PRESIDENTIAL ADDRESS:

# ECOLOGISTS AND THE ENVIRONMENTAL CRISIS

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This address concerns the environmental crisis, and how ecologists in general and the New Zealand Ecological Society in particular should meet it. A gathering of ecologists does not have to be convinced that there is such a crisis, nor that it has been caused by unchecked increase of *Homo sapiens* and the ever-increasing per capita demands the species is making on the resources of its environment. In the past we ecologists have perhaps been most concerned with threats to the survival of wild species and natural communities; latterly the problems of local and global pollution have demanded our attention. Most of these problems have political ramifications, a notable example being the tragedy in Vietnam, where the technological resources of one nation are pitted against the social and ecological resources of another, and both are squandered in the process. It is all too easy to see this war as the beginning of an Orwellian conflict between the 'haves' and 'have-nots' of the world's peoples. If we are going to transcend the environmental crisis, we shall have to examine and, where need be, amend every aspect of our individual and collective morals and mores. Even such sacred topics as religious, political and economic beliefs must come under scrutiny. Perhaps most important is the need to recognise our personal and collective responsibilities, and act accordingly, rather than continually seeking to have the individual or corporate "other fellow" put his house in order. However, these are broader topics than I can discuss here, and some of them have been covered by speakers in the symposium.

I first want to take a look at the role of ecologists as individual scientists and concerned citizens. I imagine that most of us are a little bewildered at the way in which ecology has become part of everyday vocabulary, whereas in the past we have had some trouble in finding a definition of the term satisfactory to ourselves. We find our discipline in the limelight, and most of us are reluctant to rise to the occasion. We tend to be rather cryptic animals, and prefer not to be disturbed in our habitats on rocky seashores, in moss hummocks on the floors of virgin forests and at alpine timberlines. We have tended to stand in awe of the so-called "hard sciences" and have felt ashamed of our inadequate grasp of mathematics, and of our shaky experimental designs. This low posture has, at least, saved ecologists from the colossal arrogance whereby some scientists assume that it is so important to advance the bounds of their discipline that they have the right to conduct dangerous experiments which might well jeopardize the terrestial ecosystem, and even celestial ecosystems, if there are any.

On the other hand, the very nature of our cryptic habitats is such that it has given us the clearest insight into certain biological laws; and it is belatedly recognised that in the long term man is as subject to these laws as is the amoeba. The most pertinent of the laws govern the relationships between population size and resources. For the benefit of optimists, who believe that unlimited human populations can be artificially nourished on a diet of protein meal, we must insist that resources include living space. How should we use our knowledge, and express our concern, without overstepping the bounds of our particular competence? I shall try to answer this with a couple of examples, one global, one local.

Many ecologists are worried about the effects of high altitude jet trials on the upper atmosphere, and are horrified at the prospect of this

pollution being increased to far greater levels by the introduction of supersonic airliners. Nobody needs to fly from London to Moscow 30 minutes faster, very few people will be able to anyway. yet this development must go on, in the interests, apparently, of national prestige; for one gathers that the economics of the venture are very questionable. Can one validly object if he knows little of atmospheric physics, or of the economics of aviation? I would say yes, because the ecologist's intuition and experience are that physical and biological phenomena are interdependent, in a continium that extends forwards and backwards in time. It seems prudent to allow for the probability that if extra carbon dioxide and water are injected into the upper atmosphere, there will be appreciable effects on various atmospheric phenomena, and that these, in turn, will alter the energy balance at the earth's surface. It is less important that at present we are not sure as to the magnitude or even direction of such effects. It has already been postulated that ice ages were triggered by very slight changes in world temperatures, and even that dinosaurs became extinct because carbon dioxide concentrations became a little more than such large animals could tolerate. These are only hypotheses, but such hypotheses add up to form a conviction that the luxury of supersonic transport is not worth the risk.

My local example is more mundane. New Zealand must have economic growth (and, since we are not a committee of the National Development Conference, we may ask "Why?"). Economic growth demands that marginal lands, such as those surrounding the Otago lakes, must be top-dressed to increase yield of meat and wool of doubtful marketability. Top-dressing raises the possibility of enrichment of the lakes, and Swiss experience has shown that lakes are not immune from the effects of enrichment just because they are large, cold and deep. Natural phosphates are also a limited resource—and this applies especially to the Pacific island sources most readily available to New Zealand. Is not their use on marginal lands extravagant? I believe that an ecologist is within his sphere of competence in asking whether afforestation and preservation of the quality of the lakes to retain their recreation value and tourist potential might not be a wiser use of this land. There are many issues of this kind which should command our attention, and it is scarcely to our credit that the lead in New Zealand has generally come from people who would not claim to be ecologists.

On some aspects of the environmental crisis, ecologists should speak out, because continuation of human life with any meaning or dignity is at stake. Our stand on other aspects depends instead on value judgements, where our beliefs as to what is necessary or desirable may be quite different to the values held by other people. There is no doubt that for hundreds of millions of people living an underprivileged and overcrowded existence in huge cities, the vision of a better world is one in which they too can acquire a bigger quota of luxury hardware. They are indifferent as to whether or not wild nature survives; and it has often been said that to be concerned with conservation is merely another of the privileges which goes with a high standard of living. Nevertheless, just as it can be claimed that there are absolute standards by which Beethoven is better than the Beatles, so can we insist that an environment which contains biological diversity is better than a concrete desert. At least we have the right, and indeed the duty, to present this point of view as forcefully as the "ad-man" urges us to buy his brand of non-biodegradable detergent.

In pleading for nature conservation, ecologists are sometimes accused of rather selfishly wishing to preserve objects because we have become scientifically interested in them. If so, we are in company with the radio-astronomers who got so upset at an orbiting cloud of copper needles a few years ago. Worse still, it is even said that we sometimes base our arguments on emotion rather than scientific facts. Is this really such a damning accusation? It is surely reasonable to believe that the biological diversity of our environment is a no less precious part of our heritage than the monuments of man. Also, I've never been able to understand why emotion is so suspect in this context. Most scientists have chosen their employment be-

cause of the emotional satisfaction it gives them. Even economic arguments boil down to the nice secure feeling that is induced by lots of money.

Within our own discipline, value judgements may divide us. It will suffice to mention the pros and cons of using exotic plants to combat erosion in national parks, or of deliberately retaining a population of sheep on Campbell Island so as not to lose a unique, albeit man-created, ecological situation.

My final observation on the role of individual ecologists concerns an ethical dilemma. It is hard to interest the public in bare scientific facts no matter how fascinating or alarming they might be to us. If one uses a bit of poetic licence, or exaggerates or misrepresents a little, the story may go across very well. There is a real dilemma here and I think we have to solve it according to own consciences.

I now come to consider the role of the New Zealand Ecological Society, and this is where I find it rather difficult to be constructive. According to our rules, "the object of the Society shall be to promote the study of ecology in all its aspects". It may be conceded that this object alone justifies the existence of the Society, and there are some cogent arguments for limiting our activities in the field of conservation. One is the growing number of government and independent organisations which are concerned with environmental issues. Another is that most members of the Ecological Society who have environmental interests are either employed in these government organisations or are members of other societies more specifically dedicated to conservation. The Ecology Action groups could well become the most effective of these organisations, with their wholly admirable aims of promoting environmental concern through the example of their members' actions.

Nevertheless, over the years, the membership of the Ecological Society has made it clear that it expects its Council to be active in conservation matters. In the last few years issues involving us have ranged from the preservation of the few remaining pockets of tussock grassland on the Canterbury Plains to Lake Manapouri. We have also called for biological surveys of certain areas, such as the country around Lake Taupo and the mineral belt of western Otago, so that items of scientific interest can be recognised and protected before development or exploitation commence. We have had very little success here, and I think that we should be more insistent. In particular we should promote the idea of a biological survey of New Zealand as recommended by the National Research Advisory Council in 1967.

In our last two conferences, we have discussed social ecology, in relation to town and country planning, and in relation to engineering, and the Society is indebted to those who have addressed us and given us the benefit of their knowledge and experience in fields which are of vital importance to ecology. In the future, maybe we should arrange similar frank but friendly confrontations with economists, and perhaps even, as hinted earlier, with parsons, priests and politicians.

However, in these symposia it has been we who have sat at the feet of the pundits, and endeavoured to enlarge our horizons as ecologists. There has been no feed back of ecological principles into a wider field, and unless there is such feed back, neither our science nor our society can influence policies or developments. The best way to achieve this is probably through affiliation with larger organisations representing groups with environmental and scientific interests, and making the ecological viewpoint heard in their councils. Traditionally, we have looked to the Royal Society, of which we are a member body. Till recently, the Royal Society had its own Conservation Committee but this is likely to be superseded by the newly formed National Committee for Problems of the Environment. The performance of this new Royal Society committee and our Society's relationship to it remain to be seen. About half of its 14 present members belong to the Ecological Society.

Arising out of the Manapouri issue, there is currently a proposal to form an alliance of all independent groups interested in the environ-

ment.* The impetus comes mainly from the Save Manapouri Campaign, the Forest and Bird Protection Society, and the Federated Mountain Clubs. The present (i.e. 1970-71) council's thoughts are that we should soft-pedal on the idea of any very unified Alliance, as this would surely include groups with incompatible aims and methods. On the other hand, the idea of a shared information service has definite merit and should be well within the resources of the environmental societies, both in respect to finance and ability to co-operate. The biggest drawback of conservation movements at present is not the inability of Conservation to speak with a single voice; it is the lack of information at critical times. While there is cause for concern at the multiplicity of independent conservation groups, I believe that they are a necessary complement to the government environmental organisations and the government sponsored organisations such as Nature Conservation Council. They do not have to work under the same constraints, and this more than offsets the risk of occasionally going off on a tangent or having to accommodate the so-called lunatic fringe. Furthermore, by being an active independdent organisation we have the chance to influence the membership of the official organisations. Thus, we had the opportunity to forward nominations for the Environmental Council, and two of the nominees whom we supported were appointed. The appointment of the Environmental Council followed the Physical Environment Conference held in June 1970. To me, this conference provided proof of the need for vocal interest by the Ecological Society in environmental problems. It was gratifying to see so many people gathered together, expressing concern for the environment, and staking claims for the administration of it. Nevertheless, members of the Ecological Society who were present were disappointed at the preoccupation with details, and the failure to consider fundamental aspects of the environmental crisis. We did succeed in introducing a recommendation to the Environmental Council to direct its attention to such questions as, for instance, determining an optimal population for New Zealand.* That this was passed unanimously as the last item of business may have reflected a general desire to conclude the meeting rather than wholehearted support for the clause. However, it proves my earlier point, that we ecologists do have a different way of looking at environmental matters. If we believe this way to be valid, it is our responsibility to voice our convictions where they will be listened to and acted on.

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* Since this address was delivered the Conference on Environment and Conservation (CoEnCo) has been set up. Although the rules have yet to be finalised, it has been proposed that member bodies will be classified into Class A with full voting rights, and Class B which pay a much smaller fee and have lesser rights. The Ecological Society has tentatively opted for Class B membership.

* The text of the recommendation adopted by the Physical Environment Conference is:

1. This conference recommends that the Environment Council promotes research into determining the optimal size, structure, and distribution of population and economic activity in New Zealand, that is commensurate with attaining the best social and physical environment.
2. This conference recommends that the Environment Council attempts to forecast technological developments as far as possible into the future, with a view to encouraging development that is for the good of the people, and resisting development that is detrimental to the quality of living.
3. This conference recognises that the New Zealand environment forms part of the world environment, and that such factors as over-population and pollution have global repercussions. We therefore recommend that the Environment Council promotes the necessary international co-operation in these areas.
4. This conference accepts that one of the most valuable assets in Environment is diversity, in social, physical and biological senses. We need this diversity within a nation, but also between nations, which means that the unique features of the New Zealand landscape. flora and fauna must be protected, and also that the development of an indigenous social and cultural environment should be encouraged. Conversely within a small country, we should feel no necessity to duplicate all the cultural situations occurring in larger countries.