The Role of the Royal Society of Western Australia in the Advancement of Science

Introduction

The objective of the Royal Society of Western Australia, as stated in its Constitution, is the advancement of science in Western Australia. Throughout its nearly 100-year history, the Society has pursued this objective principally through publication of scientific papers in the *Journal of the Royal Society*, through monthly meetings, and through the convening of symposia and workshops. In more recent times, the Society has expanded its role to one of promoting science in education, and taking acquired scientific knowledge to the public arena for the wider benefit of society. Conversely, the Society has become less active in the area of formal public debate, and social and scientific commentary. Despite the changes in the role of the Society during its history, it has been holistic in its advancement of Science and has pursued or commented on a range of social, technological and scientific matters, where they interface or impinge on science.

The Society has persisted through world wars, oscillating periods of economic growth and depression, industrial revolution and environmental change, and vacillating social attitudes. During this time, the membership of the Society has expanded, and to some extent has both influenced and represented the changing social values of society.

As part of this special centenary issue of the *Journal*, we present here reflections on the Society's past and potential future contributions to science in Western Australia. We first summarise the types of traditional publications in the Journal and their implications; then we describe past activities undertaken by the Society for the advancement of science, and finally we speculate on the future role of the Society in Western Australia.

Historical Context

In any assessment or description of the role of the Society throughout its history, it would seem to be a simple matter to access the papers in and contributions to the *Journal* to determine the changing roles of the Society and the scientific directions undertaken by the Society, as determined by the influences of dominant or charismatic individuals and their motivations. No doubt, there have been individuals who through their research work, or vision, or the power of their personality have been instrumental or influential in changing the course of science in Western Australia. However, equally as important and probably very much underestimated are the individuals who have also effected change, but subtly in the background, through teaching, inspiration, and off-the-record commentaries. Their contribution must not be dismissed, but it is difficult to identify and assess such input. Thus, emphasising the achievements and influences of the former without thorough archival analyses, an activity beyond the scope of this contribution, would we believe be a historical diminishment of the latter. Further, the importance of a given paper, in terms of its influence, is difficult to assess at the time of its publication; significance is often seen only in hindsight. On the other hand, the importance of a paper in many situations cannot be fully assessed by later generations; for instance, a feature that may appear innocuous or minor to later generations, may at the time of publication of a paper have been timely and significant to the scientists of the day who did not have the advantage of hindsight.

We have opted therefore to present here an account of key activities of the Society framed simply in a historical context, rather than one based on nodal points linked to prominent individuals in the Society at any given time, or one based on external causative factors such as economics, evolving technologies, or the extant social attitudes.

Traditional Publications in the *Journal*

Scientific papers published in the *Journal of the Royal Society of Western Australia* have been wide ranging, and have advanced the scientific knowledge of Western Australia. Papers have ranged from articles summarising the state-of-the-art of a scientific endeavour, to a lifetime's work of an author *e.g.* igneous activity - Prider (1948a); or animal and plant speciation - Paterson & James (1973). Articles published have been topical *e.g.* Dakin (1915) on warfare and science, and at times controversial *e.g.* Jenkins (1948) on biological control, Burvill (1953) on soil conservation, Hatch (1959) on forest burning, Bolton and Hutchinson (1973) on European settlement, de Laeter (1979) on science and technology. The *Journal* also has provided an outlet for historical accounts of the advancement of science in the State (Jenkins 1965; Bougher & Semeniuk 1991; Withers 1992; this issue), and the development of agriculture and industry (Wood 1924; Millington 1959; Playford 1971; McPharlin & Stynes 1989; van Schagen *et al.* 1992).

The main three fields of endeavour in the Society have tended to be earth sciences, botany, and zoology. In detail, perusal of articles over the past few decades of the *Journal* reveals articles covering taxonomy, animal and plant physiology and ecology, palaeontology, mineral science, meteorites, structural geology, coastal geomorphology, stratigraphy, oceanography, archaeology, wetlands, evolution, petrology, genetics, radiometric dating, climate history and biogeography, among others.

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In the early years of the Society, when exploratory work was carried out in the State in terms of documenting the natural history of regions, there were many papers that described the biologically rich assemblages of flora and fauna *e.g.* Ashby (1929), Rayment (1930), Baird (1939), McArthur (1956), Hodgkin (1959), Koch & Majer (1980). Thus, taxonomy and documenting of Western Australian fauna and flora have featured throughout the *Journal*'s history. Similarly, the geology of the State, and particularly the Swan Region, has been described. For instance, the regional geology of Western Australia was described by Wilson (1953, 1958, 1959), and at a sub-regional level, the physiographic framework of the Swan Coastal Plain was established by Woolnough (1919), and the fundamental geology in the region around Perth was described by Prider (*e.g.* 1934, 1941, 1943, 1944, 1945, 1948b).

Papers in the *Journal* can be subdivided into four categories.

- Data papers describe some aspects of science in Western Australia – these are the most numerous of contributions.
- Presidential Addresses summarise the work carried out by an author, that provide a state-of-the-art review of the research endeavour of the author, or that provide a perspective of a scientific field by the author. For instance, Prider (1948a) described the general igneous and metamorphic geology in Western Australia as it relates to ore-formation; Glauert (1950) addressed the development of knowledge on marsupials of the State; Burvill (1953) discussed soil conservation in Western Australia, an issue which has remained topical; Beard (1989) provided a major review of the early evolution of the plant life of south-western Australia.
- Review papers provide comprehensive overviews *e.g.* the history of geology in Western Australia (Lord 1967), species diversity of south-western flora (Marchant 1973), the conservation status of *Banksia* woodlands (Hopper & Burbidge 1989).
- Symposium contributions and thematic issues; that is, papers within the context of a workshop or symposium. The symposia on "Banksia Woodlands" (Abbot 1989), the "Leeuwin Current" (Pearce & Walker 1991), "Plant Diseases" (Withers *et al.* 1994), "Design of Reserves" (Withers & Horwitz 1996), and "Granite Outcrops" (Withers & Hopper 1997) are all recent examples of such events successfully held by the Society. Publications on the general natural history of south-western Australia (McComb 1973) and Rottnest Island (Bradshaw 1983) are examples of thematic issues. In recent years, the number of papers within symposia, or special thematic issues has increased.

The publication of traditional scientific papers has contributed to general and specialist scientific knowledge in Western Australia. The implications of this are far-reaching in that the dissemination of this information has influenced government policy (Hancock 1919; Glauert 1921; Mensaros 1979; Poole 1989); provided direction for future scientific research and associated funding (Burvill 1953; Grieve 1975; Burbidge 1989); has led to the protection and further research of natural resources (Smith 1962; Main 1981; Griffin & Hopkins 1985; Hopper & Burbidge 1989; Kite & Webster 1989); has encouraged recognition of indigenous culture (Alexander 1920; Love 1930, 1931 & 1932; Bolton & Hutchinson 1973; Berndt 1974; Beard 1976), and has enhanced industrial and agricultural development in Western Australia (Alexander *et al.* 1920; Ross 1925; Carne 1927; Bennets 1935; Bowley 1941; George 1962; Lord 1967; Playford 1971; Boyd *et al.* 1976; Mulcahy 1981; Cockbain 1983; Pattiaratchi & Buchan 1991; Withers & Rosman 1996).

Many of the earlier *Journal* articles may now be viewed as having influenced the social, economic and scientific direction of Western Australia, even though at the time of publication this may not have been apparent. For instance, the development of the Western Australian agricultural industry has been assisted by early accounts of agricultural weeds (Alexander *et al.* 1920), plant diseases (Carne 1929), and livestock parasites (Bennetts 1927). Similarly, the conservation status of our flora and fauna may be attributable to early recognition of the uniqueness of the Western Australian landscape, and its inhabitants *e.g.* Fitzgerald (1917), Wood (1924), Clarke (1926) and Beard (1979). The mining industry in Western Australia also has benefited from contributions to the *Journal*. Farquharson (1922) assessed aspects of the geology of the Kalgoorlie region; Ross (1927) described the physical properties of manganese steel; Clarke (1936) addressed the issue of water supply to Kalgoorlie; Carroll (1937) described soil mineralogy; and Lord (1967) addressed the potential of mineral resources in the State. In addition, the development of many Western Australian towns and cities may have been influenced by early publications such as Saw (1919) who highlighted aspects of town planning, and Wright (1919) who discussed housing in Western Australia.

Topical Activities, Special Papers, and Commentaries

Apart from the papers published in the *Journal*, the Society has been active in investigating special problems in the State, commenting on pseudo-science, and investigating and commenting on important social, agricultural, industrial, scientific, and environmental problems. These activities have taken the form of scientific papers, reports to the Council, and letters and submissions to the Government of the day.

Of particular interest has been the periodic convening of Select Committees that investigated specific problems and then reported to the Council of the Royal Society and published their reports in the *Journal*. For instance, early in the Society's history, Select Committees and Special Papers presented information and opinions on aspects such as spiritual healing (Ross 1924), salinity (Wood 1924), and problems associated with modern currency (Allum 1922).

The Society, from time to time, has presented to relevant decision-making bodies thoughtfully considered submissions, contributions and letters on issues and problems of the day. Some of the issues in the past related to establishing flora and fauna reserves, or to protecting existing reserves from various adverse land

use, and some have been related to what was considered to be scientifically adverse political decisions *e.g.* the fragmentation of the Environmental Protection Authority, and unfair dismissals of staff. Records of much of these activities are stored in the archives of the Society as letters, reports, and submissions.

The Society has endeavoured to encourage communication between scientific disciplines, and encourage community involvement in science, thereby making science more accessible. Some of the key activities, in chronological order, are briefly summarised below.

- Woodward (1907) presented a lecture on Fauna and Flora Reserves in Australasia; this topic has been an ongoing theme throughout the Society's history, with the most recent contribution being the Symposium on the Design of Reserves (Withers & Horwitz 1996).
- Dakin (1915), in a Presidential Address, commented on science and its role in warfare and national economies, and stressed that science and education should be formally recognised as a valuable resource. This commentary is as relevant now as it was 80 years ago, and yet the voice of the scientific community is often inaudible to decision makers and managers, such as politicians, urban planners, and resource managers.
- Saw (1919) published a considered article on aspects of town planning which explored and commented on important social issues of the time. Although many of the ideas contained therein would not be accepted in the light of current social values and social science paradigms, the article provided a basis for comment and debate.
- Simpson *et al.* (1919) addressed the matter of water divining, an issue important to rural south-western Australia in the early days of agricultural development, and concluded that divining rods could not be used to locate underground water flows.
- Glauert (1921) addressed at a conference the issue of 'pest' animals, with reference to both introduced animals and large populations of native species. Interestingly, the basis for classifying an organism as 'vermin' or 'protected' was determined by whether or not it reduced rabbit or insect numbers, its usefulness, and the number of complaints received. Although this approach was not entirely scientific, the current basis of pest classification is similarly based on nuisance value to humans. Of particular note is the relegation of little eagles (*Hieraaetus morphnoides*), also known as eagle-hawks, and wedge-tailed Eagles (*Aquila audax*) to the 'vermin' category, despite objection from ornithologists.
- A Special Committee of the Society, in 1923-1924, investigated and commented on the issue of Spiritual Healing (Ross *et al.* 1924), concluding that while spiritual matters can contribute to the recovery from ill health, there was no evidence of supernatural cures.
- Between 1927 and 1928, there were two Special Committees, one dealing with the problems of "Salinity in Soils", and the other dealing with "Preservation of Flora and Fauna in Reserves". Salinity was recognised as a major problem for the future, and the Special Committee investigated various aspects of the problem and submitted a final report (Wood 1927).
- A final report dealing with the preservation of flora and fauna in reserves and outlining recommendations and strategies of the Special Committee was published in the *Journal* (Shelton 1927). Increasing awareness of decline in number of various native species was its major theme, with a request for protection of the Australian bustard (*Ardeotis australis*).
- The poisonous nature of Western Australian plants was discussed in relation to agricultural stock losses (Bennetts 1935). The significance of this with regard to feral animal control was yet to be recognised.

In other matters, more in the arena of submissions, lobbying and representations, the Society became involved in issues of land management and administrative procedures where it impinged on the quality of science in Western Australia:

- In 1963 the Society was successful in instigating a survey of Aboriginal art on Depuch Island (in recognition of the importance of indigenous culture).
- In 1967, the Society persuaded the Swan River Board to enlist a biologist, and revised the Report on National Parks and Nature Reserves in Western Australia.
- In 1969, the Society was requested by the Metropolitan Regional Planning Authority to assist in assessing natural resources and heritage buildings, and to advise on matters of public interest.
- In 1970, the Society lobbied the State Government regarding the possible biological consequences of a nuclear explosion as part of a north-west harbour development, the protection of flora and fauna reserves from mining; the consequences of industrial and agricultural expansion around the Peel Inlet, Harvey Estuary, Swan Estuary and coastal waters; and the biological importance and the need to preserve the lakes and swamps of the Swan Coastal Plain.
- In 1971, the Society contributed to the Corridor Plan for Perth.
- In 1972, the Society made a submission to the Commonwealth Committee on Public Works requesting that the Garden Island naval developments be restricted to one part of the island only.
- In 1973, the Society recommended the establishment of a Research Foundation, whose aim would be to support scientific research.
- In 1974, a submission was made to the Committee of Enquiry into the National Estate, stressing the role of the Society as an unbiased and inter-

disciplinary body concerned with the conservation of nature and natural reserves.

- In 1977, the increasing pressure on jarrah (*Eucalyptus marginata*) as a timber resource, was recognised through a Jarrah Forest Symposium.
- In 1981, the Society prepared a submission to the EPA regarding the System Six Report dealing with land-use and reserves in the Perth region (see Volume 64 of the *Journal*).
- In 1989, the Society made representations to the State Government over the proposed closure of the Bickley Observatory.
- In 1992, it made representations to the State Government over the splitting of the Environmental Protection Authority into two bodies.
- In 1993, it made representations to a State Government Agency over an alleged case of unfair discrimination.

In another arena, the Royal Society has made valuable contributions to the National Trust in having a permanent representative on the Council of the Trust, dealing with issues of preservation and conservation.

The Future Role of the Society - A Discussion

Over time, the role of and activities within the Society appear to have changed, from pro-active contributions on scientific and social issues, interactive involvement between members, and interactive involvement between its members and society and decision-makers, to a general overall decrease in such activities and a stronger focus on specialist research in the last 20 years. This could be attributable to several influences, some of these being: more demands on time of academics at universities, and hence less time available for activities within the Society; an increased population, hence an increased membership, and less contact between the members; more specialisation in the sciences, thus more isolation between scientists, and again, less contact time between members in areas outside their specialised field; more scientists employed in the government sector, and hence a reluctance to be publicly involved in controversial issues; higher levels of education and more insight into scientific and social complexities, and hence issues appear more difficult to address rigorously; and the increasing reluctance of decision makers to access modern knowledge and insights.

If our Society is to be viable and relevant in the future, we believe it should change from a passive Society that holds monthly meetings and produces a quarterly journal, to one that also addresses some of the issues that have resulted in the decline of its activities and possibly its influence. It should define itself and its potential future role, and become more pro-active in its scope. This may mean a more public profile, but we believe that a Society with a higher profile, prepared to speak out openly and honestly on important issues in the public arena or in the government sector, will become more respected and influential in the long term. After all, it is within our Society that a large proportion of the State's scientists reside. This is an intellectual and core-knowledge resource that could be put to effective social use. Parallels exists elsewhere in the Australian Medical Association, the Ecological Society of Australia, the Australian Academy of Science, and the Australian Marine Sciences Association; bodies that periodically release position statements relating to critical social or scientific issues, and in some cases publish the position statements in their journal (*e.g.* Saunders *et al* 1990).

Currently, the Society is redefining its role and activities, mapping out a strategy to achieve its aim of advancing science in Western Australia, and actively promoting a scientific ethos. Some of the activities in the planning stage include an annual lecture to High School students to introduce them to the Society, awarding prizes to high achievers in universities, informative public-oriented meetings, and planning more regular symposia and thematic special publications dealing with aspects of science in Western Australia.

Is this sufficient? Currently, students in Western Australia are encouraged to study science, and University courses have been expanded to specialise in almost any field of science. While organisations such as the Royal Society encourage scientific endeavour through achievement awards, the realities are that there is limited funding for employment (Majer 1997). Scientific knowledge often is overlooked in favour of political and economic gain, and political and economic forces govern funding for science (Recher, 1998). Often the consequence of this is intellectual suppression and discrimination.

In this context, has anything changed since World War I, when Dakin (1915) proffered a critical commentary directed at society for not recognising the importance of science? The Royal Society has taken an active role in the affairs of Western Australia, throughout its history, but has it been enough? Is the knowledge of scientists respected? Is this knowledge utilised to its highest potential? Herein lies one of the future challenges of the Royal Society - to foster respect and support for, and use of, scientific knowledge.

As to the future role of the Society, we believe that there should be a continuation of the ethos of the advancement of science in all its aspects, but that additionally this objective should be pursued with vision. In many regards, the global community, including Australia is in crisis, with overpopulation, environmental degradation, and social disruption (Simmons 1989; Johnson & Taylor 1989; Saunders *et al* 1990; Mannion & Bowlby 1992). Paradoxically, and perhaps to the chagrin of social scientists and to those who believe that science actually helped create the current problems, science does in part hold the key to the solution of the crisis: through identification and design of appropriate energy sources, through identification, management and reversal of environment problems, through raising the quality of human life (though not necessarily by material growth), and through education and the raising of community consciousness. While many of the critical issues are global in extent, scientists in Western Australia, and the Royal Society in particular, can be part and should be part of problem identification, design of remedial strategies, and problem resolution.

The question of whether the ethical or philosophical direction to be taken by the Society outlined above should be simply a matter of personal choice (*i.e.* at one extreme of personal indifference to matters of social and environmental importance, and at the other extreme of pro-active commentary and involvement), or one pursued in general by the Society in its advancement of science, is one that should be directed to the membership. Our own personal view is that as scientists belonging to a community who provide information and technology to the broader community, to industrialists, to decision makers, and others, and who have directly or indirectly contributed to the environmental problems, we must be accountable to broader society. Further, in recognising the issues and their potential solutions, we have a responsibility to publicly note them, and if possible to remedy or rectify them. Historically, there is a precedent for such activities, in that the Society has become involved in matters pertaining to social and environmental issues (as noted earlier). In this context, what we offer here are our considered personal views, on the future role of the Society, for discussion.

We would like to reiterate the prime objective of the Society, *to advance science in all its aspects*.

A major advantage of the Society is that it is non-specialist in nature. As scientists become increasingly specialised, and turn to specialist journals for publishing and reading, the *Journal of the Royal Society of Western Australia* provides a generalist forum for data papers and a framework for general members to keep abreast of scientific issues within other disciplines. This broad focus is one way that allows the Society to pursue its prime objective.

If one further interprets the prime objective as being the development of scientific knowledge and subsequent dissemination of this knowledge, the future role of the Society, we believe, should be linked to four important directions towards:

- continued publication of a high-quality scientific journal to disseminate original research in Western Australia, material of relevance to Western Australia, and overviews or analyses of controversial issues of great scientific moment in Western Australia;
- the appreciation of our natural and cultural heritage;
- the identification and resolution of the critical scientific, environmental and social problems of this past millennium and the next; and
- the development of individual and community potential.

Many of the issues that would be inherent in pursuing these secondary objectives have been generated by over-population, economic imperatives, under-education, and lack of knowledge - some of these clearly still can be partly resolved directly, if not indirectly by science. To survive the 21st century, human societies have to change from their commitment to population growth and its concomitant urbanisation, resource exploitation, consumption, material wealth and corporate growth, to a vision which addresses issues such as personal development, cultural development, the inherent importance of species other than *Homo sapiens*, the Rights of Nature, and the importance and significance of Heritage (Nash 1990; Robins 1992; Singer 1993; Cavalieri & Singer 1993; Flannery 1994; Recher 1997; Lines 1998; Recher 1998). Embedded in these are the legal and ethical implications of scientific knowledge and advancement, matters that are not appraised critically in our modern world.

All the matters pertinent to the secondary objectives would need to be identified as issues and then change implemented, through education, research, lobbying and political action, (scientific) cultural enrichment, and increased core-knowledge and understanding of natural science and ecological processes. Here, the Society has to expand its notion from what is the advancement of science for industrial, agricultural, medical, and general economic purposes to one that also embraces cultural and personal enrichment, and solving the critical problems.

It is suggested, therefore, that the future role of the Society should include informative public-oriented meetings, informative contributions to the media, regular non-political representations to Government, lobbying and media interaction, and adjudication in areas of scientific controversy.

To keep the Society, and science in all its aspects, in the public view, and to raise the consciousness of the public, decision makers and politicians, regarding the Society's activities and intellectual resources, it is suggested that the Society raise its profile in the community. This could be achieved in several ways, and we offer here a list of possible options:

- increasing the accessibility of the Journal to a wider scientific community through publication on the World-wide Web, and ensuring that the scientific community in Western Australia is encouraged to publish matters therein pertaining to the State, because it is the only general scientific journal specific to Western Australia;
- periodic, informative, public-oriented meetings in community settings, on matters such as salinity problems in the rural areas, or school-oriented lectures to make students aware of the existence of the Society and to raise their consciousness of the science being carried out in Western Australia;
- informative regular contributions to the media; an article in the Earth-2000 series currently active in the *West Australian* newspaper would be an example;
- regular non-political meetings with politicians or their advisors, where the Ministers (or Shadow Ministers) for the Environment, or Resources Development, or Water Resources, or Urban Planning, as well as the Chief Executive Officers of the major government agencies are invited to present their views or to take part in a mini-symposium; this would need to be done regularly as Ministers' portfolios change, so as to keep the Society in a higher profile;
- conduct conferences to foster an appreciation of the State's scientific heritage and the need for its conservation;

- lobbying, from time to time, in regard to any *ad hoc* problems, issues or controversies that arise, and submissions to relevant inquiries or Government reports; and
- have a member of Council act as a publicity officer, to regularly undertake activities to raise the profile of the Society.

As to the matter of adjudication, there have been, and will be, many situations where there are scientific controversies. These may range from the proposed mining of a National Park, to controversies regarding rehabilitation of environments, logging of perceived important forest conservation areas, contamination of soil and water, among many others. Often the controversial situation results in a stand-off with opponents unable or unwilling to resolve the issue. In such situations, where it is of benefit to the public, or for the advancement of science, the Society could offer its services as an adjudicating mediator, or offer advice from a standpoint outside the controversy. As mentioned above, within the ranks of the membership of the Society, there are numerous accomplished and specialised scientists who could provide commentary and recommendations from time to time on such critical social and scientific issues. In such cases, the Society would need to make representations to Government agencies or politicians, in advance, that this resource is available. A follow-on from this is that the Society needs to be aware of who within the ranks of the membership are willing to provide commentary, advice or specialised knowledge. The 'Register of Scientists' published by the Royal Society of Western Australia, in 1995, was an attempt to do this.

One of the underlying problems, however, that would arise for individual members of the Society as it takes a more active role as a watchdog, is that a large number of scientists are employed in the Public Sector. Graduates in science in Western Australia find employment in private organisations, in large mining or industrial companies, as consultants, in the universities, and in government organisations dealing with agriculture, minerals, forestry, conservation, fisheries, and environment. Speaking out in-house against Government activities in the mining, forestry, agricultural and urban planning sector, when employed by a Government Agency invites vilification, discrimination, discrediting, or possibly dismissal, even if the information is sound. Speaking out in a public arena amplifies the response. Discrimination, intellectual suppression, and loss of employment opportunities for intellectual dissidents is a fact of life in Australian science (Martin *et al*. 1986), and so if the Society were to take on a new role of social/scientific commentary or adjudication, it should allow for contributing individuals within the Society to avoid public identification if so desired. Essentially, for the social, legal, and employment protection of any members who contribute to this process, as well as the integrity of the Society, representations, suggestions, recommendations, or adjudications would be by the Society as a scientific body, and not as individuals within the Society.

Conclusions

During Western Australia's development, the Society consistently has contributed to scientific knowledge, disseminated information and made efforts to raise awareness in the community of the importance of science. *The Journal of the Royal Society of Western Australia* has provided an avenue for the scientific community, and has made major contributions to most facets of science.

The role of the Society may have changed over the last 100 years, but this has reflected the dynamics of social attitudes, and prioritisation of scientific pursuits. The contributions made to the advancement of science in Western Australia have been invaluable, despite these changes. Many early contributions established a framework for modern thinking on scientific matters, and it may be postulated that, in years to come, the contributions of the latter half of this century will be seen in a similar light.

The future of the Society, as well as our social and economic well-being, may depend on how well science is communicated, understood, and respected. This will only come about if the Society makes an effort to involve itself more directly in public debate on scientific and technological issues. The future role of the Society, therefore, lies in a more focused pursuit in the advancement of science to create respect for and understanding of the usefulness of science. We have outlined above our strategy to achieve this objective.

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