
SCIENCE & SOCIETY

STUDY GUIDE & READINGS



Published by Deakin University,
Victoria 3217
First published 1986
© Deakin University 1986
Edited, designed and typeset by
Deakin University
Production Unit
Printed by Deakin University
Printery

ISBN 0 7300 0413 9

This book forms part of the
Science in Culture course offered
by the School of Humanities in
Deakin University's Open
Campus Program. It has been
prepared for the *Science in
Culture* course team, whose
members are:

Barry Butcher
Wade Chambers
Lyndsay Farrall
Jock McCulloch (chairperson)
Patricia Rizvi (course assistant)
David Turnbull

Consultants:
David Biggins, Griffith University
David Dorward, La Trobe
University
Stuart Macdonald, University of
Queensland
Brian Martin, Australian National
University
Helen Watson

The course includes
Part A: Medicine & Society
(Study Guide and Readings)

Part B: Knowledge Making
(Study Guide and Readings)

Part C: Knowledge Using
(Study Guide and Readings)

Part D: Science & Society
(Study Guide and Readings)

Acknowledgments

Photograph appearing in Unit 1,
Ref. 1.9, by Graham Tidy, reprint
of photograph of Ernabella clock,
published in *The Advertiser*
(Adelaide), 19 June 1978, p. 1.
Illustrations in Section 6 by
George Bindon.

Cover illustration:

The main workroom in Justus von
Liebig's laboratory at Giessen.

Drawing by Wilhelm Transschold,
1842 (Liebig-Museum, Giessen),
reproduced from Albert Bettex, *The
Discovery of Nature*, Thames and
Hudson, London, 1965, p. 58.

Title page:

The grand telescope at the Paris
Observatory, 1975.

L'illustration (Paris), vol. 66, p. 248,
1875, reproduced from L. Pearce
Williams, *Album of Science: The
Nineteenth Century*, Charles
Scribner's Sons, New York, 1978,
fig. 104.

STUDY GUIDE

1

DOING TIME IN MODERN SOCIETY

David Biggins

4

KNOWING IN CULTURE

Helen Watson

6

THE LESSONS OF LYSENKO

INTRODUCTION
WHAT WAS LYSENKOISM?
Wade Chambers

2

SUPPRESSION IN SCIENCE

Brian Martin

5

AFRICAN IRON TECHNOLOGY

WHAT WERE THE ORIGINS
OF THE IRON AGE IN
AFRICA?

WHAT WAS THE IMPACT
OF IRON TECHNOLOGY?
HOW DID IRON-SMELTING
TECHNOLOGY OF ANCIENT
AFRICA COMPARE WITH
CONTEMPORARY EUROPEAN
IRON-WORKING?

Smelting furnaces from upper
region of Ghana

WHAT PRICE 'PROGRESS'?
WHAT HAS BEEN THE
IMPACT OF EUROPEAN
TRADE ON INDIGENOUS
AFRICAN SMELTING AND
SMITHING?

David Dorward

7

BOOK STUDY OF OUR ORIGINAL AGGRESSION

INTRODUCTION
READING *OUR ORIGINAL
AGGRESSION* AS PART OF
SCIENCE IN CULTURE
*'OUR ORIGINAL
AGGRESSION'* AND THE
STRUGGLE FOR
AUTHORITY
Lyndsay Farrall

3

HIGH TECHNOLOGY IN AUSTRALIA

WHAT IS HIGH
TECHNOLOGY?
BENEFITS AND COSTS OF
HIGH TECHNOLOGY
REQUIREMENTS OF HIGH-
TECHNOLOGY INDUSTRY
HIGH-TECHNOLOGY
POLICY AND INFORMATION
INFRASTRUCTURE FOR
HIGH-TECHNOLOGY IN
AUSTRALIA

Stuart Macdonald

SUPPRESSION IN SCIENCE

Some people have the idea that science is a holy construction: a body of sacred knowledge which is beyond the petty concerns of humans. But science is not made by angels. Scientists are human with the ordinary defects of mortals, such as seeking power, holding grudges and covering up mistakes. Does doing science make scientists purer than other people? This is what some textbooks might suggest. But most scientists are quite aware of all sorts of nasty behaviours in the practice of science, which often affect the kind of research that is done and the type of theories that are favoured.

In this unit the focus is on one aspect of human behaviour within the scientific community: power struggles which are manifested in the suppression of an individual, a publication or a viewpoint.

Before beginning, consider the following questions:

- 1 A scientist submits a paper to a journal, and it is rejected. What is the most likely explanation? What are the possible explanations? What would you need to know for an explanation to satisfy you?
- 2 A scientist is sacked from a research job. What is the most likely explanation? What are the possible explanations? What would you need to know for an explanation to satisfy you? What difference would it make if you knew the scientist was a woman?
- 3 What is your view about how power is exercised between scientists in the scientific community? What do most writings say about this? Are there many writings which say anything about it at all?

The first reading is a set of source documents about a dramatic conflict in the scientific community involving the exercise of power. The documents are about the dismissal of Dr John Coulter from the Institute of Medical and Veterinary Science in Adelaide in 1980. The documents are newspaper articles and letters to the editor, most of them from the The Advertiser (Adelaide).

►READ REFERENCE 2.1: Selected articles and letters from The Advertiser (Adelaide), The Canberra Times and The National Times.

Examine Hailstone's second article (Ref.2.1c) and Bonnin's letter (Ref.2.1c) in detail. There are at least five separate reasons given by Bonnin for Coulter's demotion (later to be a dismissal). List all the separate reasons which you think are presented. Do Bonnin's arguments reflect 'proper' scientific criteria?

Next look at the letters in response. There are some specific replies to Bonnin's arguments. List them as a parallel list to your list of Bonnin's reasons. Do Bonnin's arguments stand up? Which respondents have presented the most effective replies? Why are they effective?

Are there also some defences of Coulter which are not just responses to Bonnin's arguments? If so, list these defences.

Look closely at the arguments about obtaining research grants. Bonnin at the end of his letter (Ref.2.1g) says that competent research workers are expected to obtain grants. Ross (Ref.2.1i) says this is an unrealistic expectation. Gouldhurst (Ref.2.1i) says that the lack of support from the management of the IMVS could have jeopardised Coulter's chance of obtaining a grant. What are the assumptions about the workings of the scientific community that underlie each of these views?

Pick at least one other argument by Bonnin, along with the counter-arguments to it by respondents, and list the assumptions about the workings of the scientific community that underlie each of the views presented. How do the arguments stand up?

Contrast the types of arguments presented by:

- Bonnin (Refs.2.1c, 2.1g);
- Coulter (Refs.2.1b, 2.1m, 2.1n);
- doctors (Refs.2.1f, 2.1i, 2.1h, 2.1j, 2.1k, 2.1l);
- trade unionists (Refs.2.1d, 2.1n).

How do the different arguments relate to the personal or occupational interests of those presenting them?

Only some people are concerned enough to write letters to the newspaper. Why do you think individuals wrote letters supporting Coulter? Only some letters are published. Why do you think there are no letters from anyone besides Bonnin representing the IMVS?

Do the supporters of Coulter disagree only about the 'evidence' presented by Bonnin or also about the criteria for dismissal?

Do you think the treatment of Coulter was 'fair'? Why or why not? What would an 'impartial' observer need to know to decide? Are the relevant issues only scientific? What are the relevant issues?

Assume that Bonnin and other administrators at the IMVS are completely sincere and well-intentioned. Does this rule out any explanations of the Coulter dismissal? What is the relationship between the individual psychology and the actions of the key IMVS decision-makers?

Consider individuals and groups such as Bonnin, Coulter, the IMVS executive, drug companies, consumers, workers and taxpayers. Which individuals and groups benefitted from Coulter's dismissal? Which ones lost out?

There is very little writing about internal power structures in the scientific community. Most studies simply assume that what exists is functional. A usual assumption is that the power of elite scientists is based on their contributions to knowledge, and that their prestige is due to these contributions.

The sociology of science tends to focus on scientific knowledge. When 'values in science' are discussed, this refers to values inherent in the choice of scientific research, scientific concepts and how they are organised, and the use of results. There is little attention to values which are built into the structure of the scientific community. These values can include assumptions about hierarchy, about patterns of communication, about who allocates money, and about who makes decisions about appointments, new departments or new research facilities.

Do you agree with these comments about science and how it is studied?

What have you read that supports or opposes them?

There are many ways to conceptualise the scientific community. Some possible ways are as follows.

- 1 Collegial model. Scientists treat each other as equals because they are essentially equal in the market-place of ideas. Ideas are scrutinised and taken up because of the usefulness or otherwise of the ideas, not because of who promotes them or opposes them. Scientific research is essentially a co-operative endeavour.
- 2 Individualistic model. There is a hierarchy in the scientific community based on merit in research. Those who develop the best ideas are rewarded appropriately. Ideas are examined independently of who develops them, but those higher in the hierarchy have more say over the direction of research funding and about who is hired. The driving force behind individual achievement is competition and the reward structure. The scientific community is essentially a meritocracy.
- 3 Professional model. The opportunity to do scientific research is restricted to those who have passed the courses and otherwise done what is necessary to be accepted. Potential contributions to knowledge are only considered from members of the profession, and this is usually restricted to the relevant speciality. Control within the scientific community is exercised collectively by professional norms.

- 4 Feudal model. The scientific elite exercises most of the control within the scientific community. Apprentices must find a sponsor, and be initiated into their sponsor's school of thought. The members of the elite run little fiefdoms, controlling appointments, promotions, research opportunities and chances to publish research. The members of the elite know best, and operate like a set of independent and benevolent autocrats.
- 5 Bureaucratic model. The scientific community is structured bureaucratically, with a strong hierarchy and division of labour. Key decisions are made at the top, which may be by the scientific elite or by bureaucratic elites in a corporation or government department. Contributions to knowledge are assessed according to how they serve the interests of the bureaucracy.

Analyse Dr Coulter's dismissal from the point of view of each of these models. Which model makes the most sense?

Are there any other models to explain the behaviour of the scientific community? Which models are most flattering to scientists? Which models are most threatening to the status of scientists?

Can the scientific community be explained by a single model? Is the 'community' really a community in the usual sense? Do different groups of scientists react the same way to different social environments? How can the whole operation be understood coherently?

To be able to understand conflicts such as the Coulter-IMVS case, a picture of the operation of the scientific community is needed. One picture is as follows.

Firstly, within the scientific community, there is an elite group which exercises much more power than most other scientists. These scientific power elites dominate decision making about research priorities, allocation of funds, editorial policies of scientific journals, and appointments and promotions of scientists. Secondly, the scientific power elite has ties to power elites outside science, especially in industry and government. Scientific elites in the areas of geology and geophysics, for example, are likely to have research and career interests tied to corporate elites in the mining industry and in the government bureaucracies which deal with minerals. Thirdly, scientists who threaten the interests of the scientific elites or related elites in industry or government - for example by speaking out in a critical manner about the research that is being done - may be attacked to shut them up or to discredit them. This can be called 'suppression of intellectual dissent'. This perspective is presented in the next reading.

► READ REFERENCE 2.2: Martin, 'The scientific straightjacket'.

There are several strands which you can look for:

- 1 Evidence about the extent of suppression. The Coulter-IMVS case is only one of ten cases (p.34-5) presented from Australia and New Zealand. The editors of The Ecologist have added some US cases on p.39.

- 2 A discussion of the scientific power elite and its relation to other elite groups (p.35-6), with the specific example of the forest industry (p.36-7).
- 3 Application of the scientific power elite perspective to explain the phenomenon of suppression (p.38-41).
- 4 An outline of challenges to the scientific power structure (p.41-2).

How is the Coulter-IMVS case similar to and different from the other cases outlined in the reading?

What are the characteristics of 'suppression' as presented in the reading? How can these cases be distinguished from the taking of 'proper' measures against incompetent work or people?

To use a term such as 'suppression' is to introduce value judgments, such as the implication that it is illegitimate. What values are incorporated into the concept of 'suppression of intellectual dissent'? Who sets the standard from which 'dissent' is made?

How can the 'cognitive scientific elite' and the 'political scientific elite' be distinguished? Is this a useful distinction? Are there other types of scientific elites?

Does the idea of a 'political scientific elite' really explain the phenomenon of 'suppression'?

Should suppression be considered a normal part of science, occasionally involving an injustice that should be tolerated?

Is there a contradiction between the usual notion that the ideas of scientists should be judged on their merits, and attempts to prevent public comments by scientists? Do the 'norms of science' only apply to 'pure research'?

Is it possible for 'science' to be done without professionals, or without hierarchy? To what degree do scientific specialisation and hierarchy reflect the bureaucratisation of modern industrial society? How much of modern science would survive a switch to science done 'by the people'?

ESSAY QUESTIONS

- 1 Examine a 'suppression case' in detail and evaluate at least two different explanations of why it occurred.
- 2 Examine a suppression case, showing what resources (including knowledge) different parties bring to bear, and how the resources are used.
- 3 Looking at a particular suppression case, explain how the different participants develop an understanding of what is going on.
- 4 What are the benefits and the disadvantages of hierarchy in science? Who benefits and who loses?
- 5 What is the relation between the exercise of power through the hierarchy in the scientific community and the exercise of power in other institutions such as capitalism, patriarchy and the state?
- 6 How are scientific power structures similar to and different from other professional power structures such as medicine or law?
- 7 How did hierarchy in science develop historically?
- 8 What sustains hierarchy in science? What forces oppose it?
- 9 What prospects are there for scientists to become part of a ruling elite under capitalism?
- 10 Analyse the viability of a non-hierarchical alternative to the present science structures.

ANNOTATED BIBLIOGRAPHY

Note: asterisk mark highly recommended works

Power in the scientific community

Blissett, Marlan. Politics in Science. Little Brown, Boston, 1972.

Includes an argument that an elite makes the major decisions in science.

Gaston, Jerry. 'Autonomy in the research role and participation in departmental decision-making'. British Journal of Sociology, vol.26, 1975, pp.227-41.

Lewis, Lionel S. Scaling the Ivory Tower: Merit and its Limits in Academic Careers. Johns Hopkins University Press, Baltimore, Md., 1975.

An exposure of the values involved in appointments, promotions and dismissals.

Mulkay, Michael. 'The mediating role of the scientific elite'. Social Studies of Science, vol.6, 1976, pp.445-70.

An argument that scientific elites protect working scientists from pressures from industry and government.

Van de Graaff, John H.; Clark, Burton, R.; Furth, Dorotea; Goldschmidt, Dietrich; & Wheeler, Donald F. Academic Power: Patterns of Authority in Seven National Systems of Higher Education. Praeger, New York, 1978.

Relates power structures of different levels including the department, the university and the state.

Suppression

Chalk, Rosemary, & Von Hippel, Frank. 'Due process for dissenting whistle-blowers'. Technology Review, vol.81, no.7, 1979, pp.49-55.

Dixon, Marlene. Things Which are Done in Secret. Black Rose Books, Montreal, 1976.

A detailed case study of a major suppression operation in sociology at McGill University.

Eddy, W.H.C. Orr. Jacaranda, Brisbane, 1961.

The definitive a count of Australian's most famous academic suppression case.

- * Horrobin, David. 'Referees and research administrators: barriers to scientific research'. British Medical Journal, vol.2, 27 April 1974, pp.216-18.

An article on the power of referees.

- Manwell, Clyde. 'Peer review: a case history from the Australian Research Grants Committee'. Search, vol.10, no.3, 1979, pp.81-6.

A detailed study of political bias in grant-giving.

- * Martin, Brian; Baker, C.M. Ann; Manwell, Clyde; & Pugh, Cedric; (eds). Intellectual Suppression: Australian Case Histories, Analysis and Responses. Angus & Robertson, Sydney, 1986.

This includes a very detailed analysis of the Coulter-IMVS case.

- Nader, Ralph; Peter, J.; Petkas, & Blackwell, Kate; (eds). Whistle Blowing: The Report of the Conference on Professional Responsibility. Grossman, New York, 1972.

A book containing case studies, many involving scientists or engineers.

- Peters, Charles, & Branch, Taylor. Blowing the Whistle: Dissent in the Public Interest. Praeger, New York, 1972.

This presents many case studies from a range of areas.

- * Triesman, David. 'The Institute of Psychiatry sackings'. Radical Science Journal, no.5, 1977, pp.9-36.

An excellent case study.

- Weinstein, Deena. Bureaucratic Opposition: Challenging Abuses at the Workplace. Pergamon, New York, 1979.

An important treatment which includes a new perspective on bureaucracy as a power system.

Professionals, bureaucracy

- Collins, Randall. The Credential Society: An Historical Sociology of Education and Stratification. Academic Press, New York, 1979.

An argument that professions in the USA have built their power on occupational control protected by credentials - not on superior performance.

- Freidson, Eliot. Professional Dominance: the Social Structure of Medical Care. Atherton, New York, 1970.

This reviews power structures within professions, and also 'professional imperialism'.

Johnson, Terence J. Professions and Power. Macmillan, London, 1972.

A crisp critique of functionalist conceptions of professions, and an argument that professions are a way for controlling an occupation.

Larson, Magali Sarfatti. The Rise of Professionalism: A Sociological Analysis. University of California Press, Berkeley, 1977.

Good insight and deep analysis of professionalisation.

Weinstein, Deena. 'Bureaucratic opposition: the challenge to authoritarian abuses at the workplace'. Canadian Journal of Political and Social Theory, vol.1, no.2, 1977, pp.31-46.

Bureaucracy as a power system. See also Weinstein, 1979, above.

Intellectuals

* Ehrenreich, Barbara, & Ehrenreich, John. 'The professional-managerial class'. In P. Walker (ed.). Between Labour and Capital. Harvester, Brighton, UK, 1979, pp.5-45.

An argument that scientists (among others) are part of a new class between the ruling and the working classes.

Elliot, David, & Elliot, Ruth. The Control of Technology. Wykeham, London, 1976.

An argument that scientists are servants of power.

Gouldner, Alvin W. The Future of Intellectuals and the Rise of the New Class. Macmillan, London, 1979.

An argument that intellectuals use their knowledge as a form of capital in the wider class struggle.

Konrad, George, & Szelenyi, Ivan. The Intellectuals on the Road to Class Power. Harvester, Brighton, UK, 1979.

An argument that intellectuals are a potential ruling group in their own right.

Alternatives to professionalism and hierarchy

Martin, Brian. The Bias of Science. Society for Social Responsibility in Science, Canberra, 1979, part V.

A vision of de-professionalised science.

Meertens, Ad, & Nieman, Onno. 'The Amsterdam science shop: doing science for the people'. Science for the People, vol.11, September/October 1979, pp.15-17, 36-7.

Description of institutionalised links between scientific research and the needs of community groups.

* Science for the People. China: Science Walks on Two Legs. Avon, New York, 1974.

Describes 'science by the people' in China under the Cultural Revolution. A very idealised picture probably very little of science in China was ever like this but nevertheless a useful vision.

WRIT FROM SCIENTIST

Prominent SA environmentalist Dr. J. R. Coulter has issued a summons against the SA Institute of Medical and Veterinary Science claiming wrongful dismissal.

The summons was served yesterday on the institute director, Dr. J. A. Bonnín.

The action has been set down for conference in the SA Industrial Court Chambers on Friday.

Dr. Coulter, who has been told by the institute that his laboratory will be closed on June 30 and that his pay and status will be reduced, has issued a qualified claim which questions whether the SA Executive Council has sanctioned the action.

If the Executive Council has not sanctioned the action, Dr. Coulter is claiming that he has been dismissed contrary to Section 15 (1) (e) of the Industrial Conciliation and Arbitration Act and that his dismissal is "harsh, unreasonable or unjust."

Dr. Coulter has been employed at the institute as a surgical research officer since 1959.

He said yesterday he had been told by Dr. Bonnín that he would be transferred to the clinical microbiology section on a salary \$10,000 less than he now received.

The Advertiser (Adelaide), 26 March 1980, p. 3.

Barry Hailstone

SACKED FOR SPEAKING OUT - SCIENTIST

2.1(b)

A prominent SA environmental research scientist claims he has been "virtually sacked" by the SA Institute of Medical and Veterinary Science because he is outspoken on environmental issues.

He is Dr. J. R. Coulter, whose future is still in doubt after a meeting in chambers at the SA Industrial Court on Friday.

The court meeting resulted from a summons being issued against the IMVS claiming wrongful dismissal of Dr. Coulter.

Dr. Coulter said he had been told by the institute's director, Dr. J. A. Bonnin, that, from June 30, his environmental mutagen testing laboratory at the institute would be closed, and that he (Dr. Coulter) would be transferred to the microbiology section on a salary \$10,000 a year less than he now received.

The summons was issued on the ground that the SA Executive Council presided over by the Governor, Mr. Keith Seaman, must sanction moving Dr. Coulter and, if it had not, then his dismissal was not valid.

Dr. Coulter's lawyer said yesterday that in the con-

ference in chambers on Friday the summons against the IMVS had been withdrawn by agreement with the Crown Law Department (representing the IMVS) on an assurance from the Crown that the Executive Council had not ratified the IMVS action in moving Dr. Coulter.

Dr. Bonnin said yesterday he would seek legal advice this week to see what the IMVS's next step would be.

This advice would include whether the Executive Council should be asked to sanction the move.

Dr. Coulter said he would also discuss with his lawyer the significance of the present situation.

Later, his lawyer had said they would either be seeking an ultimatum from the IMVS that it would not take the matter to the Executive Council, or they would seek an in-

junction in the Supreme Court to stop the IMVS going to the Executive Council.

In his present position, Dr. Coulter is paid \$31,273 a year. The position offered, that of a trained pathologist, has a salary of \$21,444.

Dr. Coulter said he was classified as a specialist pathologist in his present job.

He was not only trying to keep his present job for his personal security, but important work on mutagens in the environment should be continued.

"I have always believed that it is a scientist's responsibility to be available to the public and to speak out on issues where the scientist has a specialist knowledge and not just publish results in learned journals," he said.

"Being outspoken is my crime.

"As a doctor I see my duty to the community to do, and say, those things which are intended to improve the health of the community.

"With cancer now the second most common cause of death and the fact that 80 p.c. to 90 p.c. of cancers are caused by exposure to environmental agents, I believe I have a clear responsibility to make facts and consequences known."

Dr. Coulter, a strong opponent of the nuclear industry, said there had been a serious attempt to reduce his standing in the community so the issues he was involved in would be downgraded.

He and a colleague had been the first in the world to show that a drug, tinidazole, was mutagenic and potentially capable of causing cancer in human beings.

Dr. Bonnin said yesterday he would like to comment on Dr. Coulter's remarks, but would not do so until he had seen them and until he had taken legal advice.

Probably this would be done today.

The Advertiser (Adelaide), 31 March 1980, p. 12.

Barry Hailstone

2.1(c)

DIRECTOR GIVES REASONS FOR SCIENTIST'S MOVE

The SA Institute of Medical and Veterinary Science could not afford to have SA environmentalist Dr. J. R. Coulter continue working in his own laboratory, the director, Dr. J. A. Bonnin, said yesterday.

He said the Institute had to find about \$85,000 a year from its own resources to support Dr. Coulter in his work.

Dr. Bonnin, who was replying to a statement by Dr. Coulter that he had been "virtually sacked" by the institute because he was "outspoken on environmental issues," said there were several aspects to Dr. Coulter's work which had to be put into perspective.

Dr. Coulter has been told in a letter from Dr. Bonnin that from June 30 his environmental mutagen testing laboratory at the institute will be closed and that he (Dr. Coulter) will be transferred to the microbiology section on a salary \$10,000 a year less than he now receives.

Dr. Bonnin said Dr. Coulter was employed as a research worker and until recently had one research scientist and two other scientific assistants.

"However, he started on his own initiative to provide a routine service, testing various substances for mutagenic (potentially cancer-causing) properties," he said.

"The financial situation of the institute makes it necessary to reduce the size of this unit.

"The institute is charged with providing pathology services to the public and with research related to these services.

"It has neither the accommodation nor the available finance to branch out into other services."

Dr. Bonnin said that if such a testing unit was thought desirable in Adelaide it would be better placed in another service department such as the chemistry division of the Department of Services and Supply.

"Many drugs and chemicals are now tested by, or for, their manufacturers and there is little need for this work in Adelaide, which manufacturers almost none of these substances," he said.

Dr. Bonnin said Dr. Coulter may well have been able to continue in medical research had he been successful in attracting research grants from appropriate bodies such as the Anti-Cancer Foundation or the National Health and Medical Research Council.

Dr. Coulter had been prematurely promoted to medical specialist status and salary on his undertaking to write up earlier work in the form of a

thesis for his degree of doctor of medicine.

"The consequences of not obtaining this degree were fully explained to him," he said.

Dr. Bonnin said there was now a salaried medical officers award in SA which took medical specialist and other qualifications into account.

The SA Health Commission had insisted that specialist salaries could be paid only to those who were registrable as medical specialists or to those who held an appropriate postgraduate qualification. "Dr. Coulter still has only his basic medical degree," he said.

"In moving him into a service position in microbiology he is no longer eligible to be paid as a specialist.

"This is what Dr. Coulter regards as demotion.

"The institute council feels obliged to move Dr. Coulter into a less costly aspect of the institute's work."

The Advertiser (Adelaide), 1 April 1980, p. 8.

Bill Rust

UNIONS IRATE AT 'SACKING' OF SCIENTIST

SA's top trade union official yesterday strongly criticised the "virtual sacking" of a prominent SA environmental research scientist.

The United Trades and Labor Council of SA secretary, Mr. R. J. Gregory, said the trade union movement was "extremely concerned" that Dr. J. R. Coulter, a man known for speaking his mind about the effects of chemicals on workers, now found himself unable to continue that research.

Dr. Coulter has been told by the SA Institute of Medical and Veterinary Science director, Dr. J. A. Bonnin, that from June 30 his environmental mutagen testing laboratory at the institute will be closed and that he (Dr. Coulter) will be transferred to the microbiology section on a salary reduced by \$10,000 a year.

Dr. Bonnin said last week the institute had to find about \$85,000 a year to support Dr. Coulter and could not afford to have him working in his own laboratory.

He had been employed as a research worker, but on his own initiative had started to provide a routine service testing substances for mutagenic (potentially cancer-causing) properties.

Finance had made it necessary to reduce the unit's size.

Mr. Gregory said yesterday:

"The trade union movement is most concerned that many new chemicals and processes are arriving on the market and are constantly being introduced into industry, when in many cases it is not known until 10, 15 or even 35 years later whether

they are harmful to the people who will have to work with them.

"We believe scientific and medical research should be continued to determine whether chemicals and new processes are carcinogenic or harmful in other ways.

"We understand that a very simple test can determine whether a chemical is likely to be carcinogenic, allowing scientists then to carry out more extensive work which will prove conclusively whether or not it is.

"This work is very important because it would help to remove from our factories one of the most difficult hazards to detect."

Mr. Gregory said that where chemicals were suspect or proved to be unsafe, alternative chemicals could be found.

The SA union movement was very conscious of Dr. Coulter's good work in isolating carcinogens and drawing public attention to the chemicals and substances harmful to human beings.

Such work would be increasingly important with investigations taking place into effects of radiation on people who had worked at Radium Hill in SA "and other activities which the SA Government is going to want Australian workers to participate in."

"We are very concerned that a scientist working in this area is suddenly being pushed to one side," he said.

The Advertiser (Adelaide), 8 April 1980, p. 6.

D. Cole

2.1(e)

CANCER RESEARCH WORK

Sir — I am dismayed at the recent remarks of Dr. Bonnin of the Institute of Medical and Veterinary Science regarding the research into cancer-inducing agents carried out at the Institute by Dr. John Coulter.

Dr. Bonnin should be aware that the incidence of cancer is rising significantly on a world-wide basis. It is now suggested by medical authorities that between 70 p.c. and 90 p.c. of all cancers are caused by environmental factors, including industrial pollution and the indiscriminate use of various chemicals.

While there may be some dispute as to what constitutes a pathology service, I would have been far more impressed with Dr. Bonnin's approach to the matter if he had indicated that the IMVS recognised the value of Dr. Coulter's work and that it would, despite limited resources, assist him to continue what is a necessary service.

Dr. Bonnin suggests that in relation to the cancer-inducing properties of certain products, reliance may be placed on data and information provided by manufacturers. This disregards the fact that manufacturers have a responsibility to shareholders to sustain and, if possible, increase profits. It is naive to suggest that manufacturers of chemical products, for example, are satisfactory guardians of public health, even though they may share concerns as to the possible impacts of their products.

Dr. Bonnin's remarks encourage the conclusions either that the IMVS possesses an extremely parochial view of public health or that it is experiencing great difficulty in publicly justifying the removal of Dr. Coulter from his original position.

D. A. COLE

St. Peters.

The Advertiser (Adelaide), 9 April 1980, p. 5.

P. Gouldhurst

2.1(f)

CANCER RESEARCH

Sir — In his interview with your medical writer ("The Advertiser," 1/4/80) the director of the Institute of Medical and Veterinary Science made two claims, neither of which will bear close examination. He said "the financial situation of the institute makes it necessary to reduce the size of Dr. Coulter's unit," that is to zero, and that "there is little need for this work in Adelaide which manufactures almost none of these substances," that is drugs and novel industrial chemicals. Elsewhere in a television interview he had similarly said that the institute did not have the finance to continue this work and that Dr. Coulter's laboratory was simply repeating work which had been done overseas.

On March 26, 1980, the IMVS had a credit balance \$882,000 above its budget expectations for this point in the year, despite Dr. Coulter's laboratory having been funded in the present year.

On the second point, Dr. Coulter's laboratory was the first in the world to show that the drug tinidazole was mutagenic and therefore posed a potential cancer risk for patients. This drug, although manufactured by an overseas company, was being introduced to the Australian market before registration was sought in the US. Drs. Coulter and Turner published this work in "Mutation Research," 57:97 (1978), a fact which your readers may check for themselves.

As public accountability seems very much at issue in this matter it seems fair to comment that the public are not well served if Dr. Bonnin, the director of a publicly funded institute, does not adequately research his facts before making public statements. The statements made by Dr. Bonnin in "The Advertiser" article quoted above are clearly misleading.

**DR. P. R. S.
GOULDHURST**

Rostrevor.

The Advertiser (Adelaide), 10 April 1980, p. 5.

J. Bonnin

2.1(g)

CANCER RESEARCH WORK

Sir — The statements of Mr. R. J. Gregory, as related by your Industrial Reporter, Mr. Rust, and the letter of D. A. Cole ("The Advertiser," 9/4/80) concerning Dr. R. J. Coulter need to be answered.

The main reasons for the Institute Council's decision with regard to Dr. Coulter, have become confused with finance. These reasons are:

●His broken agreement to submit his work for an appropriate postgraduate qualification. It was on the basis of this agreement that he was promoted. Senior research workers are required to obtain such qualifications, which he could easily have done. He has for many years been paid as a specialist pathologist for which he has no qualification.

●His failure to publish the results of past research. All research workers are expected to publish their work in reputable scientific journals and, despite repeated requests and written direction, this has not been done.

●His markedly low productivity as a full-time research worker, for which he is employed and which has been drawn to his attention. He has published only three papers in recognised journals in more than two years. The institute is criticised for allowing this state of affairs to continue for as long as it has. Several of the institute's routine

service personnel are far more productive, fitting in their research studies along with their other duties.

●His failure to comply with the Regulations under the Institute of Medical and Veterinary Science Act with respect to submitting any manuscript for approval before sending it for publication.

Most of Dr. Coulter's public statements have come from his private interest in environmental matters and have not resulted from his own research at the institute. He will no doubt continue to make these statements and play a prominent part in environmental affairs irrespective of the institute.

Dr. Coulter has not justified, scientifically or practically, some of his statements about hazardous environments. Every reputable scientist acknowledges that one cannot extrapolate what he finds in an artificial "test tube" situation to what occurs in an animal or human being. The human body has many protective mechanisms. The test he uses is a useful screening test only, and much more work in animals is necessary before claiming that any substance is cancer-producing.

Dr. Coulter was authorised to establish the Ames mutagenicity test as part of an approved research project. He was not authorised to establish a large routine testing service of drugs and chemicals,

most of which are now being submitted for testing in the country of manufacture, not necessarily by the manufacturers themselves. Much of Dr. Coulter's recent work has merely reproduced the findings of others.

His claim to be the first in the world to demonstrate the mutagenicity of Tinidazole, repeated by Dr. Gould-Hurst ("The Advertiser," 10/4/80) is not correct as this observation was made by Drs. Lindmark and Muller in a paper published two years earlier.

The institute does have an interest and a role in cancer research. Excellent research work into cancer is being undertaken in three other areas which is well supported by recognised research grants. Those responsible for recommending research grants (a form of peer review) have not recommended support for his present work. A competent research worker in any scientific organisation is expected to attract financial support in the form of research grants.

It is not the role of this institute to establish a large routine testing service for the testing of chemical substances for cancer-producing properties.

J. A. BONNIN
Director,
Institute of Medical
and Veterinary Science.

The Advertiser (Adelaide), 12 April 1980, p. 5.

Richie Gun

2.1(h)

CANCER RESEARCH WORK

Sir — The closure of the Environmental Mutagen Testing Unit at the Institute of Medical and Veterinary Science (IMVS) is a retrograde step.

The unit has provided an important service through a laboratory test which gives a valuable guide to the likelihood of any substance causing mutations or cancer in exposed populations.

Without this test reliance must be placed on human population studies. This means waiting years while people are exposed to a particular substance and then seeing how many people develop cancer or have stillborn or deformed offspring.

In contrast, the environmental Mutagen Testing Unit could give a guide within 48 hours as to whether or not an agent is potentially harmful.

The Port Adelaide Occupational Health Ser-

vice through this test has been able to have one substance withdrawn from use in a particular workshop because of its demonstrated potential as a mutagenic and carcinogenic agent. On other occasions we have been able to obtain assurances that particular agents were safe to handle.

In seeking to justify closure of the unit, the director of the IMVS, Dr. Bonnin, says many drugs are tested by or for their manufacturers.

Unfortunately, many others are not.

Perhaps Dr. Bonnin will advise the Port Adelaide Occupational Health Service and other concerned bodies what they should do in future when they wish to investigate the safety of any substance workers may be asked to handle.

RICHEL GUN
Acting Medical Director,
Port Adelaide Occupational Health Service.

The Advertiser (Adelaide), 12 April 1980, p. 5.

Michael Ross

2.1(i)

RESEARCH WORK

Sir — Without wishing to become involved in the specific situation of Dr. Coulter, I would take issue with two comments made by Dr. J. A. Bonnin ("The Advertiser," 12/4/80) regarding the standards set for satisfactory performance of research scientists.

The publication of three papers over two years as an unsatisfactory standard disturbs me. Surely publications should be measured by their impact on the scientific community, the status of the journal in which they are published and the length of time and complexity of the research. Dr. Bonnin's statements suggest an emphasis on the American ethic of "publish or perish," which has led to the discarding of long-term and carefully considered research in favor of pointless and minor projects for the sake of a publication credit.

Second, in the current economic climate, failure to gain a research grant cannot be considered unsatisfactory. I am well aware of many exceptional projects submitted to bodies such as NH & MRC and ARGC which cannot be financed because the funds provided can barely guarantee maintenance for presently funded projects, let alone new ones. Failure to gain funds cannot be seen as indictment of a researcher's ability in the present economic circumstances.

the employment of any researcher.

DR. MICHAEL ROSS
Stirling

The Advertiser (Adelaide), 18 April 1980, p. 5.

P. Gouldhurst

2.1(j)

BONNIN 'ATTACK'

Sir — I would like the opportunity to answer, point by point, Dr. J. A. Bonnin's long, serious and personal attack on Dr. John Coulter (*The Advertiser*, 12/4/80).

● Dr. Bonnin cannot reasonably complain that this issue has "become confused with finance" when he was the first to introduce financial considerations and when he has now been shown to have made a misleading public statement in relation to IMVS finances.

● While there may now be a requirement, under an award, for senior research workers to obtain a higher qualification, when Dr. Coulter began at the IMVS in 1959, there was no such requirement. Dr. Coulter was paid for about 10 years as a specialist pathologist before the present award was introduced about three years ago. Dr. Bonnin clearly recognises the quality of Dr. Coulter's work in relation to these qualifications for he says Dr. Coulter "could easily have obtained" them.

● Dr. Coulter tells me he has kept Dr. Bonnin fully informed of the progress of papers for publication and was informed, in writing, by Dr. Bonnin as recently as July 1979 that this progress was satisfactory. A paper on the past research referred to by Dr. Bonnin was submitted to him for publication in December, 1979.

● It is untrue that Dr. Coulter's productivity has been markedly low. Studies of research productivity in Australia and New Zealand show an average production of 1½ papers a scientist a year. By this standard and using Dr. Bonnin's own figure, Dr. Coulter's research productivity has been above average.

Moreover Dr. Coulter has had a further four letters published or accepted for publication in scientific literature and last year was twice invited to deliver paid lectures on his work in Victoria and once in NZ. This is not the record of an unproductive scientist.

● Dr. Bonnin does not say in what way or when Dr. Coulter did not comply with IMVS regulations with respect to submitting manuscripts for approval before sending them for publication. It is true that Dr. Coulter makes many public statements as a spokesman for the conservation movement. He has been scrupulous in making these statements as a private individual.

● Dr. Bonnin's criticism of the mutagenicity test used by Dr. Coulter illustrates an alarming and perhaps wilful ignorance of this important work going on in his own institute. Both the US Occupational Safety and Health Administration and the UK Health and Safety Commission have endorsed this test. Moreover, even if this test showed no correlation with carcinogenicity (in fact it shows better than 90 p.c.) it would still provide an extremely valuable method of identifying genetically toxic agents which may increase abortion and birth defect rates and lead to damage to the human gene pool.

● Applications for research grants are made, not for basic support but for specific research proposals. Grant-giving bodies enquire closely into whether an applicant already has the basic support of his institution. Dr. Bonnin's attack on Dr. Coulter illustrates how lit-

tle support the latter has from IMVS management, and this factor must have weighed heavily against a favorable assessment of his grant applications. It is also relevant that last year Dr. Coulter was made to apply for twice as much money as he had asked for in his draft grant application, thus further prejudicing his chances in a situation in which more than seven out of every 10 applications were unsuccessful.

● Finally Dr. Bonnin has not addressed the central matter raised by Dr. Coulter, namely that the latter was made to withdraw a section of a paper because of fear that it may have jeopardised money for research from drug companies. Dr. Bonnin's remarks so far have exhibited a greater concern for the welfare of drug companies than the public interest. He has said several times that there is no need for these tests in Australia as drug firms carry them out overseas and has referenced the work of Lindmark and Muller on the drug, tinidazole.

Perhaps he would care to explain why the company launching this drug on the Australian market did not mention Lindmark and Muller's work even though the same company had supplied tinidazole to these workers and must have known of these results. Either the company did not regard this as a proven demonstration of mutagenicity or it was withholding this information from Australian medical practitioners. Either way, it argues strongly for an independent test facility in Australia.

DR. P. R. S. GOULDHURST

The Advertiser (Adelaide), 22 April 1980, p. 5.

J. Potter

2.1(k)

WORK HAZARDS

Sir — It has come to our notice recently that some organisations including semi-governmental organisations are reluctant to allow workers access to information regarding industrial hazards to which they may be exposed.

This policy is often on the basis that the information is too complex to be readily understood by them. Such attitudes, even were they justified (in fact they frequently are not) are markedly paternalistic and destructive of trust in communication.

The Doctors' Reform Society is firmly committed to the principal of free exchange of scientific information throughout the society and particularly where the information has direct and practical consequences for good or ill.

We believe that occupational health entails active participation of all parts of the workforce. Such participation is not possible if information is not freely exchanged.

Dr. J. D. POTTER,
President,
Doctors' Reform Society.

The Advertiser (Adelaide), 12 May 1980, p. 5.

Ian Maddocks

HEALTH RISKS

2.1(1)

Sir — Your thoughtful editorial *Acceptable Risk* (17/5/80) is a useful reminder of a concept with which we should all be familiar.

It is often not appropriate in medicine to speak of "cause and effect." We cannot say that smoking "causes" heart attacks, or that exposure to radiation or asbestos "causes" cancer.

But the risk of developing these diseases is clearly increased by such factors, and we have to decide, as individuals and as communities, what risks we are prepared to accept for ourselves.

As you clearly state, it is not satisfactory to leave those decisions to experts.

For one thing, we are each, individually, most responsible for our own personal well-being.

For another, the experts are often in disagreement.

Very few of the chemicals to which we are exposed in daily life have been fully assessed for their dangers to man — you quote a figure of 100 out of a total of 70,000.

I am not prepared to be told by the manufacturer

of a chemical that it presents me with an "acceptable risk."

I want to know of an assessment done outside the industry, and, if possible an assessment which takes into account the Australian situation and the way that chemical is used here.

It is a little ironic, therefore, that at the very time when your comment appears, we are facing the closure of one of the few such laboratories in Australia — the unit under Dr. John Coulter which assesses chemicals for their mutagenicity, their likelihood of increasing the risk of cancer.

Dr. Coulter is plainly out of favor with his Director.

The reasons which Dr. Bonnin has stated in your columns for Dr. Coulter's demotion do not seem to justify such extreme action. I hope that Dr. Bonnin will not force the closure of the unit — one of the few planks we have in our pitifully inadequate defense against the subtle and insidious chemical dangers of our modern world.

IAN MADDOCKS
North Adelaide.

The Advertiser (Adelaide), 28 May 1980, p. 11.

Bill Guy

2.1(m)

CONSERVATION CAMPAIGNER IN CRISIS

Dr. John Coulter believes passionately that every scientist has a moral obligation to use his expertise for the benefit of society.

This belief has made him one of Australia's foremost conservation campaigners; it is also responsible, some say, for the professional crisis he now faces.

For almost his whole working life, Dr. Coulter, 49, has been a researcher at the SA Institute of Medical and Veterinary Science.

He was once described as "the conscience of the Institute."

It is the function of conscience to prod, to nag, even to goad. Dr. Coulter has perhaps done his share of all that.

It is often the effect of conscience to create inner conflict; and it is conflict within the Institute that now threatens Dr. Coulter's career.

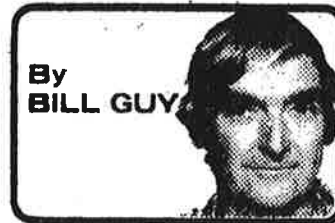
Unless a decision of the Institute's governing council is rescinded, Dr. Coulter by the end of this month will suffer a loss of status, a loss of \$10,000 in annual salary — and the loss of his research unit at the Institute.

It will be a crushing anti-climax to the dreams and ambitions he took with him when he joined the Institute in 1959.

Dr. Coulter went to the Institute with a medical degree after a brief spell in general practice. His early work included research into hospital cross-infection and the effects of DDT.

For the past few years he has concentrated on the identification of mutagens in the environment. Mutagens are chemical agents which cause cell mutations. Many mutagens have been found to be carcinogenic — that is, cancer-inducing.

Early in March, Dr. Coulter was told in a letter from the Institute's director, Dr. J. A. Bonnin, that from June 30 his mutagen testing unit would be closed and he would be transferred to the microbiology section.



He was also told that he would lose his specialist status and his salary would be reduced from \$31,223 to \$21,444.

These decisions have stirred a public debate which last week prompted questions in the SA Parliament. The controversy raises three main issues:

- Is Dr. Coulter the victim of professional injustice?
- Is there a continuing need in SA for his mutagen testing unit?
- Is Dr. Coulter being penalised by the scientific Establishment because of his forthright championing of environmental causes?

On this last point, an academic who has made a special study of what he calls "the suppression of scientists pursuing environmental research" believes the Coulter case could well fall into this context.

In a paper submitted last month to the journal "Social Studies of Science," Mr. Brian Martin, of the Department of Applied Mathematics at the Australian National University, writes:

"Environmental scholarship is often seen as linked to the 'politics' of the environmental movement; environmental scholarship often presents a challenge to established practices and policies of powerful organisations; and environmental scholarship often challenges the dogmas of various scientific disciplines."

Mr. Martin, who spoke on this subject at last month's ANZAAS conference in Adelaide, writes elsewhere in his paper of the "political scientific elite" ...

... "that group of scientists with the greatest political power, both within and without the scientific community, to influence government and corporate policies and to influence developments in the scientific community."

"The power of this elite is manifest in the promotion of research in certain areas and its restraint in others, in the creation or dismantling of research institutions, in the hiring or dismissal of staff, in the allocation of funds from specific research projects and in the establishment of and setting of policies for scientific journals and tests."

I contacted Mr. Martin after his ANZAAS address and asked him whether he believed Dr. Coulter might have suffered on account of his conservation work. He replied:

"Dr. Coulter's case is indeed serious. There are many people in Adelaide and around Australia concerned about it. I certainly believe that a full, open investigation is called for."

Dr. Coulter's conservation crusade began in the mid-1950s.

He was an early opponent of water fluoridation and uranium mining, he has voiced deep misgivings about the Redcliff petrochemical project, he was recently caught up in the controversy over the Maralinga nuclear tests.

B. Guy, 'Conservation campaigner in crisis: does Dr Coulter have to go?', *The Advertiser* (Adelaide), 17 June 1980, p. 5.

Deborah Smith

LABOR PROMISES AN INQUIRY INTO SA MEDICAL INSTITUTE

2.1(n)

By DEBORAH SMITH

THE OPPOSITION in South Australia has effectively served notice on one of the State's scientific establishments — the Institute of Medical and Veterinary Science — that Labor would begin an investigation into the structure and functions of the IMVS.

Labor wants to ensure that the activities of the scientific institute are related to the State's contemporary needs, particularly in preventative medicine — an area in which, it considers, the institute has fallen down recently.

Labor's call for a public inquiry into the affairs of the IMVS has been in response to the dismissal from the IMVS of Dr John Coulter, a surgical research officer, and to the closure of his research unit.

For the past ten years Dr Coulter has been establishing a bacterial test for the identification of substances which can cause mutations or genetic damage to cells. Such mutagens can be responsible for increasing abortion and birth defect rates and may initiate cancers.

Using this method, called the Ames test, Coulter's unit has been routinely screening substances to see if they are mutagenic. Some of the chemicals submitted for testing have come from concerned groups outside the scientific community, in particular from workers' health organisations. Only two other units, one in Melbourne and one in Sydney, routinely accept samples for mutagen screening.

An irate United Trades and Labor Council of SA is providing the focus of union concern at the closure of Coulter's laboratory with a call for all unions to support the council's submission to the Minister of Health for the reopening of the mutagen testing unit. The council claims that Coulter's work is particularly valuable to the unions because it helps remove from factories one of the most difficult hazards to detect — harmful chemicals.

The Opposition spokesman on health in SA, Terry Hemmings, told The National Times of two major concerns — that the reason for Coulter's dismissal might have been influenced by his outspokenness on environmental hazards and that SA has lost a valuable unit for the testing of hazardous substances.



Dr John Coulter... "the responsibility of the IMVS is to defend the public — not the private interest of drug and chemical companies."

Before and during the 21 years Dr Coulter has worked at the IMVS he has become well known as an outspoken conservationist. In particular, his forthrightness over issues of chemical hazards to the environment has led him into conflict with some commercial interests. Both the Bayer drug company and Velsicol Australia Ltd have taken issue with public statements Coulter has made regarding the companies and their products.

Dr Coulter told The National Times that he believes the comments he has made in a private capacity but which have led drug and chemical companies to complain to the IMVS have embar-

assed the institute to the extent that the action of his dismissal has now been taken.

"It is to the present Government's advantage not to have me in a situation where I can make announcements and do work which is inimical to the drug and agricultural chemical companies," he said.

The Institute of Medical and Veterinary Science has received, on occasions, research grants from drug companies, but the director of the IMVS, Dr Jim Bonnin, has always stressed that the decision to dismiss Coulter is based only on financial and professional considerations.

Bonnin points out that Coulter was not authorised to establish this routine testing service and as such the institute could not afford to support the laboratory with its public finances.

His environmental interests and his communication of his environmental concern to the public are very much part of his concept of the scientist's role in society.

He does not see science as an ivory tower pursuit; he is not primarily interested in the intellectual satisfactions it offers; he is concerned that scientific knowledge be used for the benefit of the community.

And if the applications of science pose dangers to the public, he believes the public ought to be fully alerted to those dangers.

This philosophy has inevitably led to collisions with commercial interests and to consequent disputes within the IMVS.

In 1978 the Bayer drug company objected to comments Dr. Coulter made about one of its products in an ABC "Four Corners" program on pesticides. And last year, Velsicol Australia Ltd. took issue with Dr. Coulter over his reference to the firm's parent company in the US during a Melbourne seminar on pesticides.

The IMVS from time to time, has been awarded research grants by drug companies, and no doubt it would welcome more.

But any suggestions that Dr. Coulter's clashes with Bayer and Velsicol or his environmental work generally have contributed to his demotion are strongly denied by Dr. Bonnin.

Dr. Bonnin justifies Dr. Coulter's downgrading on purely professional grounds.

About 13 years ago when Dr. Coulter was given specialist status, says Dr. Bonnin, he was promoted on a promise that in that same financial year he would prepare his work for a thesis for his doctorate of medicine.

"He renewed that promise several times; to this day he still hasn't fulfilled it," Dr. Bonnin said.

"Early on, he was working very well and his work was very highly regarded," he said, adding that if Dr. Coulter had written up that work as a thesis it might well have secured him the necessary postgraduate qualification.

Dr. Bonnin also complains about an alleged paucity of published papers by Dr. Coulter.

"You assess a research worker's work," said Dr. Bonnin, "by reading his published work. If that published work is quoted by others you know that people are accepting that work."

"All we know is that Dr. Coulter has published very little indeed that is referred to . . . and basically he isn't quoted by other people."

Dr. Bonnin said he did not doubt Dr. Coulter's competence and went on:

"I have read Dr. Coulter's papers on things like carbon dioxide in the atmosphere. They are most interesting. He has a good knowledge of conservation and this is his passionate hobby and interest.

"I really respect both Dr. Coulter and his views but the point is that if he is going to do that at the expense of his official duties I have got to be responsible for this."

When Dr. Coulter became a specialist pathologist there was no official requirement that he should hold a postgraduate qualification. That came in 10 years later, under a professional award.

But Dr. Bonnin disputes that the award is being applied retrospectively. The award has become relevant, he says, because of the need to give Dr. Coulter a new appointment following the closure of the mutagens testing unit.

But why close the unit? Is the service it provides of no value?

Dr. Bonnin recognises that mutagenic tests serve as an early-warning system in the identification of possible carcinogens.

But he believes that the testing can be done on a bigger and better scale elsewhere.

A national testing service has, in fact, been offered by the unit at the Sydney School of Public Health and Tropical Medicine, Dr. Bonnin says.

But local trade unions, in particular, are not swayed by this argument. Some of their workers have benefited from Dr. Coulter's tests and they believe SA should retain its own mutagen test unit.

It is this feeling that has prompted the United Trades and Labor Council to appoint a delegation to the Minister of Health, Mrs. Adamson, to voice its concern at the proposed closure of the Adelaide unit.

I asked the Minister what action she was taking in the Coulter case and was told she was awaiting advice from the IMVS council on its course of action.

Did this mean, I asked Dr. Bonnin, that the council could rescind its decision?

He agreed that the council, if it wished could call a special meeting before June 30 to review the case.

Is it too much to hope that a reconciliation can be arranged between Dr. Coulter and the Institute he has served for 21 years?

Even if all the rights in the case do not lie with Dr. Coulter, does that justify the infliction on him of what seems to many a savage wrong?



Dr. Coulter . . . a victim of professional injustice?

He has a good knowledge of conservation and this is his passionate hobby and interest.

I really respect Dr. Coulter and his views but . . . if he is going to do that at the expense of his official duties I have got to be responsible for this.

Dr. J. A. Bonnin,
Director of the
Institute of Medical
and Veterinary Science

Other reasons that have been given by Bonnin for the decision relate to Coulter's failure to submit work for postgraduate qualifications, the number of scientific papers Coulter has published – "only three in more than two years" – and a failure to comply with the regulations of the IMVS Act with respect to submitting any manuscript for approval before sending it for publication.

Hemmings, the Opposition spokesman on Health, told The National Times that a report which Coulter made on Ethylene Oxide in April might have influenced the decision to dismiss Coulter: "It may have been the one that crowned it all."

Coulter had been commissioned to study the hazard to staff of exposure to ethylene oxide, a potent mutagen, which was being used in one of the laboratories as a sterilising agent. As a result of releasing his report simultaneously to the staff in the laboratory as well as to the official safety committee, Coulter was severely rebuked by Bonnin.

"... the staff concerned received a document which they could not completely understand, therefore becoming unduly frightened and concerned. You were obliged to report your findings to the Fire and Safety Committee," Bonnin wrote to Coulter.

Coulter sees the issue as one of freedom of information, particularly that of the right of workers to information about substances to which they are occupationally exposed.

The mutagen testing unit in SA was a very small part of a worldwide effort to gather information on hazardous substances. Overall the task is a formidable one with as many as 50,000 chemical substances in common use and between 700 and 1000 new ones being marketed each year.

The Sydney unit which also provides routine mutagen tests is at the Commonwealth Institute of Health and the head of the laboratory, Dr

Robert Baker, explained the status of the three types of evidence used to identify possible carcinogenic substances.

He pointed out that there is still a paucity of data on human cancers from studies of exposed populations; and that animal cancer tests are very expensive, take several years to complete and even then cancers which arise in animals are not always predictive for humans. No animal tests are carried out in Australia.

Baker stressed that short-term laboratory tests, the third method, are very valuable as a quick and inexpensive but only preliminary way of screening chemicals. The Ames test studied by both Coulter and Baker is the most widely used and validated of these short-term tests and provides a good indicator of a potential hazard with an 80 to 90 per cent correlation between a substance which is a mutagen and its chance of causing cancer.

Does SA need its own mutagen testing unit?

The stance of the SA Government has been one of support throughout for the IMVS Council's decision. Jennifer Adamson, the Minister of Health, has emphasised that it is not the IMVS's function to screen chemicals routinely for their carcinogenicity and has justified the closure of the unit on grounds of its size.

She contends that the identification of carcinogens can only be done effectively on a grander scale with a national testing facility able to carry out toxicological studies as well as a number of short-term tests and able to provide an information bank on hazardous substances.

In this context she names the proposed Environmental Toxicology Unit which is to be set up by the Commonwealth Institute of Health in Sydney as such a national laboratory. "There is no useful purpose in individual States duplicating aspects of the work which will be carried out effectively and on a comprehensive basis by a national laboratory," she said.

On the other hand Coulter and some of the groups who have used his facilities argue that the value of the laboratory in SA has already been well established. As a local unit it has been able to monitor work environments where known mutagens are being used as well as detecting new ones, and reports from the unit have led to safer conditions for some workers.

A commonly cited case is Coulter's discovery that the drug tinidazole is mutagenic and so poses a potential cancer risk for patients. He later found out he was not the first to discover this. Two years previously workers with samples of tinidazole supplied by the pharmaceutical producers had obtained the same results. The question remains why this work was not mentioned by the company when tinidazole was first launched on to the Australian market.

Coulter is convinced that, even if a national laboratory is set up, the duplication of the results of short-term mutagen tests is both scientifically and politically valuable. He argues that the consequences of the tests are far-reaching in terms of the health of workers and the potential profit of companies. This makes it essential that there be a number of independent laboratories both for corroboration of scientific results and to guard against political pressure.

The proposed national centre of environmental toxicology in Sydney will be headed by Dr Alistair Thom, who is at present on a related study trip overseas. Research will be undertaken into the effects of environmental poisons using epidemiological or population studies, and a computer link-up with US toxicological data is planned. The Institute of Health, with its other facilities to study birth defects and possible mutagens, hopes progressively to expand all its abilities to monitor the environment for hazards.

Meanwhile, the groups concerned with occupational hazards in SA are upset at having lost a unit which could give a guide within a couple of days as to whether or not a particular substance is potentially harmful.

It may be that the House of Representatives Standing Committee Inquiry into Hazardous Chemicals will recommend the setting up of more mutagen testing units, but it may not. Either way the prospect is a long-term one since the inquiry is as yet only receiving submissions.

The conflict between Coulter and the Institute of Medical and Veterinary Science is a much more immediate problem and Coulter is as outspoken as ever.

"As a public institution the responsibility of the IMVS is to defend the public — not to defend the private interest of drug and chemical companies," he said. "This is the fundamental difference between us."

The National Times, 20-26 July 1980, p. 36.

South Australian correspondent

2.1(o)

ONE MAN'S WORK UNDER FIRE

A MINI war is raging within the hallowed halls of the South Australian Institute of Medical and Veterinary Science.

Tucked away inside is Dr John Coulter — scientist, environmentalist, and major victim of the current battle. Time is running out for this prominent South Australian, for, on June 30, his laboratory will be closed and his status in science circles will be all but lost, along with a \$10,000 drop in annual salary.

The predicament in which Dr Coulter finds himself is now well known to scientists all over the country and support for his cause is widespread, ranging from that of doctors and educators to trade unions and politicians. But Dr Coulter has no doubts about the reason for his demotion — he talked too much.

For almost his whole working life, Dr Coulter, 49, has been a researcher at the IMVS, taking up his position with a medical degree after a short time in general practice.

His early work in the institution involved research into hospital cross-infection and the effects of DDT — a time when, according to the institute director, Dr J. A. Bonnin, he was working very well and was highly regarded. But for the past few years, Dr Coulter has made quite a name for himself by using his laboratory to identify mutagenic (potentially cancer-causing) properties in the environment — and that, it would appear, is when things started to go wrong for him.

Early in March, Dr Bonnin informed Dr Coulter of the pending closure of his laboratory, and the reclassification of his specialist pathologist position to trainee pathologist in the microbiology section. Dr Coulter's shocked response was to issue a summons against the IMVS claiming wrongful dismissal, saying, virtually, that he had been sacked because of his outspoken views on environmental issues. The summons was withdrawn, with both sides getting themselves into something of a legal mess over the issue, and Dr Coulter started talking again.



"Being outspoken is my crime", he told the Press. "I have always believed that it is a scientist's responsibility to be available to the public and to speak out on issues where the scientist has a specialist knowledge and not just publish results in learned journals. As a doctor I see my duty to the community to do, and say, those things which are intended to improve the health of the community. With cancer now the second most-common cause of death and the fact that 60 per cent to 90 per cent of cancers are caused by exposure to environmental agents, I believe I have a clear responsibility to make facts and consequences known".

Dr Bonnin replied that finances were not available to a degree enabling the continuation of Dr Coulter's unit, adding, "I really respect both Dr Coulter and his views, but the point is that if he is going to do that at the expense of his official duties I have got to be responsible for this".

He said many drugs and chemicals were tested now by their manufacturers, and that there was little need for this kind of work in Adelaide, where almost none of the substances were manufactured.

When the United Trades and Labour Council of South Australia pitched its weight behind Dr Coulter and his work, expressing its concern that he was "suddenly being pushed to one side", Dr Bonnin pointed out that the institute had to find about \$85,000 a year to support Dr Coulter. Then Dr Bonnin proceeded to explain also that Dr Coulter was rather naughty in that he had been prematurely promoted to medical

specialist status on his undertaking to write up earlier work in the form of a thesis for his degree of doctor of medicine.

"He renewed that promise several times — to this day he still hasn't fulfilled it", Dr Bonnin said. "The consequences of not obtaining this degree were fully explained to him".

Dr Bonnin did not leave his schoolmasterly attack there — Dr Coulter had "markedly low productivity" for a full-time research worker, he said, having published only three papers in recognised journals in more than two years.

"You assess a researcher's work", continued Dr Bonnin, "by reading his published work. If that published work is quoted by others, you know that people are accepting that work. All we know is that Dr Coulter has published very little indeed that is referred . . . and basically he isn't quoted by other people".

While Dr Bonnin's observation may be correct in terms of the "publish or perish" medical journals, it is not true of Dr Coulter's impact over the years on the various media outlets. His conservation campaigning began a long time ago when he opposed the fluoridation of water. Since then, he has spoken out and been widely quoted as the voicepiece of anti-uranium mining groups, has talked against the Redcliff petrochemical project in this State, and was more recently involved in the controversy surrounding the Maralinga nuclear tests. Dr Coulter made himself unpopular with the Bayer drug company in 1978 because of comments he made on ABC television about pesticides, and he ran into trouble last year with Velsicol Australia Ltd over his reference of the firm's parent company in the United States during a Melbourne seminar on pesticides.

Although D-Day has almost arrived for Dr Coulter, the union movement is not allowing the matter to rest. The United Trades and Labour Council has appointed a delegation to the Minister of Health, Mrs Adamson, who is, in turn, awaiting advice from the council of the IMVS.

As UTLC secretary, Mr R. J. Gregory, said, "The trade union movement is most concerned that many new chemicals and processes are arriving on the market and are constantly being introduced into industry, and in many cases it is not known until 10, 15 or even 35 years

later whether they are harmful to the people who will have to work with them. This work is very important because it would help to remove from our factories one of the most difficult hazards to detect".

The State Opposition spokesman on health, Mr Hemmings, called last

week for an immediate public inquiry into the downgrading of Dr Coulter. It just remains to be seen whether or not he left his run a little too late.

The Canberra Times, 27 June 1980, p. 2.

 Brian Martin

2.2

**THE SCIENTIFIC
STRAIGHTJACKET**

Dissident scientists in communist countries receive wide publicity for their causes. But what of cases of suppression in the West? How do those who challenge the scientific establishment fare? And why have environmentalists become the chief target of those who seek to preserve the status quo?

33

Inscribed across the facade of the Sydney University School of Physics are the names of twenty or so famous scientists: Archimedes, Roger Bacon, Copernicus, Kepler, Galileo, Newton and others. As a result of their scientific achievements, such illustrious forebears commanded respect; through their authority and prestige in scientific matters, they influenced the direction of scientific research. Or so the standard image of scientific 'greats', as portrayed in textbooks and the media, would suggest.

But what is the relation of the image of the eminent scientists of past eras to the present generation of scientific elites who hold positions of power in large research organisations around the world? Setting aside the question of the actual status of past elites, there is no doubt that a vast change in the organisation of scientific research has come about in the past few decades. This transformation may be called bureaucratisation, industrialisation, or the shift from 'little' science to 'big' science. Even if it were ever the case in the past, it is doubtful that the leaders of the scientific community today exert power primarily through their authority on scientific matters alone.

Suppression of Scientists

Table 1 lists a number of instances of suppression from Australia and New Zealand involving individuals who have been engaged in research or teaching relating to environmental issues. There is little documentation of the scale of suppression in the scientific and academic communities, and most of the cases came to my attention through personal contacts. For example, within the Australian National University, where four of the ten cases originated, there is no straightforward or easy way to determine the existence of academic suppression. However, there are several reasons to believe that cases such as those in Table 1 are only the tip of an iceberg.

In a survey of evidence about suppression of dissident scientists, Manwell and Baker conclude that such suppression is much more widespread in the west than generally acknowledged.¹⁵ But, they note, cases in the west receive very little publicity compared to the great attention focussed on dissidents in communist countries. For example, it was only as a result of his per-

sonal case and the publicity it received that Manwell was informed of over one hundred cases of suppression in the English-speaking world.¹⁶

It is well known that there were wide-scale sackings and harassment of scientists and academics in the 1940s and 1950s, especially in the US.¹⁷ The large scale of this activity is often forgotten, as are the long term effects of this attack on nonconformist scholarship. Just as important is the low level of awareness of the political suppression which has continued since then.¹⁸

As well as political beliefs, suppression is often closely connected with struggles with organisational vested interests, and with disputes over the validity of different types of knowledge and ways of acquiring it — that is, paradigm disputes.¹⁹ A mixture of political, organisational and paradigm aspects in suppression cases is quite common.²⁰

Most scientists prefer to avoid public controversy concerning their own research and teaching. This means that it is difficult to find individuals willing to have their cases presented as in Table 1. I know of several other suppression cases in which those involved do not wish publicity for personal or career reasons. There are also many cases in which suppression is a likely possibility but in which there is insufficient evidence to make a firm public case.

For these reasons it seems reasonable to infer that publicised cases are a small fraction of total cases.²¹ Furthermore, since some types of suppression receive more publicity than others, it is highly likely that outright attempts to sack dissidents (as in the cases of Coulter, Evans and Manwell) are greatly outnumbered by non-tenured positions not being renewed; by failures to hire and promote; and by particular types of environmental research and teaching simply not being initiated in the first place.

At a more fundamental level, suppression merges with inhibition. As clearly expressed by C. Wright Mills years ago in relation to university teachers, "the deepest problem of freedom for teachers is not the occasional ousting of a professor, but a vague general fear — sometimes politely known as 'discretion', 'good taste', or 'balanced judgment'. It is a fear which leads to self-intimidation and finally becomes so habitual that the scholar is unaware of it. The real restraints are not

Table 1: Cases

Table 1. Instances of suppression from Australia and New Zealand involving individuals engaged in environmental research or teaching.

- CASE 1:** *Name* Dr John Coulter
Position Surgical Research Officer, Institute of Medical and Veterinary Science, Adelaide (1959-).
Background (a) Outspoken on numerous and diverse environmental issues, such as the impacts of environmental chemicals (1956-).
 (b) As a researcher in IMVS, started on his own initiative (1977-) a routine service for testing substances for mutagenic properties.
 (c) Prepared a report on the hazards of ethylene oxide (ETO) as a sterilant, and gave this to ETO workers as well as to the appropriate IMVS Committee (16 April 1980).
 (d) Posted on IMVS noticeboards copies of the ETO report and related correspondence with the Director of IMVS (8 May 1980).
Action (a) Letters of complaint to IMVS from chemical companies. .
 (b) Environmental mutagens testing unit closed by IMVS on 30 June 1980.
 (c) Letter of rebuke from Director of IMVS for releasing ETO report to workers (23 April 1980).
 (d) Instruction from Director of IMVS to not make available material dealing with the affairs of IMVS to any staff member without express approval from the Director (9 May 1980).
 (e) Coulter dismissed from IMVS (30 June 1980).
Status Unresolved (September 1980).
Reference (1)
- CASE 2:** *Name* Dr Jeremy Evans
Position Senior Lecturer, Human Sciences Program, Australian National University (1973-).
Background Taught in environmentally oriented Human Sciences Program (1973-).
Action Reappointment and review committees recommended that tenure be denied (1979).
Status Tenure decision postponed until 1982.
References (2), (3)
- CASE 3:** *Name* Dr John Hookey
Position Senior Lecturer, Faculty of Law, Australian National University (1971-1974).

Background Introduced (1972) and taught first Australian undergraduate course in Environmental and Natural Resources Law, at Australian National University.

Action Indication that tenure would be denied (1973).
Status Resigned (1974) pending completion of internal appeal to take up appointment as Public Hearings Commissioner in Federal Department of Environment and Conservation; subsequently Commissioner, Redcliff Environmental Inquiry, and Presiding Commissioner, Fraser Island Environmental Inquiry.
Reference (4)

- CASE 4:** *Name* Dr Philip Keane
Position Lecturer in Botany, La Trobe University (1976-).
Background Published an article (5) in a national weekly newspaper (January 1977) about the spread of cinnamon fungus in Victorian forests.
Action Chairman of the Forests Commission of Victoria applied great pressure on the University's Chancellor, Acting Vice-Chancellor and the Deans of Science to take action — nine letters written and hand-delivered between 3rd and 24th February 1977 (6).
Status Unchanged by events. The University Council was informed of the attacks and the appropriate officers (Chairman of Department, Dean of School of Biological Sciences) resisted all pressures and strongly rejected the allegations made. The Chairman of the Forests Commission was further informed that all Australian University Statutes are framed to allow staff to speak publicly on controversial issues thereby preserving academic freedom.
Reference (7)

- CASE 5:** *Name* Dr Robert Mann
Position Senior Lecturer, Department of Biochemistry, on secondment to Centre for Continuing Education (1976-), University of Auckland.
Background A founding teacher (1974-) of the Environmental Studies programme; publicly active on issues of nuclear power, nuclear weapons, 2,4,5-T, etc.
Action Dismissal proceedings initiated (1977) by University of Auckland after letter to Vice-Chancellor

so much external prohibitions as control of the insurgent by the agreements of academic gentlemen"²².

The incidence of suppression in the environmental area is almost certainly greater in government and industry than in academia, especially when cases of inhibition are included. Academics generally have much greater freedom — in that their jobs are less immediately threatened — to carry out research on and speak out on controversial topics. Because of this, academics are also more likely to speak up when attempts at suppression are made, though this is seldom enough. Dissidents in government or industry generally keep quiet, learn a new set of standards, or quietly exit. Especially in industry where few voice criticisms and stay around to tell about it.

Incompetence Rarely a Factor

Is there an underlying reason for suppression in the environmental and other areas? One answer is that the grounds given for dismissal, non-renewal and the like are themselves valid. A detailed assessment of this would require full documentation of each case, hardly possible here. Suffice it to say that purely academic or scientific judgements are almost always insufficient as an explanation. In almost every case in Table 1, the research output or teaching performance of the indi-

vidual under threat was well above average, and in several cases the research or teaching records were outstanding.

For example, the outstanding teaching performance of Evans has been widely acknowledged²; Manwell's publication record placed him in the top one per cent of comparable scientists¹⁰; Smith, in the few years since submitting his Ph.D. thesis, has an enviable publication record. A similar pattern has been noted in cases of political suppression, in which shortcomings of ability, competence or performance have been sufficient to justify suppression in only a tiny proportion of cases²³. Indeed a study of all contested dismissals in the period 1916-1970 reported in the *American Association of University Professors* found that "in only 13 of the 217 dismissal cases was there even a suggestion of incompetence in either their teaching or research"^{24,25}.

The cases as listed in Table 1 are only outlines. In almost every case, further details and information show even more clearly that the suppression is illegitimate by normal scientific and academic criteria, and that efforts at suppression are more systematic and sustained than first meets the eye. For example, at the time of the Routley case, several scientists in different organisations were threatened with dismissal or other reprisals for merely giving the Routleys publicly available information and references to public documents.