

their governments in passing wise laws for the protection and preservation of their forests, which are so vitally important to the health, wealth, and well-being, of almost every country. Every citizen can make his or her individual contribution through the Men of the Trees. This is behind the motto, TWAHAMWE, which means ALL TOGETHER. The planting of a tree, while in itself a practical deed, is also the symbol of a far-reaching ideal. Indeed the tree on the badge of the Society is an eloquent symbol of unity and a promise of fruitfulness.

Richard St Barbe Baker

Until the moment of his death on 9 June 1982, at the age of 92, this remarkable man was still pouring out ideas which could benefit Mankind and all life on Earth. He was in Saskatoon, Canada, at his old University, discussing the establishment of a school of what he called 'Deep Ecology', when he died; but his message had been unchanging for 60 years—we must plant more trees. He established conferences, he lectured, broadcast, wrote, and was featured in films. He was invited by Government leaders to discuss planting programmes—he travelled throughout the world to take the message of the trees. In 1966 the Millennium Guild of New York bestowed upon him the MRL Freshel Prize for his publication *Sahara Conquest*, as the book of the year most likely to advance the cause of humanitarianism. In 1972 he received the Honorary Degree of Doctor of Laws from the University

Richard StBarbe Baker considered that the declaration of the Australian Year of the Tree in 1982 made it the most wonderful year of his life. Why? For a long time he had gently pressed this idea until it was actually launched on World Environment Day, 5 June 1982.* This gives the citizens of Australia the opportunity to 'green' their country. He believed that Australia leads the way for the rest of the world in establishing large-scale tree-planting programmes—and already the 'Year of' has become the 'Decade of', and now seems destined to develop into the 'Campaign for Greening Australia'—again much as happened with The Biosphere in the columns of *Environmental Conservation*. St Barbe believed that, through the concerted action of people in every country planting trees, a common meeting-ground for all men and women everywhere would be provided. He dreamed of the whole Earth being made green again—healed and made whole through the efforts of all Mankind.

As we see him in the accompanying photograph† characteristically 'recharging my batteries' (as he used to say) by hugging one of his beloved trees—in Brisbane, Australia, in September 1981, when well over 90 years old—we are reminded of his account, in the Autumn 1981 issue of *Environmental Conservation*, of 'The Story of the First Chipko-hug People, as told to The Man of Trees'. There seems indeed no limit to what can be done, even in our overcrowded world, by people who really care.

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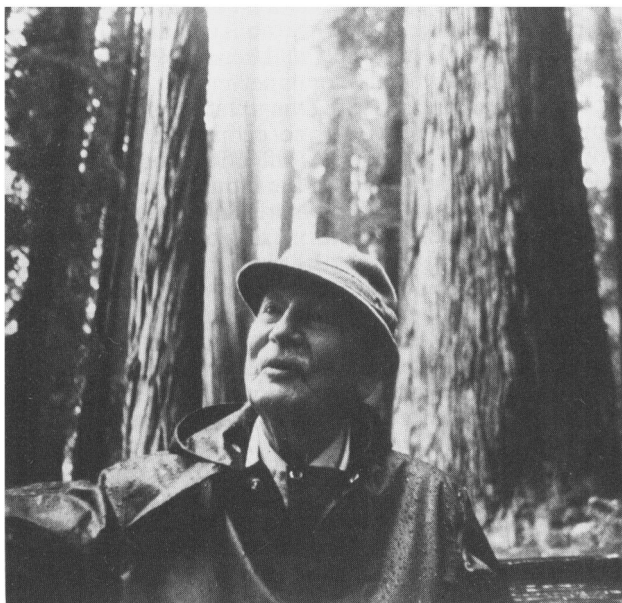


Fig. 1. *Richard St Barbe Baker among his beloved Redwoods (Sequoia sempervirens) in California again, near the end of his happily productive life. Photo: Randall Stemler.*

of Saskatchewan. In the year 1973 he was declared the Conservation Man of the Year—his contributions to the cause of conservation being considered the greatest by the Friends of Nature. In 1978 he received the OBE from Queen Elizabeth II of England. He was an Honorary Life Fellow of the Institute of Arts and Letters, Geneva; but, infinitely more important, he was an inspiration to uncountable numbers of people all over the world.

Henderson Island Threatened

The British Foreign and Commonwealth Office is thought to be seriously considering granting the request of an American entrepreneur who wants to destroy or at least seriously modify Henderson Island, which falls within their jurisdiction and constitutes a unique and highly interesting small island microcosm. It has endemic birds, plants, land-snails, insects, a spider, and probably other arthropods. We feel that this is a serious threat which should be brought to the attention of conservationists, so that they can make their opinions known to the British authorities who will decide whether this threatened desecration will be permitted.

Henderson (or Elizabeth) Island is an uninhabited elevated coral atoll in the South Pacific Ocean (Lat. 24°

* Interestingly enough the very day of declaration of the World Campaign for The Biosphere (cf. *Environmental Conservation*, vol. 9, No. 2, pp. 91–2, 1982), with which The Men of The Trees should be closely allied.—Ed.

† Most unfortunately lost by our erstwhile printers, so that the replacement on the left had to be obtained from Lake Tekapo, New Zealand, through the kind offices of Mrs Catriona St Barbe Baker, Mrs Patricia Prater, and Mr Graeme Murray, JP.—Ed.

22° S and Long. 128° 18' E), lying somewhat east of the eastern end of the Tuamotu Archipelago. Politically it is associated, along with the likewise uninhabited Oeno and Ducie atolls, with Pitcairn Island, of 'Mutiny on the Bounty' fame. It is a densely-wooded limestone platform, about 8.5 × 4.7 km in dimensions, perhaps 40 sq. km in area, with maximum elevation about 33 m above sea-level, surrounded by vertical or undercut cliffs.

Henderson Island is the only substantially elevated atoll in the 'oceanic' part of the Pacific that remains nearly unmodified by human activities. Aldabra, in the Indian Ocean, is in almost as primitive a condition, but is only slightly elevated. Of the 15 to 20 such atolls in the world, all the rest have been extensively mined for phosphate or have been long inhabited by Man, and consequently retain little of their primitive condition.

Many Unique Biota

Prior to its discovery by Europeans in 1606, Henderson was apparently occupied for at least some time by Polynesians, judging from preliminary archaeological findings. However, these people apparently left little lasting impact on the Island. In the first 13 years after 1900 there were several investigations by phosphate prospectors, from which no exploitation resulted. The Pitcairn islanders occasionally visited the island to cut *Thespesia* wood and perhaps sandalwood, and at least at one time planted some gardens in a small area of soil. Goats (and pigs?) are said to have been released on the island once or twice, but apparently did not persist. Fresh water is almost non-existent. Other than the above, only a few brief visits, scientific or otherwise, have affected the tranquility of this remote bit of land.

The cliffs around most of the periphery rise directly from the sea, except for a small beach at the base on the northwestern side and a longer beach with a strip of flat ground behind it on the north side. There are a number of caves in the cliffs, in one of which drips a small amount of fresh water. The cliffs can be scaled in several places, but not too readily.

The densely-wooded or scrub-covered top surface looks rather flat, though slightly depressed inland. However, in very many places this surface, under and between the trees and shrubs, is extraordinarily rough and dissected, with sharp pinnacles and deep pits. Soil is confined to pits and depressions, and to the occasional gentler-sloping areas. It is black, with pebbles or nodules of phosphate and coral, and lies either directly on coral limestone or on compacted coral sand. The vegetation is, as would be expected, taller and more luxuriant on the areas that have some soil. Nevertheless in most places it is dense and tangled, being often practically impenetrable.

The vascular flora consists of relatively few (69) species and varieties, only five or six of which are exotic; the rest are native, with ten endemics. Included in this last category is *Bidens hendersonensis*, which attains the size of a small tree—remarkably in a usually herbaceous genus. An endemic species of sandalwood (*Santalum hendersonense*), a *Nesoluma*, a *Geniostoma*, and possibly a *Fitchia*, add much interest.

There are at least 24 species and subspecies of birds on Henderson Island. Four (or five?) of these, including a rail, are endemic. There are one mammal (the aboriginally introduced Polynesian rat), at least two lizards, and sea-turtles. Quite a few insects and a few land-snail species, also several spiders, are found, many of these in-

vertebrates being endemic. No good account of the invertebrates has been published, and it is likely that many additional species will be discovered if the island is spared.

Henderson is one of the few almost primitive small oceanic island microcosms remaining in the world. Careful and deliberate study of it in its undisturbed state would probably tell us much about the functioning of limited ecosystems, and, by comparison, of disturbed and degraded ones.

Threat of Desecration

Alas for the illusion that such an intact island system could persist for long in this crowded world, and for our hopes of the opportunity to study it in its primitive condition! In 1981 an American millionaire, a Mr F.M. Ratliff, who is said to have made his money strip-mining for coal in Virginia, visited Henderson Island. By some curious perversity, this bitterly inhospitable, waterless environment seems to have attracted him, and he has applied to the British authorities for permission to construct a house, landing facilities, and an air-strip, on Henderson Island.

To win the approval of the Pitcairn islanders, who are considered by some to have a *de facto* claim to Henderson, Mr Ratliff is said to have offered to give the few Pitcairners who still live on their island home a very large sum of money and, it is rumored, to build an air-strip on tiny Pitcairn. Such an air-strip would leave little room for the subsistence horticulture which supports the people there now.* It seems highly unlikely that the values inherent in the interesting and unique Pitcairn Island culture could survive the combined impact of a large sum of money and an air-strip giving ready contact with the outside world. These 50-or-so people are said to have given their assent to the Ratliff offer, but nothing has been heard of the feelings of the thousand or more other Pitcairners who now live on Norfolk Island, in New Zealand, and even in England.

Ecological Survey Needed

It is felt that, before any intelligent decision can be made, a careful and detailed ecological survey of Henderson Island should be carried out. The 15th Pacific Science Congress, held in Dunedin, New Zealand, early in 1983, passed a resolution requesting this, and the British Royal Society has been approached in this connection. The British Foreign and Commonwealth Office, in whose hands the matter rests, have made no decision as yet, on either the suggestion of an ecological survey or Mr Ratliff's application. Neither the Office nor the Society seems to share the belief of many others interested, that the survey should precede the decision on the application, and should provide the information to enable the authorities to make a well-considered and enlightened decision.

To conservationists it seems unthinkable to destroy such a resource as Henderson Island, as the proposed construction would do. To sacrifice the only remaining intact example of any natural phenomenon seems shortsighted in the extreme. Our inclination would be to

* Pitcairn Island is only about 5 sq. km in area, with little level ground.—Ed.

protect and preserve such an asset for its scientific and aesthetic values, and for the benefit of future, and perhaps more appreciative, generations of Mankind.

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Some Evidence That Trees 'Communicate When in Trouble'

Preliminary findings indicate that trees which are being attacked by insects may communicate their predicament to other trees through airborne chemicals, according to a recent report to the National Science Foundation (NSF), of Washington, DC. The warning message may enable trees that have not yet been attacked to prepare defences against plant-eating insects.

If the above-mentioned findings are confirmed, they may well constitute the first demonstration that plants emit pheromones which are received and responded to by other plants, the report indicated. Pheromones are chemical substances which convey information to, and elicit responses in, other individuals. Well-known examples of this phenomenon are insect sex-attractants, but this new work could have far-reaching implications in integrated pest control programmes dealing with interactions between plants and animals.

Indications that trees communicate in this manner were reported by Professor Gordon H. Orians, Director of the Institute for Environmental Studies, University of Washington, and Dr David F. Rhoades, to the NSF's Ecology Programme which has financed their research. They informed the NSF that: 'We have gained preliminary evidence in field experiments that leaf damage of Sitka Willow [*Salix sitchensis*] by Western Tent Caterpillars [*Malacosoma californicum pluviale*] and Fall Webworms [*Hypantria cunea*] can lead to changes in nutritional quality, not only in leaves of the attacked trees, but also in those of near-by unattacked trees... This effect may be due to a defensive response in unattacked trees stimulated by volatile compounds emitted from attacked trees.*'

The general hypothesis that is being investigated in their ongoing research is that volatile chemicals, released by plants in response to damage of their leaves, can cause chemical changes in neighbouring, undamaged plants that render the undamaged plants less suitable as food for leaf-chewing insects. The research workers will use Sitka Willows in the laboratory phase of the investigation, and will try to induce changes in leaf quality of undamaged plants by confining them in chambers with damaged plants, isolating and identifying chemical emissions that may be responsible for any effects. They also will try to induce changes in leaf quality of plants,

* In writing to give us the scientific names of the above-mentioned organisms, Professor Orians added (*in litt.* June 1983): 'The experiments were designed and executed by Dr David Rhoades of my laboratory, and he is preparing the results for publication... At a somewhat later date, a more general survey of this and related research might appropriately find its way into your Journal.'—Ed.

using fractions and pure compounds isolated from volatile plant emissions or obtained commercially.

'If the general hypothesis is correct', Drs Orians & Rhoades claimed, 'it is necessary that damaged plants emit volatiles which differ quantitatively or qualitatively from those emitted by undamaged plants.' Since 1979 they have been conducting field experiments designed to detect changes in the nutritional quality of trees to insects, that may have been induced by insect attack. In these experiments they placed colonies of tent caterpillars or webworms on trees and periodically monitored the biological and chemical quality of the leaves, observing lowered growth-rates and other features in trees that were being attacked by tent caterpillars as compared with unattacked control trees.

'However', they reported, 'several of our experiments gave results suggesting that both the test and unattacked control trees were changing their leaf quality in response to our placement of insects on the test trees... This implied that unattacked plants receive and respond to signals from near-by plants experiencing attack by insects. In each individual experiment the observed changes in leaf quality of control trees could have coincided with our manipulation by change, but an overall picture strongly suggestive of communication among plants gradually emerged.' They will now attempt to confirm their earlier evidence of 'plant communications'.

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Moratorium on Ocean Dumping of Radioactive Waste Agreed to in London

Whether or not *any* radioactive waste should be dumped into the ocean was the major focus of the seventh consultative meeting of the parties to the London Dumping Convention, held in London, 14–18 February 1983. Considerable discussion focused on two proposed amendments, one introduced by two Pacific island nations (Kiribatu and Nauru) which would place all radioactive waste immediately on the black-listed Annex 1, and a second resolution, introduced by the Nordic nations, which would allow for a phase-out period of such dumping until 1990. It was agreed to table both these resolutions, in order to allow a scientific and technical review to be conducted.

What was finally adopted, by 19 votes to 6 with 5 abstentions, was a fall-back resolution, introduced by Spain, which called upon all nations to cease dumping immediately. Voting against were Japan, the Netherlands, South Africa, Switzerland, UK, and US; abstaining were Brazil, France, Federal Republic of Germany, Greece, and USSR.

The resolution also requested that a scientific review of the proposed amendments and other considerations relevant to radioactive-waste dumping be reviewed during the next two years. At the ninth consultative meeting, to be held in 1985, the question of whether to amend the Convention and its annexes to prohibit radioactive-waste dumping will be considered. While not legally binding, the strong majority which supported the