

## THE NATIONAL RESEARCH COUNCIL OF CANADA

A NEW format has been adopted for the forty-fifth annual report of the National Research Council of Canada, covering the year 1961-62, but the report is on the usual lines and includes the annual reports of the Medical Research Council and of Canadian Patents and Development, Ltd.\*. During the year, 8.7 million dollars went in support of pure research in the universities, including 975 grants and 675 scholarships and fellowships, as well as a further 3.3 million dollars through the Medical Research Council. The scientific research staff now numbers 733 (including 163 postdoctorate fellows) with 997 technical personnel and 890 general service and administrative staff. A notable development of the year was the Government's decision to give financial assistance to research and development in Canadian industry, and in 1962-63 a special committee of the Council will make awards totalling 1 million dollars in support of long-term applied research in industry. Besides this, the Council is already responsible for wide programmes of objective basic research, as well

\* The National Research Council of Canada. Forty-fifth Annual Report for 1961/1962, including the Annual Reports of the Medical Research Council, and Canadian Patents and Development, Ltd. Pp. 47. (N.R.C. No. 6815.) (Ottawa: National Research Council of Canada, 1962.)

as undertaking applied research under contract and operating technical information and documentary services. Support for university science has increasep from 3.6 million dollars in 1957 to 14.4 million dollars in 1962.

Brief summaries are included of the work done in the Division of Applied Biology in the Atlantic Regional Laboratory, Halifax, the Prairie Regional Laboratory, Saskatoon, the Divisions of Applied Chemistry, Pure Chemistry, Applied Physics, Pure Physics, Building Research and Mechanical Engineering, the National Aeronautical Establishment and the Radio and Electrical Engineering Division. Under the Medical Research Council, 96 programmes directed by senior scientists were supported on a three-year basis and 224 on a renewable annual basis, while 64 fellowships, totalling 236,642 dollars were held. Of cases coming to the Canadian Patents and Development, Ltd., during the year, 39 per cent originated in the laboratories of the National Research Council, 47 per cent from other Government agencies and departments and 14 per cent from universities and provincial research institutions. Besides 107 patent applications filed, 150 patents were issued in 13 countries.

## PRESERVATION OF WILD LIFE AND ZOOS

IN her book *Orang Utan*<sup>1</sup> Mrs. Harrison describes rearing baby oranges confiscated from poachers in Sarawak and taking them to European zoos. Having learnt something of their needs, she considers the possibility of training them to return to their natural jungle habitat. In a later paper, entitled "First Response to Freedom of Young Orang-Utans at Bako National Park, Sarawak"<sup>2</sup>, she describes the first stages of an experiment in rehabilitation.

In the first three years orang babies are nearly as helpless as human babies; they need a mother-figure as much, and they will endlessly adapt their behaviour to fit the environment the 'parent' provides. The problem is to bring up a baby to a stage when it can cope alone with its jungle environment, without distorting its behaviour so much that it is unable to break free of human society when the time comes. Up to the time of writing the paper the problem had not been solved, and if the experiment is to be successful newly independent females must not only be self-sufficient, but so shy of their former nurses that they will not bring their own babies within easy shot of poachers.

An earlier paper of Mrs. Harrison<sup>3</sup> and Dr. T. Harrison's addenda to the book show how vital it is that these experiments should succeed. Simple arithmetic shows that if the present situation remains unchanged the orang-utan has about ten years left. An orang should live thirty or forty years: in zoos their average life is four years, and breeding in captivity is negligible, so to maintain the present world zoo population 60 replacements are required each year. To exhibit a baby costs the life of its

mother, and the mother of another baby who will die in transit. Thus in ten years 2,400 animals are lost from a population which stands at present between two and five thousand and is probably already overweighted with adult males, which do not interest collectors.

It is highly questionable whether the import of oranges, or any other threatened species, should be allowed into civilized countries. There is no justification on scientific grounds because it is now cheaper and easier to transport the biologist to the ape than vice versa. The real irony of the situation is that these oranges acquired at so much cost are then kept in such a way as to make them useless as entertainment or for research. Probably the main function of this book will be to help to teach a basically kind-hearted but uncomprehending public that the sad-eyed hulks of apes in zoos bear no more resemblance to mentally healthy creatures than would a human being maintained in the same way. The clear account of the needs of the baby orang should prevent the demands on the pet market (and ultimately the poachers) which books of this type are apt to produce. (Compare, for example, the assortment of unsuitable felids that were bought as a result of *Born Free*). Orangs are said to be more stupid than chimpanzees, but this impression has arisen because they are expected to behave like the mainly terrestrial and imitative African apes. The orang is arboreal and must have trees to climb; it is an explorer rather than an imitator. Its requirements sound like a zoo director's nightmare. How do you provide thirty years' worth of exploration?—yet they should be considered as

necessities, in the same way that a zoo does not acquire a giant panda until it has assured a supply of bamboo.

The expense, in space, materials, and time which is needed to provide adequate environments is one which very few zoos are willing to face. Before real improvements can be made it will be necessary for zoos to reconsider their whole function, because their present way of thinking belongs to the past century. Then it was valuable to collect together large numbers of closely related animals, a single specimen of each perhaps, since zoology was mainly a form of taxonomy: but completeness of the collection is still a criterion of excellence, as in a collection of postage stamps. Then the public could be educated and entertained just by seeing legendary foreign animals in the flesh: now that we have superb wildlife films people are surely becoming more sophisticated about animals, and realizing that cage-stupid isolated specimens are little better than stuffed animals, and that begging for food is the least entertaining behaviour that animals have in their repertoire.

The time has now come when for both entertainment and scientific value it would be more profitable for a zoo to specialize and concentrate on one species from any group—for the lay public, and indeed for most zoologists, the difference between, say, a chacma and an olive baboon is of little moment—but to use the space and resources saved to present that species as a flourishing breeding colony. In this way it might become possible to pay more than lip-service to the idea of breeding and maintaining vanishing species in captivity, which is the only excuse for having such animals as the orang in captivity at all. Co-operation between zoos could prevent overlap, so that each could become famous for its specialities and worth using the facility of

modern transport to visit. Let us hope that this book will prod the imagination as well as the consciences of zoo directors, and help to make people dissatisfied with some of their present offerings—with the rare exception, the 'good' British zoos are not even up to the standards of the American and European.

For the orang itself, the most urgent need is for reserves in south-east Asia. These must be protected from poachers, of course; they must be large enough, because the population density of oranges seems to be about one per square mile; and the size of the area must be estimated in terms of useful orang habitat, which is forest at least eighty years old. A first park has been established in North Borneo, but on Mrs. Harrison's estimate<sup>4</sup> the present boundaries include space for only fifteen adults. There is a conflict between the interests of the orang and those of timber merchants and traditional hunting rights; as usual, conservation is a political, not biological, problem. If nothing is done within the next few years, the conflict will cease to exist.

I found the arrangement of the book too chatty; oranges are interesting enough without padding (for example, a digression about turtle eggs) and I felt to be piecing together relevant information with difficulty. If, as must be the intention, this treatment attracts a wider audience, it is a worthwhile sacrifice. The photographs are delightful; I suspect that one of the oranges facing page 176 is a chimpanzee.

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<sup>1</sup> *Orang-Utan*. By Barbara Harrison. Pp. 224 + 17 plates. (London: William Collins, Sons and Co., Ltd., 1962.) 25s. net.

<sup>2</sup> Harrison, Barbara, *Sarawak Museum J.* (in the press).

<sup>3</sup> Harrison, Barbara, *Sarawak Museum J.*, 10, Nos. 17-18 (1961).

<sup>4</sup> Harrison, Barbara, *Sarawak Museum J.*, "Report on Recent Investigations in North Borneo on Behalf of the World Wildlife Fund, Project 21, Orang Utan Study Group" (in the press).

## BOTANICAL EXPEDITION TO THE LIMESTONE AREAS OF ULU KELANTAN, MALAYA

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UNDER the sponsorship of the Unesco Science Co-operation Office in Djakarta, a botanical expedition to Ulu Kelantan, Malaya, was undertaken during July 24-August 17.

At a conference several years ago, Dr. E. J. H. Corner, former assistant director of the Singapore Botanic Gardens, directed attention to the fact that the present knowledge about the peculiar limestone flora in South-east Asia is very inadequate. This flora extends from south Thailand through Malaya to Borneo and Java.

The limestone hills in Malaya are widely distributed in the northern States. According to a recent report by Mr. J. R. Paton<sup>1</sup>, they are concentrated in Ulu Kelantan. Furthermore, the limestone hills are less explored and less disturbed there. For these reasons, it was generally agreed that Ulu Kelantan was the most suitable place for the expedition.

Participants of this expedition included staff members from the Singapore Botanic Gardens, the Forest Research Institute of Malaya and the graduate students of the University of Singapore. The foreign participants came from neighbouring countries: Thailand, Indonesia, Hong Kong, and the Philippines.

Altogether the party consisted of sixteen members. The exploration was called a 'training expedition' because the participants were expected to gain knowledge and experience of botanical field work. Actually this was the third one of its kind sponsored by Unesco, the first being held in Java in 1960, the second in Sarawak in 1961.

The party spent three weeks in the field. By the end of this time the party had collected 691 (many with 4-6 duplicates) kinds of dried herbarium specimens and more than 200 kinds of living plants. The dried herbarium specimens, more than 3,200 sheets, are kept in the herbarium of the Singapore Botanic Gardens for future distribution to the leading herbaria of the World; the living plants, including a great variety of orchids and other plants, are being kept in the gardens for multiplication.

The only literature available about the Malayan Limestone flora is the paper written by Mr. M. R. Henderson<sup>2</sup>. In that paper, Mr. Henderson enumerated 745 species of seed plants which were found on the limestone hills throughout Malaya. Among these 745 species only 195, or approximately one-fourth, of them were confined to the limestone hills; the rest