

LORIS

THE JOURNAL OF THE WILDLIFE AND
NATURE PROTECTION SOCIETY OF CEYLON



Vol. • XV No. 5 June 1981

121, POINT - PEDRO ROAD

NALLUR, JAFFNA

No.



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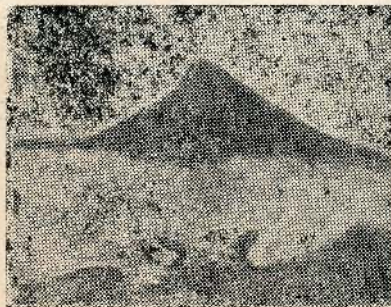
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VOL. XV. No. 5,

June, 1981

Hony. Editor :

R. A. WIJEWANSA

LORIS is published biannually, in June and December.

The Editor invites literary contributions from those interested in wildlife and nature conservation and these should reach him by 31st March and 30th September respectively for each of the two issues.

The views expressed by the authors are not necessarily those of the Society. Reproduction is permitted with due acknowledgement.

Front Cover **SAMBHUR STAG**
(*Rusa unicolor unicolor*)

Sambhur is the largest of the Sri Lanka deer, dark brown to grey in colour and is covered with coarse hair. Found in the forested plains and hills but seldom in greater numbers than two or three. Wanders during the night and retires by day.

Photo by P. R. Anthonis, Jr.

Back Cover **GOLDEN BEETLE**
(*Stenocera sternicornis*)

The Golden Beetle has a brilliant golden green lustre with red reflections. They are herbivorous and their larvae are borers in the woody stem. They fly actively and are diurnal.

Photo by Carlo Woehner

Printed at :

Caxton Printing Works Limited,
280, Dam Street, Colombo 12.

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FOREST COVER

The Constitution of the Democratic Socialist Republic of Sri Lanka declares in article 27,

“The state shall protect, preserve and improve the environment for the benefit of the community”

and goes on further to say in article 28,

“..... that it is the duty of every person in Sri Lanka to protect nature and conserve its riches,”

We could think of no better time than the present to remind the Government of its commitment and to drive home the concept to every citizen, no matter who or what he is.

Today it has become quite clear that man is not the master of nature and never quite would be, in spite of all the technological advancements taking place around him. Life on this planet is solely dependent on that thin film of surface soil and the air around us and we humans have to share this medium along with a host of other living beings — both plant and animal — which obligation, Thomas Huxley described as “man’s place in nature.”

We being part of the developing world, are often compelled to walk the tight rope. An urgent need is to improve the living standards of the larger mass of the people by a concerted development effort, which often means coming into direct conflict with nature. How best this could be done in a manner which prevents environmental degradation is a matter that demands the most careful analysis from planning and executing agencies. In this area we should profit by the mistakes of the developed countries and develop a greater degree of ecological awareness.

The hydropower crisis which we are going through today is a direct result of the lack of foresight over the years, when nature had been taken for granted. We have not given adequate thought

to the forest cover in the hill country, where all the major rivers of the country have their origins. We are all too familiar with the hydrological cycle. Rain being the major source of water, must be conserved effectively for use over a period of time, especially when its occurrence is seasonal as in the Dry Zone of the country.

Remove the forest cover and the bulk of the rain water will run-off the land causing flash floods, prolonged droughts, absence of dry weather flows in the rivers and ultimately desertification. For what remained of the upcountry forest cover until about a decade ago we owe a debt of gratitude to that famous Botanist, Sir Joseph Hooker, who in 1873 advised the then colonial government to leave all montane forests above 5000 feet undisturbed. It is the wisdom of this enlightened piece of advice which had been the saving grace, but events during the last decade brought about a devastation of forests in these vital upper catchments. The nation would be wiser if only we pause to reflect on the folly of such ill conceived acts, which in the long run only get us deeper into the mire.

In the days of the Sinhalese Kings — wise men that they were — the hill country was conserved and the plains were cultivated with the water which was a perennial feature of our major rivers. What is important is the dry weather flow in the rivers and this could only happen if the watersheds are rich with verdant jungle.

A former Prime Minister of Sri Lanka speaking to a cross-section of the scientific community some years ago said: “The ancient people of Ceylon left us marvellous achievements in the dry zone. They seem to have a greater appreciation of scientific agriculture and irrigation. Here the people of this country forsaking the salubrious atmosphere of the hill country and retaining that area in jungle and forest cover populated the plains of Ceylon, the Dry zone, fully realizing that preservation of the hilly areas under forest was essential for the operation of the mighty irrigation schemes.”

We welcome the measures taken recently by Government which has now come down with a total ban on the felling of forests — except under the strict control of state agencies — designed to conserve what little is left of the valuable forest cover, not so much for its timber value but for its other attributes which have a direct bearing on the lives of each one of us. These measures include the ban on the issue of permits by Government Agents for felling and transport of timber from state lands.

It is also gratifying to note that a programme of social forestry is to be launched soon so that the village would assume self-sufficiency in its needs of fuelwood and other requirements. The state plantations and other energy consuming institutions should immediately establish fuelwood plantations of their own.

We are happy to note that 31,000 acres have been reforested by the Forest Department in 1980,

although we have reservations about the planting of exotics at the higher elevations.

We hope that this extent would be increased substantially in the years to come — the campaigns even be conducted on a war footing, as we are already below critical levels in respect of the country's total forest cover, especially in the upper catchments, which we emphasize once again, is a prerequisite to development.

The Society had been for a very long time calling for a meaningful protection of the existing forest cover and a systematic replanting of areas which have come under the axe. We are all the more pleased with the attention the subject is now receiving from politicians, planners and developers who have realised, belatedly though, that development goals cannot be achieved without conservation and husbanding of forest resources.

WHITHER LORIS ?

'The time has come, the walrus said, to talk of many things ...' so goes the lines in a poem we learnt at school.

And so we thought it opportune to tell our readers some of our difficulties. Our magazine 'LORIS' has earned a prestigious place among the many wildlife and nature magazines from around the world — thanks to the illustrious people who have hitherto worn the mantle of Editor — during the past 45 years.

Our main problem is that 'LORIS' is now getting beyond our means, and we are virtually 'scraping the barrel' to let you have the two numbers each year. Members would have seen from the published accounts of the Society that the cost of paper and printing has become prohibitive and what is more disturbing is that each issue is getting dearer than the previous. How do we keep pace with these cost escalations ?

Some of the suggestions have been, to levy a charge for each number so as to cover costs, increase the annual subscription, and, do away with the colourful front and back covers.

It is time to pause and take a fresh look, so that 'LORIS' could continue, and, as it has in the past, be the voice of a large number of conservation minded men, women and children.

Your suggestions in this regard are most welcome.

— Editor

A Botanical Excursion across the Peak Wilderness

Aptly called the Peak Wilderness, this ancient forest has protected the Holy Peak, Sri Pada, from time immemorial. It had engaged the attention of Sinhalese Kings and travellers of old like Ibn Batuta and Marco Polo. The worth of the forest has not yet been fully documented and preservation of what remains of it is imperative.

ANDREW M. GRELLER¹,
S. BALASUBRAMANIAM²,
SAVITRI GUNATILLEKE³ AND
I. A. U. N. GUNATILLEKE⁴

Sri Pada (Adam's Peak) has attracted pilgrims of three major religions for millenia. Recognising the spiritual and historical importance of this mountain, the people of Sri Lanka have set aside extensive natural forests surrounding it as the "Peak wilderness". Because of the rugged terrain and difficulty of access, the Peak Wilderness has received little attention from botanists and ecologists. We undertook a botanical excursion north to south across the area, near its narrow point on 13—15 February 1981. The object of the small expedition was to collect data on forest composition and leaf size of montane and mid-elevation forests of the "Wet Zone". One by-product of the endeavour was the re-discovery of *Stemonoporus rigidus* Thwaites (see Plate 1), a plant that had not been seen by scientists since it was first collected and described by Thwaites in 1854 (in Kew Journal of Botany VI, p. 69), from Ambagamuwa. Further, it was found that *Stemonoporus rigidus* is the dominant tree of a zonal montane forest type, which extends from about 4900—6000 feet above sea level. This forest has been recognised as a new montane type in Sri Lanka (A. M. Grellier and S. Balasubramaniam, MS).

The Peak Wilderness lies between 80°30' and 80°45' E longitude at approximately 6°45' N latitude in Central Province and Sabaragamuwa Province. It is at the centre of the western ridge of the Central Highlands. Three rivers have their headwaters (tributaries that arise) in this area—Maskeliya Oya, Ratganga and Walawe Ganga. Underlying the entire area is the Highland Series of Pre-Cambrian rocks which are highly crystalline and non-fossiliferous. Temperatures vary from

MAT = 27.2°C in Ratnapura (130 ft. elev., WM = 28.1°C) to MAT = 15.4°C in Nuwara Eliya (6,230 ft. elev., WM = 16.7°C), inversely with increasing elevation. Rainfall (MAP) at Hapugastenne Estate (1,950 ft. elev.) is 201.7 in (5,123 mm) rainfall (MAP) at Maskeliya Hospital (4,200 ft. elev.) is 121.3 in (3,081 mm). Thus a wide range of warmth regimes are present in an area enjoying abundant rainfall.

The trail we took traversed the Peak Wilderness from north to south, beginning at the Frogmore Division of Gartmore Estate (Kandy District, Central Province) to Ratganga in Hapugastenne Estate (Ratnapura District, Sabaragamuwa Province). We started at 6,000 ft. elev. above Frogmore, near one of the tributaries to the Maskeliya Oya; proceeding south for half-a-mile, we reached the edge of the Peak Wilderness escarpment. We walked east along the escarpment for one mile to the "divide" between Ratganga, a tributary of the Kaluganga which flows to the west, and a major tributary of the Walawe Ganga which flows to the east. We headed southwest from that point, remaining fairly level at 6,100 ft. for approximately three quarters of a mile. The trail then dropped precipitously for two miles, continuing southwest. For the next mile and a half the trail was only moderately steep, traversing the heavily disturbed margin of the Ratganga Division of the Hapugastenne Estate (2,500 ft. elev.) which is eight miles ENE of Ratnapura.

To reach the trailhead at Frogmore, we climbed up through tea plantations into disturbed montane shrubland. Common plants were: *Syzygium cyclophyllum*, *Gordonia speciosa*, *Hedyotis* spp. *Actinodaphne* spp. and *Cinnamomum ovalifolium*.

We next passed through a mature forest of emergent *Calophyllum walkeri* and *Palaquium rubiginosum* with a secondary tree layer mainly of *Garcinia echinocarpa*. On both days that we visited this forest (14.02.81 and 15.02.81), a heavy

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mist rolled in by 11-00 a.m. and drastically reduced visibility. The tall shrub layer was dominated by at least 3 different species of *Strobilanthes* in most places and in some places by *Agrostistachys coriacea* along with a slender bamboo with rather narrow sparsely arranged leaves. Root climbers (*Freycinetia walkeri*, *Kendrickia walkeri*), filmy ferns, leafy liverworts, and mosses covered the branches and trunks of all the woody plants and made it extremely slippery for our tree climber to collect samples for us. *Garcinia* and *Strobilanthes* were remarkable for their "stilt roots". There were few lianas and no thorny plants. *Gaertnera ternifolia* was a common species in the undergrowth. An unidentified *Lycopodium* species was common in the herb layer of the forest.

The trail soon emerged from the forest and entered an extensive marshland which vegetationally resembled moist depressions on the Horton Plains. It was observed that extensive gem mining had disturbed the landscape, interfering with normal hydrologic processes by creating muddy pools and channels. Woody plants of the marshland were stunted trees of *Syzygium cyclophyllum* and the beautiful *Gordonia speciosa*. Shrubs were mostly *Hedyotis* spp., *Osbeckia walkeri* and the common dicot herbs were *Impatiens* spp., *Exacum walkeri*, *Sonerila* spp., *Vernonia* spp. and other

composites like *Senecio ludens* and *Emilia glabra*. *Phaius wallichii* (= *P. tancarrillae*) a tall terrestrial orchid was in full flower.

Here we also encountered a small population of the rare *Burmannia caelestis* in flower. *Lycopodium carolinianum* and the ferns *Histiopteris* and *Gleichenia* (*Dicranopteris*) *linearis* were also common in this marshland habitat. Here we also encountered several interesting species of *Eriocaulon*. Other characteristic species recorded in this marshland were the grass *Garnotia mutica*, the rush, *Juncus prismatocarpus* and the sedges *Scripus fluitans* and *Carex* sp. *Scripus fluitans* was always found growing submerged in water. It will be interesting to see the patterns of colonization and succession in the gem pits, each of which differs in water depth and duration of inundation.

Entering the forest just above the south-facing escarpment, we collected several fruits of *Stemonoporus rigidus*, which had never been seen before. Altitude was approximately 6,000 ft. here. By now it was raining heavily; the trail was rocky and slippery. We descended to approximately 5,500 ft. where we sampled one hundred trees, mainly *Stemonoporus rigidus* and *Garcinia echinocarpa*. *Leucocodon zeylanicum*, a vine with a "splash

(Continued on page 276)

Use of Fuelwood in Sri Lanka

Frequent escalation of petroleum prices has already put fuel oil beyond the reach of many. One of the renewable alternatives being wood, the urgent need is to plant rapidly growing fuelwood species.

M. PUSHPARAJAH

Appropriate Technology Services
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Introduction

The forest cover in Sri Lanka has decreased from 2.9 million hectares (44% of the total land area) in 1956 to 1.3 million hectares (25%) over the last two and a half decades, chiefly due to large scale agricultural development programmes and shifting cultivation.

Another factor that has significantly contributed to the depletion of the forest cover in Sri Lanka is fuelwood cutting. Fuelwood accounts for nearly 64% of the total energy consumption in Sri Lanka. It is estimated that nearly 94% of the domestic energy needs of the rural sector is met from fuelwood. The total fuelwood consumption is estimated to be 4.719 million m³ per annum, based on a per capita consumption of 0.33 m³, and increasing in direct proportion to the increase in population.

The ever-increasing cost of fossil fuels means that, for the foreseeable future, fuelwood will continue to meet the bulk of the energy requirements of the people in Sri Lanka.

Supply, demand and consumption

Statistical data on fuelwood production and consumption are in general less reliable than those for industrial wood. A fair amount of coconut husk, trunks and other agricultural residues are also used as sources of fuel but statistics regarding quantity are scanty.

According to the FAO Yearbook of Forest Products (1977) the production of fuelwood between 1966 and 1977 in Sri Lanka is as follows: (Table 1)

The current per capita consumption of fuelwood on the basis of the above data amounts to an average of 0.33 m³. Sankar and Fernando, (1977), however, estimate the per capita consumption at 0.51 m³. Based on the FAO estimate of per capita consumption of 0.33 m³ which appears reasonable, the total fuelwood consumption is estimated to be 4,719,000 m³ per annum. The demand is expected to increase sharply in the future not only due to the rise in population but also due to the escalating oil prices and a consequent switch over by industry, from oil to fuelwood as the source of energy.

Table 1.

Fuelwood Production 1966-1977
(X 1000 cubic metres)

1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
3690	3740	3800	3880	3940	4000	4070	4009	4071	4118	4177	4219

One of the options that is available to meet the growing demand for fuelwood is to increase its supply principally through the establishment of fuelwood plantations and accordingly the Forest Department's fuelwood planting programme for the Mahaweli Development Scheme's would be settlers, envisages a total target of 28,350 ha over a 10 year period at the rate of 2835 ha per annum.

M. Pushparajah, B.Sc. (Hons.), B.Sc. (Forestry) from A. N. U. Canberra and M.Sc. Oxon, is a Deputy Conservator of Forests in the Sri Lanka Forest Department.

The fuelwood requirements of the domestic and commercial sectors are summarised in Table 2.

The factors that determine wood fuel demand are cooking habits, income, family size, population growth and the relative availability of other fuels. By far the most important factor limiting supply is physical availability. Consumption takes place predominantly in the form of fuelwood with charcoal accounting for a very insignificant part of the total.

Table 2.

		Estimated fuelwood demand		
Sector		Population (million)	Percent using fire- wood for cooking	Total consumption (million m ³ /year)
Domestic Sector				
Urban	16%	2.3	75.8	3.9800
Rural	72%	10.3	97.9	
Estate	12%	1.7	99.0	
Total ...		14.3		
Commercial Sector				
Tea Industry		...	...	0.7360
Other Industries		...	...	0.0028
Total ...				4.7188

Wood fuel consumption is higher in the rural areas than in the urban areas. 84% of the total fuelwood consumed is used for cooking and the balance 16% is consumed by industry. The tea industry accounts for an annual consumption of 0.7360 million m³ and the other industries such as tile, brick, pottery etc. account for about 0.0028 million m³ per annum.

The present requirements of fuelwood are met from three principal sources :—

- Natural forests and plantations
- Rubber wood from areas cleared for replanting.
- Other crop residues.

According to official data only about 0.1274 million m³ of firewood is supplied annually by the State Timber Corporation from state forests, while much of the fuelwood collections made from state forests in the rural areas are never recorded. The bulk of the firewood consumed in the densely populated south-western part of the island comes from rubber estates which are being replanted. The annual rubber replanting target is 6075 ha and the yield per ha is 172 m³. However, in 1979 the area replanted was only 2835 ha yielding 487,620 m³ of fuelwood. Even if the target in replanting is achieved the total production of fuelwood from rubber plantations cannot exceed 1.044 million m³.

The renewable nature of fuelwood plantations offers potential for the sustained output of wood for fuel. A number of measures have been taken by the Government of Sri Lanka to increase the supply of fuelwood. These include :—

- Establishment of fuelwood plantations
- Establishment of village wood lots through the proposed Community Forestry Project

- Encouraging people to plant trees in their homesteads and farmlands under the proposed Community Forestry Project.

- Compelling major users of fuelwood both in the State and Private sector to establish fuelwood plantations to meet their requirements.

- Tea estates to plant 10% of the total extent of the land with tree species — in ravines, valleys and in areas not suitable for tea.

Establishment of fuelwood plantations

The sites selected for planting of fuelwood species are forest lands that have been abandoned after shifting cultivation. In most cases, the areas selected for planting carry only a light growth of shrubs and grass with occasional standing trees. Clearing is therefore easy and can be carried out with simple hand tools. All seeds are produced in Sri Lanka and seedlings are raised in well managed nurseries. There are no serious problems of access to the plantation areas.

Planting takes place in the months of October, November and December. To obtain maximum early yields the spacing is usually 2 × 2 m. Fertilizer application is not normally undertaken at the time of planting. The plantations are weeded for two or three years after planting. The cost of establishment and maintenance for the first three years ranges from Rs. 4,000 to Rs. 8,000 per hectare. In 1980, 1250 ha of fuelwood plantations were established using mainly *Leucaena*, *Eucalyptus* and *Casuarina* species.

Harvesting and collection

Rubber wood

After felling, the trees are transported in the form of logs by lorries and tractors to dealers who in

turn cut them into smaller sizes using cross cut saws, which are subsequently split to about $6 \times 6 \times 6 \times 45$ cm sizes and sold as firewood in depots, or delivered at the door-step by handcarts.

Natural forest and plantations

Fuelwood harvesting from natural forests takes place only in the dry zone where the forests are ear-marked for development purposes. The preferred species are clear-felled, cross cut into small billets about 1 m in length and delivered to State Timber Corporation Depots where the consumers make their purchases. A fair quantity of fuelwood also comes from the departmental co-operative reforestation areas where the felling and conversion are carried out by the respective lessees and the fuelwood is offered to the State Timber Corporation or sold to the public and industries by the lessees themselves.

There are no harvestable fuelwood plantations in Sri Lanka and what is available is mostly in the form of thinnings from Eucalyptus plantations in the Montane Zone and its contribution to the total consumption is insignificant.

Rural areas

In rural areas firewood is self collected where one or more members of a household collect firewood for the use of the entire household. Firewood collection is often a social matter, few collectors particularly women going alone. Someone returning home from work may pick up some bits of firewood, but specific excursions to gather wood are rarely made alone.

Utilization Cooking

By far the most significant use of firewood in rural and urban households is to fuel the hearth. Cooking activities are carried out mostly on open hearths in the rural areas and on more efficient hearths in the urban areas. Most rural households use the traditional three-stone open hearth. The use of more efficient covered hearth is now getting popular in many households. Generally, the first fire is lit at dawn and burns continuously and is used four times a day for preparation of morning tea and breakfast, lunch, evening tea and dinner. A second separate fire is also lit during the preparation of lunch and dinner to expedite the cooking process.

Heating

Use of fuelwood for heating is confined only to the Up-Country areas where the average tempe-

rature is about 15°C . Fires are kept burning all day and into the evening to ward off the cold.

Manufacturing

Many industries and traditional manufacturing activities are entirely dependent upon fuelwood as their energy source. They include small local enterprises such as pottery, brick-making, blacksmithing and tile making, tobacco curing, bakeries and lime burning. Lime burning is very common along the southern and eastern coasts and tile manufacture in the southern and western provinces where wood fires have traditionally been used. The tea industry uses about 15% of the total fuelwood consumption for curing of tea.

Charcoal

Charcoal production and consumption are in its infancy in Sri Lanka. Commercial production of charcoal by the State Timber Corporation commenced only in 1979, in order to make the maximum utilization of surplus non-commercial wood generated from the massive land clearing operations under the Mahaweli Development Scheme. The State Timber Corporation produced 1200 tons of charcoal during the year 1980.

Charcoal represents an extremely viable option for certain sectors of the Sri Lankan economy. If charcoal were available tea drying, brick production, tobacco, steel, ceramics and other small industries that presently utilize fuelwood could utilize this resource.

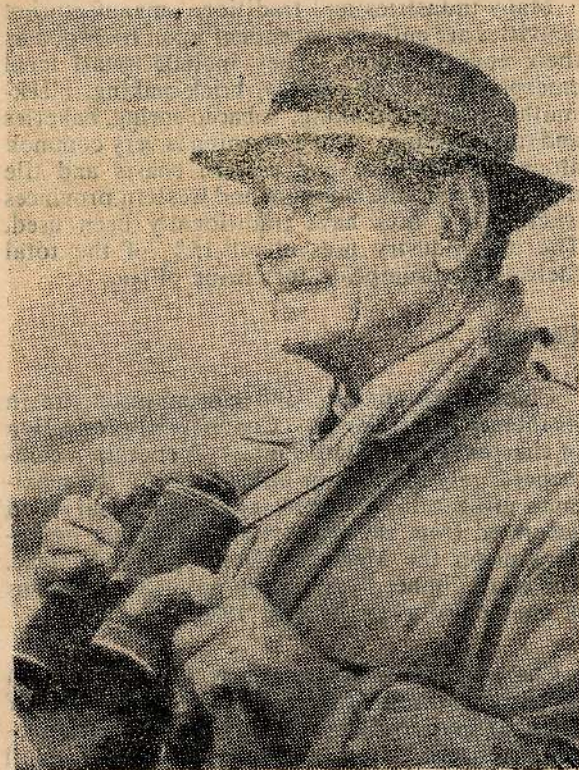
The chief factors that favour an increased production and consumption of charcoal in Sri Lanka are :—

1. Large scale land clearing operations under the Mahaweli Development Scheme — nearly 0.2 million ha of dry zone forests are being cleared under this scheme.
2. Low transport costs.
3. Labour intensive nature of charcoal production.

The State Timber Corporation is actively promoting the use of charcoal in households by public demonstrations and selling charcoal cookers at subsidised rates. The consumption of charcoal is growing fast and is believed that the use of charcoal will assume importance in the future in both the domestic and industrial sectors.

An Appreciation

Major W. W. A. Phillips, M.B.E., M.B.O.U., F.L.S.



Through the daily press and the Ceylon Bird Club Notes many readers would have heard of the recent death in England of Major Phillips, the great naturalist and grand old man of Sri Lankan ornithology. Major Phillips was for many years the mainstay and live wire of the Wildlife and Nature Protection Society, when he was its Secretary from 1929 to 1940, longer than any one in the history of the Society. He took over from George M. Crabb and worked with illustrious Presidents such as Dr. R. L. Spittel and A. C. Tutein-Nolthenius; he was President in 1942 and 1947. Those were rather lean years for the Society, and it needed strong personalities with an abiding interest in wildlife and nature to keep the little ship floating.

The period of Major Phillips' Secretaryship coincided with fundamental changes in the conservation outlook and the shift from conservation for hunting to conservation for its own sake as well as the emergence of photography as a substitute for shooting.

Bill Phillips was born in Nuneaton, Warwickshire in 1892, and educated at St. Peter's York. In 1911 he travelled to Ceylon where he joined his uncle David Kerr on Glasgow Estate and became S.D. on Bogawantalawa Estate. Later he worked at Annasigala, today part of St. George's Group, in Matugama.

At the outbreak of the 1st World war he joined the Ceylon Planters' Rifle Corps, went with a contingent to Egypt and was commissioned into the 24th Punjabi Regiment of the Indian Army in 1915. The Regiment took part in several battles in Mesopotamia and Phillips was taken prisoner on the fall of Kut-Al-Amara after a 6 month siege. He spent the next 2½ years as prisoner of war in Turkey. He used the time to read and for the study of Zoology especially birds and mammals. He was repatriated to England at the end of the war, rejoined the Regiment in India, resigned his commission and returned to Ceylon in 1920 to continue his planting career at Matugama where he remained till 1927.

During home leave in 1924 he worked at the British Museum and in January 1925 married Lilian Anderson (Paddy); the couple had 2 children—both born in Ceylon. Tragically his son Charles died as a result of a swimming accident in 1946. His wife 'Paddy' died in 1980. He leaves a daughter, Mrs. Eileen Mary Wynell-Mayow who lives in England.

From Matugama, Bill Phillips moved to Matale where he was Superintendent of Mousakande Group. At Mousakande he had excellent opportunities to explore and study the fauna of the then extensive patnas and the hill forests as well as to make numerous expeditions into the Northern Dry Zone which was then almost totally covered with jungle. During this time he was made a J.P.U.M. and took a deep interest in all aspects of life in Sri Lanka, the people as well as the fauna and flora. It was at Mousakande that he wrote and published (1935) the 'Manual of the Mammals of Ceylon', still the only standard work on the subject. He compiled many collections of scientific interest for both the British Museum and the Colombo Museum.

During the 2nd World war Major Phillips once again joined his Regiment and, seconded to Ceylon, organised the Coast Watching of the island, which included in particular the more remote and uninhabited parts such as the coast of Yala against surprise attacks from the Japanese.

After Mousakande he was Superintendent of Galapitakande (today part of Hindagala Group) Namunukula, and eventually took over Tonacombe

Group, Namunukula, from which he retired in 1956. Thereafter Major Phillips undertook a survey of the flora and fauna of the Maldives Islands for the British Museum, and 2 years later was asked by the British Government to return to the Maldives as a Liaison Officer with the RAF at the Gan Base, for which work he received the M.B.E. In 1969 Major Phillips and his wife settled at Aldwick Bay, Sussex, where he took a great interest in local affairs and natural history in all its aspects. He was Chairman and later President of the Bognor Regis Natural History Society, and an Hon. Warden of the Nature Conservation at Pagham Harbour and Kingly Vale. But he remained in close contact with Sri Lanka throughout.

Sri Lanka, its people, its students and scientists and especially all those interested in nature owe Major Phillips a great debt of gratitude for a lifetime's spare time work. He rendered extremely valuable service to the conservation movement and the preservation of wildlife. The enduring monument to his activities in these fields are his numerous articles on birds, on wildlife, on conservation, and his major works the 'Manual of the Mammals of Ceylon' (revised Ed. 1980), the 'Checklist of the Birds of Ceylon' (3rd Edition 1978) and the 4 — part popular 'Birds of Ceylon' (1949 — 1955) illustrated by Cicely Lushington. A glance at pages 109 and 110 of Ian Goonetilleke's 'Bibliography of Ceylon' Vol I, illuminates Bill Phillips' importance as a writer and researcher on Ceylon ornithological subjects. To 'Loris' alone he contributed over 60 articles. Another important work was his report on the Avifauna of the Maldives. He also contributed an Assessment of faunal changes in Sri Lanka to the Paul E. Peiris Commemoration Volume (1956) and published a continuing series of Scientific articles on the 'Nests and Eggs of Ceylon Birds'. In 1978 he contributed an important article entitled "The Avifauna of Sri Lanka" to the Centenary Volume of the Colombo Museum, which is yet to be published.

Bill Phillips was a true naturalist ; apart from his expertise on mammals and birds, he had a considerable knowledge of Orchids, Ferns, Butterflies and Moths. He wrote convincingly about wildlife and its conservation. In 1940 he compiled and published in 'Loris' a list of the more important animals, birds and reptiles of Ceylon, with Sinhalese and Tamil names. Many of his articles concern the distribution of mammals in Sri Lanka, and he was particularly knowledgeable about the lesser kinds such as Shrews, Mice, Rats and Squirrels. But I think I am not wrong in saying

that his main interest and love belonged to the birds, their lives, habits and migrations and systematics. The writer knew Bill Phillips when he was still working in Sri Lanka, but then lost touch with him. In 1970 contact by letter was established and this developed into a close association with regard to wildlife conservation and Ceylon ornithology. Major Phillips was the final arbiter on all questions of doubt which cropped up from time to time in the observations and notes of the Ceylon Bird Club, of which he was a founder member and long time Secretary/Chairman. He took a lively interest in the Club and its monthly notes until his death at the ripe age of 88, and his knowledge and understanding of Sri Lanka's avifauna was quite unmatched. One of Bill Phillips' endearing traits was his ready and generous willingness to share his knowledge freely with anybody and to advise and assist unselfishly with a genuine desire to be of help.

During the last decade the writer assisted Major Phillips in the publication in Sri Lanka of the 2nd and 3rd Revised Editions of the 'Checklist of the Birds of Ceylon' (1975 & 1978) and lately the Revised Edition of the 'Manual of the Mammals of Sri Lanka', on which Bill Phillips worked for many years modernising and up-dating the text and the nomenclature. He generously donated the profit from the sale of these books to the Wildlife and Nature Protection Society. He had the satisfaction of seeing Part I of the last work and expressed his joy and satisfaction about the accomplishment in the following terms :—

"A few days ago I was thrilled to receive by airmail the specimen copy of Part I of the 'Mammals', and I was even more thrilled, upon looking through it, to find how exceptionally nice, you as Editor and the Printers have produced the first Part. I think that it is all excellent. I was especially pleased to note the way the line-drawings or 'text figures' and the Plates have been reproduced, and also the cover which is an excellent choice."

This letter was written 14 days before Bill Phillips died. His memory will remain with his friends and the people of Sri Lanka as long as his writings endure. In particular the revised 'Manual of Mammals', an unique work, will retain a place of pride amongst the scientific literature of Sri Lanka.

Thilo W. Hoffmann

Colombo, 26th May, 1981.

Environmental problems could no longer be considered in isolation. The Society welcomes the formation of SACEP.

South Asia Co-operative Environment Programme

K. H. J. WIJAYADASA

The South Asia Co-operative Environment Programme, popularly known as SACEP, is an association of 10 South Asian countries — viz. Afghanistan, Bangladesh, Bhutan, Burma, India, Iran, Maldives, Nepal, Pakistan and Sri Lanka. SACEP is the outcome of the initiative taken by the Regional Office for Asia and Pacific of the United Nations Environment Programme (UNEP) based in Bangkok.

The principal objective of the new organisation is to promote and support the protection, management and enhancement of the environment, both natural and human, of the member countries individually, collectively and co-operatively. It is hoped that SACEP will be in a position to make a more meaningful contribution towards the judicious use of the resources of the environment and thereby help achieve the goals of development of the member countries such as removal of poverty, reduction of socio-economic disparity and enhancement of the quality of life of the people.

The launching of SACEP is an initiative of indisputable significance for the SACEP countries as well as for the world community. All the countries in the sub-region are confronted with the problems of rapidly growing populations. They also face the irreversible problem of a depletion of natural resources and the rapid degradation of the environment. It is also an indisputable fact that in order to meet the demands of a growing population we should not only sustain economic and social development, but also accelerate the pace of development. It is wellknown that in the development process, the environment — which is the life support system of society — can be impaired as well as enhanced. Therefore, SACEP will attempt to harmonise the relationships between environment and development, both at the national level as well as at the regional level.

It is true that the South Asian sub-region, stretching from the Himalayan range at one end

to the Indian Ocean at the other, displays a diversity of land forms, climates, soils, natural vegetation and human settlements. Amidst such diversity there is a great deal of similarity in ecological characteristics, the way of life and the problems of development common to the region which afforded a unique opportunity for a collaborative approach towards the protection and management of the environment. The 10 member countries were also mindful of the fact that there was a wealth of knowledge and expertise which could be shared for mutual benefit. Moreover being developing countries, all of them realised that solutions to the problems of the environment could emerge from the region itself rather than from the application of imported solutions from the industrialised world.

The establishment of SACEP had its beginning at the Inter-governmental Expert Group Meeting held in Bangalore, India, from the 10th to the 15th of March 1980. This meeting unanimously adopted that it would be mutually beneficial to establish a regional organisation of the 10 member countries, enjoying equal status, with its headquarters in Colombo. As decided at this meeting UNEP Bangkok once again took the initiative to convene a highlevel meeting of officials and Ministers in Colombo from the 18th to the 25th of February 1981. This meeting concluded in a cordial atmosphere and in a spirit of mutual self-help, culminating in the adoption of the Colombo declaration and the Articles of Association. The decision to establish the SACEP Secretariat in Colombo was reaffirmed and a *Protem* Director was appointed to get down to the task of establishing the Office without delay. The Sri Lanka Government's offer of host facilities such as office accommodation was accepted by the member countries with appreciation.

The institutional arrangements as contained in the Articles of Association comprised the Governing Council, the Consultative Committee, Subject Area Focal Points and the Secretariat. All members of SACEP are represented at the Governing Council at Ministerial level. It is the principal review and deliberative body of SACEP which

K. H. J. Wijayadasa, B.A. (Hons.) in Geography, is Additional Secretary, Ministry of Local Government, Housing and Construction and Chairman Central Environmental Authority.

will be responsible for determining policies and programmes. The Governing Council will meet once a year.

The Consultative Committee is the executive arm of SACEP. Its headquarters will be in Colombo and will be represented by all member governments through permanent representatives to be nominated by the respective governments. The Consultative Committee is expected to meet about once in three months and give guidelines to the Secretariat on the implementation of the different programmes and projects and also monitor the progress of the activities of SACEP.

The most significant innovative feature in the institutional framework of SACEP is the establishment of 15 subject area focal points with each country assuming responsibility for one or two such focal points. Some of the important focal points are Environmental Impact Assessment and Environment and Development — Sri Lanka; Conservation of montane ecosystems and watersheds — Pakistan; Wild-life conservation — Iran; Corals, mangroves, deltas and island ecosystems — Bangladesh; Environmental legislation, education and training — India, amongst others.

Each focal point is expected to co-ordinate all activities pertaining to the subject area assigned in its own country as well as with the related agencies in the other countries of the region with the full knowledge and concurrence of the Secretariat. Each focal point, while financing its own activities and disseminating information, will also endeavour to bring about close liaison with other countries to avoid duplication of effort. The success of this experiment will depend not only on the energy and enthusiasm of the focal point but also in the actual practice of the spirit of sharing each others experiences and of course in the very collaborative approach itself.

The Secretariat will consist of a Director and a modest number of other international officers appointed by the Governing Council from among the nominees of member governments as well as other supporting staff to be recruited from time to time. The Secretariat is expected to identify areas of critical concern, formulate programmes and projects and obtain the assistance of UNEP as well as other multi-lateral and bilateral donor agencies in the implementation. Each country is expected to make a voluntary annual contribution as determined by the respective governments.

The deliberations, both in Bangalore and Colombo, clearly showed that each country had made considerable progress in tackling the common problems of the environment in one way or another, but yet unknown to each other. Nepal, for instance, has to its credit a solar water heating device designed, manufactured and marketed in that country. Sri Lanka has made considerable headway in the design and manufacture of a wind-mill with a water pump. India has made great strides in research and development in several fields of renewable energy such as bio-gas, solar and wind energy. The installation of a water desalination plant based on solar energy in Pakistan evinced a great deal of interest. All these developments were bound by the common thread of appropriate technology, low costs and use of local materials as well as local skills. It was obvious that a regional arrangement of this nature could result in a sharing of the research effort, transfer of technology and the fostering of bilateral trade among these countries.

In conclusion it will be pertinent to mention that what SACEP has achieved is something unique. Where there was no organisation, no machinery for co-operation, the countries have decided to set-up the machinery for it. It is hoped that from this embryonic beginning — through the non-controversial subject of the environment, a stronger and a more viable United Nations of South Asia would emerge for further collaboration in the field of political, economic and social development.

EDITOR RETIRES

Mr. Noel de Costa who was Editor over the last ten years has retired. 'Parting' he writes, 'is such sweet sorrow, which is however greatly allayed by the hope that though Editors may come and go, LORIS will go on for ever.' With his taking over, LORIS received a new look, in that a colour photo came to adorn the front cover and later the back one too.

We appreciate the hard work put in by Mr. de Costa and his contribution to wildlife conservation in Sri Lanka.

Accelerated Mahaweli Ganga Development Programme

A thirty year programme has been telescoped to six years, taking on the simultaneous construction of five major dams. US AID commissioned TAMS of New York to undertake an Environment Impact Survey of the areas earmarked for accelerated development. Below are excerpts from that part of the report dealing with wildlife — Editor.

Introduction

The following quotations from the Environmental Assessment Report show that the TAMS team have given realistic thought to the needs of wildlife. The accompanying sketch maps illustrate the recommendations for permanent wildlife reserves in the Accelerated Mahaweli Project area. These recommendations are similar to proposals made by the Society at various times in the past and can be summarized as follows :—

In the North the existing Somawathie Sanctuary is to be made into a National Park and extended substantially towards the coast at Verugal, and in the West with a link to Kantalai. The new *Somawathie National Park* is the centre piece of a system of wildlife reserves in the Northern part of the Mahaweli Project and is of particular importance for the survival of the elephant. Along the main road from Habarana to Trincomalee, a new *Hurullu National Park* is to be created in hilly country. It will consist of two existing International Biosphere Reserves and the Naval Head Works Sanctuary.

More or less in the centre of the Mahaweli Development area lies *Wasgomuwa* which is to be made into a National Park with a small northern extension. This very old wildlife conservation area (presently a SNR) will be connected with Hurullu through the Sudukande Range, the Minneriya-Giritale Sanctuary and the Kaudulla Forest Reserve. West and south of Wasgomuwa the TAMS team have proposed a Conservation Park which would include the entire *Knuckles Range*, the main catchment area of the Amban Ganga. The Conservation Park is a new concept somewhat similar to the present Sanctuary. The land will be managed as a National Park but existing developments will be allowed to continue.

The Wasgomuwa National Park and the Somawathie National Park will be connected by the Mahaweli Ganga Conservation Park, a narrow

strip of land on both sides of the river. This completes the north-western wildlife conservation areas.

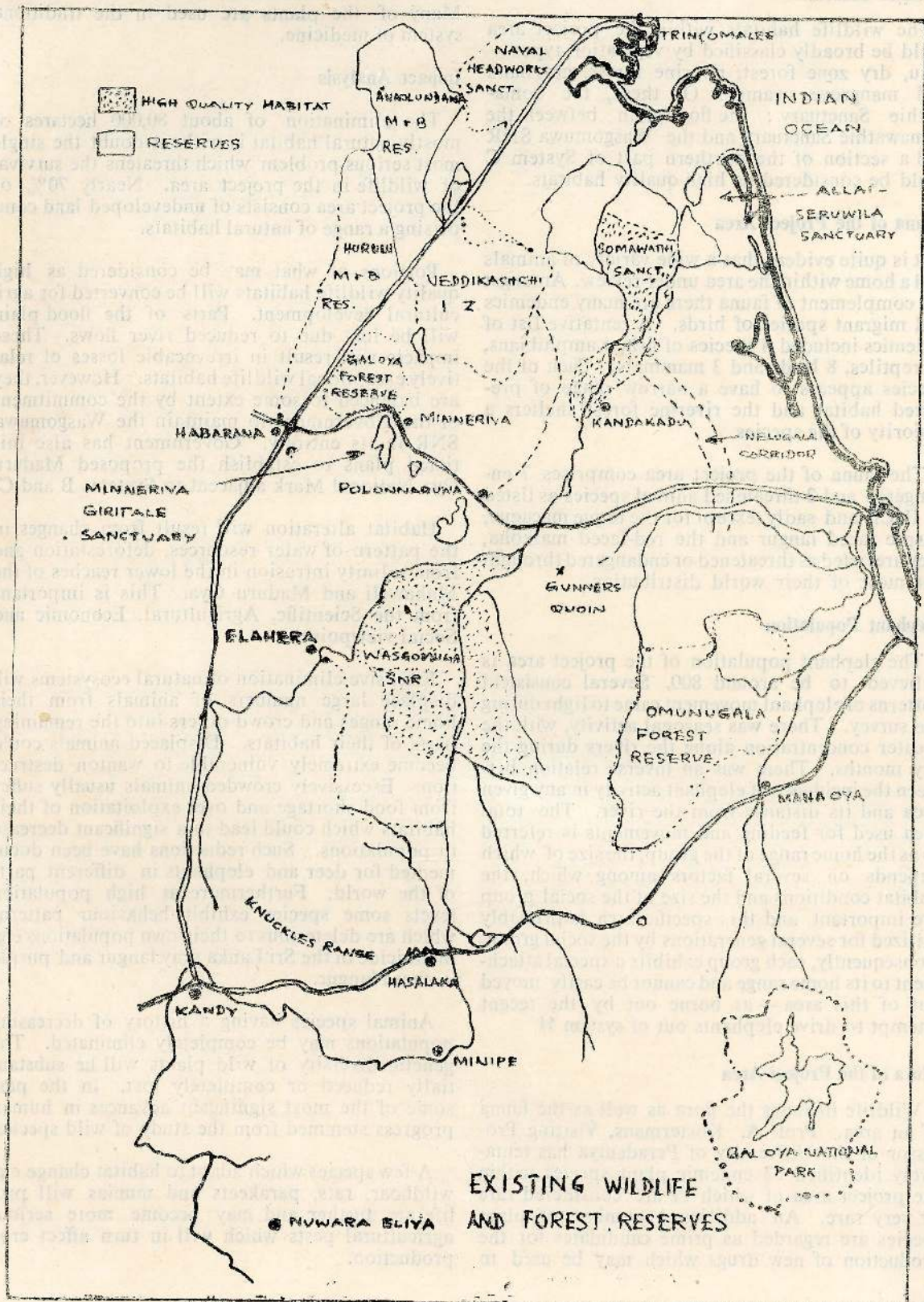
In the south-east of the Mahaweli Project there will be the new *Maduru Oya National Park*, greatly extended eastwards compared with the present proposal. This in turn will be connected with Gal Oya through a large Conservation Park south of the Bibile-Chenkaladi Road. Most of this is hilly country and existing forest reserves.

The link-up between *Gal Oya and Yala* is outside the study area, but is something that the Society must not forget and continue to press for most strongly.

If the TAMS recommendations for wildlife reserves are accepted and implemented, we can be well satisfied and consider the result as exemplary and a very positive development for wildlife conservation in Sri Lanka. The Society gives full support to the TAMS Report and presses for its implementation.

Extent

Within the accelerated Mahaweli Project area a total of 95,150 hectares is being considered for irrigated agriculture and of this, 80,800 hectares are largely undeveloped areas. The latter essentially consists of a variety of prime wild life habitats — a sizeable portion of which is included within the roughly 82,000 hectares of land proclaimed as wildlife reserves — through legislation passed over the last several decades. At present there are five wildlife reserves whose boundaries fall within the project area — these include the Veddikachchi Intermediate zone, Nelugala Corridor, Somawathie Sanctuary, Polonnaruwa Sanctuary and Seruwila — Allai Sanctuary. In addition there are five forest reserves. Lying outside the project area is the Wasgomuwa SNR — established in 1940.



Wildlife Habitats

The wildlife habitats within the project area could be broadly classified by vegetation types — villu, dry zone forest, riverine forest, grassland and mangrove swamps. Of these, the Somawathie Sanctuary; the floodplain between the Somawathie Sanctuary and the Wasgomuwa SNR and a section of the northern part of System C could be considered as high-quality habitats.

Fauna of the Project Area

It is quite evident that a wide variety of animals find a home within the area under review. Amongst the complement of fauna there are many endemics and migrant species of birds. A tentative list of endemics included 8 species of fish, 4 amphibians, 19 reptiles, 8 birds and 3 mammals. Each of the species appears to have a narrow range of preferred habitat and the riverine forest shelters a majority of the species.

The fauna of the project area comprises 7 endangered and 2 threatened animal species as listed by IUCN and sadly, except for the toque macaque, purple faced langur and the red-faced malkoha, they are listed as threatened or endangered throughout most of their world distribution.

Elephant Population

The elephant population of the project area is believed to be around 800. Several consistent patterns of elephant movement came to light during the survey. There was seasonal activity, with the greater concentration along the rivers during the dry months. There was an inverse relation between the incidence of elephant activity in any given area and its distance from the river. The total area used for feeding and movements is referred to as the home range of the group, the size of which depends on several factors among which, the habitat conditions and the size of the social group are important and this specific area is probably utilized for several generations by the social group. Consequently, each group exhibits a special attachment to its home range and cannot be easily moved out of this area — as borne out by the recent attempt to drive elephants out of system H.

Flora of the Project Area

Wildlife includes the flora as well as the fauna of an area. Prof. A. Kostermans, Visiting Professor of the University of Peradeniya has tentatively identified 53 endemic plant species within the project area of which 17 are considered rare or very rare. An additional number of plant species are regarded as prime candidates for the production of new drugs which may be used in

the treatment of cancer and other human maladies! Many of the plants are used in the traditional system of medicine.

Impact Analysis

The elimination of about 80,000 hectares of mostly natural habitat is without doubt the single most serious problem which threatens the survival of wildlife in the project area. Nearly 70% of the project area consists of undeveloped land comprising a range of natural habitats.

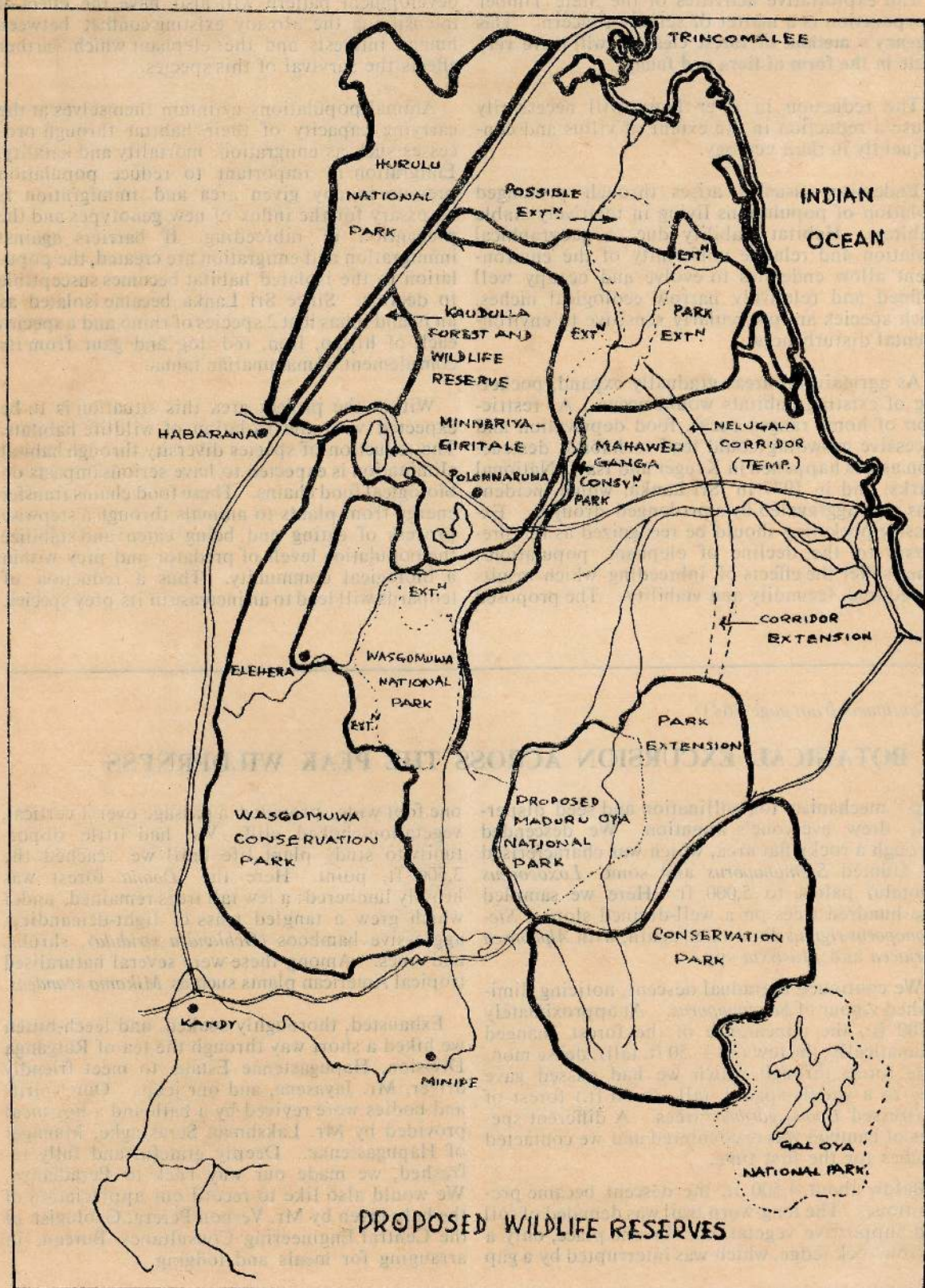
Portions of what may be considered as high quality wildlife habitats will be converted for agricultural development. Parts of the flood plain will be lost due to reduced river flows. These impacts will result in irrevocable losses of relatively exceptional wildlife habitats. However, they are balanced to some extent by the commitment of the Government to maintain the Wasgomuwa SNR in its entirety. Government has also initiated plans to establish the proposed Maduru Oya National Park adjacent to Systems B and C.

Habitat alteration will result from changes in the pattern of water resources, deforestation and from salinity intrusion in the lower reaches of the Mahaweli and Maduru Oya. This is important from the Scientific, Agricultural, Economic and Social viewpoints.

Extensive elimination of natural ecosystems will displace large numbers of animals from their home ranges and crowd others into the remaining parts of their habitats. Displaced animals could become extremely vulnerable to wanton destruction. Excessively crowded animals usually suffer from food shortage and over exploitation of their habitats which could lead to a significant decrease in populations. Such reductions have been documented for deer and elephants in different parts of the world. Furthermore at high population levels some species exhibit behaviour patterns which are deleterious to their own populations e.g. infanticide in the Sri Lanka gray langur and purple — faced langur.

Animal species having a history of decreasing populations may be completely eliminated. The genetic diversity of wild plants will be substantially reduced or completely lost. In the past some of the most significant advances in human progress stemmed from the study of wild species.

A few species which adapt to habitat change e.g. wildboar, rats, parakeets and munias will proliferate further and may become more serious agricultural pests which will in turn affect crop production.



The exploitative activities of the State Timber Corporation is a matter of serious concern. **This Agency's method of forest clearing will leave very little in the form of flora and fauna.**

The reduction in river flows will necessarily cause a reduction in the extent of villus and consequently in their ecology.

Endemism usually arises through prolonged isolation of populations living in relatively stable habitats. Habitat stability due to geographical isolation and relative uniformity of the environment allow endemics to evolve and occupy well defined and relatively narrow ecological niches. Such species are particularly sensitive to environmental disturbances.

As agricultural areas gradually expand, pocketing of existing habitats would occur. As restriction of home ranges occur, food deprivation and excessive crowding could lead to habitat destruction as has happened in Kruger and Isavo National Parks, and in 1977 in Sri Lanka, which incident was also aggravated by a prolonged drought. Excessive pocketing should be recognized as the precursor to the decline of elephant populations. They suffer the effects of inbreeding which results in reduced fecundity and viability. The proposed

development pattern will also have the effect of intensifying the already existing conflict between human interests and the elephant which further effects the survival of this species.

Animal populations maintain themselves at the carrying capacity of their habitat through processes such as emigration, mortality and natality. Emigration is important to reduce population pressure in any given area and immigration is necessary for the influx of new genotypes and the prevention of inbreeding. If barriers against immigration and emigration are created, the population in the isolated habitat becomes susceptible to decline. Since Sri Lanka became isolated as an island it has lost 2 species of rhino and a species each of hippo, lion, red dog and gaur from its complement of mammalian fauna.

Within the project area this situation is to be expected with the isolation of wildlife habitats. The reduction of species diversity through habitat elimination is expected to have serious impacts on biological food chains. These food chains transfer energy from plants to animals through a stepwise process of eating and being eaten and stabilize the population levels of predator and prey within a biological community. Thus a reduction of leopards will lead to an increase in its prey species.

(Continued from page 264)

A BOTANICAL EXCURSION ACROSS THE PEAK WILDERNESS —

cup" mechanism for pollination and seed dispersal, drew everyone's attention. We descended through a rocky flat area, which was characterised by stunted *Stemonoporus* and some *Loxococcus* (Dotalu) palms, to 5,000 ft. Here we sampled one hundred trees on a well-drained slope. *Stemonoporus rigidus* dominated again, with *Alphonsea coriacea* and *Mastixia* spp.

We continued a gradual descent, noticing diminished vigour of *Stemonoporus*. At approximately 4,700 ft., the appearance of the forest changed dramatically, the low (30 — 50 ft. tall), dense montane forest through which we had passed gave way to a widely-spaced, tall (> 70 ft.) forest of buttressed *Doona Gardneri* trees. A different species of bamboo was encountered and we contacted leeches for the first time.

Below about 4,500 ft. the descent became precipitous. The long-worn trail was denuded of soil and supportive vegetation. In one place, only a narrow rock ledge, which was interrupted by a gap

one foot wide, provided a passage over a vertical, vegetation-choked cliff. We had little opportunity to study plant life until we reached the 3,500 ft. point. Here the *Doona* forest was heavily lumbered; a few tall trees remained, under which grew a tangled mass of light-demanding, aggressive bamboos (*Ochlandra stridula*), shrubs, and vines. Among these were several naturalised tropical American plants such as *Mikania scandens*.

Exhausted, thoroughly soaked, and leech-bitten we hiked a short way through the tea of Ratganga Division, Hapugastenne Estate, to meet friendly driver, Mr. Jayasena, and our jeep. Our spirits and bodies were revived by a bath and a hot meal provided by Mr. Lakshman Serasinghe, Manager of Hapugastenne. Deeply grateful and fully refreshed, we made our way back to Peradeniya. We would also like to record our appreciation of the help given by Mr. Vernon Perera, Geologist of the Central Engineering Consultancy Bureau, in arranging for meals and lodging.

To Capchur a Tiger...

The Smithsonian Institute, working in the Royal Chitwan National Park, Nepal, has been tracking tigers through radio transmitters carried by the tigers, in order to study their territorial patterns.

JOHN BANKS

The Royal Chitwan National Park in the Terai of Nepal carries a population of about 40 tigers, some 300 Great Indian One Horned Rhinoceroses, besides Leopards, Spotted deer, Hog deer and Sloth bear. It is also the location of a breeding station for Gharial — a long snouted fish eating crocodile that is on the endangered list. The wild eggs are collected carefully and hatched; the young are reared for 2 — 3 years and then released into the rivers in an attempt to increase the wild population of this rare crocodilian. My wife and I had received an invitation to visit the Gharial breeding station from Hemanta Mishra, a Senior Government Official, and decided to reach the Station at the Park Headquarters, Sauraha, via Tiger Tops Jungle Lodge, in April 1981.

Tiger Tops Jungle Lodge is a private operation located in the western half of the Royal Chitwan National Park. It is a small Lodge of 20 rooms and visitors are taken on elephants to view game or are escorted, on foot, by trained naturalists if they wish to go bird watching or just stroll in the forests. Since much of the park area consists of tall elephant grass, riverine forest or Sal forest, and both tigers and leopards are retiring and secretive animals by nature, visitors very seldom encounter these animals when riding elephants or walking. Therefore, Tiger Tops Jungle Lodge has established 'hides' overlooking baiting sites so that when a tiger or leopard goes to the bait, visitors can be taken quietly, on foot, to view the animals from the blind with the aid of a spotlight.

For some years now, the Smithsonian Institute has been undertaking a study of the Tigers in the Royal Chitwan National Park and it is a basic requirement of that study, that certain tigers should be fitted with collars containing radio transmitters so that their movements can be recorded over a period of time. In this way it has been possible to map out the territorial behaviour of male and female tigers and, today, the Park authorities have a very fair idea of the territories claimed by every resident tiger. As tigers breed well in the Park most of the immature youngsters must move out of the Park to establish their territories elsewhere

but, from time to time, male tigers, who have yet to establish a territory, move about in the Park. These transient males are sometimes 'collared' so that their movements can be monitored and the tiger we had seen at the blind on our first night at Tiger Tops Jungle Lodge, was one such collared transient. However, his transmitter was not working and the National Park and Wildlife Conservation Authorities considered it necessary to change the collar and this would mean tranquillising the animal by means of a dart fired from a capchur gun. The darting of a tiger is a fairly complicated operation and required considerable preparation. It meant that the tiger had to be encouraged to remain in a certain area and this was achieved with the aid of Tiger Tops Jungle Lodge who supplied baits on which the tiger could easily feed, and their Shikaris kept track of the tiger's movements. In the meantime, the personnel and elephants required for the operation were moved from Park Headquarters at Sauraha to the area of operation, and a camp was set up.

The method of driving a tiger within range of a gun — in this case a capchur gun — remains the same as it has always been. Once the tiger has been located with reasonable certainty, the field of fire is selected, the person with the gun is placed in a convenient tree and using his tree as the apex of a 'V' two white cloth barriers, about 3 ft. high are laid out to form a wedge up which the tiger is driven. The gap at the open end of the 'V' is then closed by a line of elephants which beat in a line towards the position of the gun. On an earlier occasion, the largest tiger in the Chitwan National Park known as 105 was darted in this manner. After the dart struck home, and the drug was automatically injected, the tiger wandered off into thick grass while being slowly overcome by the drug. It was some time before the tranquillised tiger could be tracked and it was found that he had collapsed with his nose in a puddle of water — and had drowned. Therefore, to avoid a recurrence of that tragic death, a circular enclosure of cloth is now placed around the apex of the 'V' so that any darted animal is confined to a limited area and can be quickly dealt with after the drugs have taken effect.

John Banks, a keen ornithologist, had been a member of the General Committee for a number of years.

My wife and I were invited to participate in the Tiger Capture operation. During the next 3 days a total of 5 drives were undertaken. Of these 3 were a total failure because the tiger had moved out of the area before the cloth enclosure was set up, and, on one such occasion, the tiger was actually seen moving away. However, it was soon discovered that the young male with the useless collar, was consorting with Chuchie, a female, also wearing a collar, which was transmitting strong signals. It therefore became easy to locate the young male so long as he remained with Chuchie. However, it posed a problem in that two tigers wearing collars would now be driven past the capchur gun and before it could be fired, the identity of the target would first have to be established without doubt — no easy matter in tall elephant grass or thick scrub. If the two animals appeared together the relative sizes would be helpful because the male was a larger animal, but this was unlikely to happen and there was only one gun and one dart available. On the second day of operations, Chuchie was located and a drive was prepared. The 4 Government elephants, and personnel, had now been reinforced by 4 elephants and personnel on loan from Tiger Tops Jungle Lodge (who always work very closely with National Park authorities) and very soon all was ready for the drive to begin. I was perched in a tree located just outside the holding area beyond the 'V' down which the tigers would now be driven. The drive commenced with the elephants rumbling (they fear tiger), men shouting and, occasionally, a loud trumpet from one of the beating elephants. Not long afterwards a tiger appeared trotting through 5 ft high grass and a gun is raised, but lowered, because the animal was thought to be Chuchie. She came through to the end of the enclosure then wandered back and forth, growling, while trying to find a way out. Then there was a crashing through a patch of taller grass of an animal moving at speed and suddenly the large male sprang into sight for a second, going at full speed, towards the end of the enclosure. It failed to stop him — he was through the cloth and away into the sea of grass beyond. He had come through the apex of the 'V' too fast for the capchur gun to be aimed and fired. By now the elephants had arrived and four of them were sent to flush Chuchie from a patch of long grass both to check her identity and also, to drive her clear so that the men could gather up the cloth again.

There followed an exciting 5 minutes while Chuchie stood her ground snarling and threatening the elephants while they in turn put on a demonstration of trumpeting and aggression to the accompaniment of yells from those on their backs. It is not unknown for tigers, so confronted by elephants, to be extremely aggressive and they

have been known to spring onto an elephant's head and claw its face and ears. Therefore elephants are frightened of tigers and this applies in particular to an elephant that has suffered the terror of a tiger on its head. Once Chuchie had been driven off, we packed up for the day and returned to Tiger Tops Jungle Lodge to plan operations for the following day.

Next morning it was established that Chuchie and, presumably, her male consort, had moved and were resting about one mile away from the previous area of operations. They had, in fact, moved out of the grassland into forest cover. After a call at the Wildlife Department's camp, to mix the drugs and load the dart, we moved off on elephants to attempt capture of the young male. It was not difficult to pin-point the location of the tigers through the signals from Chuchie's transmitter and the beat cloth was set up in the usual way although, on this occasion, it was in a forested area. Those of us who were permitted to perch in trees were placed there, from elephant back, before the elephants took up their position for a drive through the 'V' formed by two lengths of cloth. The tree in which I was sitting was in the middle of the enclosure beyond the gun position and I was well placed to see the tigers when they came.

Before long, the line of elephants started their beat which was not easy, having regard to the overhead tangle of low branches and hanging creepers, which either had to be torn away by the elephant or cut by the Mahout. However, the clamour of the drive approached and before long we heard the sound of a heavy animal trotting over dried leaves and Chuchie appeared moving in a fairly leisurely manner. She passed under the tree containing Hemanta Mishra and the capchur gun and he was able to identify her without difficulty. She then passed under my tree — a mere 10ft below me — and disappeared into the scrub beyond where she was stopped by the beat cloth. It was not long before the male tiger made his appearance but he must have seen someone in a tree, gave a growl, and moved swiftly back towards the elephants. However, he was soon turned back and was just coming into range of the capchur gun when fate took a hand. There was a tremendous crashing and upheaval in the undergrowth and a large female Greater Indian One Horned Rhinoceros, and her large calf, burst upon the scene snorting with fear and fury. She frightened off the male tiger, who turned once again towards the beating elephants, and rushed on into the enclosure where, for a while the Rhino and Chuchie chased each other in circles with

(Continued on page 287)

Quiz (New Series) No. 1

Compiled By S. M. S. FAROOK

Questions

1. Which is the largest and most powerful mammal in Sri Lanka?
2. Which is the smallest mammal in Sri Lanka?
3. What are hoofed animals?
4. Which Sri Lanka mammal is devoid of teeth?
5. What is a hornet?
6. What happens to the drone (male bee) after successful mating with the queen?
7. Can elephants swim in deep water?
8. Owls, Frogmouths, Nighthawks have one thing in common what could this be?
9. Which species of Sri Lanka monkey eats birds and bird eggs?
10. Name the Sri Lanka bird which sleeps while hanging upside down?
11. What do bears eat?
12. How many species of wildcat do we have?
13. Can a Cat see in total darkness?
14. Which one of the following is more suited to be a "devil bird" ?
(1) Honey-Buzzard (2) Crested Hawk Eagle
(3) Forest-Eagle Owl (4) Brown Wood Owl
15. During the breeding season the male Bustard Quail is responsible for brooding the eggs and looking after the young. What role does the female play?
16. People wrongly use the word 'Iguana' for one of our reptiles. Which one is it?
17. The Arrenga or Sri Lanka Whistling Thrush is an uncommon endemic bird. Name two areas where this bird could be seen?
18. Crematogaster is a species of brown-black tree ant building large nests of clay, soil, pulp and dung. Which bird gets associated with this and for what purpose?
19. In which bird species is the female imprisoned in its nest hole until the eggs are hatched?
20. What are the other names for the pole cat?

— Answers on page 301

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BELGIUM

Deteriorating Environmental Standards in Asian Cities

A deeply ecological way of thinking and awareness of environmental processes seem to be present in the country when one scans newspapers, magazines and governmental decrees.

MARTIN SOMMER

One area that receives little attention is the human habitat within urbanized areas — a sphere of highly sophisticated environmental interactions with intensive human interference, which presently affects at least 20% of Sri Lanka's population. It is this aspect which shall be discussed here, in the light of ever increasing urbanization processes which have taken place in western countries and have caused severe management and planning problems in a number of cities.

Physical Environment

Colombo, as many other capitals in Asian countries, represents the highest concentration of business, industrial and residential activities of the island. Colombo and its suburbs are densely populated with over 2000 persons to the square mile. The city itself is built on low lying swampy land, interspersed with ridges and lagoons. Colombo in this respect is comparable to other cities like Calcutta, Jakarta or Phnom Penh where the populations suffered from many diseases and where the spatial growth of the city was limited by waterbodies, marshland and the sea.

But this location produced also a number of environmental advantages such as a natural drainage pattern, an originally dense vegetation cover providing a variety of natural recreation spots for the inhabitants, and an excellent source of fresh air from the sea.

However, the seasonal floods caused by the monsoonal rains and the diseases could be overcome by stabilizing banks of rivers and channels, and by preventive campaigns to curb the epidemics. Today land in the city and the suburbs is of prime value and the marshes are being reclaimed.

Condensation of Activities

The foundation of many coastal cities in former English or Dutch colonies goes back to the exis-

tence of a natural harbour as an important prerequisite for a successful trade between the colony and the mother-land. The transport of goods was predominantly by either railway (on the national level) or shipment (on the international level). Motor traffic played a subordinate role, and therefore most of the available space of the cities could be used for either commercial or residential buildings which, at that time, reached three to four stories and were scattered between greenbelts and small forests. A population of less than a fifth of that of 1980, with a natural increase of around 1.5% yearly a hundred years ago caused little pressure on the available land resources for urban settlement. Most of the labour force was required up-country in the plantation sector, so that migration was negligible and a commuter phenomenon was non-existent.

More recent trends however increased the pressure on all the available resources not only within the cities, but also in the suburbs and along the main traffic routes of the country. Under what is called 'Urbanization', a series of condensing activities with a highly centre-oriented trend could be observed. In addition to the traditional commercial sector in Colombo, more and more business activities arose in the city, e.g. banking, development of government administration, tourism and other services. Little industrialization has taken place, but this sector is progressively increasing at present. All these activities not only require more office space within town, but also stimulate the whole transport system to concentrate on accessibility of the centre. In addition residential requirements spread into the suburbs, and a city growth in a horizontal dimension continued up to the point where a certain maximum of the built-up area was reached.

The inner parts of the cities, the so-called Central Business Districts (CBD : in Colombo Fort and Pettah) urbanized even faster ; because their horizontal growth was already limited by surrounding residential areas, they had to expand in a third dimension, and finally the spatial growth appeared as a sky-line, dominating the capital.

Martin Sommer of the Department of Geography, University of Zurich, is attached to the Sri Lanka/Swiss Satellite imagery interpretation project.

Through this concentration of activities and the accompanying employment opportunities, an increasing number of people are stimulated to settle down near the capital to reach the working place within reasonable time and cost. The residential concentration depends on the cost of travel and the available public transport facilities.

Environmental Impact of Urbanization

The condensation of the built-up area caused a loss of open spaces with vegetation cover, and reduced at the same time, at least in highly concentrated areas, the natural ventilation and the inflow of sunlight which is particularly important during the wet season in order to dry up the environment and to prevent wall-decay. The reduced vegetation cover resulted in an adversely affected regeneration capacity of the cities' polluted air.

(facilitating vehicle imports, improving the road-infrastructure), the spatial pressure on the urban environment, combined with multiplied exhausts of cars and noise volume was rapidly increasing (see Fig. 1). Waste disposal of industrial processing as well as the growing immigration of rural low-income families which resulted in large scale squatter settlements on the remaining green-belts along channels and rivers, the city's water courses turned into sewers and waste water outlets. These primary effects are well known, but not so the possible side effects which will turn urban living unwholesome and probably will cause extensive transformation costs to the complex urban ecosystem.

Assuming a further unlimited growth of centralized functions with their related transport requirements, a first consequence will be the deteriorating

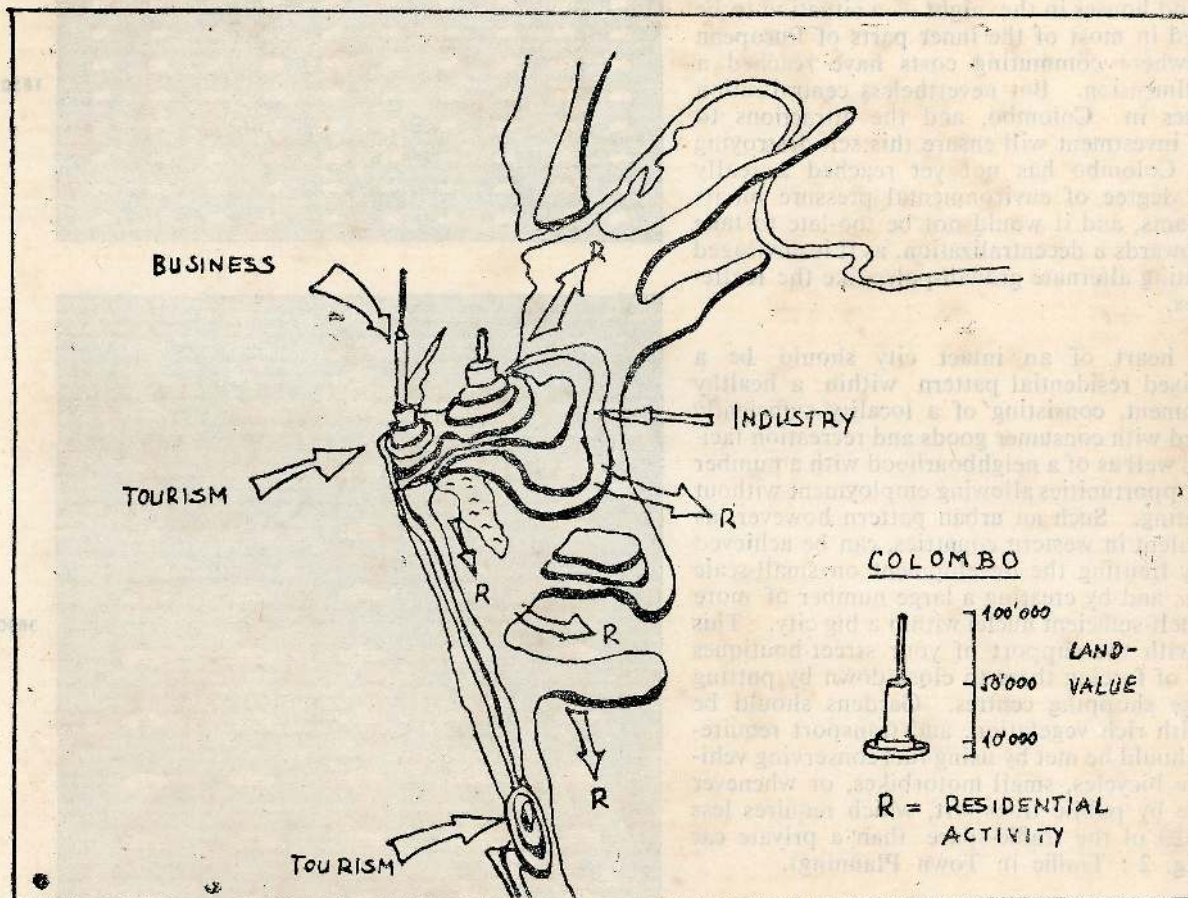


Fig. 1. Functional pressure on the CBD, and resulting residential emigration.

Some very recent examples show that road-widening also reduced the share of garden space and the felled trees were not replaced. Through an emphasis given to private automobiles

standard for residential living which results in an emigration of high income families into the suburbs or even out of the urban area. The environmentally unattractive wards will then be taken over by

lower income groups, and the physical loss for the municipality is a double one: firstly the tax-income is reduced, and secondly the population density with its demand for an improved infra-structural supply is multiplied. A social disintegration results, based on a squatting type of structure, because the land values are shooting up due to the high demand of the capital intensive activities for inner city wards (see also Fig. 1). Multi-storied buildings arise side by side slum-settlements, as the government still considers these settlements as temporary, and little attempt is being made to improve their environmental standards by supplying water and providing drainage and waste disposal.

Conclusions

These events will bring about a city with an active business life at day-time and with empty roads and houses in the night — a situation to be observed in most of the inner parts of European cities, where commuting costs have reached a dizzy dimension. But nevertheless centralization continues in Colombo, and the attractions to foreign investment will ensure this self-destroying trend. Colombo has not yet reached a really serious degree of environmental pressure on its inhabitants, and it would not be too-late to take steps towards a decentralization, as it is envisaged by creating alternate growth-poles like the Kotte-complex.

The heart of an intact city should be a well-mixed residential pattern within a healthy environment, consisting of a locality sufficiently supplied with consumer goods and recreation facilities as well as of a neighbourhood with a number of job-opportunities allowing employment without commuting. Such an urban pattern however, as is prevalent in western countries, can be achieved only by limiting the development on small-scale projects, and by creating a large number of more or less self-sufficient nuclei within a big city. This starts with the support of your street-boutiques instead of forcing them to close down by putting up large shopping centres. Gardens should be kept with rich vegetation, and transport requirements should be met by using fuel conserving vehicles like bicycles, small motorbikes, or whenever possible by public transport, which requires less than 1/20 of the traffic-space than a private car (see Fig. 2 : Traffic in Town Planning).

Large scale development projects for business and service near the CBD should be deferred in favour of a creation of new transport junctions in already existing sub-centres like Borella, Kirullapone, Narahenpita, Nugegoda etc. The putting up of big shopping centres attracts the people to shop

with vehicles, at one central place, causing traffic congestion and air pollution, and requiring large amounts of infrastructural costs (multistoried centres, parking space etc). Road widening projects should be carefully reconsidered, and should be implemented only when unavoidable for the functioning of public transport. Sidewalks however should be included, and the paved green space should be compensated adequately.

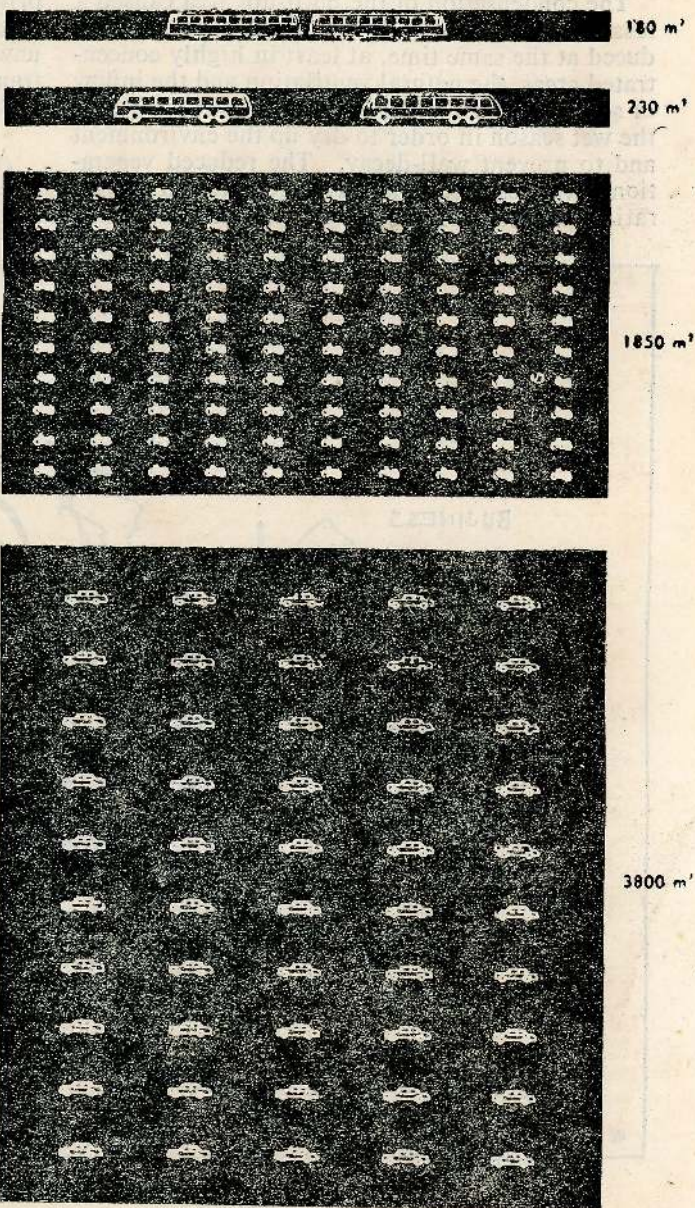


Fig. 2. Transport in Town Planning, Source: Hamburger Hochbahn.



Notes from The Ceylon Bird Club 1980

THILO W. HOFFMANN

General

Throughout the year members have readily contributed to the monthly notes and there have been some interesting observations as well as discussions on ornithological subjects concerning Sri Lanka.

Habitats

The pressure on bird habitats continues unabated and the Mahaweli Ganga Project will seriously reduce the available living space for many of our forest dwelling species, including some endemic and endangered ones. Together with the WNPS the Club has, therefore, made its views and recommendations known to the authorities. The Report on the Environmental Assessment of the Accelerated Mahaweli Development Programme, funded by USAID, is a good basis for the protection and conservation of wildlife and bird habitats and deserves our full support; it is hoped that Government and the Mahaweli Authority will accept and implement the recommendations without major modifications.

Mixed Forests

Forest plantations continue to be extended with vigour, and re-forestation is at long last taking place in many degraded and denuded areas, especially catchments in the hills. Unfortunately these replantings are mostly monocultures of exotic species such as Eucalypts and Pinus, which are practically sterile in regard to wildlife and birds. Anyone who wanders through a Teak or Eucalyptus or Pinus or Cypress forest, whether in the Low-country or in the hills, will immediately notice the almost total absence of birds and other wildlife in these artificial and monotonous forests. It is, therefore, necessary to press for the establishment of mixed plantation forests, and the greater use of indigenous species of trees. Unsatisfactory experiences with monoculture forests have been made in other parts of the world, and it is really unnecessary that these should be repeated here.

Tourism

Wader and migrant habitats along the coasts and lagoons are also under increasing pressure from drainage and irrigation schemes, settlements, and now also touristic development. It is very necessary that these special and highly important habitats, especially mud-flats, reefs, lagoons, mangroves should be totally and completely protected

wherever they exist in Sri Lanka. No one should be allowed to cut mangroves, fill in low-lying land along the coast and estuaries, break coral, remove sand, drain coastal swamps, because there are very few such systems in Sri Lanka anyway. It is hoped that tourist and other authorities will consider these important aspects and come up with legally binding and enforceable zoning laws.

Amongst the ever increasing stream of foreign tourists which flock to beautiful Sri Lanka, there are also more and more regular groups of bird watchers and ornithologists. The Club welcomes and assists these special interest visitors.

From rare to regular

Migrants were again plentiful during both seasons and a number of relatively rare species were noted (see month by month account below). Two birds which so far have been treated as rare winter visitors can now be regarded as fairly common and regular migrants. These are the Spotted Redshank (*Tringa erythropus*) and particularly the Green Sandpiper (*Tringa ochropus*). The latter is now regularly observed during winter at various places throughout the island.

The Ringed Plover (*Charadrius hiaticula*) is another rare species of migrant which is now noted more often.

From time to time in recent years American migrant species have been reported, such as Wilson's Phalarope (in large numbers!) and the Solitary Sandpiper. These identifications have proved to be wrong, e.g. Wilson's Phalaropes turned out to be swimming Marsh Sandpipers. It is most unlikely that American winter migrants which have never been noted anywhere else in Asia would suddenly turn up in far away Sri Lanka, and Major Phillips wrote in January 1980: "I still feel that it would be a most remarkable coincidence were two species of purely North American birds to turn up in Sri Lanka, just when a party of American Bird-watchers were there to identify them! Both species, Wilson's Phalarope and the Solitary Sandpiper have never before been recorded in the Indian Region and it is most unlikely that they ever will be. And by another remarkable coincidence both the species that the Americans claim to have identified are so similar, in the field,

to other species that it is *most* difficult to distinguish them, the one for the other, in the field ! Personally I think that there has been some ' wishful thinking '.

Raptors

Raptors continue to be seen in reasonable numbers and there were more migrant Harriers this year than in the recent past. In Mannar a roosting place of Harriers was discovered with more than 50 birds. There has been no report of the Peregrine which used to be regularly seen in Colombo and elsewhere. But the rare Osprey was noted at Nuwara Eliya in February. The Black Eagle is rarely seen but is present in fair numbers, in the more remote forested areas. The Booted Eagle is more often seen than in the past, one at Madhu and another at Jaffna during the year under report.

From race to " Good " species

Member Priyantha Wijesinghe has pointed out that many respected authors consider *Sterna saundersi* a " good " species, distinct from *S. albifrons* and not a race of the latter. The Club has accepted this position and will treat *S. saundersi* as a full resident (breeding) species with *Sterna albifrons sinensis* as the local breeding race of *S. albifrons* (see Club Notes for April and July).

Similarly, member Priyantha Wijesinghe drew attention to the fact that several Club members had reported sightings in the Wet Zone of both races of *Dicrurus paradiseus*, namely *Dicrurus paradiseus ceylonicus* and *Dicrurus paradiseus lophorhynchus*, the Racket-tailed Drongo and the Crested Drongo. There has in the meantime been further evidence that both co-exist in the heart of the Wet Zone jungles, i.e. at Kitulgala and elsewhere ; there appears to be no evidence of hybridization, although this cannot be definitely determined until specimens have been collected and carefully examined. Thus there is a strong possibility that the 2 forms may be separate, i.e. " good " species and not sub-species as hitherto assumed.

As usual the more important observations by members during the year are recorded in chronological order below.

Attention Bird Watchers !

The Ceylon Bird Club has a limited number of sets of its monthly Club notes for the years 1972 to 1980. These contain reports on sightings and other observations on birds made in Sri Lanka during this period and are available for sale at Rs. 30/- per set.

January

Two foreign visitors identified a Caspian Plover (*Charadrius asiaticus*) at Bundala ; this is the

third record of this species in Sri Lanka. The Ceylon Warbler, an endemic species, is reasonably common in Nilu undergrowth at Horton Plains. An Indian Reef Heron was observed at the Beira Lake outlet in Colombo from January onwards for several months. One Black-capped Purple Kingfisher, a rare straggler to Sri Lanka, reported from Wilpattu. At Kalametiya 2 Glossy Ibis were noted, and member Sunil Wickremasuriya recapitulates his own sightings of this rare resident species at this place : 4 birds in January 1971, 2 in September 1974, 2 in June 1978, 2 in September 1978, and 2 in January 1980. The Club urges again that this lagoon and the surrounding land be declared a sanctuary or a nature reserve under the Fauna and Flora Protection Ordinance.

February

An Indian White Wagtail at Kantalai. A night roosting place for Harriers reported from Mannar, 53 birds being counted, all Marsh and Montague's. A Common Buzzard, 2 Ringed Plover and 1 Shoveller also reported from Mannar. 2 Indian Reef Heron and 1 Sandwich Tern at Talaimannar. A member reports Black-headed Oriole feeding a young Pied Crested Cuckoo. Desert Buzzard at Minneriya. Pied Harrier near Colombo. Common Terns continue to be regularly seen at Colombo during winter, and for the first time a Sandwich Tern was noted amongst the Large Crested Terns on the rocks at Galle Buck.

March

A nest of the Broad-billed Roller (*Eurystomus orientalis*) discovered in a dead tree at Diyagala, above Carney (Ratnapura) ; detailed observations by member Dr. T. S. U. de Zylva. In the same general area 3 flocks of at least a dozen birds each of the endemic Pied Ground Thrush (*Zoothera wardii*).

April

Nest of the endemic Spotted-winged Thrush (*Zoothera spiloptera*) discovered at Halgran Oya and described by Dr. T. S. U. de Zylva. 1 Northern Orange-headed Ground Thrush at Wilpattu ; also a Red-winged Crested Cuckoo. Member Munidasa obtained the young of an Indian Cuckoo which was collected at Elahera where it appears to have been raised by Black-headed Orioles.

May

Nest of Blue Magpies in Hakgala Gardens. Nest of the Long-tailed Nightjar at Madhu in the wall of a well with a single nestling. Breeding of Common Terns observed by the writer of these

(Continued on page 292)

The sounds produced by birds are of two general types — vocal and non-vocal. Recording such sounds have opened new vistas to the ornithologist.

Recording Birds Sounds

DOUGLAS RANASINGHE

The vocal sounds of birds are classified as songs and calls. It is difficult to draw the line between the two. According to Dr. W. H. Thorpe, a song is a convenient term to use for a series of notes, generally of more than one type uttered in succession and forming a discernible pattern. Songs are generally more complex than calls and they are usually attributed to the male only, controlled by the sex hormones produced during the breeding season.

Calls are usually short and simple and are made by individuals of both sexes and all ages and they are used in situations other than breeding.

The non-vocal sounds of birds may be produced deliberately or accidentally. Some groups such as storks, pelicans and egrets are nearly or entirely voiceless. The storks compensate by making loud clattering noises with their bills. Though the woodpecker has quite a good voice it also produces a mechanical sound by drumming or tapping a tree with its bill. The rustling of wings is another mechanical sound used in courtship. The peacock rattles its quills when it has spread its train and a bleating noise is made by the air going through the tail feathers of snipe in courtship flight.

In very recent times recording bird sounds have interested bird watchers and amateur ornithologists in Sri Lanka. As co-producer of the first bird song disc in Sri Lanka, "Bird sounds of Sri Lanka I" — (Ranasinghe and Poullier — 1978), the writer, will in this article attempt to give a few guide lines on how to obtain recordings which will lead to many hours of happiness and education.

There are three different objectives in recording bird sounds — (1) to have a collection of communication systems used by a species; (2) for aesthetic

reasons and (3) for use in educational and scientific work and in practical situations like attracting birds.

History of Bird Song Recording

The oldest known recording of the sounds made by a bird was made in Germany by Ludwig Koch in 1889. Wax cylinders and discs were used first and later motion picture film was used in recording sound. In 1932 Peter Kellogg and Peter Keane adapted the parabolic reflector for use in recording birds. This innovation enabled the capture of sounds of wild birds at a distance. However the first major breakthrough came with the German invention of the magnetic tape recorder during the last war. The new machine was first



used by the Swedish recordist Sture Palmer in 1946. The second invention that profoundly affected the nature and purpose of recording bird sounds was the audiospectrograph. With this instrument it became possible to make three dimensional "pictures" of sound. In recent years the advent of inexpensive cassette recorders enabled even the casual bird watcher to make creditable bird recordings.

Douglas Ranasinghe, B.Sc., is an ornithologist; author of a number of books on Sri Lanka's birds and is a member of the General Committee.

Equipment

In recording, the following equipment is used :—

(1) Recorder (2) Tape (3) Microphone.

When selecting a tape recorder the following facts should be considered :—

- (a) **Frequency Response** : This measures the tape recorder's ability to handle signals without affecting their amplitude. It is expressed in terms of a range of frequencies typically, 20 to 20,000 Hertz (Hz.). Typical response for a professional quality recorder is 30 — 18,000 Hz.
- (b) **Distortions** : The recorder should have low distortion values.
- (c) **Wow and flutter** : These terms refer to the deviation of the tape recorder's drive system away from the set speed. Wow is low speed variation. Flutter is rapid speed variation. Both values expressed as a percentage should be as low as possible.
- (d) **Signal-to-noise ratio (S/N)** : It refers to a measure of the relative intensity or level of the signal applied to the recorder's inputs versus the intensity or level of the background noise of the electronic system and tape being used. The S/N ratio is always given in db units. Larger values are better. In professional work, open reel tape recorders are used since cassette recorders have limitations and it is also difficult to edit the recorded cassettes. It is important that all recorders have a metering system to allow monitoring of the intensity of the signal being recorded.

In selecting a tape, the characteristics of the recorder should always be considered. In general, tapes with the widest possible dynamic range, best frequency response and best signal to noise capabilities should be chosen. Long playing (eg. 90 minutes) cassette tapes should be avoided.

Careful attention should be given when selecting a microphone. Its main function is to convert sound signals into the electrical form. Of the different types available, dynamic as well as condenser microphones are suitable, but dynamic microphones have a serious disadvantage as they have a poor frequency response (10,000 — 12,000 Hz.). Condenser microphones have a uniform frequency response extending to 20,000 Hz. Hence condenser microphones are considered best for scientific work.

In recording a bird sound, the recorder should single out the desired sound from the surrounding sounds. To achieve this two different strategies have been developed. The common strategy is to use a Parabolic reflector with omni-directional microphones to pick up the sound waves at the focal point of the parabolic reflector. In the second, a shotgun microphone or a uni-directional microphone is used where the sensitive element of the microphone is placed in a long tube which rejects sound from all but an acute angled area directly in front. Since parabolic reflectors are cumbersome, shotgun condenser microphones or uni-directional microphones are used for better recordings. Normally a person would use a head-phone fixed to the recorder to get an accurate aim of the sound. The microphone should be equipped with a windscreen made either of foam or fabric.

Field Techniques

The recorder should try to obtain lengthy sequences of the songs from as close as possible. One way to get close to a singing bird is to lure it to the recorder. A favourite technique is to record a bit of its song and then play it back so that the bird can hear it. If the recorder is within the bird's territory, the bird usually will approach and often sing vigorously. Using this technique to record the call of a Ceylon Hawk Owl, the writer barely escaped being pecked at by the owl which was not visible during the night when its call was recorded. Recently, using this method the song of the rare Whistling thrush (*Arrenga blighi*) was recorded at Nuwara Eliya. The recorder who uses playback techniques in order to attract a bird should also be aware of its harmful effects on the bird.

It could upset the birds normal routine, cause abandonment of a territory and cause breeding failure, amongst other side effects. When a bird is rare, it is best that this technique be avoided.

Birds are most active in the early mornings, late afternoons and early evenings. Recording is best done during these times of the day. In Sri Lanka most species of birds build their nests during April and May. Hence this is the best period to record bird songs. Some get under the bird in a tree and point the microphone or parabola upwards eliminating most of the unwanted sound.

Recordings will be more valuable if they are well documented. Data needed to document a recording falls into four categories. 1. Identification and locality. 2. Behavior and Biology. 3. Habitat 4. Technical data.

Bird sound recordings fill a role analogous to that of museum skins, used in studies of morphology and anatomy. This means that by the analysis of bird sounds, using mainly the sound spectrograph, it is possible to determine the geographic variation of species without having to obtain specimens by killing. Hence it is hoped that more and more bird watchers would take to recording bird sounds and properly documented copies of recordings could be kept in a central place like the Wildlife and Nature Protection Society's Headquarters for easy reference.

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(Continued from page 278)

TO CAPCHUR A TIGER

snorts and growls. Meanwhile the male tiger had met an elephant with a furious snarl and the elephant, having once before been mauled by a tiger that had attacked its head, turned and bolted in panic. The Mahout was soon swept from the elephant's back by a low branch and the tiger escaped through the gap.

Meanwhile the Rhino (2) had given up going round in circles and were also heading back towards the elephants, which they met head-on, and further confusion was caused as the rhino hit an elephant while passing through the beat. Once the frightened elephants had been calmed down and a somewhat battered and shaken Mahout reseated, the beat was started again because the male tiger had not, in fact, left the area embraced by the cloth 'V'. After a while, he was located again, and not without difficulty driven out of the thicket in which he had taken cover, towards the position of the capchur gun. However, there must have been a gap in the cloth arm because he suddenly disappeared and was not seen again that day. At this stage it was decided to call off the hunt and resume operations on the following day. The Wildlife Department elephants set about gathering up the cloth while we departed for Tiger Tops, on the 4 elephants from the Lodge, for a late lunch. On the way one of the elephants became excited and it had apparently become aware that there was a tiger (not one of those we had been hunting) in the immediate vicinity.

That evening, our last at Tiger Tops Jungle Lodge, we were fortunate to see another leopard from one of their blinds and, two hours later, we

were looking at a huge tiger from another blind. This tiger, the dominant male of the area, had recently lost most of his tail and all that remains is a small stump. It has been noted by the Park Authorities and Dr. Charles McDougal, Director of Wildlife Activities at the Lodge, and an authority on tigers, that immediately following the loss of his tail, the large dominant male had begun to lose sections of his large territory. In fact, the loss of the tail seems to have caused a general territorial movement amongst the tigers in the Royal Chitwan National Park and it was thought possible that the young male tiger we had been trying so hard to dart, was one of the contenders for part of the dominant male's territory. It was therefore of importance to the general monitoring of tigers in the Park, that the young male should have his collar replaced as soon as possible. Only then would it be possible for the Park authorities to take full note of the territorial changes now taking place. However, the drives we had already undertaken had, of course, caused harassment of two tigers and had also disturbed wildlife in general over a large extent of the Park. It was therefore decided that one more, and final, attempt would be made to dart the animal on the following day and if there was another failure for any reason, the operation would be abandoned for the time being.

Postscript—I was not present on the last day's operation but understand it failed. The male tiger showed himself, and a dart was fired at him but it appears to have hit the collar or been deflected by intervening vegetation. The operation was thereupon abandoned.

Indigenous Medicine and Herbal Plants

Indigenous medicine reaches far back in time. Among areas of the world, there is faith and confidence in the use of various plants for the prevention and cure of disease in human beings and domestic animals.

DR. MRS. SEELA FERNANDO

The regimens of indigenous plant medicine are not the products of scientific research. Rather, they evolved in early times in the absence of it. They were usually the result of practices that have been handed down from generation to generation. The ancient folk doctor was a teacher as well as a physician. His real job was to teach people how to be healthy. They were not masons who repaired the cracks of the walls. In other words they did not repair the body. They treated the cause of the disease and taught the people how to be strong, active and be free from disease.

Nature was the first drug store for folk medicine. Primitive man and the animals depended on preventive use of plants and herbs to avoid disease and maintain health and vigour. Because man and animals were constantly on the move they found nature's drug store having branches everywhere. Wherever in the world you were, you would find nature in the fields to cure you. Indigenous medicine is to condition the body in its entirety and not in parts so that disease could be resisted.

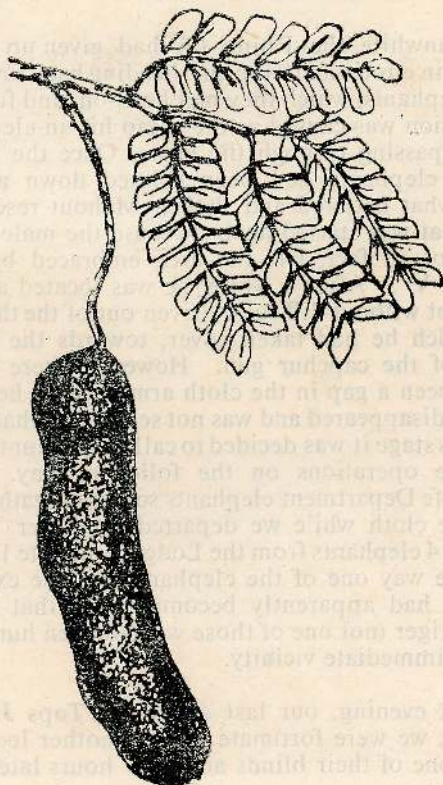
Our pioneer ancestors loved the trees and venerated them. Large grown trees, with plenty of foliage and out-spreading branches were even demified, or believed to be abodes of gods. I propose to describe some of the common trees found in the gardens of our homes and discuss the characteristics which enable them to find a place in native medicine.

Tamarind

The botanical name is *Tamarindus indica* and it belongs to the family Leguminosae. In Sanskrit it is called Amilka, in Sinhala, Siyambala and in Tamil it is called Puli. It is a very large and beautiful tree with a rather short twisted stem, and wide spreading branches. The bark is rather thick, brownish or dark grey. It is fissured with longitudinal and horizontal cracks. The flowers are small, yellowish and veined with purple and arranged in terminal racemes, with 10—15 flowers in each. Pods are about four inches, thick and stout. They are greyish or rusty

and are filled with acid pulp. The seeds are about half inch, brown and shiny.

The wood is pale near the rind, becoming yellowish, streaked with brownish red, often in curious pattern. It is hard, smooth and capable of taking a very fine polish. It is a heavy wood. In very old trees the heart wood is often streaked with irregular patches of black. It is a pretty wood and is in considerable demand, for making furniture. It is very durable and insect proof. This very handsome tree is cultivated in Sri Lanka in the wet zone but it is more at home in the dry areas. It is a tropical tree and supposed to be indigenous to Africa. Dr. Lewis Frederick in his book "The Vegetable Products of Ceylon" mentions the historical aspect of the tamarind tree found at Kottiyar. This tree is supposed to be, where Robert Knox and his father were captured,



The stone tablet erected by Sir S. M. Burrows placed at the foot of the tree bears the inscription, "This is the White Man's tree under which Robert Knox was captured A.D. 1659". The tree is however no more, having being blown down in a recent cyclone.

The curative values of the tamarind tree are many. The pulp covering the seed is acid and is largely used in native curry as a substitute for lime. It is cooling and laxative. The shell covering the pulp is also used medicinally. Tamarind pulp is occicinal in the British Pharmacopaea. The pulp is said to contain cream of tartar, tartaric, citric and acetic acids combined with a trace of malic acid.

There are many decoctions in which tamarind is used as the basic ingredient, especially for habitual constipation and also for diarrhoea. It is given as a drink for intoxication. Tamarind water can be used as a mouth wash and gargle for inflammation of the gums and sore throat. A hot poultice of the tamarind seed pulp is applied over inflammations. The root bark is astringent and is used in decoctions for dysentery.

The leaves are as efficacious as the pulp. The tender leaves and flowers when eaten as a vegetable, are cooling and help to overcome biliousness. A poultice of the fresh leaf is locally applied over swellings of ankles and joints, for sprains, boils, sore-eyes and scabies. In India the leaves give a dye which colours red. The acidic flesh of the pod is extensively used for cleaning metal. An infusion of the pods mixed with sea water is used for cleaning silver ware. It is a tree worthy of protection.

Beli

This is another common tree we see in our gardens. *Aegle marmelos* is the botanical name and belongs to the family Rutaceae. In Tamil it is called Vilva fruit. It has many names in Sanskrit, such as Bilva and Sri. This is a medium sized tree with pale bark and sharp axillary spines. The leaves are alternate. The flowers are rather small pale, greenish, honey-scented, arranged in short panicles. When in fruit, the tree is easily distinguished by the large hard shelled greyish or yellowish fruits. The seeds are enclosed in a viscous mass surrounded by a pale orange coloured aromatic pulp.

Its uses are many. This tree is considered sacred to god Siva and the leaves are used by devotees in their religious festivals and ceremonies. The roots, fruits, flowers and the leaves are chiefly used in

medicine. The leaves are boiled and used for fermenting inflammations and also for bathing women at child birth. Beli is an ingredient in many decoctions for diarrhoea, dysentery and various other complaints. The half ripe fruit is regarded as an astringent. The root bark is regarded as a corrector of deranged wata and is prescribed in cases of melancholia, heart disease and fever. It is also an ingredient in arista. Beli acts both as a laxative and as a binding agent.



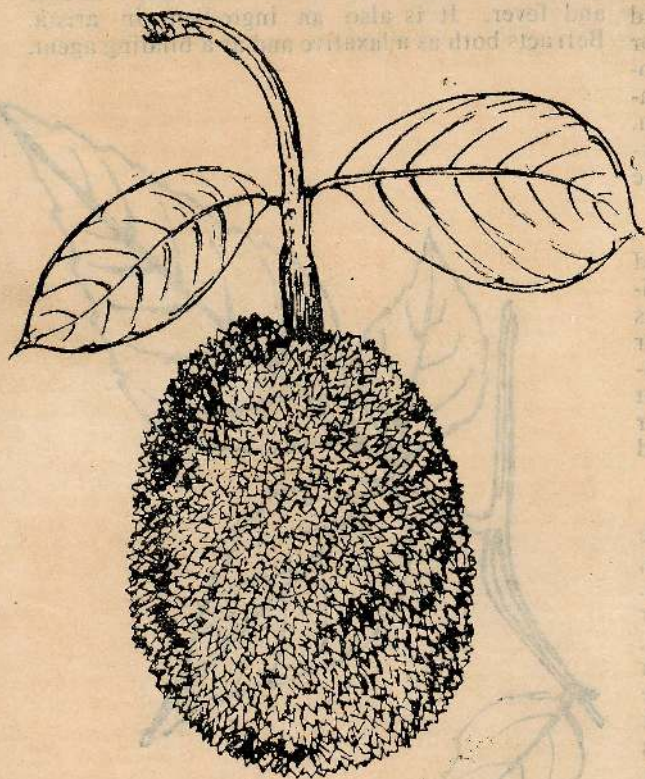
The flowers are used as a herbal tea. This is a cooling drink. An infusion of the flowers clear the sediment collected in the kidney. The fruit is a very effective remedy for irritation of the alimentary canal. The pounded leaves made into a bundle and steamed is an effective fermentation for painful haemorrhoids.

An infusion of the root and vilanda (pori) with a little or no sugar is an efficacious drink for thirst specially in the hot season. On the whole beli tree is a nice shady tree too good to be destroyed.

Jak

Jak is a very common tree both in the city and the village. It is a beautiful shady tree with thick

foliage. The fruits are mostly borne on the trunk and are of immense size and frequently weigh up to 75 lb in weight. As much as fifty in number on a single tree are not uncommon. It belongs to the family Moraceae. The botanical name is *Artocarpus heterophyllus*. In Sinhala, Kos and in Tamil, Pilakai. In Sanskrit it is known as Panasa.



This tree is well-known for its wood, much valued as timber for building purposes and also for making furniture. It is durable and of a good appearance when polished. No part of the tree is useless. At first the wood is yellow, gradually turning to a rich mahogany-brown. The dye in the wood is used by Buddhist priests to dye their robes and is obtained by boiling wood chips.

The fruits provide ample food both to man and animal. The milk is applied in swellings and abscesses, to assist in suppuration. The leaves are fodder for cattle and goats, and are also used to treat skin diseases while the root bark is given in diarrhoea.

Knox gives a full and accurate description of the jak tree and its fruit, adding that "these (the fruits) are a great help to the people, and a great part of their food." A statement that applies in the present day. Jak when tender is called Polos, and makes a delicious curry.

In the diet chart of the ancient kings of Sri Lanka this polos curry was never absent. Polos is given as a curry to patients recovering from diarrhoea. This helps to settle the stomach. Polos is a curry that is relished by expectant mothers, because it is digestive, nutritious and helps to enrich breast milk.

Vela or the soft ripe fruit is eaten by the villagers on an empty stomach, as a laxative. It helps to clear the bowels and to digest the food. The vela bulbs are kept in dew and dipped in bees honey and given early in the morning to children suffering from whooping cough.

Waraka has more medicinal value. The bark of the tree is used as a remedy for sprains. The leaves are used as a remedy for diabetes.

In a standard work on indigenous medicine, "Sarasansepa" the following prescription for diabetes is given:— "Pakwanan mahapatranan churnan taylanna tehayet pramehan sakalan sigran maseymuttra sansayah."

The meaning of the above is, pound well the ripe leaves of the jak and take it fried in gingelly oil, and diabetes will undoubtedly vanish forthwith. One can hardly imagine that so simple a remedy could have such marked results on this disease. Let us grow more jak as it is a very useful tree.

CORRECTION

The picture of the Three Toed Kingfisher, which appeared on the back cover of the last issue of LORIS was incorrectly attributed to 'Mr. Azeez Pandola.' This name should read as Asheesh Chandola. We apologize for the error.

The Smallest Mammal

The white-toothed pygmy shrew, weighing only 0.03 ounces is one which would stake a strong claim. This tiny creature found in the Mediterranean region and in Africa measures 2.7 inches from head to tail.

A close contender is the hog-nosed bat whose home is the south of Thailand. It weighs only 0.06 ounces and has a wing span of 6.3 inches.

Junior Members' Day



A Junior Members' Day was held on 7th July 1980. Several School Nature Clubs were also invited to participate. There were 26 participants with representation from Anuradhapura Kanishta Vidyalaya,¹ D. S.

Senanayake Vidyalaya, Kalutara Maha Vidyalaya, Ladies College, Richmond College, St. Joseph's College and Wesley College. The day's programme highlighted two illustrated talks, discussions and a film show.

The talks featured two important problem areas in the island's environmental scene. Mr. A. A. Wijetunga, Director Forestry, Ministry of Lands emphasised the need to salvage what is left of a rapidly dwindling forest cover and explained the government's programme in this field. The establishment of fuelwood plantations and a programme of social forestry are part of the new outlook on keeping a larger area of the land under a forest cover and also meeting the crunch of the fuel oil crisis.

Mr. Renton de Alwis, Deputy Manager, Coast Conservation Division of the Ministry of Fisheries focused attention on the problems faced at the interface of the land and sea — the coast. While natural erosion takes place seasonally, man's activities such as coral mining, sand mining, hotel construction too close to the tide marks and the destruction of coastal vegetation, only aggravate the problem. In the interests of the people living in the coastal areas and of industries like tourism and fisheries, the planned utilisation of the coastal resources becomes a *sine qua non*.

(Continued from page 284)

NOTES FROM THE CEYLON BIRD CLUB 1980

notes on a small island of coral debris in the sea north of Valaichchenai. On the same island Roseate, Little and Large Crested Terns are known to breed. Detailed description. This is the first time that the Common Tern, probably the European sub-species (*Sterna hirundo hirundo*) has been observed to breed anywhere in the tropics. If the observation is confirmed in 1981, as the writer is confident it will be, a further species will be added to the list of Sri Lankan resident birds.

June

Breeding colony of Common Terns further observed and eggs measured. Nest of Small Scaly-bellied Green Woodpecker described in this and subsequent months by member Mary Jayaratne.

July

Another specimen of the White-capped Noddy (*Anous tenuirostris*) was observed in Colombo — the third record for Sri Lanka; detailed description and sketches from literature by member Ismeth Raheem. A Broad-billed Roller observed at Kitulgala, and a pair of Black-backed Yellow Woodpeckers reported at Katunayake.

August

The 2 forms of Little Terns, namely *Sterna albifrons* and *Sterna saundersi* (Saunders's Tern) are now recognised as full species in Sri Lanka, with *S. a. sinensis* (White shafted Ternlet) the local breeding race of the former. The main difference between *S. albifrons* and *S. saundersi* is that the black on top of the head of the latter is straight across the forehead, whereas it tapers to a point in *S. albifrons*; legs and feet of latter are orange-yellow to yellow compared with dusky yellowish-olive in *S. saundersi*. Nest-hole of a White-headed Starling in dead tree at Kitulgala.

September

For the first time in a number of years the mass migration of Brown-winged Terns and other pelagic birds which was regularly observed at this time on the coast in Colombo, failed to materialize this year.

White-headed Starlings and Green-billed Coucal observed at Kitulgala (Bandarakele). Rufous-bellied Hawk-Eagle at Mimure. Survey of the Kirklees Range by member Arjun Guneratne. A small flock of Cotton Teal and a female Shoveller on Bolgoda Lake.

October

A colony of Indian Cormorants with over 100 Breeding pairs at Gal Oya. Ceylon Wood Pigeon in forest above Looecondara Estate, Deltota.

November

One Red-necked Phalarope at Maha Lewaya, Hambantota, also a flock of 30 Avocets at Koholankala Lewaya. 14 immature Rosy Pastors were observed at Ratmalana. 1 Ringed Plover at Yala. A Malay Bittern at Gal Oya. A pair of Broad-billed Rollers at Diyagala (Carney). A Booted Eagle near Nagar Kovil, Jaffna Peninsula. In the Jaffna area about 100 Pigeon (*Anas penelope*) amongst other Duck. 55 Flamingo on Delft Island. Red-winged Crested Cuckoo near Elephant Point.

December

Spotted-winged Thrushes in a garden at Nuwara Eliya. Large Pied Wagtail in river bed below Polgolla Dam, Kandy. 1 Sandwich Tern at Colombo.

Corals, the preserve of the tropics — are a kaleidoscope of colour. They are about the most biologically productive of all natural ecosystems. Should we not preserve all coral formations for posterity?

Hikkaduwa Reef Sanctuary

RODNEY JONKLAAS

Introduction

The writer was able to carry out a fairly extensive inspection of the main viewing area of corals in the above Sanctuary on the 2nd of April 1981, acting as Visiting Lecturer and Underwater guide to the Staff and students of the 'Universe' — a student cruise ship.

It was nearing the end of the calm season but on that day conditions were near-perfect as regards clarity, calmness of the sea and general weather conditions.

About three hours were spent diving and swimming and inspecting the main formations within the reef and some investigations were done on land as well.

The object of this article is to suggest further ways of preventing damage and removal of live corals from the protected area, encouraging and preserving fish and invertebrate life and carefully re-stocking the area with appropriate species of fish.

Corals

It was gratifying to observe that most of the spectacular corals in the viewing area of the lee of the Rocky Islets Sanctuary are intact and flourishing. Those which had been damaged were due to, 1. Boat anchors, 2. Feet of swimmers, divers, waders and 3. Oars.

If fixed moorings in the form of concrete blocks could be erected at suitable spots enabling boats and glass-bottomed boats to tie up and look at the fish, anchors which damage corals need not be used. To keep the boat moving, all that it required would be to lengthen or shorten the line and let the boat drift with the wind and current.

Some boats move slowly over the corals using motors or oars thereby causing damage in the shallower areas.

On no account must boats with poling or punting devices be permitted to operate.

The practice of dropping people on to the Rocky Islets Sanctuary should be stopped. There is much more that goes on here than mere sun bathing and exploring. Boats going to these rocks damage the corals in the shallows.

If people are prevented from getting on to the Rocky Islets Sanctuary there will be a return of sea-birds and perhaps more opportunities for the Hoteliers to add bird-watching to their list of recreational activities.

Fishes

There is a lack of large-sized fishes in the area. The writer is reliably informed by resident boatmen that spearfishing is the main cause. This must certainly be the case because the species with the greatest degree of fear and in the smallest numbers are those sought after by foreign spearfishermen, i.e. Groupers, Parrotfish and Sweetlips. Only two Koran fish of poor size were seen and about two or three Blue-ringed Angels, four Moorish Idols, one Lion fish, less than a dozen juvenile Blue Surgeon fish and *not even one* Thread-backed Butterfly fish. In fact not one species was seen in any significant concentration.

More fishes were in evidence in very shallow water where spearfishing is not possible. The least populated depths were from 15 to 30 ft. where spearfishermen operate.

The writer was informed that outriggers with 'hippie' type spearfishermen sneak in by evening or early in the morning, do the damage and then leave before the charter boats and glass-bottomed boats come in.

It is time to curb the spearfishermen — regrettable but necessary. If it is possible to impose and enforce a ban on the possession and use of spear guns within the town limits of Hikkaduwa and in the adjacent sea, there may be a chance to stop this.

Invertebrates other than corals

The reef has been shamefully 'shelled' out and not one seashell of any worth was seen alive.

Rodney Jonklaas, B.Sc., is a marine biologist.

There are virtually no crayfish ('lobsters') to be seen. A very small one which a young lady saw was yanked out by one of the local diving boys and literally torn to pieces for his amusement — and her horror. There were no anemones, sea-fans, tube-worms or clams to be seen, nor the cleaner-shrimps and little crabs living amongst the corals.

It is now time to put a complete stop to people selling shells, corals, etc., in the Hotels and even in the shops, even if they are supposed to be from elsewhere. This is the only way to save the lesser fauna of this reef.

The writer saw fresh corals and shells displayed on the lower shelf of a tea-trolley in the Coral Gardens Hotel. These could not have been more than a few days old.

Boys and young men harass tourists and locals alike on the beach by offering them freshly collected corals, not even killed, washed or bleached.

It is time to advise the Hoteliers in Hikkaduwa not to display dead (or alive) fauna of the reef, and accomplish their attempts to educate their guests by having posters, pictures, photographs or models.

Re-stocking

It is time to re-stock this reef and October should be the month for this operation. A list of fishes comprising those from close to Hikkaduwa and also from Trincomalee and the Maldives is given below :—

Striped Damselfish (*Dascyllus aruanus*) — 300 to 400 from Maldives.

Green Damselfish (*Chromis caeruleus*) — 300 to 400 from Trincomalee.

Blue Damselfish (*Pomacentrus melanochir*) — 500 to 750 from Trincomalee.

Clownfish (*Amphiprion clarkii* and *sebae*) — 100 to 150 from Trincomalee and Jaffna.

Moorish Idols (*Xanclus canescens*) — 25 to 50 from Galle or Colombo.

Bannerfish (*Heniochus acuminatus*) — 50 to 60 adults from Colombo.

Scorpion or Lionfish (*Pterois volitans*) — 25 to 50 adults from Colombo or Galle.

Blue ring Angels (*Pomacanthus annularis*) — 25 to 30 from Colombo or Negombo.

Emperor Angels (*Pomacanthus imperator*) — 10 to 20 from Galle or Trincomalee.

Cream Angels (*Holacanthus xanthurus*) — 50 to 75 from Galle or Colombo.

Powder-blue Surgefish (*Acanthurus leucosternon*) — 50 to 75 from Trincomalee or Tangalle.

Sailfin Tang (*Zebrasoma veliferum*) — 10 to 20 from Maldives.

Invertebrates

Cleaner-shrimp (*Stenopus hispidus*) — 50 to 75 from Trincomalee

Giant Anemones (*Radianthus* sp.) — 20 to 40 from Trincomalee

Great Murex (*Murex ramosus*) — 30 to 40 from Negombo.

In all cases adults or semi-adults are preferred, for the following reasons :—

- (1) They are not desirable for the export trade and will not attract poaching.
- (2) They are more amenable to settling down and claiming territorial areas.
- (3) They are more adaptable to feeding artificially for a start.
- (4) They are less susceptible to attack from resident species.
- (5) They are more visible to viewers and will breed in a short period.

It is hoped to keep accurate records of these introduced species.

Attracting and holding reef fishes

As is done in the Malindi Underwater National Park in Kenya, boat operators attract and hold fishes by simply feeding them from boats. The hoteliers and boat operators (recognised) in Hikkaduwa may be requested to do the same. Reef fishes soon learn to feed on and enjoy most unusual foods. The Malindi fishes like bread, hamburgers, hot-dogs and even kitchen refuse.

In the Maldives, an artificial tide-pool which contains sharks, groupers, turtles, etc., is a great attraction and the hotel guests feed them with virtually any type of restaurant food.

In Hikkaduwa, it could easily be the same. For a start, it is best to feed on pulverised fish-waste, meat-waste and bread. After fishes have learnt to eat this, larger pieces can be given. It is surprising how soon the reef fishes get used to being fed. The boat operators will soon realise that it is in their interests to keep the fishes well fed and tame. This feeding may tempt poaching anglers to try for the fish. This must be avoided at all costs. Most of the fishes recommended for introduction and stocking have small mouths and are not easily hooked, but visiting fishes, attracted by the food could well be species of Snapper and Grouper which could soon be hooked out.

It may be a good idea, as in terrestrial Sanctuaries and National Parks to open them at special times and forbid entry except for passing fishing craft going to and from the open sea. This would keep out nocturnal poachers and, to a great extent spearfishermen and lobster collectors. It would be useful to permit viewers only between 8 a.m. and 6 p.m.

A Tribute to ...



THILO W. HOFFMANN

.... a past President

E. B. WICKREMANAYAKE, Q.C.

Honorary life membership is the highest honour that any Society can confer on its members and no one deserved it more than Mr. T. W. Hoffmann on whom it was bestowed at the last Annual General Meeting of the Wildlife and Nature Protection Society. It was a tribute both to his dedication for wildlife conservation and to his unrivalled knowledge of the country. Mr. Hoffmann joined the society in 1948; ten years later he was elected to the General Committee and he has served on the committee up to date without a break, first as an ordinary member, then as Hony. General Secretary and finally for eleven years as President. During the period he held office he has made a significant contribution to advance the interests of the Society. It was due to his efforts that we have the Headquarters at Chaitiya Road which was a portion of the abandoned Navy buildings at Galle Buck, consisting of a derelict brick-walled hut with an asbestos roof. Unaided he transformed it into what it is now, himself collecting the first bricks and stones from the beach after his morning swim in the sea.

It was his enthusiasm that helped increase the membership from a bare 1000 when I was President in 1953 to the 5000 that it is now. He has managed to interest the younger generation in nature conservation — which is an achievement itself.

It was his effort mainly, fighting very strong opposition, which enabled the Society to drop that obnoxious clause — “to safeguard the interests of legitimate sport” — and with this change, the Society was in the vanguard of nature conservation in the country.

Although a busy man himself, being the head of Baur and Company, Mr. Hoffmann always found time to devote to the Society. He has never failed to attend a meeting of the Society whether in Colombo or the outstations except when he has been out of the Island. He has travelled widely over the length and breadth of the country and has an intimate knowledge of what we conservationists regard as our heritage — the natural state. This knowledge has proved very useful not only when it came to writing memoranda and articles but also when it came to convincing those charged with the destiny of our environment.

He is a member of the Mahaweli Environmental Studies Panel and was instrumental in promoting an Environmental Impact Study by a group of scientists, funded by US AID. The report of this group has just been released and, by and large, the recommendations for wildlife conservation are very much the same as those which Mr. Hoffmann had made from time to time on the basis of his earlier investigations.

In his defence of wildlife conservation Mr. Hoffmann was both uncompromising and outspoken. The Wilpattu West National Park owes its existence to him. It was at a time when plans were being finalised for the development of the then, Wilpattu West Sanctuary, that Mr. Hoffmann intervened on behalf of the Society and ensured its status quo as a National Park.

The prospect of foreign exchange held no lure for him. He strongly opposed the plan to construct tourist hotels within the National Parks. He fought tooth and nail against the exploitation of the Sinharaja forest. The plan to export birds and fish and trophies found no favour with him. Naturally he became unpopular in certain quarters. But I am sure that whatever he did, was done in the honest belief that it was in the best interests of the Society and of wildlife conservation. Mr. Hoffmann is no longer President of the Society but continues to be on the committee and it is hoped that he will show the same zeal in the future as he has shown in the past.

BACK TO FREEDOM

On 21 February 1980 four Saker Falcons (*Falco cherrug*) arrived at the Frankfurt Airport from Abu Dhabi. They are birds of prey protected by the Washington Convention (CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora) that may only be exported or imported according to the conditions of the Washington Convention. The owner of the falcons was a sheikh from Abu Dhabi and his son was supposed to bring over the already trained falcons with all the falconer's apparatus. The prescribed export permit was signed by the owner himself, a minister in the Abu Dhabi government. However, according to the regulations of CITES another minister should have been responsible for the export permit. Something else was wrong too; there was no receiver. According to the export documents two German Zoos were each to receive two birds as a gift; only the zoos knew nothing about it and refused to take them. It was not possible to hand over the falcons to the Wild-life park in Hellenthal — who are co-owners of the falcons from Abu Dhabi and whose representative was present when the birds arrived at Frankfurt Airport — as they were not addressed there.

The four birds of prey were therefore made over to the Frankfurt Zoological Society who also took over the customs clearance with the object of releasing them to the wild. That has now been done. According to the export papers the Saker Falcons originated in Syria. After an appropriate period of rehabilitation they will fly again in freedom, not far from the land where they originated, in Israel.

— Frankfurt Zoological Society.

BIRDS AS INDICATORS OF POLLUTION

Industry and agriculture have serious consequences on our natural ecosystems which are really the foundation of human welfare. While we should employ all the technology that is available to understand the changes which are unfolding before us, we might remember that birds can serve as excellent indicators of environmental change. Birdwatchers know that a crow in a jungle invariably indicates the presence of a village. A Racket — tailed Drongo informs us that the area is well wooded and in a natural state.

In days gone by canaries were used in coal mines to determine whether carbon monoxide was under control. If the bird died it was a sign

that the poison level was so high that it would affect human beings, and the bird thus acted as an indispensable signal, warning of impending disaster. The metabolism operates much more rapidly in birds than in humans and therefore any untoward environmental factor affects them before damage is caused to the human species.

Environmentally speaking, one of the great successes of our time has been the cleaning up of London, in particular the River Thames. It is unfortunate that unless there is a major disaster we humans do not get into action. It was the great London smog of 1952 which killed 5000 people and is estimated to have damaged the health of 100,000 which provided the impetus for the city's house cleaning. The Clean Air Act was passed in 1956.

The result on birdlife has been amazing and the London Natural History Society reports that 183 different species of birds were seen within 20 miles of St. Pauls' Cathedral — less than half the number could be found prior to the cleaning up process. The newcomers include a whole range, from aquatics like Polchards to terrestrial species like the Red — backed Shrike.

The presence of birds is a living proof that the environment has become clean and healthy. Recently work was suspended at a sewage pit for 8 weeks while a Little Ringed Plover successfully hatched the four eggs she had laid in a drying bed!

— Indian Express

LITTLE HANDS PROTECT TREES

Sita Joyal looks like the least likely crusader in a country of more than 600 million people. This 5 year old village girl from Uttar Pradesh State in India started a forest conservation movement in the village of Reni, that has succeeded where governments of various countries have faltered at enormous expense.

Here's how it started. A group of wood cutters arrived in Reni to fell timber. Sita gathered the village women — all 20 of them and seven children, to ward off the horde. They formed a human ring around the trees, and dared the cutters to chop them off. Realising that they had been taken, the men backed off. This little beginning, sans all the pomp and pageantry we see nowadays in tree planting, launched a forest conservation drive that now covers 25% of the total land area of Uttar Pradesh. Little Sita's single — minded courage

had inspired the first organised protest of the hill people whose lives depend on the forest. The movement has not only precipitated the launching of a new forestation programme, but it has also forced the government to stop all unauthorised felling of trees.

Today thousands of little Sitas have emerged in the vast waste lands of Uttar Pradesh and Rajasthan — the site of the world's largest man-made desert. They plant tree seedlings, water young trees, and see to it that woodcutters are held at bay. Little Sita's open defiance of the woodcutters' axe could very well go down in the history of Uttar Pradesh as a small girl's biggest contribution to the cause of forest conservation.

— *Depthnews*

WHITE ELEPHANTS

We've often heard the term 'White elephant' being used. Are there white elephants and how did this term come to be used?

The Asian elephant has I believe, put out some editions of an albino type. Such animals have been of a salmon-pink colour having light reddish eyes. Of course they are rare and hence are highly prized.

The story goes that in Thailand these creatures are the preserve of royalty and that the king had presented a white elephant to courtiers whom he did not like, so that, the gift though magnificent, would also be burdensome, thereby bringing them to financial ruin.

Thus the term 'white elephant' came to be used to describe things which are a liability rather than an asset.

— *Editor*

PELICAN PARADE

"What a strange bird is the Pelican," says an old rhyme.

There are eight different species of Pelican, and Africa is inhabited by the white and pink-backed variety only.

Pelicans are mostly gregarious and feed and nest in flocks in the same areas. Sometimes they will build their nests some distance from the communal grazing place. The nest consists of a heap of stones on the ground or a structure of twigs in a tree. The white pelicans sometimes go as far as 100 km to look for food for their young. Its beak can hold more than its belly. It can carry upto 14 litres of water.

The fish are carried in the parents' bills and the fledglings feed from their parents' pouches. Early explorers often thought that the chicks were feeding

on their parents, a theory prompted by the Dalmation Pelican which has a bright red spot on its crop.

Scientists believe that the first species of pelican existed more than 40 million years ago. This bird is still found in most parts of the world, particularly in warm tropical regions. Pelicans were often seen in large flocks and are insatiable in their search for food. They will sometimes advance in a straight line across the shallows to chase fish into a group so that they can be easily caught. They also specialize in plunging from dizzy heights into the water, having discovered that the force of the impact often stuns fish swimming just below the surface. Nature made provision for this by giving them air sacs in their lungs and chest which could cushion their impact as they strike the water. The quaint combination of clumsiness on the ground and grace in the air makes this bird with its big bill a unique relic of prehistoric times. Like the crocodile, the pelican has watched the advent of man!

— *South African Panorama*

What, Pelicans on the Beira? Yes, a pair or two often come in the early mornings. Watch out when you are next passing by. How lucky we city dwellers are, with Pelicans at our doorstep!

— *Editor*

SUCCESS OF CROCODILE-BREEDING — A COMBINED INDIA / FRANKFURT ZOO PROJECT

All three species of crocodile native to the Indian subcontinent — the gharial, the estuarine and mugger crocodiles — are greatly endangered and their numbers there have sunk to a few hundred. While the estuarine and mugger crocodiles still occur outside India, although they are also endangered, the Ganges gharial was restricted even in former times to the Indus and the Brahmaputra river system. It has to be regarded as extinct in Pakistan (Indus). This imposing slender-snouted crocodile is only to be found now in the northerly tributaries of the Ganges in India and Nepal. The reason for the serious decline that has led to the species being practically exterminated are the usual; hunting to extreme, destruction of the natural habitat and the collection of eggs for food. The gharial received total protection in India under the 1972 Wildlife Protection Act. Despite this numbers continued to dwindle. By the mid-70's there were only 60 to 70 of them in India, while in Nepal it is surmised that only a few dozen had survived.

Five minutes to twelve, as it were, two projects in India and one in Nepal have been developed to save the gharials. One of the Indian schemes

which is supported by the World Wildlife Fund is in Madras and the other, a combined Government and FAO project, is in Hyderabad. The project in Royal Chitawan National Park in Nepal is financed by the Frankfurt Zoological Society of 1858 from its account "Help for Threatened Animals". All three schemes are breeding stations. Because of the lack of adult reptiles, eggs are successfully collected from the few known breeding places to protect them from robbers, and they are hatched in the breeding stations. The young are brought up there and will be released once they have reached the right age. The goal is to breed eventually with adult crocodiles on the stations. The Nepal station possesses no adult gharial at all while Hyderabad and Madras have only one male incapable of breeding and a few adult females.

It was therefore a matter of course for the Frankfurt Zoological Gardens to lend the Indian Government their adult male gharial that has lived in the Exotarium since 1958. The animal, which was 3 m long and weighed 150 — 170 kilograms, was sent to India in August 1979. Air India undertook the delivery of the valuable animal free of charge.

After about six months getting accustomed to the new surroundings the gharial was transferred to the Gharial Breeding Centre at Nandakanan Biological Park, Orissa, in early January 1979. It has gone into a spacious pool which already housed three adult and three sub-adult females and one adult male which, however, did not appear to be able of successfully inseminate females. Within a few days the Frankfurt gharial had supplanted him and taken over the females. By the beginning of February it was observed that he was already paying attention to the females. By March 1980 he had taken over the pool as his territory, killed the impotent male and had been seen mating with the females on a number of occasions. In April it was surmised that at least one female had laid eggs, which was confirmed later, and in October came the news that out of the 25 eggs 24 young ones had hatched. All of them had developed very well by November 1980.

Thus through this international collaboration between the Frankfurt Zoological Gardens and the Indian Nature Conservation Authorities the first successful breeding of Ganges gharials in captivity has been realized. It is to be hoped that the next breeding season in 1981 will see more young ones hatched, which will assist the conservation of one of the most threatened crocodile species of the world.

— Frankfurt Zoological Society

LO, THE CALIFORNIA CONDOR

The California Condor has a 10-foot wing span and a jet-black body. Up close, it is downright

ugly, a bald reptilian head mounted on a gawky neck, its crop looking like a big pink goiter. It is the largest flying bird in North America but is a dying species — no more than 30 are alive today. It thrived tens of thousands of years ago in the Pleistocene epoch and continues to arouse human emotions. "The Condor has become sort of a totem, a symbol of the conflict between development and wilderness," says National Audubon Society's John Borneman.

The death throes of the condor have set off a human conflict between well-meaning environmentalists about how to keep the species alive. The disagreement exists mainly because no one knows much about the life of the bird. They hide their nests in mountainous caves and their life span in the wild is a mystery.

Californian Indians killed the birds for religious ceremonies and made capes from their long feathers. Nineteenth century miners used, their grills to carry gold dust. More recently many of the condors who fed on carrion, may have eaten poisoned carcasses set out to kill coyotes. The spreading Los Angeles suburbs have cut the birds foraging areas.

The California condors have hastened their own demise by practicing extreme birth control: a female normally lays a single egg every two years. By breeding in captivity, ornithologists hope to increase the species through what they call "double clutching". If her egg is stolen and placed in an incubator as soon as it is laid a female California Condor might lay another one, as her cousins, the Andean Condors, have done in several zoos. Other scientists argue, that birds pampered from birth in captivity may not survive when set free in the wild.

— Newsweek

JAPANESE INDUSTRY THREATENS FISH

A Japanese research team claims after a two year study that Japan's industrial expansion in Southeast Asia and the South Pacific is causing pollution and serious damage to fish stocks. Since the end of the second World War a large number of industries transformed Japan's shoreline. The wastes discharged from these factories have now destroyed most of the rich fishing grounds along the Japanese coast. With the loss of its own resources, the industry has begun to tap the rich waters of South Asia and the South Pacific.

The expansion of the fishing industry has been matched by the spread of Japanese industrial subsidiaries throughout Asia. Many Asian countries eager to advance industrially and stabilize their economies, have hardly given thought to the effect of pollution.

The researchers cite a joint Thai-Japanese caustic soda company set up in 1964, as discharging caustic soda, hydrochloric acid and mercury wastes into the Cabo Phraya, Thailand's largest river. Fish caught last year near the factory showed alarmingly high mercury levels — up to 3.6 parts per million. Pressure from the local people led to a government investigation which revealed that the company was also taking effluents containing mercury and cyanide by boat and dumping in the Gulf of Thailand.

The researchers also place serious doubt on the joint ventures, which are ostensibly for the improvement of local industry. Are the Japanese firms paying attention to the preservation of local resources? asks the report. The research team goes on to say that the operations of Japanese fishing companies have not led to the development of the local fishing industry or fishing technology. In fact they look more like quick-profit operations than a long-term commitment.

Capitalist fishing never hesitates to destroy the environment and exhaust resources, charges the report. Fishing technology of this nature never serves the interests of the countries which are now developing their fisheries.

—Earthscan

BACTERIA BREAKDOWN OIL SLICKS

One of the most constant pollution problems at sea is that of tankers dumping the oily ballast water and sludge which has replaced oil on their return voyages. Professor Patricia Clarke of University College, London, at a recent conference on genetic engineering, described experiments in which bacteria able to breakdown oil had been encouraged to work fast in the tanks containing sludge and oily water. In just four days, oil and sludge had completely disappeared — disproving the commonly held notion that bacteria are uneconomically slow workers.

Bacteria are well suited to deal with oil pollution because the genes which give them the ability to breakdown various fractions of oil are normally found not in the chromosomes but in small separate rods called plasmids. Bacteria frequently exchange plasmids between themselves, thus making it easy to construct bacteria with extra plasmids allowing them to breakdown most if not all the main fractions of oil.

The first living creature ever to be patented by the American, Dr. Chakravarty in 1974 was a bacterium provided with all the extra plasmids required to breakdown octane, camphor and naphthalene, some of the commonest and most polluting fractions of heavy oil. Experiments now show that

such bacteria, while they are too quickly dispersed to deal with spillages at sea, are excellent for cleaning up spills on land or for cleaning tanks of waste sludges and oily water. At the conference she and other experts agreed that it was time to set up a UK National Collection of cultures of bacteria and other micro-organisms created in this or other ways, kept stored for use in the event of disastrous pollution.

—BBC Features

CHINA CONSERVES THE PANDA

The Panda (*Ailuropoda melanolenca*) is unique to China and is considered a national treasure. Conservation activities have been intensified over the last few years with WWF assistance also coming in. The team of conservationists is headed by Dr. George Scheller, Director of the Animal Research and Convention Centre at the New York Zoological Society.

The anxiety regarding the Panda is heightened by the fact that the umbrella bamboo (*Thamnochalamus spathaceus*) on which the panda feeds, is due to flower — believed to occur every 100 years — and is followed by the inevitable death of the plant. The threat from the anticipated die-off of the bamboo sparked off the research programme.

The Chinese fear that a wide-spread die-off of bamboo would reduce the population to the point where the species could become extinct in the wild. The Chinese are already experimenting with captive breeding programmes and their efforts saw fruition with the recent birth of the first giant panda by artificial insemination.

The difficult terrain which is the home of the Panda, and the dense bamboo forests which are almost impenetrable, makes research work difficult.

The giant Panda was originally classified as a bear, although unlike bears it does not hibernate. The Panda has other un-bearlike features including a unique prehensile forepaw acting like a second thumb which enables it to grasp objects — a feature which has been vital to its ability to adapt to a diet of bamboo. Because of its unusual characteristics, taxonomists have been divided on whether to consider the Panda a racoon or bear. Chinese scientists have classified it as the sole living representative of *Ailuropodidae*, an ancient family which is neither racoon nor bear.

—World Wildlife Fund

Letters

Appropriate Technology Services
121, POINT-PECCO ROAD
NALLUR, JAFFNA
No.

Sir,

On a recent visit to Nuwara Eliya, I was pleasantly surprised to see the Little Grebe swimming about on Lake Gregory. A resident near the lake told me that there were several to be seen and that their arrival there was rather recent.

Nuwara Eliya is my birthplace and I have observed several birds, usually termed 'Low country types', come in over the years. For instance, in the early 40's the Jungle Crow, Mynah, White-breasted Kingfisher, Ceylon Spotted Dove, made their appearance and are now regarded as 'locals'. The Indian Darter was a later visitor. We even saw a Brown-headed Barbet at Blackpool, but there are none to be seen now.

Lake Gregory now has, in addition to the Grebe, the Indian Shag besides the Pond Heron which came in during the 50's. Coming back to the Grebe, G. M. Henry, in his book, made reference to it, where he mentions that 'Legge states, on the authority of their people, that it had been seen at Nuwara Eliya (6200 feet) but it is probable that the Little Cormorant was mistaken for it'. The fact that the Grebe is now there for all to see, could be regarded as proof that it had, in early years, been seen in Nuwara Eliya.

It would be interesting to know from where the Grebe came, as I cannot envisage any likely area within a 15 mile radius of Nuwara Eliya Lake.

Yours faithfully,
Fred Young

Note by Editor :

S. M. S. Farook, a member of the Society, a keen ornithologist and a regular visitor to the countryside, says that the Little Grebe has been a breeding resident of Lake Gregory and sightings have been made by him since 1970. However when the lake was desilted, the Grebes had moved over to the reservoir near Blackpool on the road to Horton Plains. During the last three years he had seen the Grebes nesting at Lake Gregory and had counted 8 in February 1980 and 14 in February 1981. Also seen were the Little Cormorant, Pond Heron, Common Kingfisher, White-breasted Kingfisher, Common Sandpiper, White-breasted Waterhen and Pintail Snipe. The Wood Snipe had been sighted sometime ago but it would be interesting if it could be recorded again.

Sir,

CONSERVATION OR DEVASTATION ?

What in the true sense of the word 'CONSERVATION' have we effectively achieved to balance the ecological imbalance that has resulted from the exploitation through the years of our forest-cover? Has anything effective been done to stop the illicit felling of trees for timber and fuel for domestic and commercial purposes? How can conservation be effected when it is a fact that the required rate of timber for curing tobacco is 7 tons per acre of tobacco per season. This means that hundreds of acres of forest-cover are damaged each year to meet the needs of flue-cured tobacco. It is said that 300,000 acres have been set apart as forest cover for Wildlife conservation in the plan for the Mahaveli Scheme; this is supposed to be the Gene-Pool for future generations. We can hope for the best, but will this be practicable with vastly populated settlements around.

Even in Towns, let alone jungle land, lands are being denuded in the name of industry, development and housing schemes; trees hundreds of years old are being felled for road widening and Town Planning Projects — what then can be the solution to all this?

Is it that our country — a speck on the world map — is too small for such a vast field of 'Development' and vote-catching projects and with our high rate of population growth, will conservation prove ultimately a failure? What then is the earthly use of those 'Seasonal' tree — planting campaigns accompanied by so much fuss, noise and publicity when more trees are being felled daily, than have ever been planted in one single island — wide campaign!

There seems to be no far-seeing sense displayed by the authorities concerned even in 'road widening' — take Kurunegala for instance; very recently, an age old tree which for shade must have been a great solace to many a traveller, beggar, or vendor was felled on the main Colombo Road in the heart of the town. No one seems to know why, except perhaps the authorities concerned. If this was done for the purpose of road widening the 'mushroom' stalls on the road-side — very much in the way during rush hours, happily exist whereas this particular tree towered on an embankment where no widening is possible. It was heart rending to see its magnificence felled to the ground, the

massive trunk over 6 ft. in diameter indicating an age well over a hundred years. This tree that lived for over a century took a matter of hours to be destroyed and is just one in a million felled daily in our forests — there seems to be very little thought given to beauty or nature preservation in this busy city of Rocks despite its historical background.

The Lake — Round and Bund proved refreshing for an early morning or evening walk in days gone by but now the bund serves only a few scattered undesirables who sprawl on what is left of seats that once did exist for quiet and healthy relaxation. Thus the gravel drive is now sans shade, sans beauty. Here again, only the authorities concerned know the reason for this very trendy act of tree felling. What evidence is there yet of this much spoken of 'Environmental Act' and again how do these Tree planting campaigns succeed with the long drawn out droughts we now experience which are due as we know to the denuding of our forest-cover, and which bring in

their wake death and destruction. One sees little else but timber sheds and massive logs in massive heaps while journeying on our roads. Where do these lorry-loads of logs get to? To what 'development' project are they of use? Maybe for our tobacco barns, for all our fuel needs — commercial and domestic . . . and for 'development' through devastation!

Even the Tree Protectionists and Nature and Wild Life Conservation Societies seem voices in the wilderness literally and metaphorically! Is it that these societies can do nothing or at the most precious little?

Then let our voices ring loud, ring **EMPHATIC** — sounding the **ALARM BELL** . . . lest Conservation be some euphoric tale . . . lest our land slowly transforms into a sandy desolation . . .!

Yours faithfully,
Manel Van Der Poorten

Answers to Quiz

1. The Elephant.
2. The Pygmy Shrew.
3. They are mammals having horny casings covering the toes, e.g. Deer, Sambur, Wild boar.
4. The Pangolin (Scaly Anteater).
5. A Hornet is a large species of wasp. It is not a bee as sometimes thought of.
6. It dies.
7. Yes, they are good swimmers.
8. They are all active at night — nocturnal.
9. The Sri Lanka Toque Monkey.
10. Ceylon Lorikeet.
11. Bears are omnivorous; that is they eat all kinds of foods, both animal and plant. Occasionally the food consists of flesh — squirrels, mice and other small animals, as well as carrion. Otherwise they eat grass, nuts,
12. 4 species — Leopard, Jungle Cat, Fishing Cat and Rusty Spotted Cat.
13. No. — The eye has a substance called guanin which requires at least diffused light for its reflection and detection on the eye ball.
14. Forest Eagle Owl.
15. It pairs off with another male.
16. The Land Monitor.
17. (i) At Hakgala along the streams.
(ii) At Horton Plains.
18. The Rufous Woodpecker, which makes a chamber in the ants' nest for using it as its own nest.
19. The Malabar Pied Hornbill and the Grey Hornbill.
20. Black Palm Civet and Toddy Cat.

fruits, roots, honey, insects, eggs, ants and termites.

Meetings

Minutes of the 87th Annual General Meeting of the Wildlife and Nature Protection Society of Sri Lanka held on 25th May, 1981 at the Sinhalese Sports Club, Maitland Place, Colombo 7.

Present : Mr. A. J. Edwards, President in the Chair and 457 members.

1. The President welcoming members to the meeting called upon the Hony. General Secretary to read the notice convening the meeting. The Hony. General Secretary next read the list of members who had died during the year. They were :—

Mr. J. D. D. Piyadasa, Mr. W. I. Peiris, Mr. W. D. E. Bastian, Mr. V. C. Modder, Dr. A. W. R. Joachim, Mr. R. A. Kannangara, Mr. W. Q. D. Fernando, Mr. J. R. V. de Liveira, Mr. C. T. Miles, Mrs. K. I. Hardstaff, Mr. G. D. M. Jayasekera and Major W. W. A. Phillips.

The members paid their respects by observing two minutes silence.

2. The minutes of the last Annual General Meeting held on 24th May, 1980 and published in the December 1980 issue of *Loris* were put to the House for comments. In the absence of any comments, the confirmation of the minutes, proposed by Mr. Sam Elapata and seconded by Mr. H. Jayasena was unanimously accepted by the House.
3. The President announced the next item in the agenda which was the election of six members to the General Committee. He informed the House that in accordance with the rules, six members of the present General Committee retire in rotation, every three years and this year Mr. A. J. Edwards, Dr. Ranjen Fernando, Dr. W. Gooneratne, Mr. B. S. C. Ratwatte, Mr. J. D. N. Banks and Mr. N. D. C. Austin retire. Of the six retiring members only two would be seeking re-election, namely Dr. Ranjen Fernando and himself.

He informed the House that the General Committee had by unanimous decision nominated six members to serve on the General Committee for a fresh term, viz.

Mr. A. J. Edwards, Dr. Ranjen Fernando, Mr. Mahendra Amarasuriya, Mr. Senarath Dias, Dr. R. S. B. Wickramasinghe and Mrs. Mary Wijesekera. Six other nominations, duly proposed and seconded had also been received, viz.

Mr. George Candappa
Prop. — Mr T. Ratnasabapathy
Sec. — Mr. K. Somachandra

Mr. Mervyn Casie Chetty
Prop. — Mr. Shelton Abeyasuriya
Sec. — Mr. Nihal Fernando

Mr. Sidney de Zoysa
Prop. — Mr. Rex de Silva
Sec. — Mr. Brian de Silva

Dr. A. Gabriel
Prop. — Mr. Nihal Fernando
Sec. — Mr. S. R. Ratnapala

Mr. Asoka Goonewardene
Prop. — Mr. S. R. Ratnapala
Sec. — Mr. S. L. Ekanayake

Dr. H. N. S. Karunatileke
Prop. — Mr. A. N. C. W. Jayasekera
Sec. — Mr. C. L. Peris

At this stage Dr. H. N. S. Karunatileke rising to a point of order on a matter of procedure mentioned that rule 8 (a) indicated broadly the sequence in which the agenda should be drawn up and reference to last year's Annual Report indicated that the election of office bearers comes later in the agenda and should only follow the discussion on the Annual Report. He added that the election of a Patron, Auditor and members to fill the vacancies in the General Committee should come last in the agenda in that order.

He then proposed that the discussion of the Annual Report be taken up first, as the General Meeting is convened to discuss what the Association had been doing the previous year and not to elect members to the General Committee, which he thought was the least important item. He added that he had seen a number of errors in the wording of the Annual Report as he did last year. Mr. S. R. Ratnapala stated that this had been the procedure for the last 86 years and it should not be altered.

At this stage the Hony. General Secretary explained why the committee decided to list the particular item early in the agenda. He pointed that the distribution and the counting of ballot papers would take a long time and therefore it was thought that it would facilitate the conducting of the meeting if this matter was dealt with early. Since Dr. Karunatileke had brought this matter up he felt that if the members so desired he had no objection to altering the agenda.

The President mentioned that since this request had been made to alter the agenda he could take the item of discussing the Annual Report at this stage.

Mr. T. W. Hoffmann objected to this proposition of the Chairman. He pointed out that this agenda had been prepared, and the general membership informed of it in accordance with the rules. He further stated that there is no rule which lays down the order in which the agenda had to be listed. He pointed out that it would be grossly irregular to change the order of this agenda unless the members present vote on it and decide to do so, by majority consent.

The President said that as two points of view had now been expressed, he had no option but to put this matter before the House.

Mr. I. M. de Silva pointed out that the Chairman had already consented to discuss the Annual Report when Mr. Hoffmann objected to it but the Chairman explained that this intention of his was conditional as emphasised by the Hony. General Secretary who said it could be done if the membership agrees.

Mr. de Silva mentioned that two outgoing members of the Committee are seeking re-election and this is all the more reason why the membership should be acquainted with what the General Committee had been doing over the past year. He added that the Annual Report had to be discussed in order to assess the activities of the General Committee.

At this stage the President informed the House that he would put the issue to the vote.

The Hony. General Secretary explained the two opinions as expressed by Dr. Karunatilke and Mr. de Silva on the one hand and by Mr. Hoffmann on the other. He called upon those members who wished to change the agenda as proposed by Dr. Karunatilke to raise their hands. The Hony. Asst. Secretary counted 41 members who wanted the agenda changed. The Hony. General Secretary next called upon those who wanted the agenda to remain unaltered to raise their hands. An overwhelming majority voted to retain the agenda.

Answering Mr. de Silva, the Hony. Asst. Secretary informed that 41 members had voted for the change of agenda while over 300 members voted against such a change. The President confirming the agenda, then proceeded with the election.

The Hony. General Secretary explained the details of the ballot and how the voting was to be done. The President having closed the ballot requested Dr. W. Gooneratne, a former Vice President to function as the Returning Officer. The results were as follows :—

Mr. M. Amarasuriya (371), Mr. G. Candappa (88), Mr. M. Casie Chetty (94), Mr. S. G. de Zoysa (94), Mr. B. S. Dias (352), Mr. A. J. Edwards (377), Dr. R. Fernando (355), Dr. A. Gabriel (88), Mr. L. A. Goonewardene (79), Mr. H. N. S. Karunatilke (104), Dr. R. S. B. Wikramasinghe (357), Mrs. Mary Wijsekera (355).

The following were duly elected to fill the six vacancies in the General Committee.

1. Mr. A. J. Edwards
2. Mr. M. Amarasuriya
3. Dr. R. S. B. Wikramasinghe
4. Dr. Ranjen Fernando
5. Mrs. Mary Wijsekera
6. Mr. B. S. Dias

4. The President then proceeded to the next item in the agenda which was the adoption of the Annual Report and the Statement of Accounts for 1980. The Hony. Asst. Secretary made 2 corrections in the Annual Report namely the deletion of the word "Tax" appearing immediately after the word "Income" in para 2 item 4 page 6 and the correction of the word "inapact" to read as "impact" appearing in para 2 line 5 page 7. The President requested members to comment on and discuss the Annual Report and the Statement of Accounts.

In the absence of any comment or discussion, the President suggested that it be adopted. Thereupon Mr. Chandra Karunanayake proposed its adoption, seconded by Dr. N. Karunaratne, which the House accepted unanimously.

5. (a) The next item in the Agenda being the conferring of Honorary Life Membership on Mr. T. W. Hoffmann as proposed by Mr. E. B. Wikramanayake Q.C. and seconded by Mr. J. A. R. Felix, the President put this motion to the House for its approval, which was approved by an overwhelming majority with only 5 members expressing disapproval.
- (b) Conferring of Honorary Life Membership on Mr. Noel de Costa as proposed by Mr. S. J. C. Kadigamar, Q.C. and seconded by Mr. S. G. de Zoysa was approved by 129 members the rest of the members declining to vote.

6. Presidential Address :

Ladies & Gentlemen,

It gives me great pleasure to welcome you to this 8th AGM of the Wildlife and Nature Protection Society of Sri Lanka.

As you are well aware, the concept of wildlife and nature protection in Sri Lanka had undergone significant changes during the last decade. You will recall the days when wildlife protection was shrouded with sentiment centred round "... poor helpless dumb creatures in the wilds ...". This concept has changed and wildlife and nature are beginning to be much more meaningful and important for our day to day existence. Our Natural Parks and other forests are no more the conclaves of the elite or the hunting grounds for collecting trophies. On the contrary they are now held in sacred custody by the state as a very essential participant in national development. The unique contribution that nature and natural resources make towards the welfare of our community is now recognised and no pains are spared to protect this dwindling resource.

It is therefore only to be expected that emphasis has shifted from protecting animals towards protecting the terrain but of course we should realise that with adequate protection of forest land all the fauna and flora that it bears will naturally be conserved.

The necessity for this change of concept was recognised by the Society over 15 years ago when we changed our name from Wildlife Protection to Wildlife and Nature Protection Society. In pursuance of this object this Society has continued to actively agitate for more and more land to be preserved in a meaningful manner so that it would serve the dual purpose of protecting the animals and conserving the natural environment.

If one were to analyse the reasons threatening the existence of any species the most important single cause would be the loss of its natural habitat.

Taking lessons from those countries which have hitherto destroyed their forests and are now paying the price for this folly Sri Lanka is fortunate in still having a minimum amount of forest cover in the island though there are ominous signs that this amount may hardly be sufficient.

Therefore, Ladies and Gentlemen, every effort must be made to conserve land under forest cover and maintain the natural environment.

As you all are well aware this Society has always been in the forefront of any and every move to effect scientific and planned conservation of land. Our request for conservation is not merely an expression of sentiment. We are fully aware that an increase in population makes a demand on land but what we have always pointed out is that available land should be used scientifically and methodically so that it would have minimum adverse effects on the environment. We also wish to emphasise that land that is unsuitable for cultivation should not be cleared of existing forest cover as such forests could act as wind-barriers and catchment areas to the various irrigation schemes. This brings me to the classic example of the Udawalawe Development Scheme where a great deal of land unsuitable for cultivation had been cleared of forest and now remain eroded and exposed to the elements. This small island of ours cannot afford to dissipate our limited resources in this manner. However we are consoled to find that implementation of the Accelerated Mahaweli Scheme has taken great care to maintain the status quo of the natural environment wherever feasible. Infact Ladies and Gentlemen, you will notice that a special team of environmentalists had been

deployed to report on the optimum adjustments for conserving forest cover, and the TAMS report, which is now available, is to be commended and acted upon. We would otherwise find ourselves in the predicament as we did in Udawalawe when the entire catchment area was swamped by illicit cultivators, whose continued occupation would have been a threat to the existence of the scheme itself. This change of attitude between Udawalawe and Mahaweli shows the government's concern and recognition of the importance of conserving forests and the natural environment. This Society will wholly support these measures.

Another subject of equal significance is erosion of the coast. Here again I will not be vary in pointing out that the single reason for the erosion is the illicit coral mining which is prevalent in many areas. Thanks to a Presidential decree this devastation has been arrested in the east and north but it is regrettable that it is permitted to continue in the southwest where damage to the railway line and the main Colombo — Matara highway appear imminent. It is unfortunate that the authorities fail to recognise the danger inspite of the many representations made.

Ladies and Gentlemen, there is yet another matter which I am obliged to bring up for your consideration. You will realise that inflation affects the running of the Society as much as it is affecting our day to day life. We may therefore have to seek your co-operation in trying to make ends meet and I look forward to your friendly understanding in this matter.

In conclusion while thanking each and everyone of you for your presence this evening, I look forward to your continued assistance in the future too.

7. The undermentioned resolution appearing in the agenda was read by the Hony. General Secretary and a broad outline of it explained to the house which unanimously accepted it.

"After crying in the wilderness for decades, the Wildlife and Nature Protection Society of Sri Lanka notes with great satisfaction that Government and most of its agencies now show considerable concern for the environment.

Having expressed serious reservations about the Accelerated Mahaweli Programme, the Society welcomes the Environmental Assessment of the project which was carried out under the aegis of the Mahaweli Authority and funded by the United States Agency for International Development. The final

Report on this assessment having just been released, the WNPS wishes to express its approval and acceptance of the definite recommendations for specific land use in respect of National Parks and Conservation Parks and forest crop lands in Systems, A, B, C, and D.

The Society considers it of vital importance to the survival of the wild elephant in Sri Lanka that the recommendations regarding the proposed Somawathie National Park should be accepted and implemented in full including the possible northern extension.

Similarly, the Society wishes to stress its support for the proposed Hurulu National Park, the proposed eastern extension of the planned Madura Oya Park and the various link areas, notably the proposed Mahaweli Ganga Conservation Park and the link between Wasgomuwa and Hurulu National park through Minneriya and the Kaudulla Forest Reserve. Lastly, we urge acceptance of the conservation proposals for the wider Knuckles area and other catchments.

The implementation of these recommendations will not in any way diminish the major socio-economic benefits of the Mahaweli Development Project ; on the contrary, it will enhance and consolidate them.

Thus the WNPS urges the Government and the Mahaweli Authority, to accept and implement the Report's recommendations in respect of wildlife and conservation areas.

The Society wishes to thank the Government, the Mahaweli Authority the U.S.A.I.D. and the TAMS Team for the excellent Report."

8. The President mentioned that Messrs. Carter de Costa & Co., who had been our Auditors for over 25 years have intimated that they will not be standing for re-appointment as Auditors of the Society. Whilst thanking Messrs. Carter de Costa & Co., for the services rendered over the years he mentioned that Messrs. Tudor V. Perera & Co., have consented to be our Hony. Auditors for 1981 which the House accepted.
9. There being no other business of which due notice had been given the President declared the meeting closed at 7-45 p.m.

Lalith Senanayake,
Hony. General Secretary.

There are two dangers in not living on a farm.
One is the danger of supposing that breakfast comes
from a supermarket, and the other that heat comes
from a radiator.

— Aldo Leopold

WILDLIFE AND NATURE PROTECTION SOCIETY OF SRI LANKA
Chaitiya Road, Colombo 1.

STUDY TOUR PROGRAMME — 1981

Members interested in joining the undermentioned tours organised by the Society are kindly requested to fill in the proforma and forward it to the Society. Depending on the numbers joining, preliminary arrangements will be made. When the cost and other details are worked out, we will notify the details of the tours **ONLY TO THOSE WHO HAVE SENT THE PROFORMA** so that the payment could be made for reservation. Following are the tentative dates :—

September—18th, 19th and 20th	—	Ritigala—Sigiriya
October —10th, 11th, 12th, 13th and 14th	—	→ Mannar—Madhu
November—13th, 14th and 15th	—	Yala National Park

PROFORMA

Name of Member..... Membership No.....

Address.....

I wish to participate in :—

September

☐

October

☐

November

☐

Date.....

STUDY TOUR PROGRAMME - 1981

Members interested in joining the programme should contact the Secretary, Whiteland and Nature Protection Society, Chelva Road, Colombo 1. The programme is designed to fit in the holidays and weekends of the Society. Depending on the number of participants, preliminary arrangements will be made. When the cost and other details are worked out, we will notify the details of the tour ONLY TO THOSE WHO HAVE SENT THE PROGRAMME so that the payment could be made for reservation. Following are the tentative dates:

September - 14th, 15th and 16th
 October - 10th, 11th, 12th, 13th and 14th
 November - 12th, 13th and 14th
 December - 14th, 15th and 16th

PROFORMA

Name of Member: _____
 Address: _____
 Telephone: _____
 Occupation: _____
 Date of Birth: _____
 Signature: _____
 Stamp: _____

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The illustration is framed by a thick, black, dashed border. On the left, a hand is shown pouring a liquid from a small can labeled 'Shelltox' into a larger, dark cylindrical container also labeled 'Shelltox'. To the right of this, a large, white, cloud-like shape contains the text 'SSHHH!' in large, bold, black letters, followed by 'SILENCE THEM' and 'FOR GOOD' in smaller, bold, black letters. Several small, detailed drawings of mosquitoes are scattered around this text. Below the main illustration, there are four smaller images of Shelltox products: a bottle of liquid spray, a box of 'Shelltox with Vapona', a box of 'Shelltox MOSQUITO COILS' with a spiral design, and another bottle of 'Shelltox with Vapona'. To the right of these images, the text 'Use Shelltox with Vapona' is written in large, bold letters, followed by 'available as a liquid spray and in Aerosol form— also as Shelltox Mosquito coils.' in smaller text. At the bottom left of the frame, the text 'LANKEM CEYLON LIMITED' is printed.

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