feasibility of subsurface isolation of nuclear waste is now demonstrated and accepted in the relevant science and engineering communities. What is required now is public appreciation of the principles, if not the scientific detail, of the isolation methodology. Neither of these issues is explored at any length in the text. The positive part of the presentation is the extensive and informative discussion of the evolution of government policy, and its implementation, in various expressions of party political and national interest. However, one is left with the feeling that there is still significant scope for scientific contribution to the decision making process related to uranium, and in formulating a more valid and rational policy than currently exists for uranium production and utilisation.

The final chapter of the book deals with the treatment of the mining theme in Australian poetry and prose. The discussion reinforces the ideas developed in earlier chapters, that early mining established in the national culture attitudes, images, conventions and language itself which persist in current times. The reviewer's assessment of current literature related to mining and its social ramifications is that it is more assertive and obviously didactic than that of times past. It is not necessarily more effective in promoting reflection on the human condition.

It was noted initially that a real need, in current times, is the creation of bridges of recognition and understanding between the traditional culture and the new scientific culture. The book under review will certainly promote an awareness among scientists and engineers, particularly those in the mineral industry, of the social, political and cultural concerns pervading the wider community in which they operate. As an exercise in the application of a range of academic disciplines to a significant industrial and social enterprise, it is also a successful effort. However, from the point of view of intellectual rigour and objective analysis, the book may be critised by readers with backgrounds outside the social sciences. The book represents good value. It is well illustrated and referenced, and well presented in all other respects.

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Incentives for Innovation in Australian Industry *Report by the Australian Science and Technology Council (ASTEC)*
(AGPS, Canberra, 1983) pp. iv + 23, $1.65, ISBN: 0-644-02703-7.

Faced with increasing competition in domestic and export markets from developing economies, many established industrialised countries are investing in new technology and innovation to help them hold their own in international markets. Various factors underlie this new policy emphasis and include problems of unemployment, the need for new industrial infrastructure, concern at the over-burgeoning influence of multinational companies and, possibly, just contagious panic. Various alternative approaches to promoting innovation have been suggested. In Canada the theme has been 'threshold' firms; in Sweden technology transfer; in the UK and US the roles of defence R & D and small firms have increased importance. In Australia there has been a

similar requirement for action. The report under review focuses attention on some recommendations regarding the provision of venture capital *per se* and specific budgetary assistance for R & D.

The report suggests that the government develops a single venture capital institution in the public sector to provide finance for high technology enterprises and that this should be a reconstituted Australian Industry Development Corporation (AIDC), where there is already an infrastructure for risk assessment and evaluation. The main focus of this financing operation should be for the AIDC to take equity holdings in certain companies. The principals of these firms would then be able to later buy out the bank's share at an agreed price. It is suggested that there should also be a determined effort by government to encourage private alternatives. The AIDC would however be necessary, in the short run, because it would, according to the authors of the report, take some time for private venture funds to develop fully in Australia.

Trying to solve problems of new enterprise development by intervening in capital markets has been a favourite remedy of economists and governments in many countries. In the UK the National Enterprise Board was set up with such lofty ideals but ended up looking after ailing companies. There have been similar failures in other countries. The responsiveness to change of the financial system may sometimes be under estimated. In the UK, for instance, the Wilson Committee reported that the supply of finance was not a problem for enterprise development, even if the banking sector was a little insensitive to industry's needs. Other commentators have suggested that if there was a problem, this could be the result, not of insufficient incentives for venture capital finance, but too many incentives for other forms of less risky investments — such as domestic housing. The ASTEC report, however, seems convinced that what is needed in Australia is some greater incentive for the provision of venture capital *per se.* Australia may well be a special case in this respect; problems of scale of operation may well affect the efficiency of an unlisted securities market and with a relative concentration on non-manufacturing as the means of generating wealth, the existing infrastructure may well be inefficient in evaluating industry's needs. This at least seems to be the view of the authors of the report and if the private market gradually took over from the proposed public source, then the mainstream impact of this proposal may be beneficial. The focus of the proposals on the provisions of equity as well as debt finance is important. Most rapid growth or threshold enterprises have overly high debt:equity ratios which may lead to insolvency at a stage when the company is poised for growth. Any changes either in public or private provisions which could help remedy this problem would possibly yield substantial dividends.

The main recommendation of the report regarding R & D concerns the introduction of tax incentives, in addition to existing grant schemes, with the introduction of a single premium rate of 50 per cent so that companies could claim, as deductable expenditure, amounts greater than they actually spent on R & D. The authors of the report see this dual system as one which would increase company choice and which would relate to the term profitability of individual ventures. While they recognise that this could lead to tax avoidance and windfall gains to companies already involved in R & D, it is considered that such problems are not insurmountable. In addition, a taxation incentive scheme is considered easier to administer because it does not involve some of

the problems that grant schemes have in forecasting project profitability. However, there are inevitably some drawbacks of a tax incentive scheme and these are noted by the authors of the report. The first of these is the inability of companies not reporting a profit to take advantage of tax incentives. Secondly, and perhaps more importantly, is the lack of control and direction a tax incentive scheme allows government, compared with a grant scheme where incentives can be used to alter the nature and pace of overall industrial policy. It was because of these objections that the committee opted for a dual approach with both tax incentives and grants. If it is more innovation that is needed, then probably it is reasonable to suppose that more R & D spending will achieve this and any system which reduces the cost of R & D investment should increase its use.

Possibly the most pertinent questions to ask are, first, whether the system can be discriminatory enough, so that innovative firms get the lion's share of the cash. Secondly, whether the production of in-house technology is what Australia needs most in the context of overall economic policy. On the first question it is possible to look at studies from other countries which link productivity of R & D with various company and industry structural features. This has led some goverments to concentrate on small firms, e.g., UK, US, and others to concentrate on medium sized firms, e.g., Canada. The problem with this approach, however, is that the evidence is far from conclusive. In the UK, for instance, a recent study by Pavitt suggests that large firms may not be more productive in innovating, but may simply produce more innovation because they spend more. Overall, evidence as to which firms should be recipients of subsidy is not clear cut, but for a system of incentives to be efficient it should target those areas of industry which are most productive.

The second question may be equally pertinent. With a massive wealth of natural resources it is possible to argue that Australia should concentrate, not on re-inventing wheels but in buying-in knowledge via licensing agreements and developing products to suit local needs and resources. It is a policy pursued by various countries very successfully, e.g., Sweden and Japan, and may well, at least in the short term, provide substantial returns to enterprise development. The report notes that Australia possibly has not the ideal environment for enterprise development based on new ventures; this may well be so and a greater emphasis of science policy on technology transfer as well as R & D could help create that environment and at the same time solve some of the problems caused by the international 'branch factory syndrome' and the need for employment and industrial generation in general.

Overall, the report represents an exhaustive analysis of problems of enterprise development in Australia. While that may not be Australia's major problem, the report sets out sensible alternative strategies. Some of them have been tried before, both in Australia and other countries. However, the current environment is conducive to a greater degree of government action in this crucial area of industrial policy and this report adds significantly to the debate.

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