state his point of view succinctly and persuasively – often with the touch of humour that maintains harmony'. [43]

Other invitations soon followed and Dirk Zeidler served on the Immigration Planning Council (1968-73), the Commonwealth Inquiry into Salaries in Colleges of Advanced Education (1968), the Committee on Overseas Professional Qualifications (1969-81) – he was particularly concerned at the cost to the community of denying employment to those with advanced professional training in foreign countries – the CSIRO Advisory Council (1970-73), the Defence Industry Committee (1976-84), the Commonwealth Committee of Inquiry into Education and Training (1977-79) and the Bureau of Industrial Economics (1979).

In addition to these formal government appointments, Dirk Zeidler was a trustee of the Science Museum of Victoria (1962-82), a member of the Queen Elizabeth II Silver Jubilee Trust (1977-88), the Australia-Japan Business Co-operation Committee (1978-80), the Sir Robert Menzies Memorial Trust (1978-80), the Red Cross (Victorian Division) Commerce and Industry Committee (1978-85), the Australia-New Zealand Business Council (1978-80). He was a member of the board of the Walter & Eliza Hall Institute of Medical Research

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[41] *Financial Review,* 8 February 1979.

[42] Dr Alan Robertson (a director of ICI UK and ICI Australia), quoted in *ICI Circle,* 18 March 1980.

[43] Sir Ian Wark to Malcolm Fraser, 30 April 1979, nominating Dirk Zeidler for 'consideration as the recipient of a high honour'.

(1972-1989), serving as Honorary Treasurer (1978-82), Vice-President (1978-89) and Chairman of the Building Committee during the construction of the Institute's new building in the early 1980s. Sir Gustav Nossal recalls that the building project took place at a time of great disruption in the building industry and 'Dirk was able to guide us through those very stormy waters.' He emphasized that Dirk Zeidler 'was always so generous and kind to me personally over all my years as Director' and expressed amazement at his 'constant availability (unusual for a terribly busy person)'.[44]

An extraordinary feature of the commitments listed in the preceding paragraphs is that Dirk Zeidler took them on while he was the highly successful chief executive of a major industrial company. A colleague at ICI Australia commented that 'It is difficult for the ordinary mortal to understand how one person can so unobtrusively but so effectively undertake such a great work load.'[45]

Following his retirement from ICI Australia in 1980, he accepted many more invitations to join both government and non-government boards and inquiries. He was Chairman of the Federal Government Inquiry into Electricity Generation and the Sharing of Power Resources in South Eastern Australia (1980-81), and of the Victorian Government Inquiry into the State Electricity Commission (1981-82), and a member of the Committee for the Development of Youth Employment (1983-88). He was President of the Melbourne Club (1987-88), Director of the Melbourne Committee of the Ludwig Institute for Cancer Research (1980-98), Governor of the Ian Clunies Ross Memorial Foundation (1984-93), Director of the Schizophrenia Fellowship of Australia (1986-94), member of the Development & Expansion sub-Committee of the Bionic Ear Program (1988-93), Director of the Australian Bicentennial Multicultural Foundation (1988-94), and Director and Deputy Chairman of the Victorian Government Strategic Research Committee (1988-94). His strong belief in the importance of education was reflected in his membership of the PLC and Ormond College councils (1964-72 and 1967-73 respectively).

Invitations to join company boards are an acknowledgment of success as a chief executive and Dirk Zeidler's prominence in the business world was shown by the list of blue-chip boards he served on: Commercial Bank of Australia (1974-82), Westpac Bank (1982-1991), BHP (1978-88), Amatil (1979-89), Metal Manufactures (1980-88) and Australian Foundation Investment Company (1982-1990).

Even as Dirk Zeidler advanced to the peak of Australia's business world, he always retained close ties to the sciences. In 1976 he was elected to fellowship of the Australian Academy of Technological Sciences (since 1990 the Australian Academy of Technological Sciences and Engineering), and served on its Council as Honorary Treasurer (1979-83) and Vice-President (1980-83). In 1984 he became the Academy's second President, overseeing significant developments, most particularly the purchase of a permanent headquarters, Ian McLennan House in Parkville. As president he gave important support to the establishment of the Crawford Fund for research into increasing food production in Third World nations and did much to develop the Academy's international links, notably in leading an industrial mission to Sweden in 1987 hosted by the Royal Swedish Academy of Engineering Sciences. In 1987 he

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[44] Sir Gustav Nossal to the Zeidler family, 16 March 2004.

[45] Milton Bridgland (chairman of ICI Australia 1980-93) quoted in *ICI Circle,* 18 March 1980.

was appointed President of the Council of Academies of Engineering and Technological Sciences, presiding over the convocation of the international body in Sydney in 1988.

Dirk Zeidler became a member of the Royal Australian Chemical Institute in 1942 and a Fellow in 1954. In 1985 he was elected to Fellowship of the Australian Academy of Science for his conspicuous service to the cause of science. He was also a fellow of the Institute of Chemical Engineers and the Institute of Engineers, and a member of the Australian Institute of Management, the Australian Institute of Directors, the Royal Society of Victoria, the Royal Society for the Encouragement of Arts, Manufacture and Commerce (London), the Cook Society and the Pacific Institute.

Throughout his working life and into retirement Dirk Zeidler remained close to his friend and mentor, Sir Ian Wark. In 1983 an international symposium was held in Adelaide to honour Sir Ian for his contribution to the science and technology of mineral flotation, and scientists and technologists who had worked with him were invited to send a short greeting. Dirk Zeidler wrote,

> My mind inevitably goes back to 1939 when I read of the appointment of a young physical chemist of 39 to lead a new division of CSIR. There began for many of us a long association, fruitful in many ways and treasured in recollection. They were exciting years guided by one for whom we all have the greatest affection.[46]

An invitation to give the address at the dinner held during the symposium was an honour that Dirk Zeidler greatly valued.

Dirk Zeidler's achievements in science and industry and contribution to the community were acknowledged with Imperial and Australian honours. In 1971 he was admitted as Commander (Civil) to the Order of the British Empire (CBE) in recognition of his service to industry, science and education, and in 1979 he was knighted for his services to industry. In 1990 he was appointed a Companion in the Order of Australia (AC) for services to science and technology, business and the community.

An honour that gave Dirk Zeidler particular satisfaction was the award of an Honorary Fellowship by the Honda Foundation in 1986. One of only five honorary fellows, he received his award 'in recognition of distinguished contribution in the field of Eco-Technology'. The Honda Foundation sponsored a series of 'Discoveries' symposia that Dirk Zeidler regularly attended as a representative of the Academy of Technological Sciences and Engineering.[47]

In November 1943 Dirk Zeidler married June Broadhurst, who had relinquished her first-year Science studies at the University of Melbourne to take up wartime work as a metrologist at the Defence Standards Laboratory in Maribyrnong. Towards the end of the war she transferred to the University of Melbourne Engineering School, where she worked for six months until the birth of the first of their four daughters. Although life as Dirk Zeidler's wife was demanding, June Zeidler made important contributions to the work of many community

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[46] Dirk Zeidler to Ian Wark, 14 June 1983, Wark Papers, Basser Library, MS 148/1/24

[47] *The Honda Foundation: the 25th Anniversary,* Tokyo, 2003, pp. 8-15, 124..

projects. Notable among these was her pioneering in Victoria of the Home Tutor Scheme for teaching English to migrants. This was based on the Wandsworth scheme in London, which June Zeidler visited in 1972 when she was on the national board of the YWCA. She had a keen interest in neuroscience, particularly in the area of schizophrenia research and was a foundation board member and treasurer of the Mental Health Research Institute. While treasurer she played a leading role in securing funding for the Institute's modern research centre in Parkville. Among her most memorable moments was an invitation in 1986 to launch BHP's *Iron Pacific,* the biggest ship ever to sail under the Australian flag.

Soon after his return from the USA in 1947 Dirk Zeidler began to build a home for his family in the Melbourne suburb of North Balwyn. He built the house himself, from digging the foundations to laying out the garden. Building supplies were hard to get in the post-war years and he got building materials wherever he could, even going down to the docks to get cement directly off the ships.

Dirk Zeidler had a happy and fulfilling family life. He enjoyed skiing and his children recall many marvellous holidays at the family's flat at Fall's Creek. He loved the mountains and from an early survey expedition into the Snowy Mountains to an arduous hike up Mount Bogong in his later years, the Australian Alps were an important part of his life. For many years the family enjoyed summer holidays at Aspendale, sharing a house with in-laws and cousins. In later years they bought a holiday house at Mt Martha, where Dirk enjoyed gardening and tennis. Dirk and June Zeidler were regular social tennis players at weekends and Dirk was also a Royal Tennis enthusiast, but opportunities to participate in this and other recreations were limited by his enormous commitment to his work.

Dirk Zeidler's final years were dogged by ill health and he died at his home on 12 March 1998, a week before his eightieth birthday.

Dirk Zeidler's success was based on a formidable intellect, determination and an ability to get to the heart of issues. Yet he was far from the popular image of a ruthless business tycoon. A quiet, unassuming man, he had impeccable manners, a wry sense of humour and deep compassion for those who encountered misfortune. As CEO of ICI he maintained links with his former workmates at the various divisions of the company and at the CSIRO. He inspired great loyalty among those who worked with him. Many friends and acquaintances recalled with gratitude quiet words of encouragement or comfort from Dirk Zeidler that meant more for being given without fuss or fanfare.

One of Dirk Zeidler's colleagues on the board of ICI Australia wrote of him:

> Dirk is not a man to rush into instant relationships or judgments. Of deceptively quiet disposition, I rapidly found that his courtesy was not to be mistaken for softness and that he was a man of great determination. Always willing to listen to the views of others before making up his mind, but having done so pursued his objective with great single-mindedness and with great coolness of nerve in difficult situations. [He had] a wry but very effective sense of humour, a

> deep feeling for the importance of people and great sympathy and consideration for those in adversity.[48]

Dirk Zeidler had a wide ambition for the success of the organisations he served. As one of Australia's great industrial leaders he was a creator of concepts, a builder of organizations and a pioneer of innovation. With Sir Archibald Glenn, he was largely responsible for the development of Australia's modern chemical industry as one of the central pillars of our modern economy.

Speaking of Sir George Julius, an engineer and Chairman of the CSIR from 1926 to 1945, Dirk Zeidler said,

> Sir George … was an engineer who successfully carried innovation through to practical reality, and I have wondered about the human qualities for success in the all-important skill of bringing creative concepts to the practical benefit of people. The world has a lot to thank engineers for.[49]

Dirk Zeidler was a modest man, but he could easily have been speaking about himself; he had a rare ability to carry innovation through to practical reality.

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[48] Alan Robertson quoted in *ICI Circle,* 18 March 1980.

[49] CSIROOA *Bulletin,* no. 177, winter 1980.

Acknowledgements

Mr Bob Ampt, engineer and friend of Sir David since schooldays.
The late Mr Ampt provided his recollections of school and university days.

Dr.Joy Bear, formerly Senior Principal Research Officer, CSIRO Minerals Division and later Honorary Fellow of that Division.
Dr. Bear was a colleague of Sir David at CSIR/O. Dr. Bear provided material and suggested avenues for research to the family of the late Sir David, assisted Dr. Yule with technical detail and reviewed Dr. Yule's final draft. Her commitment to factual accuracy, generosity with her time and overall encouragement are greatly appreciated by the Zeidler family. Dr. Bear is co-author of I. J. Bear, T. Beigler and T. R. Scott, *Alumina to Zirconia; the History of the CSIRO Division of Mineral Chemistry*, CSIRO, Melbourne, 2001 and is acknowledged in B. Beale, *Engineering a Legacy: Memories of the Journey of CSIRO Chemical Engineering,* CSIRO Minerals, 2005, for her work on the Committee which guided the project of producing Mr Beale's book.

Mr Bob Birtles, CSIRO Corporate Archives, and Margot Clarke, Records Manager CSIRO Minerals Division.
Mr Birtles and Ms Clarke ensured that relevant documents were copied and forwarded to Dr. Bear.

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The family of the late Katrine Brown provided her written recollections of the Zeidler family.

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Dr. Culvenor provided his summary and assessment of Sir David's MSc. thesis, set in the context of scientific research at that time.

Mrs Michelle Dimech, Manager Membership and Publications, ATSE.
Mrs Dimech copied and forwarded documents as requested.

Sheryl Holschier, Librarian, Orica (formerly ICI, Aust.)
Ms Holschier located and forwarded to Dr. Yule copies of material relevant to Sir David's time at ICI (Aust.)

Dr. Jan Kolm, Executive Director Research and Technology, ICI (Aust.) 1973-1980 and Vice President of the ATSE, 1986-1990.
Dr. Kolm was a colleague of Sir David at ICI (Aust.) and the ATSE. He made a valuable contribution to the ICI (Aust.) section and reviewed Dr. Yule's final draft.
Dr. Kolm is the author of "The Chemical Industry – Australian Contributions to Chemical Technology" in Frank Eyre (ed.), *Technology in Australia 1788-1988*, Australian Academy of Technological Sciences and Engineering, Melbourne, 1988.

Dr. Keith Neill, an Associate Research Manager, ICI (Aust.) 1971-1987.
Dr. Neill read Dr. Yule's drafts, including Dr. Yule's final draft, December 2004, and assisted with technical detail as to the ICI section.
Dr. Neill is author of *Making the Future: A History of ICI Australia Research Group*, ICI Australia, Melbourne, 1989.

Sir Gustav Nossal
Sir Gustav provided the family of Sir David with his recollections of Sir David's 17 years of service on the board of the Walter and Eliza Hall Institute of Medical Research.

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Dr. Pearse provided his recollections of CSIR's Chemical Engineering Section in the 1940's and suggested avenues for research as to the CSIR/O section.

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Professor Rae undertook some preliminary enquiries and read Dr. Yule's drafts, including Dr. Yule's final draft, December 2004. At this time, Professor Rae was Technical Director of the ATSE.

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Mrs Stapleton provided information about the Honda Foundation, Japan and its commitment to worldwide discussion and promotion of advances in technology.

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Ms Walker copied and forwarded documents and photographs as requested.

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Sir Ian Wark was a Foundation Member of the Australian Academy of Science, founded in 1954, and was elected to the Council of that Academy in 1959. Sir Ian also played a significant role in the establishment of the Australian Academy of Technological Sciences in 1976 and was one of its Foundation Fellows. See the Biographical Memoir, I. W. Wark, published by the Australian Academy of Science.

B. Beale, *Engineering a Legacy : Memories of the Journey of CSIRO Chemical Engineering,* CSIRO Minerals, 2005.

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Who's Who in Australia.

Note by the Zeidler Family

The family of Dirk Zeidler thanks Dr. Yule for his thorough research, and scholarly drawing together of the disparate strands of Dirk Zeidler's life, and also for his detailed and informative footnotes. Dr. Yule was the last of four appointees commissioned by the Australian Academy of Science to research and write a biographical memoir of Sir David.

The family of Dirk Zeidler also acknowledges those appointed by the Academy, in contributing to the discussion leading up to the publication of this biography.

Dr. Yule independently researched and wrote this biography. It was reviewed by Dr. Joy Bear and Dr. Jan Kolm. Their written reviews were received by the Academy in 2004.

Dr. Bear, formerly Senior Principal Research Officer, CSIRO Minerals Division and later Honorary Fellow of that Division, was a colleague of Dirk Zeidler at CSIR/O. Dr. Bear is co-author of I. J. Bear, T. Beigler and T. R. Scott, *Alumina to Zirconia; the History of the CSIRO Division of Mineral Chemistry,* CSIRO, Melbourne, 2001 and is acknowledged in B. Beale, *Engineering a Legacy: Memories of the Journey of CSIRO Chemical Engineering,* CSIRO Minerals, 2005, for her work on the committee which guided the project of producing Mr Beale's book.

Dr. Jan Kolm, Associate Research Manager (ICI Aust.) 1958 – 1969, Research Manager ICI (Aust.) 1970-1973, Executive Director ICI (Aust.) 1973 – 1980, Vice President, Australian Academy of Technological Sciences and Engineering (ATSE) 1986 – 1990, was a colleague of Dirk Zeidler at ICI (Aust) and at the ATSE. Dr. Kolm is the author of *The Chemical Industry – Australian Contributions to Chemical Technology* in Frank Eyre (ed.) *Technology in Australia 1788-1988*, Australian Academy of Technological Sciences and Engineering, Melbourne, 1988.

Dirk Zeidler was awarded the Chemeca Medal in 1985.

In April 1998, shortly after Sir David's death, the Australian Academy of Science published the following short obituary in its quarterly Newsletter. Dirk Zeidler's family thanks the Academy for this.

> **David Zeidler**
> The distinguished chemical engineer and industrialist, Sir David Zeidler, died on 12 March 1998. David Ronald Zeidler was born in Melbourne on 18 March 1918. He went to Scotch College in Melbourne and gained a Master of Science degree from the University of Melbourne.
> He then went to work for the Council for Scientific and Industrial Research (the precursor of CSIRO) from 1941 to 1952. He worked in the Division of Industrial Chemistry and soon became leader of the Chemical Engineering Section.
> In 1947 he did postgraduate research at the Massachusetts Institute of Technology.
> In 1952 he joined Australia's leading chemical manufacturer, ICI Australia, as Research Manager. He progressed through the ranks of Development Manager, Controller of the Dyes and Fabrics Groups to Director in 1963, Managing Director in 1971 and Chairman in 1973. He retired in 1980, when he was created a Knight Bachelor.

> While working at ICI he studied business at the Massachusetts Institute of Technology and Harvard Business School.
> Under his guidance, ICI grew and prospered. With his research background he consistently supported company research in chemical and related fields. He backed Australian innovation, including CSIRO's Sirotherm and Sirofloc processes.
> He was committed to cooperation between industry, research organisations and universities. While in CSIRO he set up a cooperative high- pressure chemical engineering unit at the University of Sydney.
> Sir David served on the boards of a number of other large companies, including BHP, Amatil, the Commercial Bank of Australia and Westpac Banking Corporation. He supported science and technology through his work on the boards of research organisations such as the Walter and Eliza Hall Institute of Medical Research in Melbourne. He was a member of many scientific and professional societies.
> Sir David contributed to Australian education, serving on the Commonwealth Advisory Committee on Advanced Education and other committees looking at overseas qualifications, academic salaries, and education and training. He worked on government inquiries into electricity generation and distribution.
> He was President of the Australian Academy of Technological Sciences and Engineering and joined the Fellowship of the Academy of Science by special election in 1985.

The family of Dirk Zeidler has chosen not to correct the factual errors in, or make any addition to, the Wikipedia entry relating to Dirk Zeidler, first published 24 August 2007. All of the above sources were available to the author(s) of the Wikipedia entry, as were the sources footnoted by Dr. Yule. The author(s) of the Wikipedia entry omitted to mention Dirk Zeidler's appointment as a Companion in the Order of Australia was for services to science and technology, business and the community.

Contrary to material published online, which could lead a reader to believe otherwise, Dirk Zeidler was never a member of the H.R. Nicholls Society or the Mont Pelerin Society. Nor was he associated with either of these societies. Any reference to Dirk Zeidler and the H.R. Nicholls Society, relates only to an invitation from that Society which was declined by Dirk Zeidler.