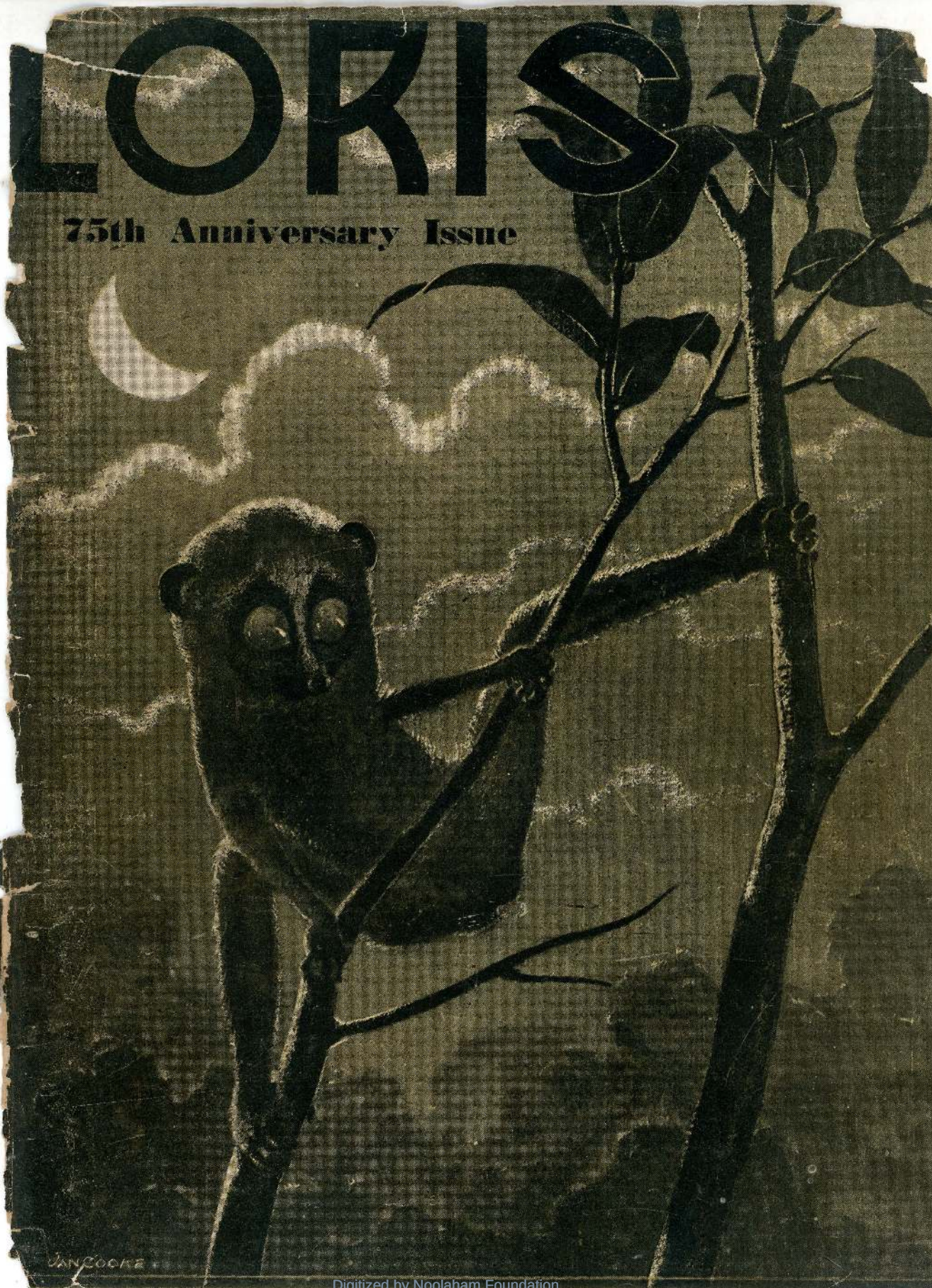


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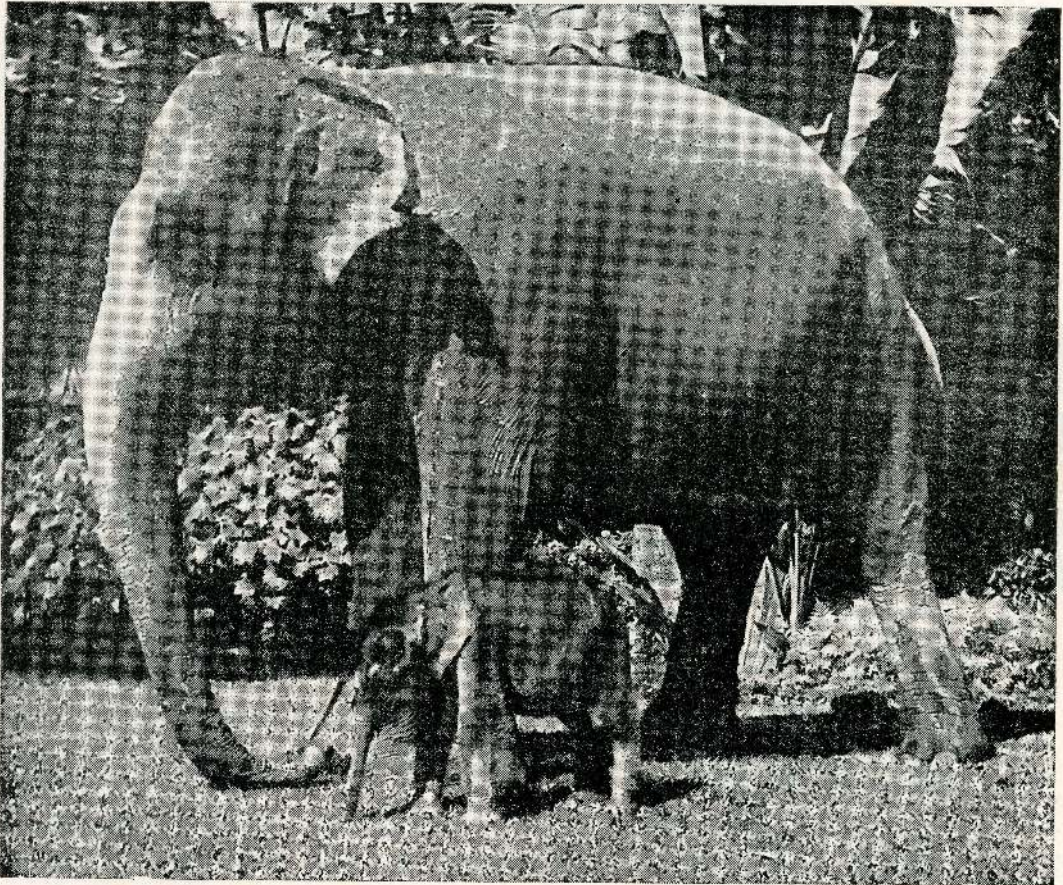
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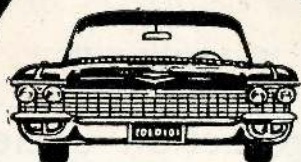
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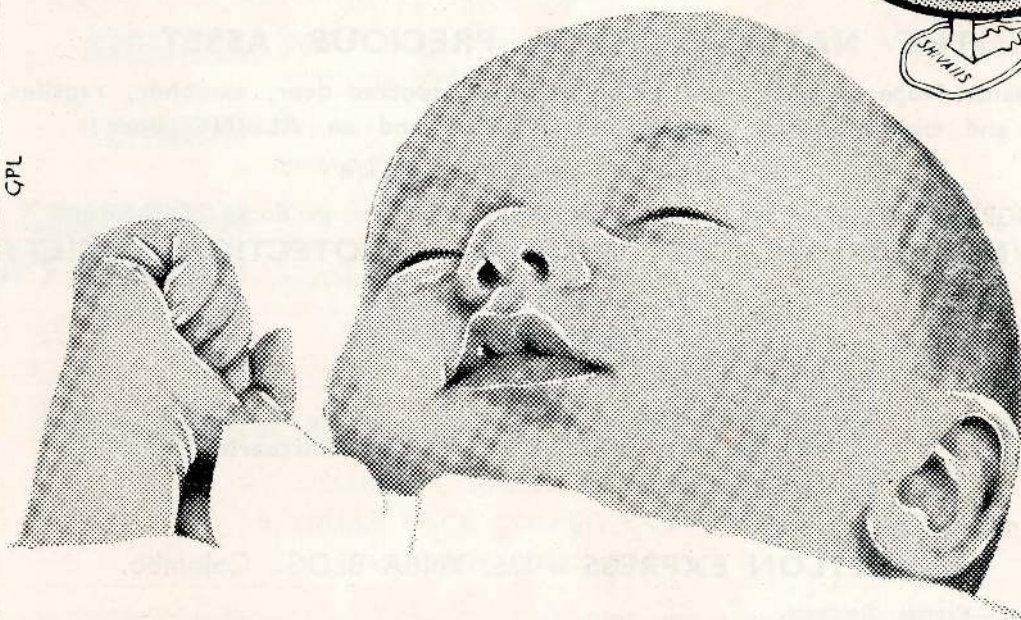
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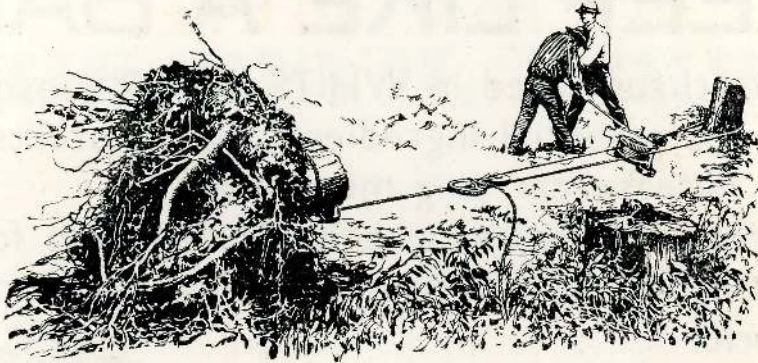


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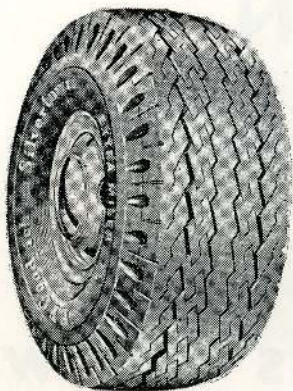
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Wild Life Protection Society of Ceylon

FOUNDED 1894

The society was formed at a meeting held in Colombo on May 23rd, 1894, and was called the Game Protection Society of Ceylon. It had no stated objects and only a few simple rules which were drawn up in August 1894.

On May 26th, 1928, the first set of comprehensive rules and objects was adopted, and in November 1930 the name was changed to the Game and Fauna Protection Society of Ceylon.

The rules and objects were revised from time to time and the present name of the society was adopted at the annual general meeting of 1957.

The objects of the Wild Life Protection Society of Ceylon are now:—

- (1) To prevent the progressive destruction of species of wild animals, and wherever possible, to preserve wildlife and plants intact in natural conditions in Ceylon, and
 - (2) To promote an interest in the life histories of all forms of animal life and to co-operate with other societies and institutions which have similar aims and objects.
-

The Subscription to the Society is Rs. 15 annually, payable on the 1st October.

All members, whose subscriptions are not in arrears, receive a copy of each number of the Society's Magazine, LORIS, which is issued bi-annually in June and December. Further copies may be had at Rs. 4-50 each, at which price copies are also available to the general public.

Persons wishing to join the Society, or desirous of obtaining further particulars, should apply to the Hony. General Secretary, Chaitiya Road, Fort, Colombo 1.

Wild Life Protection Society of Ceylon

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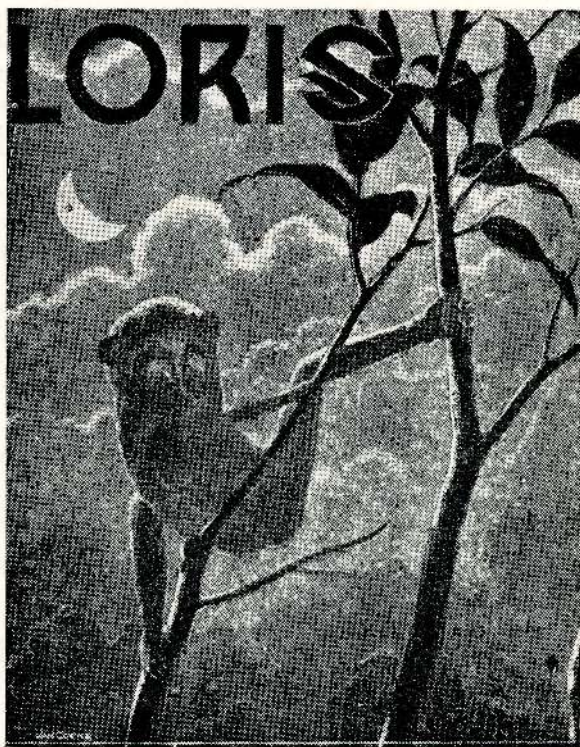
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SPECIAL
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ISSUE

Vol. XI No. 5
June, '69



Literary contributions should be sent to the Editor, MR. C. SELWYN SAMARAWERA, 291/25, HAVELOCK ROAD, COLOMBO 6.

Articles and photographs of good quality are invited not only from members of the Society but also from the general public interested in wild life. All sources will be acknowledged.

All manuscripts should be typed with double spacing and on one side of the paper only.

Contributions for the June issue should be sent in by March 31st, and the December issue by September 30th.

Matters relating to *Membership, Subscriptions and Advertisements* should be addressed to Mr. Corbet E. Jayewardene, HONY, GENERAL SECRETARY, CHAITIYA ROAD, FORT, COLOMBO I. TEL. 25248.

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LORIS

Vol. XI

75th Jubilee Issue

No. 5

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LORIS

Published by the Wildlife Protection Society of Ceylon

Congratulatory Messages

The Governor-General

I congratulate the Wildlife Protection Society of Ceylon on the completion of seventy-five years of service.

The Government's activities through the Wild Life Department, and the various laws and regulations aimed at protecting valuable fauna from destruction, could not by themselves achieve the desired results without the work of the society, which mobilises public opinion in support of these efforts.

The continuing publication of the LORIS with its most interesting contributions has been a valuable service rendered by the society.

I wish the Wildlife Protection Society all success for the future.

W. GOPALLAWA,
Governor-General.



The Minister of State



In Sir Edwin Arnold's "Light of Asia", the Buddha preaches against animal sacrifice with these eloquent words.—

" . . . Let him not strike, great king!" and there-
with loosed

The victim's bonds, none staying him, so great
His presence was. Then, craving leave, he spoke

"Of life, which all can take but none can give,
Life which all creatures love and strive to keep,
Wonderful, dear and pleasant unto each,

Even to the meanest; yea, a boon to all
Where pity is, for pity makes the world

Soft to the weak and noble for the strong. . . "

" . . . Kill not—for pity's sake—and lest ye slay
The meanest thing upon its upward way . . . "

The great King Asoka followed the Buddha's advice and decreed that all living creatures be protected throughout his wide domain and he even forbade killing for food on certain days.

For almost 2,000 years after the introduction of Buddhism into Ceylon this protection was afforded by king and commoner. The invasions from the west changed these humane concepts. It was not until 1894 that protection for wildlife was once again restored in some degree, when the Ceylon Game and Fauna Protection Society was formed. The present Wildlife Protection Society grew out of this earlier organisation. In this context "wildlife" includes anything which is alive and wild, and aims to perpetuate as many as possible of the different kinds of birds and beasts and plants which have hitherto shared this planet with us.

The natural world is an essential part of our human environment and the more the world gets overcrowded many species of life will become extinct and many unique wild places will disappear. This society has consistently urged the creation of national parks and sanctuaries for the protection of wildlife. In Ceylon, Mr. D. S. Senanayake was the first administrator in modern times to cry halt to the indiscriminate destruction of wildlife when he created our National Parks at Wilpattu and Yala. Mr. Dudley Senanayake took a further step and created the Wild Life Department. I was fortunate to be able to complete this programme by forbidding the killing of wildlife for sport.

In the national parks and sanctuaries many forms of wildlife live without harming human beings who visit them. Elephants and leopards pass by human dwellings in them without attempting to damage them or to touch those who live in them.

Wildlife needs protection on other than humanitarian grounds alone. Man's reckless exploitation of the resources of nature, the wholesale destruction of wildlife, both fauna and flora, have in many parts of the world upset the delicate biological balance of nature. Not only has this been responsible for the extinction of many animal

and vegetable species, both the land and the climate have been affected to the detriment of man.

The endless process of evolution has produced plants and animals which share the earth with mankind. Sometimes there is conflict between the survival of man and the survival of wildlife. In such a case human interest must prevail. Yet a little thought and planning can permit the co-existence of both. If we understand that danger exists to man himself by the wholesale destruction of animals, the cutting down of forests, polluting of rivers, and that man will be a loser, then alone can we preserve the inter-relationship between man, animals and plants.

Wildlife in all its forms which are our heritage must be saved as much as possible for the benefit of the generations that will follow us. This Government is committed to the task of preserving wildlife for all time, consistent with the needs of man. The Wildlife Protection Society has always helped those seeking to achieve this ideal.

J. R. JAYEWARDENE,
Minister of State.

The President

THREE-QUARTERS of a century ago a small band of sportsmen got together in order to represent their interests to Government. They found that the game on which their sport depended was being ruthlessly decimated and exploited on a mass scale for monetary gain. They were successful in bringing after years or decades of persistent agitation some order to the chaotic conditions as they then existed, and thus laid the foundation for what we have today in the way of progressive wildlife and nature protection laws, national parks and other reserves, the Wild Life Department and even the Zoo. Soon purely protectionist ideas emerged, and the original Game Protection Society became the Game and Fauna Protection Society, and later still the Wildlife Protection Society. Today I have suggested that we should go one step further

and call our much evolved and enlarged organisation the Wildlife and Nature Protection Society of Ceylon, short WNPS.

The society has grown and changed with the times, and this is proof of its viability. At the time our founders saw its birth, over 80% of the land was covered by jungles, and the population of Ceylon was just over three million. Now 12 million people live in this country, and the jungles must of necessity give way to productive activity, but there is enough land for the preservation of wild places wherein wild animals can survive, there are enough and more areas unsuitable for productive human activity which can accommodate the recognised and the vital need for reserves of undisturbed forests and nature. We have come to realise that these areas must now be finally and carefully demarcated and then held in trust for perpetuity on behalf of the people of this country and of mankind as a whole, but not, and I wish to make this clear, for the sake of just the animals. Only man can intelligently appreciate the values to him of animals and wild nature; it is, therefore, for man that they are preserved.

I hope that our society will continue to grow and evolve as it has during the past 5 or 6 years. I should certainly like to be around when it celebrates its centenary in 1994! So let all of us today look forward to that next quarter of a century, continue to work hard, to persevere and to remain unshaken in our conviction that what we do is a service to the people, the nation and mankind.

TH. W. HOFFMANN,
President.

FOLLOWING are extracts from congratulatory messages received from:—

THE WORLD WILDLIFE FUND

On behalf of the International Board of Trustees of the World Wildlife Fund I would like to congratulate the Wildlife Protection Society of Ceylon on the occasion of its 75th anniversary in

May, this year. To have led the way for so long a time is a proud record indeed.

The World Wildlife Fund is comparatively a very young organisation—only in its eighth year—but during its short existence we have much appreciated the collaboration we have received from the Wildlife Protection Society of Ceylon which is a most valuable link for conservation in Asia. . .

PETER SCOTT,
First Vice-President.

THE WORLD WILDLIFE FUND

. . . . as a humble member of your society, I should like to convey to you all best wishes and heartiest congratulations.

F. VOLLMAR,
Secretary General.

SMITHSONIAN INSTITUTION

It is a tribute to Ceylon that it has one of the world's oldest wildlife protection societies, which is celebrating its 75th Jubilee this year. The foresight of its founders can be fully appreciated in the context of today's worldwide concern for environmental quality. With a world population approaching 4 billion people, environmental deterioration is accelerating at an unprecedented rate, and without the efforts of citizen groups such as the Wildlife Protection Society of Ceylon there would be little hope in the immediate future of preserving wild land values that are essential not only for the spiritual good of man but also for his physical survival. The Smithsonian Institution commends the society for its accomplishments, and urges it to strengthen its role in the conservation of nature and the communication of environmental knowledge. Its accomplishments in Ceylon within the years immediately ahead will be of significance not only to the Ceylonese people but also to the world at large. Being a

small island country, Ceylon can provide a meaningful example to other countries in the management of ecological systems involving human society and its total environment. In this endeavour the Wildlife Protection Society of Ceylon can function as one of the country's most valuable social institutions.

S. DILLON RIPLEY,
Secretary.

I. U. C. N.

... We congratulate the society on this significant anniversary and recall with satisfaction that it has become one of the world's oldest conservation organisations through sensible resistance to the kind of destructive change which mankind can ill afford ... We are therefore grateful that so strong and effective an organisation as the Wildlife Protection Society of Ceylon is associated with us in IUCN, and we look forward to continuing co-operation in advancing the broad purposes to which both our organisations are dedicated.

E. J. H. BERWICK,
Secretary-General IUCN.

(International Union for Conservation of Nature and Natural Resources)

FAUNA PRESERVATION SOCIETY, LONDON

... The Wildlife Preservation Society of Ceylon is, we believe, the oldest surviving conservation society east of Suez, and its journal Loris is a standard-bearer in the fight to preserve what remains of the earth's once teeming wildlife. We are confident that its second 75 years will be even more successful than its first.

RICHARD FITTER,
Honorary Secretary.

BOMBAY NATURAL HISTORY SOCIETY

... We appreciate fully the hard work that is entailed in keeping natural history societies

going in a developing country where so many other activities get priority over natural history. On behalf of my committee I wish your society every success, and hope that the occasion of its 75th anniversary will be a happy one in every way.

ZAFAR FUTEHALLY,
Honorary Secretary.

WILDLIFE SOCIETY OF OREGON, U.S.A.

... Surely there is much that we can learn from the Wildlife Protection Society of Ceylon. Both of our societies work in a growing field of conflict where so-called higher standards of living often exacts a toll from that part of our culture based on the wildlife resources in our environment. You have our best wishes for continued long life and expanding success in contending with the wildlife protection problems in your part of the world.

THOMAS G. SCOTT,
President.

OUR FIRST GOVERNOR- GENERAL

... On the society's 75th Jubilee I would like to send my warm congratulations and best wishes for the continued success of a movement which has already achieved so much.

LORD SOULBURY,
through his son.

A PAST PRESIDENT

... The society has come a long way since the days of the old Ceylon Game Protection Society, as it was named when I first took office ...

... Without the united efforts of the society and its members many of the larger forms of jungle life would undoubtedly have disappeared long

ago so the society can take great pride in the fact that the indigenous fauna of the island remains almost intact to the present day, in spite of the opening up, for cultivation, of vast tracts of jungle and forest lands. . . .

W. W. A. PHILLIPS,
Sussex, England.

A FORMER U.S. AMBASSADOR

. . . In the forefront of organisations dedicated to saving Ceylon's wildlife is the Wildlife Protection Society of Ceylon which this year celebrates its 75th anniversary. When I joined the society in 1953, it was known as the Ceylon Game and Fauna Protection Society and the pages of *Loris*, the society's journal, were brightened by the vivid writings of R. L. Spittel, W. W. A. Phillips, and many others. . . .

To my mind the greatest contribution which the Wildlife Protection Society of Ceylon can make is to keep reminding the people of the island of the importance of their wildlife heritage. Only when this message has been put across to the average villager will sufficient pressure be exerted on the government to enforce existing conservation laws and promulgate new ones.

COLONEL, THE HONOURABLE,
PHILIP K. CROWE

A PAST PRESIDENT

. . . I wish you all good fortune in your efforts to prevent the extinction of many species which I delighted to watch in my many happy trips to Ceylon's eastern jungles.

G. COOMBE,
Surrey, England.

THE ZURICH ZOO

On behalf of the Zurich Zoo we congratulate you on the 75th. anniversary of the society and wish you further prosperity.

PROF. HEDIGER SCHMIDT,
Director of the Zurich Zoo.

W. L. P. S. INDIA

"I am delighted to learn that the society has been actively engaged in wildlife conservation for such a long time. Your journal *Loris* is informative and interesting. I wish the Wildlife Protection Society of Ceylon all success in its noble work and hope that the celebration will be a complete success. I congratulate you on the occasion."

MAHARAJA SIR PRATAP SINGH,
President, Wild Life Protection Society of India.

AMERICAN SOCIETY OF ZOOLOGISTS

"The Wildlife Protection Society of Ceylon deserves congratulations perhaps, less for its seniority than for its good work during the 75 years of its existence. Few similar societies throughout the world have been charged with such great responsibility and have accomplished as much with so little for the protection of wildlife. The foresight of its founders is being perpetuated to an extent far beyond their apparent expectations."

PROF. JOHN A. KING,
American Society of Zoologists.

Ourselves

SEVENTY-FIVE years is a long time, and we can congratulate ourselves in having continued our corporate life beyond the normal span of individual human existence. Our thoughts go back this jubilee year to the enthusiastic group of jungle lovers who in 1894 banded themselves to form the Ceylon Game Protection Society, from which body the present Wildlife Protection Society, springs.

Down the intervening years came many other enthusiasts who spoke their bit, acted their part, and left the stage enriched by their occupancy. R. W. Levers, E. Gordon Reeves, Thos. Farr and George M. Crabbe are names, among the pioneers that readily come to our mind. These were followed by many others who made an impact on the life of this country, people whose names are perhaps better known to members of an earlier age. Stalwarts all, nature lovers, conservationists and protectionists. We salute the memory of these men who paid heed to those inborn human instincts which prompt man to battle for noble causes, in their case for the preservation of the species natural to rural surroundings, although possibly, following a way of life where primary instincts may have been to ensure conditions favourable to the continuance of their sporting activities.

There is no doubt however, that these nature lovers and sportsmen projected themselves beyond their own interests to further in practical ways, the cause of conservation of natural resources for the benefit of posterity.

It was the original society that brought pressure on the government of the day to form a sanctuary for wildlife at Yala in 1898 and a similar forest reserve at Puttalam which now includes the Wilpattu National Park.

It was the efforts of the society too, that culminated in the appointment of the Boer, Englebrecht, as the guardian of the sanctuary then called the Southern Nature Reserve and till recently Yala Block 2.

The society paid a part of Englebrecht's salary for supervising the "Resident Sportmen's Reserve" which conforms more or less to the metes and bounds of the Ruhunu National Park west of the Menik Ganga. Official records refer to the advantages

gained by the appointment of Englebrecht the "irreconcilable Boer prisoner" who showed excellent results in the preservation of game by virtue of the interest he took in his work—an interest and love inborn and natural to this Boer from the Transvaal.

In recalling the names of some of the original members of the society, the name of Dr. R. L. Spittel comes naturally to our mind as one of the later and perhaps more famous members. A great nature lover and conservationist of the first magnitude, his poems and writings have delighted thousands of readers who enjoy a mental excursion into the realms of the wild. During a life time of service to man, his frequent sojourns into the jungles of Ceylon, his keen sense of observation and his interest in his fellow beings, engendered the vivid writings which have brought distinction to this simple and lovable man who rose to the highest ranks of the profession he adorned. Dr. Spittel as Editor of *Loris* for many years has set the seal of excellence on this magazine bringing it to a standard and pitch that has received acclaim from all over the world.

In our new President, Mr. T. W. Hoffmann, we have a leader who has proved himself in the past, sparing no pains to make the Wildlife Protection Society a living thing. Disdaining popularity he has set his eyes on targets and has achieved many a success in those spheres where we have a voice and are given a hearing. A spirit of dedication motivates our tireless and knowledgeable President. He more than others, has toiled incessantly in the past for the furtherance and fulfilment of our society's aims and we can confidently look forward to the future with some sense of accomplishment and hope.

The inexorable demands of an ever increasing population for living space and for the means of extracting sustenance from the soil, combine to make unhappy inroads into our dwindling forests and uplands.

The day of final reckoning when our last remaining jungles will fall before the woodman's axe and the consequent extinction of our wildlife may not be very far distant, but during our own lifetime let us strain every sinew to try to preserve our precious heritage of jungle charm, its birds and its beasts, the

trees and the blooms, its noises and silences, and the overall majesty of nature unsullied.

We of the present generation are but stewards for the unborn. Let us give a good account of our stewardship before we pass on. That is the aim of our society—our *raison d'être*. May we relay

the torch to our successors as we received it, undiminished and blazing as brightly as we can make it, a glowing focal point for all nature lovers to rally round.

THE EDITOR

Some of the Earliest Vertebrates of Ceylon

By P. E. P. DERANIYAGALA

with eight illustrations by the author

THE vertebrate fossils of Ceylon belong to two categories. The younger one is of the Pleistocene epoch which commenced about two million years ago, while the older is of the Miocene which commenced twenty-five million years ago and terminated eleven million years later. Pleistocene vertebrates occur as part of the world famous Shivalik fossils of India, Burma, Java, Celebes and elsewhere. In India the southern limit of such fossiliferous earth layers is the Godavari river and in Ceylon this Shivalik fauna is represented by hippopotamus, rhinoceros, lion etc. These are now known as the extinct Ratnapura fauna.

Little however has been published about the Island's Miocene vertebrates although marine fishes, parts of a turtle's carapace and a fragmentary limb bone of a marine mammal were first described thirty-five years ago. (Deraniyagala 1935, 1937). As the standard work, A. S. Romer's *Vertebrate Paleontology* 3rd edition (1966), lists only three sites from Asia which yield fossils of Miocene reptiles and mammals, the Ceylon site is of especial importance. My estimate of the Miocene age of these fossils has been confirmed as follows:—

(a) Dr. Errol White, keeper of Vertebrate Paleontology at the British Museum of Natural History in 1935 concurred that my fish fossils formed a "Typical Miocene Assemblage." These are now in the British Museum of Natural History.

(b) Vide the statement of Dr. Remington Kellogg the whale expert of the Smithsonian Institution, regarding a fossil neck vertebra from this area. See p. 237.

(c) The Miocene vertebrates of Ceylon are known from isolated teeth and parts of fin spines of fishes, fragments of the corselets of turtles, parts of a skull and of ribs of a dugong, a vertebra and isolated teeth of a dolphin and several more or less complete vertebrae and fragments of ribs of two whales. These reptiles and mammals have been tentatively named by me, and this collection is with me.

The hypothetical reconstructions here published of some of them are based upon the identification of this material, and aided by what are regarded as primitive characters in the position and the number of nostrils, the number of digits, claws, scutes, length of baleen and shape of the flukes in their living and extinct relatives.

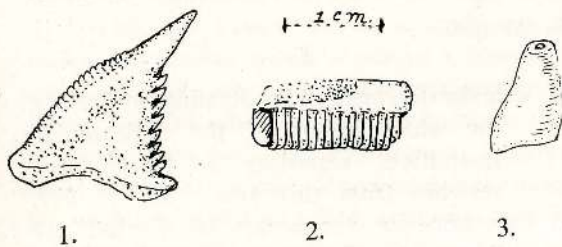
All these Miocene vertebrates were secured from what has been termed the *Malu Member* of Ceylon's Miocene in the vicinity of Arna Kallu about fifteen miles to the north of Puttalam. The latter is a 'Horst' or hill produced by a sudden push up of a section of the coastal plain. As the molluscan shells upon the top of this horst belong to 8 living species and are in the same state of preservation as those of the estuarine deposit in this coastal plain 240 feet below, the

upheaval of the horst was evidently relatively recent.

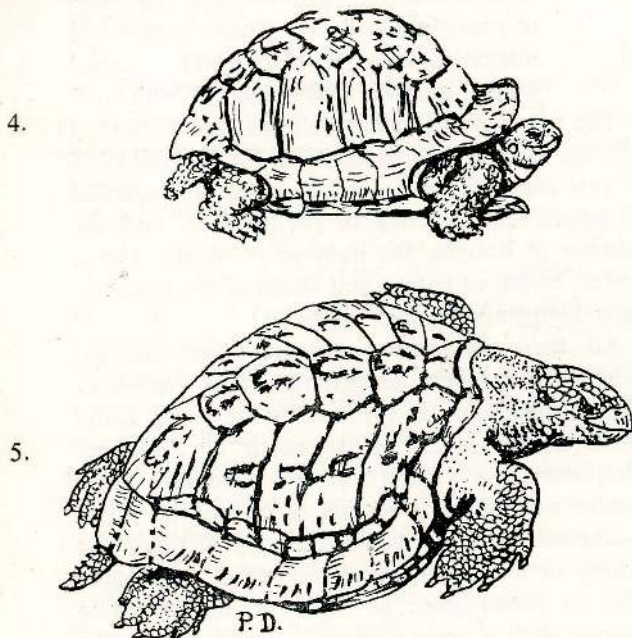
A resume of the more important animal fossils from the area is as follows:—

Fishes

Dr. White agreed with me that the fossil fishes which I collected in 1935 were Miocene ones. Many of them possess living relatives which enter estuaries and ascend rivers. Detailed descriptions of the various species are being published elsewhere, but the best specimen of a fossil tooth of a shark *Hemipristis serra* to be secured



from the *Malu Member* of Ceylon's Miocene is depicted in fig. 1 together with a fragment of the teeth pavement of the ray *Myliobatis sinhalensis* fig. 2.

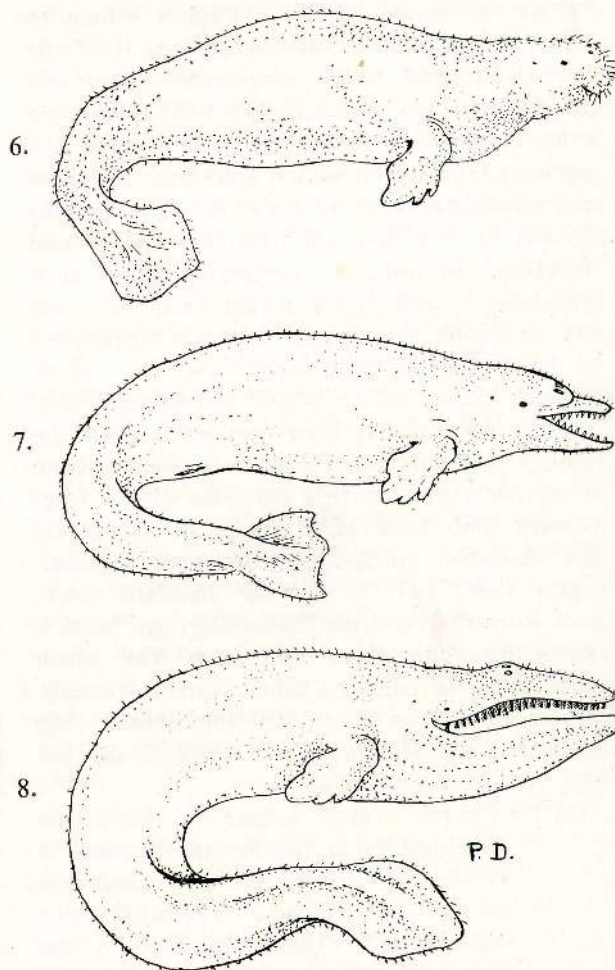


Reptiles

Geoemyda striata:—This terrapin is known from a marginal bone which is marked with seven grooves and ridges which extend inwards from each of two of its sides.

Miotestudo ibba (fig. 4)—A land tortoise is known from a part of the upper shell or carapace which is above the right axillary area. The front of the shell is turned upward at an angle of 110° .

Miocaretta lankae (fig. 5)—A sea turtle as large as *Caretta caretta gigas* is known from three marginal bones, which are remarkably solid. Each comprises three bony elements that are fused together, whereas in other turtles each marginal



consists of only one bone. Each fossil marginal also contains two pits for the two rib tips whereas in most turtles there is only one. The animal probably possessed supramarginal scutes.

Mammals

Miodugong brevicranius:—This dugong is known from the left half of the back of a skull, and two sections of ribs, each belonging to a different individual. The skull is shorter than in the modern dugong. (fig. 6.)

Miotursiops mulla:—This dolphin is known from a vertebra and isolated teeth. The latter are subconical and generally worn at the apex. (fig. 3.)

Mioceta bigelowi:—Known from two more or less complete vertebrae and two fractured ones.

Dr. Remington Kellogg the whale expert of the Smithsonian Institution at Washington, to whom I sent a sketch and the measurements of a neck vertebra expressed the opinion that "it agrees most closely with the posterior cervical

vertebra of some late tertiary whale bone whale, the Cetotheriidae."

This family flourished during the latter part of the Oligocene, throughout the Miocene and became extinct early in the Pliocene epoch. *M. bigelowi* is about 13 feet long and is the first member of its family to be recorded from southern Asia. It is named for Professor H. B. Bigelow of Harvard, the greatest oceanographer of his day.

A larger species, *Mioceta magna* is known only from fragments of ribs.

The present sketchy study should be sufficient to indicate that the above mentioned geological structures form irreplaceable pages in the history of Ceylon's changing landscape and the evolution of its living creatures. Since deciphering, interpreting and producing knowledge has commenced, it is most desirable that early action is taken to make adequate reservations both from Arna Kallu and the Malu Member to ensure the satisfactory completion of this important work.

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EXPLANATION OF ILLUSTRATIONS

Miocene fossils from Ceylon

Figs. 4 to 8 are hypothetical reconstructions. All drawings are by the author.

1. A tooth of *Hemipristis serra*. A shark.

2. Part of the teeth pavement of *Myliobatis sinhalleyus*. A ray.

3. A tooth of *Miotursiops mulla*. A dolphin.

4. *Miotestudo ibba*. A land tortoise.

5. *Miocaretta lankae*. A sea turtle.

6. *Miodugong brevicranius*. A dugong.

7. *Miotursiops mulla*. A dolphin.

8. *Mioceta bigelowi*. A cetotheriid whale.

Some Observations on Ceylon Elephants

By FRED KURT

(Text of a talk given after the annual general meeting of the WLPS of Ceylon on November 26th, 1968).

AS a member of the Smithsonian Elephant Survey, I have concentrated my field work on the Yala group of reserves. Other scientists are investigating the Ceylon elephant at Wilpattu (Dr. John Eisenberg), Gal Oya (Mr. George McKay) and Lahugala (Kurt and McKay). This paper deals with some of the findings at Yala and is, of course, not a full report of the activities of the Smithsonian Elephant Survey in Ceylon.

First of all I would like to thank the Warden, Department of Wild Life, Mr. Lyn de Alwis, the Divisional Game Ranger, Mr. Quintus de Silva, Ranger, Mr. D. White, my tracker Piyadasa, and above all my assistants and colleagues, Mr. A. P. W. Nethsinghe and Mr. Anil Jayasuriya, for their co-operation and assistance.

AGE AND AGE CRITERIA : Western culture had little contact with elephants, except as war animals in antiquity, and much later through circuses and zoos. Interest in these animals was, therefore, mostly academical. One of the questions which intrigued the old Greek and Roman naturalists concerned the lifespan of these imposing creatures, and they assumed that elephants would attain an age of between 150 and 250 years! This belief persisted through the centuries and is even today still found in some Zoological textbooks. In marked contrast to this are the records on thousands of captive Asiatic elephants kept in Western zoos. The oldest of these died at the age of 69 in the Sydney Zoo. All others did not even reach the age of 60, and most died under 40 (Seitz, 1967). Of 55 Asiatic elephants born in zoos or circuses, not one lived to be 40. Amongst working elephants in South India and Ceylon, I found only one to be older than 50. The skull of a 60 year old elephant is exhibited at the Ratnapura museum.

In order to understand the growth rate of wild elephant populations, it is essential to have accurate criteria for estimating the age. In a two year

investigation such as the present Smithsonian study, it is not possible to obtain direct age evidence extending over the full lifespan of wild elephants, which would entail marking at birth and observation during dozens of years. It was, therefore, necessary to first study and measure tame elephants of known age and determine reliable age indicators. It was found that elephant cows grow until they reach the age of 25 years. Males grow faster and continue to grow throughout their lives. This is in conformity with the results of studies on African elephants.

We also found that depigmentation of the skin increases measurably with age, and that the tail hairs are gradually shed; these criteria are, however, of little use in the wild because elephants are often covered with mud, and because tail hairs and parts of tails are frequently lost in fights. Therefore age estimations in the wilds were found mainly on the relative shoulder height of the observed animals. Naturally we are working with averages applicable to populations, and are not concerned with individual variations. The focal points of size estimation and age estimation of wild elephants are: (a) the shoulder height of the newborn baby and (b) the shoulder height of the full grown female.

(a) Newborn babies can clearly be recognised by a brilliant pink circle around the eyes (which persists for one or two weeks), the long lanuge hairs, and the fact that in height they fit under the belly of adult females.

(b) Of the full grown female we know only that she is 25 years old or older.

Animals as tall as full grown females or smaller were grouped by us into eight size and corresponding age categories, as shown in table I. A ninth category consists of males taller than average adult females.

Table I.

Relation between shoulder height and age in Ceylon elephants.

SOME OBSERVATIONS ON CEYLON ELEPHANTS

Size class	Shoulder height cm. ft. ins.		Apr. age male	Apr. age female
1.	95		newborn	
2.	115		1 year	
3.	135		2½ years	
4.	155		4 years	4½ years
5.	175		6 years	7 years
6.	195		8 years	11 years
7.	215		11 years	17 years
8.	235		25 and more	17 years
9.	Taller		—	25 and more

In our studies of age composition of herds at Lahugala and in Yala, we obtained the results given in table II. From these two facts can be deduced :

- (a) That the average lifespan of wild elephants is about 17 years, even if one wrongly

assumes that individually they would grow up to 60 years.

- (b) Less than 50% of the newborns reach maturity.

Table II

Age and sex classes of elephant herds tallied in Lahugala and Yala. (Number of animals tallied 350).

The age of adult male and female elephants can only be determined from the condition of the molar teeth, i.e. from skulls of dead wild animals, of which we had 49 for study. In each of the four jaw bones an elephant carries a set of six molars, of which only one or two are functional at any one time. Table III shows the time-table of the replacement of the molars throughout the life span of an elephant. Amongst the 49 skulls of wild elephants found by us, not one had only one, i.e. the last molar left, which means that all of them would have been younger than about 40 years when they died. The only skull found to have only one molar in each jaw bone (the last) belonged to a tame elephant which died at the age of sixty (Ratnapura Museum).

1½	age groups	1-5 yrs.	6-10 yrs.	11-20 yrs.	21 & older	Total
2.	males	16%	11%	7%	6%	40%
3.	females	16%	9%	12%	23%	60%
4.	total	32%	20%	19%	29%	100%
5.	average age per groups	3 yrs.	8 yrs.	15 yrs.	40 yrs. (assumed max. lifespan is 60 yrs.).	
6.	4 × 5	96	160	285	1160	1701
Average lifespan : 1701 : 100 = 17 years						

Table III

Time-table of the replacement of the molars.
(After E. W. Guenther, 1955).

<i>No. of molar</i>	<i>duration</i>
1.	birth—3-4 years
2.	birth—6-7 years
3.	3 —13 years
4.	6 —26 years
5.	16 —43 years
6.	33 —65 years

REPRODUCTION : In European zoos and circuses 55 births of Asiatic elephants have been recorded as against only 12 in America (Dittrich 1967). Studies on the duration of the gestation period have shown that there is a big variation with extremes between 18 and 25 months. Usually calves born after 18 months are smaller than others which are carried longer. Of all the areas in which Asiatic elephants are kept for work or ceremonial purposes, only Burma and Mysore systematically breed them. Burma breeds 600 elephants annually. I have for instance not found a single record of tame elephants having successfully mated in Ceylon.

From available records about births in European zoos, and amongst Mysore state elephants, I obtained the following facts :—

- (a) If the baby elephant is stillborn or dies shortly after birth, or is removed by man, the mother cow will have another calf after $27\frac{1}{2}$ months ($2\frac{1}{4}$ years) average.
- (b) If the young survives and stays with the mother, the next birth will take place after 48 months (4 years).

Captive mother elephants reach maturity at the age of about 7. Of 55 mother animals in captivity, one gave birth at the age of 9, one at 10, two at 11, and 51 were older than 11 when they had their first young. It would appear that elephants can successfully bear young up to a relatively old age, and there are records of 39, 49

and 53 year old mother animals. The wild elephants show the same reproductive pattern as captive ones. Thus, theoretically a female could reproduce during a total period of about 30 years, and in this time give birth to 8 calves, namely, at the age of 10, 14, 18, 22, 26, 30, 34, and 38. Regeneration of populations is, therefore, slow, even under optimal conditions.

Of the eight theoretically possible offspring of a single cow, four would be males and four females, as the sexual ratio was found by us to be 1 to 1 in calves (see Table II). Since more than half of the young animals die before they reach maturity, a maximum of 2 female offspring will themselves attain reproductive age. These findings show clearly that elephants breed very slowly and that there can be no rapid regeneration of populations.

SOCIAL BEHAVIOUR : Elephants live either in herds or as solitary individuals, depending on sex and age. Male calves begin to separate from the herds when they are about 6 or 7 years old, but remain associated with them as satellites. When they reach maturity at the age of about 10, they separate from the herds and join loose male groups. Thus the normal herd consists only of adult females, new born and juveniles of both sexes. Mature males will join herds mainly when there are females in heat. However, they are only able to stay with the herd and defend their temporary position in the herd against other males, if they are in musth.

Elephants of both sexes are equipped with temporal glands which are situated immediately under the skin, almost in the centre between the eye and the ear over the zygomatic arch. In the male of the Asiatic elephant the musth glands exude an oily, smelly secretion during irregular periods extending from 3 days to 5 months. In African elephants the temporal glands function in both sexes. Our studies on tame and wild elephants in Ceylon have shown that the musth period is shorter in wild elephants than in tame ones, that it is seasonal only with wild animals and occurs throughout the year in tame ones.

Wild elephants are commonly in musth during February—May. The earliest age at which male

elephants come into musth is about 17 years. This raises the question whether musth is a sign of rut, especially in view of the fact that almost all father animals of the 55 calves born in European zoos, and circuses were younger than 17 years.*

The observations on wild elephants have clearly shown that males in musth are far more aggressive than other males, that they are more frequently found in herds, and that they use the musth secretion to place olfactory markings chiefly at water holes. Successful mating furthermore is almost exclusively the preserve of males in musth.

It has not been possible so far to carry out physiological investigations of the hormone level in the blood of elephants and its correlation to skin glands such as the musth gland. However, in other mammals, especially in ungulates, it has clearly been shown that the functioning of skin glands is controlled by the level of sex hormones in the blood. It is, therefore, reasonable to assume that there is a similar correlation in elephants.

On the other hand, there is a clear social correlation between the functioning of the musth gland and sexual activity, because elephants in musth, as already mentioned, are more aggressive, and hence are able to more successfully mate than others, and furthermore are in a position to keep in olfactory contact with herds during the period of musth.

There is a Sinhalese proverb which says that when a baby elephant is born in a herd, 7 females are in milk. Our own observations of cow elephants show that before, during and after birth, the mother animal is never alone. She is always accompanied by at least one other adult female (popularly called 'aunt'), and we have observed on several occasions that not only the mother, but also the aunt cares for the new born baby, eats part of the afterbirth, and is in a position to nurse the new born. Later, only the mother animal will nurse the young, but other members of the herd not only take upon themselves the task of protecting and looking after the

baby, but also assist in its feeding by preparing grass and breaking branches.

It is no exaggeration to say that for the successful raising of a young wild elephant more than one adult is required. To look after a baby is an exhausting 24-hour task. As an adult elephant normally feeds during 18 hours in 24, it is essential that the job of looking after babies is shared amongst various members of the herd.

Babies are usually grouped together in what might be termed a nursery. The nursery is in charge of one adult animal, which is relieved from time to time by others. Water holes are pivotal points in the life of elephants, and it is at these points that the young are handed over from the mother to the nursery and vice versa; it is at water holes that herds usually close up into a compact gathering, and this as much as the presence of water makes water holes of such great importance to elephants.

From my observations I must conclude that elephant herds are basically female family units consisting of a mother animal, her daughters and their various off-spring.

Male elephants have no defined territories as have for instance buffaloes. On the other hand, female herds with juveniles live in home ranges which overlap only at the borders. The fact that males roam over wide areas and definitely leave the home range of their childhood assures that there is no excessive inbreeding.

The home ranges of elephant herds are much smaller than is commonly believed and the normal daily movements of herds vary between half a mile and seven miles only, provided, of course, the herds are not disturbed. The usual home range appears to be no greater than 60 to 80 sq. miles; only in one case was it found to be 150 sq. miles.

The family group is led by the oldest female, which usually is found near the centre of the herd. She decides which of the peripheral younger females the herd should follow, i.e. the direction

*The reason for this is that in zoos and circuses most of the male elephants which come into musth have to be destroyed because of the danger to human life, and there are, therefore, practically no old males held in captivity in Europe and America.

of the movement of the herd. Next to the oldest female the cow with the youngest calf can exert influence because she is more aggressive than others, and it is thus that occasional disagreements occur. In this case majority rule decides on the movement of the herd.

A number of family groups and single elephants may join together into large concentrations of over 100 animals during periods of drought or under other uncommon conditions (such as floods, shortage or abundance of food). In concentrations up to about 40 animals, the leadership is taken over by the various elders who jointly decide on the group's movements. Still greater concentrations become unwieldy and are no longer under the direction of individuals or groups; the concentration then moves along traditional routes or remains stationary.

Within concentrations individual herds retain their identity and cohesion, they do not mix, and remain in close direct contact. This cohesion of family groups of herds within a large concentration was clearly demonstrated at last year's kheda in Mysore when throughout the great excitement and disturbance caused by the driving and capturing operations, the family groups remained compact until all animals were roped and forcibly separated, and even then they kept vocal contact with one another. The bonds within the family group are, therefore, enormously strong, and there is further no doubt that individuals recognise one another by voice.

INTERACTION WITH ENVIRONMENT :

The following remarks refer only to Yala, and cannot necessarily apply to other areas. The three main factors of interaction with the environment concern :—

- (a) the biotop,
- (b) potential competitors for food and water,
- (c) man.

All larger herbivores such as sambhur, spotted deer and buffaloes must be regarded as competitors to the elephant for food and water. The composition and density of ungulate herds in Yala were studied by us in extensive surveys and it was found that with the high existing densities only

the number of buffaloes increases whereas the absolute number of spotted deer remains stable; this is due to predation by leopards and jackals.

Although these herbivores crop the grass short and leave a clear browsing line on trees and shrubs, elephants still manage to obtain their food requirements due to specialized equipment such as the trunk and forelegs and their greater height. The extensive use of this special equipment can, of course, cause damage to the biotop, and we fear that due to excessive scalping of the grass by elephants, and the hoof action of too many buffaloes, large feeding areas may not be able to regenerate rapidly enough, and that erosion may set in.

This problem will become more serious as more and more elephants are forced into the National Park area as a result of the clearing of the surrounding jungles. Spotted deer and sambhur cannot be regarded as despoilers of the biotop, but the increasing number of buffaloes, many of them escaped village buffaloes, clearly constitute a danger. We, therefore, strongly support the efforts of the Wild Life Department to reduce the buffalo populations in Yala.

Buffaloes not only compete with elephants for food, but above all for water. Unlike other ungulates, they lie up in water holes in large numbers for much of the day and night, particularly during the dry season when water is scarce, thus not only using, but fouling up the water. A clear negative correlation was found between the presence of buffaloes in water holes and the number of elephants which come to these holes (Table IV). It is my firm opinion that the migration of elephants during the drought out of Yala block 1, is chiefly connected with the excessive presence of buffaloes in this south-western section of the park, which is also the one chiefly accessible to visitors.

Table IV

Comparison of buffalo and elephant presence in water holes during the end of the dry season 1968 (July-Sept.).

<i>Water holes</i>	<i>Number of resident buffaloes</i>	<i>Remarks on elephants</i>
Heenwewa	about 40	regularly visited by herds and solitary bulls.
Padikema	30	
Diganwala Rakinawala	80 70-80	Regularly visited by solitary bulls, rarely visited by herds.
Palugaswala No. 1	60	Very rarely or not visited by herds, rarely visited by bulls.
Ureniyawewa	90	
Debragaswala	120	
Jamburagala	200	

Direct contact between man and elephants could, of course, not be extensively studied in Yalā because all visitors have to stay in their

vehicles. It is interesting to note that the behaviour patterns of cars in National Parks resemble that of animals insofar as cars appear only during certain times of the day and move along clearly defined tracks, i.e. roads. This is probably one of the reasons why wild animals tolerate the presence of cars when they would otherwise be greatly disturbed by people on foot.

There have been few accidents, and these few are the result of visitors disobeying the trackers' instructions. As long as the common rules of courtesy and common-sense are followed by drivers, and as long as the vehicles are in good condition, and the instructions of the staff are followed and excessive speeds are avoided, there is no likelihood that dangerous situations will arise on the roads.

The situation is, however, somewhat different at water holes, especially where visitors are allowed to leave the cars, such as Heenwewa and Padikema. In these places elephants are undoubtedly disturbed by the arrival and departure of successive groups of visitors. If this happens with nursing herds, there is a grave danger to the young, because, as mentioned elsewhere in this paper, the water hole is a place where herds assemble, where they can obtain much needed rest and water, and above all where the new born and their young are handed over to "relief nurseries."

(For literature cited see page 330)

The Battle of the Giants

By WILL SOYSA

The author, a veteran jungle lover, who has come out of his shell to help us with this Jubilee issue, has stated that these incidents took place around 1933. The article was written some time later. The period was probably when present day Yala was a Resident Sportsmen's Reserve—Editor.

WE hurried down from our eyrie on the top of Buttuwa rock at the news that that the fight was on. From 200 yards we watched—it was too awesome and dangerous to get any closer—and a wish to get a closer view was

unfavourably looked upon by Carolis, our game tracker. We witnessed, with bulging eyes, a spectacle that Nero's Rome would have spent limitless gold, and labour, if only it could have been organised!

The contestants were evenly matched, and there was no faking, for the prize was stupendous—the very breath of life—for it was the lordship of a whole herd.

That morning I had photographed a herd of elephants as it crossed the small lagoon. It had been possible to get up to fifteen yards, although the approach was by an open plain with no cover whatsoever. The wind, though blowing at a slight angle to us, was correct.

There was the leader, gaunt, giant, middle-aged and immediately following, the cows, seven of them of which one was a very old grandma, bony and crinkled. Between the legs of these elderly ladies, were the young calves, three in number. An unobtrusive young bull followed them all.

From my position, the sun's rays (it was 7 a.m.) were playing on the flanks of the great beasts. The light, however, was not strong enough to ensure good photographs, and so, the snaps taken between 1/10th to 1/100 of a second in succession of six exposures, rewarded me with one fair, presentable negative exposed at 1/50th.

About the time the herd reached the opposite shore of the stretch of water, which was about 100 yards in width here, the wind began to blow directly from us towards the elephants.

Up went their trunks at this, and an uneasy suspicion on the part of the young bull became apparent, the mothers hurriedly closed around the kiddies, and then, with their trunks and forefeet they jostled the little ones forward with the utmost urgency.

In a few moments the herd had vanished into the scrub.

It was near 4 p.m. that day when the bearer came up the rock shouting excitedly: "Sir, look, an elephant fight".

We ran down the granite face and raced across the park, and might not have stopped until we were actually in the ring as if to take on the task of referee, had not Carolis halted us, and brought us to our senses.

Of the two combatants, we at once recognised our friend of the morning, the big bull that led the herd.

The other was a total stranger. The contest had gone on, presumably, for some length of time, before our arrival.

There were livid gashes on the face and head of both animals.

There was even blood; I think a tooth or two had been dislodged and blood-stained saliva reddened their bodies.

"Dum"! the heads crash, then a moment's pause, the whole body shaken by the impact, the earth reverberates at the sickening thud. A mighty swipe with the trunk follows, and the other kicks in return.

The animals then fall apart, slowly, very slowly, backing like railway engines reversing.

They fall back about fifty yards all the time facing each other. At a given signal they come on again, accelerating and then "wham"! the heads collide.

The force at the time of impact could develop enormous pressure; a full-grown elephant weighs up to four tons.

"Dum"! the skulls crack, the elephants sway a bit, their heads wag groggily, they snort, draw deep breaths and then back again for their next charge.

Thirty exciting minutes speed by but to us it seemed not three.

There is no sign of either contestant wearying; on the other hand the blows are exchanged as hard as at first; the pain inflicted seems to goad them on to greater effort, and with each succeeding blow they return with renewed strength.

Once, just once, one slipped to his knees immediately after the impact. But the other held off and would not approach for the kill.

"Follow up" I yell, but he did not hear me.

"Oh! you fool feller, you lost your chance", I cry, for now the knocked down one has straightened up.

But I have been oblivious of the fact that under pachydermal rules a blow when the opponent is on his knees, is as foul as our hitting below the belt.

At the next rush the crash is shattering, the skulls seemingly split open, and the one that got

THE BATTLE OF THE GIANTS

knocked down in the earlier round, runs through his opponent as if the latter had been halved.

Both are badly shaken and change sides as in tennis when the players change courts.

All this time there were no signs of the herd. They were, however, very probably, close at hand in the jungle cover.

The two had fought for nearly three-quarters of an hour. Up to now the contest had been equal.

As they fought on, the animals edged closer and closer to cover though this movement was unplanned; and, very soon the fight went on amidst the bushes that fringe the jungle.

A few minutes later the giants were lost to view, but the swaying of the trees, the snapping of branches like crackers, and the thud of heads colliding like distant thunder proved that the great contest was going on yet.

The sun had set, and the whole world seemed to have settled down to bed except for the two fighters. The sounds got further and further, until they finally faded away. We walked back, deep in thought, to the friendly light of the camp lantern.

The sequel was as thrilling as the fight.

It was on the following night that we had planned to watch over a leopard's kill.

That morning I had ordered a messa (platform) to be built on the highest tree near enough to the kill.

But when I came in the afternoon to take up our positions for the night, I discovered that it had been constructed too low and too close to the carcase; and also that it was to windward, which would have made the stench unbearable for long.

The men did find a taller tree but because it was too far out and the ground below too heavy with cover, they chose the branches of this small palu tree.

The stench from the rotting flesh of the sambhur was the one reason that made me decide to change position, and as there was no time to build another platform, we elected to watch from the ground.

Hastily making a leafy hide under a clump of alder at a suitable distance from the kill, we settled down to await the killer.

It was 5 O'clock when we commenced our watch. Many minutes sped by, but there was no sign of the leopard at all.

For that matter the jungle seemed oppressively still, even the evening breeze had forsaken the slender-stemmed leaves of the wild Bo-tree, some hundred yards from us.

Weary minutes passed. A furtive jackal slunk by the carcase like Mahasona, (ghost) the flesh-eating, dog-faced being from the nether world. There was no sign of any movement.

Heavy-booted night followed on its steps, and the air became burdened with the dew, our bodies ached with the statuesque posture we were compelled to take, the dew stiffening our limbs, and the cold made our teeth chatter. To add to our misery, a drizzle commenced.

An hour of this, and then, like the passage of an electric current through our numbed bodies and brains, the crash of ripped timber above our heads shocked our senses to the alert.

We saw the tree where our messa was built swaying as if a giant was uprooting it. In the stygian blackness nothing else could be seen. We could only conjecture.

It was an elephant, and it had pulled down the platform we had built.

We lay still, too terrified to move, while the rogue made unearthly sniffing noises as if it had a cold in the head; at intervals, it drew breath through its trunk as if moaning, for a lost one; and, most nerve-racking of all, it gurgled blood-curdlingly with a slow jarring "ga-de . . . ga-de . . . ga-de . . ." like a syphon that functioned badly.

After an age of terrifying minutes, the animal left, proceeding on the track it was following, and passed us at six yards, "sighing like a furnace," and grunting horribly.

There was no doubt in our minds about the identity of our awesome visitor. He was indeed the loser of the night before.

What was the secret of our safety? Why were we not scented?

By the grace of the God of Kataragama at that moment the wind had stood still.

The beast could not have smelt us.

The Sexual Behaviour of Wild Elephants in Ceylon

By SAM A. I. ELAPATA (Snr.)

IT was 9.30 in the morning of 5th March, 1957 in the Ruhuna National Park II when we drove into Uraniya from Buttuwa. It was dry from 27th February, to 5th March, though clouds were banking up every evening. It had rained heavily the previous two weeks or more. The Menik Ganga, wewas and waterholes were full, the scrub and jungle lucious and green—good drinking, bathing and feeding.

There were in the car Vicky Atukorale, Robosingho, the department's tracker, my chauffeur Simon and I.

In the open space across the wewa a large bull elephant who had drunk and bathed was seen making its way leisurely towards the south end of the Kalapuwa, where he joined a female. We watched them for a short while before going on to Siyambalagaswala to photograph a palu tree whose branches grew in strangely tortured shapes.

On our return to Uraniya at 10 O'clock the two elephants were quietly feeding where we had seen them earlier. The car was drawn up to a halt alongside the track by Uraniya wewa at the sight of a large bull emerging from the jungle not far from the feeding elephants. On its heels came six others—a mother and baby and four of various sizes. The large bull of the herd skirted the margin of the jungle towards a point at which another elephant appeared. The latter, however turned back into the jungle as the large bull came up whereupon the bull rejoined the herd.

Not many minutes had passed when a group of four elephants—a male, female and a mother and baby—debouched on the plain about 30 yards away and approached the herd of seven. The large bull in the seven herd, singled out the cow in the four herd for his advances, and was promptly resisted by the male in the latter herd. A baby from each of the herds followed their elders by

engaging in a tussle. The large bull now disengaged himself and mounted the cow while the other bull stood by. At 10.20 both herds entered the water and the obvious antagonism of the two bulls manifested itself again as they vied with each other for the female's favour.

The large bull mounted the cow again and when he had moved off, the younger bull took his opportunity with the same cow. They were in about five feet of water. By 10.38 both groups of elephants left the water together and proceeded towards the jungle. A baby screamed when he received a trunk blow from one of the others. At the cry the bull we had seen first at Uraniya and who all this while was browsing in a patch of jungle in the company of two cows, came bursting out and made for the herds.

He went straight for the cow in heat and commenced amorous advances. By and by the rest of the four herd entered the jungle leaving behind the cow in heat which with the bull (the latest arrival), and the herd of seven sought cover at the point where the latter had originally appeared.

No elephants were now in sight but the swaying of the tree tops indicated some sort of activity among them. It was 10.45 now. A loud scream pierced the air and the large bull of the herd of seven broke out of the jungle with ears outspread. He walked rapidly across the plain, veered round and entered the wewa where the herds had previously drunk, bathed and mated.

As he took his fill of water and bathed, a cow elephant came to water. Quite obviously she had not been among either the herd of seven or four as her body was unmarked with water. The bull moved forward to meet her and both entered the wewa. When they reached a depth of about five feet they mated. It was then that the bull's ears outspread till now folded back. After the

completion of the act the bull attempted to move off. The cow reached out placed her trunk across his back and drew him towards her and they mated. This happened twice with the cow taking the initiative. The time was 11.20.

A few minutes later a pair of elephants came towards the wewa from the north eastern corner. In the wewa they met by the mated pair who advanced through the water towards them with a curious gliding movement. Not a minute had elapsed when the bull of the mated pair shot out his ears, climbed out of the wewa and strode out on to the plain at a fast gait leaving his last mate behind in the water. A little later, the three remaining elephants crossed the wewa and came towards us obliquely. On land they scented us and swiftly melted into the jungle on our left.

Something made Robosingho look back. He was startled into a warning cry and we saw behind us three other elephants not 30 feet away from our car. They heard him and vanished noiselessly into the jungle.

The lusty bull of the seven herd alone remained feeding along the border of the plain. At 11.38 he took to the jungle on the track of his own herd.

Several interesting points arise for consideration from this experience.

The matings took place both on land and in water. One cow mated with two different bulls. A bull mated with two different cows and had five sexual connections with them in the space of an hour—the second three occurred in the space of ten minutes.

When the sexual act commenced the male placed his fore-feet on the withers of the female, during the act, the male's fore-feet were gradually drawn backwards until at the end the male was standing almost erect on his hind legs with his fore-feet on the rump of the female. In each case the duration of the sexual act was about two minutes.

Above all none of the males was in musth—at any rate, there were no traces of glandular secretion moistening the cheeks.

Note by the Editor.—This hitherto unpublished article was found in one of his father's files by Sam Elapata who kindly sent it on to us for use in the jubilee issue. We reproduce it with pleasure as a salute to the memory of a great gentleman and nature lover.

Elephant Ahoy!

By MICHAEL CLARKE

THIS article describes a canoeing trip completed two years ago. At the time it occurred to me to write an article for Loris, but the eventful journey had left me with mixed feelings and a reluctance to do so.

I became interested in canoeing from exploring the Mahaweli Ganga. After several trips down parts of Ceylon's longest river, I turned to something else and my choice fell on the Maduru Oya, following parallel with the Mahaweli, some twenty miles to the east, through the jungles of Bintenne. Fifty-five miles of the middle section still pass through some very wild country. It took some time to get sufficient information about rapids and

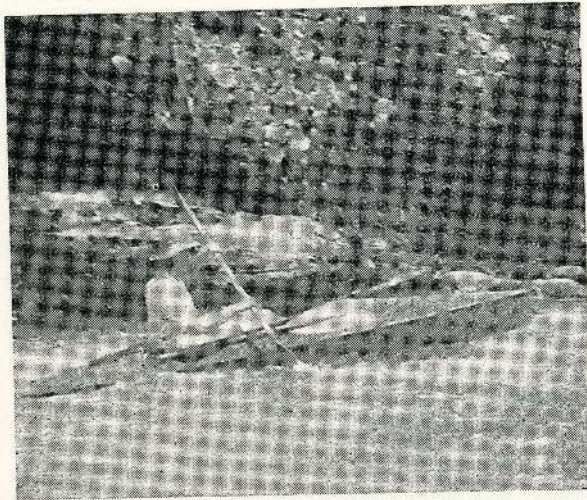
water levels, but eventually I decided that a light canoe would do.

In February I got my small boat ready, with the little equipment and food for which there was space, and waited for suitable conditions. I would have preferred to have a companion, but there was no one available at short notice. At the end of the month conditions were just right, and so, one morning very early, my driver and I set off with the canoe lashed to the top of the Land-Rover.

The start was where the Maduru Oya crosses the new road between Mahiyangana and the Biblile-Baticaloa road. There was a thick ground mist

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rising off the river that morning. This gave the scene an eerie look in the dawn. My driver seemed very agitated as I loaded up and set off down stream. He probably thought me a little crazy



I loaded up and set off

and that he would never see me again. He never did. Three days later, on his way to collect me, at the other end of my journey, he had a heart attack and died by the side of the road. I was very sorry to lose him as he had been with me on many jungle trips.

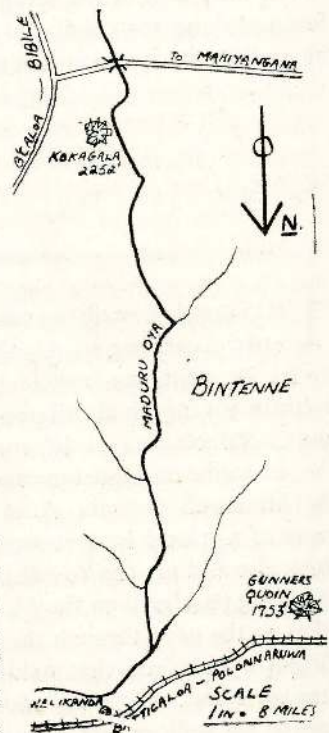
As I was to discover, there were rapids, for the first fifteen miles. Thereafter the only obstructions were the numerous snags and fallen trees. The very first rapid nearly proved my undoing almost capsizing the canoe. It filled with water and I had to stop to bale out and after this my equipment was never really dry again. I decided to be more careful in future, and, for difficult sections, let the canoe down on a rope.

Throughout the fifty-five miles which I completed, there is thick jungle on both banks practically the whole way. The river first passes Kokagala mountain. Birds were very noisy after the sun rose. There were racket-tailed drongos, shamas, imperial pigeons, parakeets and many others. Between the cliff and the jungle bordering the river there is a narrow strip of

park land some miles long. It is quite close to civilisation, but one still sees elephants, buffaloes and deer here and frequently the footmarks of leopard and bear. Almost from the start, I met crocodiles. The Maduru Oya is full of them having far more than the Menik Ganga or Kumbukkan Oya. They were all exceptionally wary and usually saw me first. After leaving Kokagala, a crocodile jumped off the bank and shot right under my canoe, moving so fast that it could have been mistaken for a shark. Just after this I disturbed three sambhur feeding on the bank who honked in alarm and ran off.

During the morning I came to a small foot path which led to an isolated village with a few scattered chenas. Hiding in the trees, with their eyes popping out of their heads, were two young villagers. It was fortunate that I met them, for there are some impassable rapids here. After some persuasion, they helped me carry my boat and equipment below the rapids but I lost my faithful old watch in the process.

The river then entered a very wild section of seven or eight miles where it narrowed down, became full of rapids, and numerous kumbuk trees closed overhead to form a gloomy twilight. Before mid-day I had the first of two narrow shaves. Standing in the middle of the river, roping the boat down a rapid, the current swept me forward. My leg got trapped in some rocks under water. The pull of the rope and the current was



tremendous and I thought my leg would break. I released the rope and struggled furiously for some time and got free. The boat had, meanwhile, navigated the rapids on its own and grounded on a sandbank. There was an angry bruise on my shin but a run on the sand convinced me that nothing was broken.

After stopping for lunch I passed, what I later realised was, the last rapid. The river became broader with beautiful white sandbanks and occasional patches of grass on the banks. In one I passed a sounder of eight wild pigs rooting around in the afternoon sunlight who were surprised when I floated up to them unawares. From another patch of grass, ten feet above the river, two crocodiles did a high dive when they saw me. I kept a constant lookout with my binoculars at birds, but saw nothing unusual.

Towards the end of the day I passed the remains of an ancient dam where the river flows between two rocky hills. Later I was surprised to come upon an abandoned chena. I chose a fine sandbank for my rough camp with a polythene sheet to keep the dew off.

As it got dark a barking deer started calling close by, followed later by the chorus of nightjars and owls. I had spent a night on my own in the jungle before, but on this occasion I must admit to feeling rather lonely, if not lost, for all along I had little idea of what the river held in store for me. Had I known what awaited me next day, my feelings would have been more disturbed. Some whisky soon cheered me up.

Early morning after a rough breakfast, I set off again. Thick jungle continued on both banks, but I did notice signs of some old chenas. I saw some spotted deer moving through the trees. I had been to this area before, along a timber track from Manampitiya. Inland from the river are some beautiful parklands. As recently as 1958 I saw a herd of over a hundred spotted deer here but now, I believe, they have nearly all been killed. The main diversion along this part of the river was the crocodiles, in all sizes, on practically every sandbank.

Towards mid-morning, I came upon an enormous chena fairly recently abandoned. I landed but all that was to be seen, apart from wholesale destruction, was a sorry looking herd of half-wild buffaloes. I felt sad that what had recently been fine forest, was now no more than waist high weeds with the gaunt skeletons of trees sticking up here and there. I soon regained my spirits for thick forest started again, with jungle covered islands in the middle of the river.

The current was flowing about three miles an hour, added to which, steerage way had to be maintained. I was making much faster progress than I expected. By noon on the second day I had completed nearly fifty miles, with only five to go. It was here that I had an encounter with a large and cantankerous elephant who ensured that I would not soon forget my lone trip down the Maduru Oya.

Rounding a bend I came upon a large bull elephant with big white patches on his ears. He was about three hundred yards ahead, standing in



The cantankerous elephant

Photo: M. Clarke

the middle of the river, squirting water over himself with his trunk. I stepped out of the canoe and watched him for ten minutes. Becoming bored with his leisurely bath, I shouted at him. He ignored me completely, and a little while later walked to the side of the river, and lay down in the water, appearing entirely comatose. Being rather impatient

I decided to float past him under the trees on the other bank. Just as I was opposite him, about forty yards away, he turned his head.

There now occurred what can only be described as an explosion. With one massive thrust he was on his feet, coming straight at me in a shower of spray, trunk curled up and ears forward. I did the only thing possible. I leapt out of the canoe, dashed through the water and gained the top of the bank. I glanced quickly behind me, thinking he would stop to smash up my boat, but he tore past, striking the stern with his foot. Convinced that I was now his objective, I set off down the bank, through the tall trees, running as I had never done before, with the monster following me. A hundred yards on, there was a massive crash behind me followed by dead silence. I stopped, then tip-toed up behind a kumbuk tree at the edge of the river and peering round I saw

my canoe upstream, swung sideways by the elephant, but still floating. I waited till it floated down to me, when it was the work of a moment to climb in and paddle away.

At the time I was convinced that the elephant was after me, but on consideration felt that he was probably both frightened and very angry, that I got between him and his path into the river, and that he got out just as fast as he could. It is also possible that the crashing behind me was further away than I thought and that he was just running away, and not after me. I could have checked this by returning and examining his footprints, but, by now, I was putting as much distance as possible between him and myself.

I reached my destination Welikande without further excitement. I set up camp on a little island in the river to await my driver but he never arrived.

Man Versus Elephant in Ceylon

By Ian de Silva

“NO one who knows Ceylon will deny that it has been granted two prerogatives by God: It produces almost the best cinnamon in the world, and the best elephants.” so wrote *Martin Wintergerst of Memmingen in 1712.*

Ceylon has been famous for its elephants since ancient times, and records exist that show that the excellent qualities of the Ceylon animal were known to the Greeks as far back as the time of Alexander the Great. (3rd century B.C.).

The presence in Ceylon of a team from the Smithsonian Institution carrying out a survey of elephants in the island has focussed attention on a problem that has caused some anxiety in the minds of animal lovers for some years past—the problem of conserving the fast diminishing numbers of the Ceylon elephant and saving it from extinction for the benefit of future generations.

There have been various estimates of the number of elephants extant in Ceylon today. It seems

to be a generally accepted figure that their numbers cannot be in excess of two thousand. The present survey being carried out through the initiative of the Wildlife Protection Society will no doubt produce more accurate statistics and other useful information which can serve as a basis for a planned campaign to save the elephant.

Time was when the island was teeming with elephants and at one stage these animals formed an important item of the export trade of the country. Large-scale destruction and reduction in numbers appears to have started in the nineteenth century and went on until quite recent times. The opening up of vast tracts of land for colonization and peasant settlement during the past three or four decades has hastened the destruction of these “monarchs of the forest” at an appalling rate in spite of the awareness of the need for conservation; and today the stage has been reached where they face extinction unless

timely action is taken—if it is not too late already—to save them for posterity.

Reference to old books and records gives one some idea of the important place these animals occupied in the trade of the country and in warfare in the past, and the rapid rate at which their destruction was effected since the early years of the nineteenth century. I reproduce in this article some statistics and interesting facts gleaned from various sources, together with some observations of my own, in the hope that they may be of interest to lovers of wild life.

Harry Storey, in his "Hunting and Shooting in Ceylon," says, "The elephants have been a prominent feature in this island for ages, and at the time of the English occupation existed in great numbers all over the country. Major Forbes in his "Eleven Years in Ceylon," between 1820 and 1830, speaks of elephants being met with 25 miles from Colombo . . . after 1831 the destruction of elephants was encouraged owing to their depredations and numbers, and Major Forbes mentions the killing of 106 elephants in 1837 by a party of four Europeans in three days, and the slaying of no less than 9 in one morning by a gentleman who was at the time Government Agent at Kurunegala."

Deraniyagala refers to a map of Colombo of 1730 which reveals the interesting fact that elephant kraals were held on the land now occupied by the Ridgeway Golf Links!

Considering the fact that the numbers of the Ceylon elephant are today estimated to be in the region of two thousand, it will no doubt come as a surprise to many to learn that in the years 1863—1884, a twenty two year period ending just ten years prior to the formation of the Game Protection Society of Ceylon (now the Wild Life Protection Society), the number of elephants exported from the island was 1,875.

The Ceylon Handbook and Directory (Edition of 1885-86), compiled and edited by A. M. and J. Ferguson, has the following information under the heading "Curiosities of the Ceylon Customs":—

"The number of *elephants* shipped from Ceylon year by year, is of public interest. Under the

head "Export Duties" a royalty of Rs. 200 used to be recovered for each elephant exported. The law came into operation on the 8th July, 1873. One or two years after this date, the exportation was reduced from 83 elephants per annum to 3. In 1878 only one elephant was exported.

The royalty was then reduced to Rs. 100 by proclamation of 17th June, 1882, and this has led to more business, more especially as there sprang up a demand for Ceylon elephants from menageries on the continent of Europe; but this was soon met, while the steady market seems to be for the supply of rajahs' courts in southern and other parts of India.

We append a list showing the number exported for the years 1863 to 1884:—

Elephants					Value
No. exported					Rs.
1863	...	...	173	...	28,690
1864	...	...	194	...	45,920
1865	...	...	271	...	72,660
1866	...	...	203	...	63,250
1867	...	...	148	...	23,280
1868	...	...	167	...	47,450
1869	...	...	199	...	46,500
1870	...	...	38	...	8,050
1871	...	...	74	...	17,600
1872	...	...	53	...	22,270
1873	...	...	83	...	28,900
1874	...	...	77	...	41,230
1875	...	...	7	...	3,500
1876	...	...	3	...	1,000
1877	...	...	1	...	500
1878	...	...	1	...	500
1879	...	...	1	...	1,100
1880	...	...	12	...	11,200
1881	...	...	8	...	7,470
1882	...	...	25	...	10,105
1883	...	...	86	...	40,010
1884	...	...	51	...	28,100
Total	...	...	1,875	...	144,715

"That Ceylon should have exported in 22 years no less than 1,875 elephants valued at Rs. 144,715 shows how plentiful the monarchs of our forests have been; the question is now with a lessened export whether their number is unduly increasing; but we suspect that the greater number of planters and visitors nowadays anxious to kill "their elephant" while in Ceylon more than counter-balances the export deficiency."

According to Tennent, in the eighteen forties and 'fifties rewards were paid for the destruction of no less than 5,500 elephants!

Deraniyagala gives the following figures of elephants captured in early kraals from 1666 to 1871 :—

Dutch period:—

1666 ... 96 elephants in one kraal.
1681 ... 13 in one kraal; 104 in another;
204 in a third.
1690 ... 160 in one kraal.
1697 ... 97 elephants.

British period:—

1779 ... 176 elephants in one kraal; 400 in another.
1805 ... 300 elephants.
1849 ... 6 captured; 2 shot near Colombo.
1871 ... 28 captured.

Going back to the seventeenth century we find that John van der Behr, in his "Diary of a Nine Years journeyed by Water and Land in the service of the Dutch East India Company," in the course of which he landed in Ceylon on 12th December 1644, states under the date 21st March, 1648:—

"I was sent with 6 Musqueteers and 8 Laskerins to the River Keymello, to be stationed some weeks in the new-built house there. At that place we were often disturbed by the elephants, for they walked boldly past our house by day, although we often, Fir'd at them with musquets, which they heeded little. But by night they came 20, 30 and 40 together, swimming across the River, but were driven away by our fire-brands."

Again, under the date 17th September, 1649, "19 tam'd elephants, which the Governor had sold in the name of his Principals, the East India

Company, to a Moor for 19,000 Dutch Guilders, were embarked from Galle in Moorish yachts and *Schampanien*. They had great trouble ere they were brought on Board. The Jetty and the Vessel must be covered with green branches, and thickly strewn with sand, so that they go as if into a wood; and then they were hoisted into the ship with great trouble and toil, and so sail'd for the coast of Cormandel."

Albrecht Herport, Freeman of the City of Berne and Amateur of the Painter's Art, in a short description of a Nine-Year East-Indian Journey, says (1663), "This King hath always some 100 Elephants at this Court, which all, when they see the King, bend their Fore-Foot, to Honour him; they go also by night through all the Streets of the City, instead of a Patrol, and none must let himself be seen by them, or if they find him, they use him pitifully."

Albrecht Herport gives an account of the manner in which elephants were killed or captured, and the uses to which they were put after being tamed. The method of capture described was obviously the precursor of the modern elephant kraal. His description of the manner in which they were killed, is:—

"First, on the Roads where the Elephants are known to be, great heavy Blocks are hung from Trees that spread over the Road, with a Spike; and when the Elephant comes below it, the Watcher who is in the Tree, cuts the Rope, so that the Block falls on him, by which, if he is hit, he must be killed. This is done only so that they may travel safer from them."

Christopher Schweitzer of Wuerttemberg in the "Journal and Diary of his Six Years' East-Indian Journey (1675—1682)" gives a fairly lengthy account of the appearance, habits and mode of capture of elephants. The following extracts are from his account :—

"I come now to give a short Account of the Wild and Tame Beasts that are in this Island of Ceylon.

"First, it is full of Elephants. These are finer and more Docile than in other Countries. Therefore they catch a great many of 'em, as shall be

told, which they make Tame, and fit for War, and send them to the Kingdoms of Persia, Surat, the Great Mogul, and other places; and the Dutch themselves make use of them in the Field."

"They'll live above 200 years, as has been seen in some whose Age has been designedly marked. They go together in the Woods some 4, 5, 6, 10 to 20 in a Company. They have a Leader or King, which they follow; the young ones go in the middle. In the day time, they keep to the Mountains or in great Wildernesses, in the Shade, but towards the Dusk of the evening, they begin to repair to the Plains, where are the Waters and the cultivated Fields.

The Eastern Kings and Merchants buy the Elephants by their height, which they measure to an Inch, from the Ground to the ridge of the Back. According to their height, they are worth 7, 8, 900 to 1000 Rixdollars."

"The 28th, 29th and 30th, of November, 1678 we must Fire against 20 Elephants on the Drill-Ground, now from in front, now from behind them, so that they should be apt to our propos'd Expedition. At first they were not able to bear the noise and smoak of our Guns, tossing up their Trunks. At last they were brought to it so, that an Indian could get upon them, and ride about a Pistol shot away from us, and then drive them upon us (we standing in a four-corner'd Windmill Formation and firing against them all the while), at length they'd break our Ranks, take what care we could; and tho' we shot in their very Noses; and if the Cingulayans that ride them had no prevented them with their Hooks, they would have trampled us under foot."

The figures quoted from Fergusons' Directory give some idea of the magnitude of the export trade in elephants a hundred years ago. A hundred years earlier, in 1762 to be exact, an embassy was despatched by the British Government at Madras to the Court of the King of Kandy with the object of entering into an alliance with Ceylon. The journal of John Pybus, the leader of that Embassy, throws much light on the conditions existing in Ceylon at that period and indicated

that the trade in elephants in the 18th Century was no less extensive than in the 19th.

He states, "The trade carried on by the Dutch in Elephants, in which this Island abounds may properly be considered among its Exports; and is one of those, I believe, which yields a very considerable advantage to that Company. But as the King reserves to himself the sole prerogative of catching these animals, the Dutch are obliged as a Matter of Form, to make application to him annually for his permission for this Privilege, which is always granted them under a restriction not to exceed such a number, which is generally limited to between twenty and thirty. Little regard is however paid to it; and I am informed that at Matara, Colombo and Jaffnapatam, where these animals only are hunted for, the Dutch do not catch less than 150, and sometimes 200, in one year."

Samuel W. Baker, in his "Eight Years in Ceylon" published in 1855, bemoans the fact that the Government reward for the destruction of elephants which had earlier been ten shillings per animal, was at the time of writing reduced to seven shillings in some districts and altogether abolished in others, "as the number killed was so great that the Government imagine that they cannot afford the annual outlay." He goes on to say that although the number of these animals was still so immense in Ceylon, they must nevertheless have been much reduced within the preceding twenty years.

It is, of course, a well-known fact that until quite recently a sportsman who could boast of having shot more than one elephant on safari was regarded with something akin to hero-worship by his fellows. I remember meeting at Mahiyangana one such, a medical officer, who had achieved quite a reputation as a big-game hunter with a record of several elephants to his credit. This was in 1941, when he was at the height of his career as a big game hunter.

Being stationed in rather a wild part of the country, he was able to indulge in his favourite sport to his heart's content. This was in the days when the road from Kandy through Teldeniya

to Minipe came to a dead end at the Weragantota resthouse, when there was no modern highway or bridge across the river, before the Mahiyangana Dagoba was restored, and the area around the ruins of the dagoba was in thick jungle with a few scattered houses in the jungle, some of which had Portuguese cannon for gate-posts. I had to get across the river from the Weragantota resthouse to the Mahiyangana resthouse on the opposite bank by ferryboat. It is hard to recapture that scene when one visits the area today.

While on the subject of well-known elephant hunters, mention must be made of the celebrated Major Thomas William Rogers, who was struck dead by lightning at the Haputale resthouse on the 7th June, 1845, at the age of forty-one. He is credited with having slain over 1,400 elephants; a Captain Gallwey with over 700; and Major Skinner (the road builder) almost as many. The exploits of Major Rogers are described at length by Keble in his "Ceylon Beaten Track."

For a graphic description of the capture of elephants by panikkayans and in kraals, which vividly brings out the contrasts in the two methods of capture, it would be hard to beat the description given by Spittel in the chapter titled "Elephants and Men" in his book "Far Off Things."

Today, in spite of a virtual ban on the shooting or capture of wild elephants, one does hear of an occasional animal being shot as the owner of cultivated land always has the right to shoot one found destroying his crops.

The only circumstances under which a licence to shoot an elephant is granted at the present time is when an animal has turned "rogue" and has become a menace to life and property. The animal is proclaimed by a notification in the Government Gazette, after which a licence to shoot will be issued by the Government Agent of the District on application. A description of the proclaimed elephant is given in the Gazette notification, but even assuming that the description given is an accurate one, it is hard to imagine that a hunter meeting a potentially dangerous elephant in the forest will pause to check whether the appearance of the animal tallies with the

description given in the Gazette! Having had some experience of the way these things are done, I think I can say without fear of contradiction that the description of a "rogue" elephant as published is often a fanciful one.

* * * *

The Land Utilization Committee has recommended the establishment of a corridor for elephants from the Yala or Ruhuna group of reserves to the Gal Oya reserves, to ensure that in that part of the country at least the animals will be safe for some time to come.

In the Gal Oya Valley, wild elephants proved a major tourist attraction some ten or twelve years ago, but are not constantly "on show" now as they were then.

In 1956, when the airstrip three miles north of Amparai town was being built, one had only to drive down the approach road to the airstrip of an evening at dusk to see herds of elephants grazing peacefully within a few yards of the road. On one occasion—in October 1956—I drove down this road with my family at about six p.m. to see the elephants, but this was apparently one of those rare occasions on which they had decided not to show themselves. Disappointed, we decided to turn back but Francis, our driver and unofficial guide, had other ideas. He drove down past the airstrip to the Uhana "saddle" and then back along the main left bank channel road that would take us back to Amparai *via* Himidurawa and Paragahakelle.

No sooner had we turned on to the road running along the channel bund, than we saw the elephants—herds of them of all sizes, males, females, infants, coming down to the channel from both banks to drink their fill. Soon we had to halt the car and wait until the animals blocking the roadway decided to move down the bank to the channel on our right or into the jungle on the left. After we had been forced to halt in this manner a couple of times, as the animals were increasing in numbers and it was growing dark, we felt it would not be wise or safe to proceed further and decided to turn back. But it was too

late, for now, in addition to the animals in front, those that had moved off the road on the approach of the car had moved back on to the road behind us so that we were hemmed in, with the herd all around us.

There was no help for it but to go on and this we did, heaving sighs of relief and thankfulness when we got past the last of them. We were in no mood to even attempt to count them as we drove through, but the impression created in our minds was that the herd must have numbered well over a hundred. What had begun as a pleasure jaunt ended up as a nightmare ride but it proved, to my satisfaction at any rate, that an elephant will not normally attack unless it is provoked or disturbed. I have had confirmation of this on several other occasions.

One herd that frequented this area at the time, and was actually counted on several occasions as it crossed the road to get from one patch of jungle to another, consisted of over seventy elephants.

Spittel in the account mentioned above refers to the fact that the panikkayans at Kondavattavan would walk up to within about 15 yards of a wild elephant without any qualms. I found that on several occasions I was able to get up to within about five yards of elephants feeding in the Amparai tank to take pictures of them. I do not pretend that I was being extra bold in doing this, for anyone could have done the same. It was merely a case of familiarity breeding contempt, for the animals had by this time grown so accustomed to the sight of man that they took no more notice of me than of the buffaloes in the water. (No, I did not say 'other buffaloes').

When the Gal Oya sugar plantation was started—and at Kantalai as well—elephants became a veritable menace. They are very partial to

sugar cane, and, considering the fact that an adult is said to consume about 500 lbs. of food a day, the havoc that can be caused by a few animals that may find their way into the plantation at night can well be imagined. The authorities responsible for the plantation tried many devices to keep them out—watchers along the boundary with fires burning all night, panikkayans with nooses, electric fences, the whole works.

Finally the advice and assistance of that elephant expert, the late Sam Elapata Dissawe, were sought. He spent about a week in the plantation and made some useful suggestions that were adopted. His suggestion that a trench 4 ft. wide and 4 ft. deep be dug round the periphery of the plantation to keep the elephants out could not be adopted because of the magnitude of the task—the trench would have had to be several miles in length—and the fact that the machines needed for the job could not be spared from other urgent work. I believe the most effective deterrent and one which has kept the elephants out without causing them injury, has been the electric fence.

On the 4th of December, 1968, while on a visit to Amparai in connection with the observance of Hardy Memorial Day, I drove down the Airport road once more at dusk and was pleasantly surprised to find the elephants still there, as in the days gone by, but not in such numbers on this particular day. Members of the Smithsonian Elephant Survey team were there, by the roadside, watching the animals through their binoculars.

So it does seem that there is still a fair chance of saving the elephant—at least until that dismal day in the not too distant future when, according to the prophets of gloom, there will be **STANDING ROOM ONLY** on this planet for the human race. All other animals would, of course, have long since disappeared by then.

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Mating of Elephants in Captivity

By SAM ELAPATA JNR.

ON May 12th, 1966, two elephants came to my bungalow to clear the roots of the rubber trees in my garden.

The male was in an advanced stage of musth with the secretions from the temporal glands reaching the mouth on both sides of the face, (Demada Kavila). He was restless and irritable. The male, Kadira, who had established a friendly kind of relationship with me through many years—he was captured as a baby in the Embilipitiya area and brought up at home and is about 30 years old—was not too friendly to me either. He grabbed the food I offered him which was most unusual. His thoughts seemed faraway from food and projected in almost an obsessive way towards the female, Kapuri—captured in the 1944 kraal at Panamure and about 29 years old.

Kadira kept scenting Kapuri and trying to fondle her. The stories I have heard from childhood are that elephants want privacy for their mating and when in musth become uncontrollable if given the chance. So there has always been a certain diffidence about giving elephants an opportunity to mate for fear of consequences. Even at home when my father had a herd of about 14 elephants it was never encouraged—though in the 1920s a female did mate and a baby was born which died after a month. Somehow or other it seems that in the last two or three decades I have not heard of more than two or three acts of mating in captivity.

Having asked Kadira's mahout whether he could control the elephant I decided to give the two animals a chance. I let the animals move freely in the garden. Kadira began fondling the female with his trunk. They moved from the sun towards the shade of the trees. As they reached the trees the male attempted to mount the female using a rock in the garden as a stepping-stone to facilitate his mounting. Several attempts were made, but all proved unsuccessful. Both animals were absolutely impervious to us as spectators—thereby giving lie to the myth that mating occurs

in absolute privacy. They did not so much as give a look of annoyance at us with all our conversation.

Kadira having attempted to mount about four or five times gave up and then they started fondling each other. They would touch each other with their trunks, intertwine them, put the tips of their trunks in each other's mouths and caress each other in an almost human way. The female Kapuri kept on a constant rumbling noise which no doubt was one of affection. Kadira on the other hand used gentle pressure with his "tushes" starting from the head and going down gradually along the back right to the hindquarters. The pressure used by Kadira was by no means excessive but sufficient for Kapuri to feel and submit.

There was as it were a tacit acceptance and acquiescence in Kapuri to this pressure from the dominant male. Then Kadira attempted to mount again, this time broadside and desperately tried entry which was quite impossible. He did however emit a glutinous fluid which might have been sperm or only seminal fluid every time he mounted. Each attempt lasted one to two minutes. It appeared that the male was unaccustomed to the act. In spite of Kapuri permitting and manouvering for position the male did not succeed.

It must however be mentioned that there was a certain anxiety at times in the female because she deliberately moved away when the male was about to succeed. As the garden was too small to permit them complete liberty I was forced to tie the female leaving the chain long enough not to impede either of the animals in their movement.

Then the male after several more attempts managed to get the female into position and partially entered at which point the female gave vent to a cry or trumpet which could have been through fear of the first attempt or one of utter excitement. Anyway the act was not complete and the male dismounted because the female moved out of position again. This time the male seemed to

be irritated and the pressure used by his "tushes" was quite hard, so much so that the female winced in pain. In between these several attempts the animals stood close to each other in a state of relaxation. The male seemed to be almost half asleep. At 10.30 a.m. we sent them off for their daily bath. No further activity on that day.

The following day they were brought to my bungalow at about 8 a.m. They were not keen on any food we gave them and began caressing each other. This time the first attempt at mating was a complete success. This was at 8.20 a.m. The male's forefeet were placed well forward along either side of the female's spine with knees bent somewhat. Having gained entry the male surged forward and there was a distinct forward and backward movement of the buttocks. There was a shriek or trumpeting from the female at the consummation of the act—which took approximately one and a half to two minutes.

After the first act there was a mucousy blood flow from the female—not of a large amount but a reasonable quantity. There was a 20 minute period of rest with the animals eating some palm leaves. The male seemed to be completely disinterested in the female, though she continued with those low rumblings.

Then the male began to court again, applying the usual pressure with his "tushes" and manou-vering for position with the female adjusting herself. An attempt was made but complete penetration did not take place due to bad positioning and the male dismounted. At 8.45 a.m. a further attempt was made and the act consummated without any trouble. Again the female trumpeted in what by now seemed to me to be one of ecstasy. This act too lasted just about two minutes. The next attempt was made at 10.02 a.m., but failed; then again at 10.30 a.m. the attempt was a failure. Finally at 10.55 a.m. the act was completed—again lasting no more than two minutes.

The male was in almost a vertical position with the forelegs lying stretched along the back of the female and the hindlegs somewhat bent and right up against the hindlegs of the female at the completion of the act.

Neither the male nor the female showed any sign of agitation whatsoever at the proximity of the spectators. The male didn't seem to mind the mahout going near the female to loosen the chain which sometimes got wound round the tree even when he was attempting to mount the female. At all times the animals were under the complete control of the mahouts.

The flow from the temporal glands was less than the first day, coming only half way down the sides of the face. By noon they were back in the river for their bath. On the third day the elephants arrived at 8.10 a.m. There was a complete union at 8.20 a.m.—the act lasting one to two minutes. Several further attempts were made that day at intervals of 20 to 30 minutes, but the female was not willing. She constantly moved away and faced the male. The male anyway mounted with the forelegs on top of the female's head and went through the motions of coition—ending in a trumpeting by the female. The flow of fluid was stronger than on the previous day.

One interesting point was that on the third day the male ate avidly all the female's dung as if it were a delicacy. Elephants are known to eat the dung of other elephants if they contain earth which elephants eat when they have stomach upsets. But this particular dung did not contain earth at all—it being quite easy to ascertain from the colouration of the dung.

Although this male gives a wide berth to the dung of other elephants it had subsequently eaten the dung of this female several times to my knowledge, and there had never been any signs of earth in the dung on all these occasions.

On the fourth, fifth and sixth days the female refused to mate. I therefore gave up the idea of putting them together for some time. I tried again months later, several times, but the female just refused to mate. On one of these occasions the male was not in musth and when he did attempt to mount, the fluid from the temporal glands literally squirted out and down the sides of the face.

Unfortunately the mating did not end in conception.

REDUNDANT ELEPHANTS

Daily Telegraph 10.2.69.

DRIED elephant meat will become a delicacy to the British housewife in the near future as officials of South Africa's Kruger National Park are forced to put a stop to an unprecedented elephant population explosion. The elephants are painlessly killed by darts fired from helicopters and the carcasses removed to a processing plant where the meat is dried to form "Biltong."

The population explosion reflects the success of the animal preservation policy in the Kruger Park during the past 70 years. "We don't know what to do with all our elephants. If we let the situation develop they will cause damage to the park that cannot be made good for hundreds of years," Mr. A. M. Brynard, Chief Nature Conservator of the Park, explained to me.

Elephants have no natural enemy except man, and their large demand for water, the critical factor for all life in the park with daytime temperatures of over 100 deg. F., is already threatening the survival of other species.

"We shall have to kill 1,137 elephants a year, as well as 483 buffaloes, 1,500 impala (a type of gazelle) and 856 zebras among others," Mr. Brynard said, "We can sell live zebras at £35 and there is a good prospect of starting game farming in the Transvaal."

"The culling of the herds and the selling of animals is a complete reversal of all our previous policies."

The problem is made much worse by a constant stream of elephant "immigrants" crossing into the park from the east, from neighbouring Mozambique, where intensified hunting and increased settlement has driven the elephants to emigrate to the safe Kruger Park.

Shortage of Lions

One might expect that the carnivores in the park, like lions, leopards and cheetahs, would at least keep the other animals in check even if they do not kill elephants. But Mr. Brynard told me that lions do not increase in the same proportion as other animals, and that in fact the mortality of young lions is very great. "When they are about one year old, their mothers expect them to fend for themselves and it is then that many die of starvation. They can only rarely get an animal for themselves."

Another valuable product from the killing of elephants will be their skins, already being processed in London for jackets and other Carnaby Street products.

CARS KILL ANIMALS

According to the American Automobile Association, motorists in the United States kill one million animals a day, more than hunters do with guns. The association stated that in 1968 at least 365,000,000 animals, most of them wildlife, were struck and killed by vehicles in the United

States. During 1967 in Pennsylvania alone vehicles killed 22,610 deer and 37 bears. During a single day in Florida, state authorities reported that vehicles had killed 5,000 quail, 250 turkeys and 2,000 squirrels, rabbits, songbirds, rodents and reptiles.

Birth of an Elephant

By MELVYN LOCKHART

DURING February, 1968, I served as a field assistant for the Smithsonian elephant survey team during its efforts to observe the keddah operation at Kakankotte, Mysore, India. The elephant drive held in Kakankotte during 1968 will probably be the last to be conducted in that area since most of the land will be inundated as a result of a new high dam construction in the Kakankotte river basin. A complete analysis and description of the keddah operation will be published subsequently by Dr. Fred Kurt, Dr. Suzanne Ripley, and Mr. George McKay. I offer this brief account of an elephant birth which I was privileged to observe and photograph while working for the Smithsonian team in India.

Ninety-four elephants were captured during the drive, approximately half of them being females. Approximately twenty animals were adult females capable of giving birth. Shortly after the adult animals had been individually noosed and picketed with monitor elephants three females gave birth.

The following description of an elephant birth appears normal in every respect if we compare the observations with the published material collected over the last fifty years in zoos, circuses, and the timber camps of India and Burma.

At approximately 15.00 hrs. the female passed a large quantity of amniotic fluid. After this time contractions became more regular and very soon a distinct bulge marking the descent of the foetus into the cervix could be noted in the perineal region of the female. A string of mucous was noted extruding from the urogenital sinus opening.

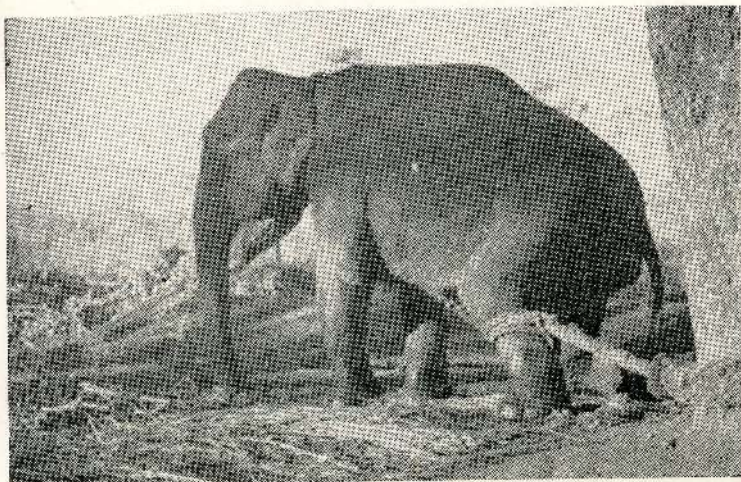
Appearance of the foetal membranes and the final dropping of the neonate took approximately ten minutes and the newborn was free of the mother by 17.35 hrs.

The mother paid little attention to the young until it began to move. The foetal membranes had been broken during the passage through the vagina and uro-genital sinus. The mother commenced sniffing the baby with her trunk when it started to move. The baby made several attempts to stand and was able to do so by 17.55 hours.

At approximately 18.00 hours the infant made its first attempts to suckle. The mother showed no aggression toward the youngster and nursing was successfully accomplished.

We know from observations at the Portland Zoo, U.S.A., and from field observations that the birth of an elephant generally involves the attendance of one or more adult females in addition to the mother. Indeed, often a whole cow herd will remain in the vicinity of a parturient female. Since the above observations were made on a tied female separated from other adult elephants certain normal aspects of the social interaction at birth involving the neonate and adults are lacking. Nevertheless it is hoped that the photographs and time-table of the observations will be of use and interest to the reader.

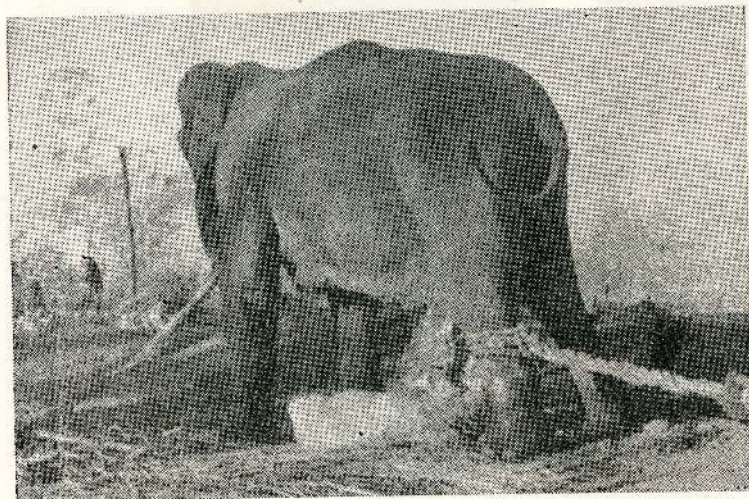
(All photographs by MELVYN LOCKHART.)



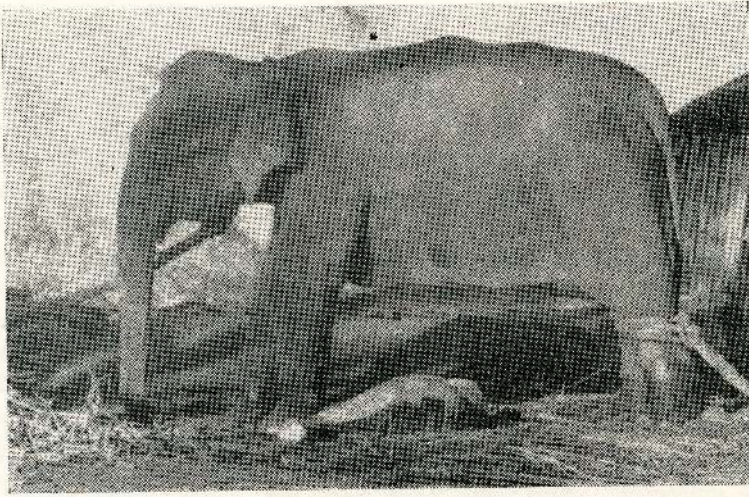
The female in a typical squatting posture during a heavy contraction. The contractions commenced at approximately 15.00 hours. Lesions on the legs caused by the restraining ropes may be noted in this picture.



The first appearance of the amniotic sac still containing some fluid. Appearance of the foetal membranes and the final dropping of the neonate took approximately ten minutes. The newborn was free of the mother by 17.35 hours.

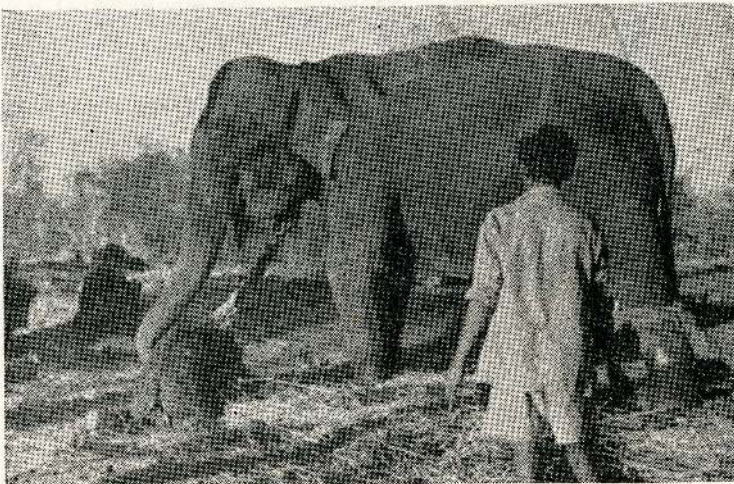
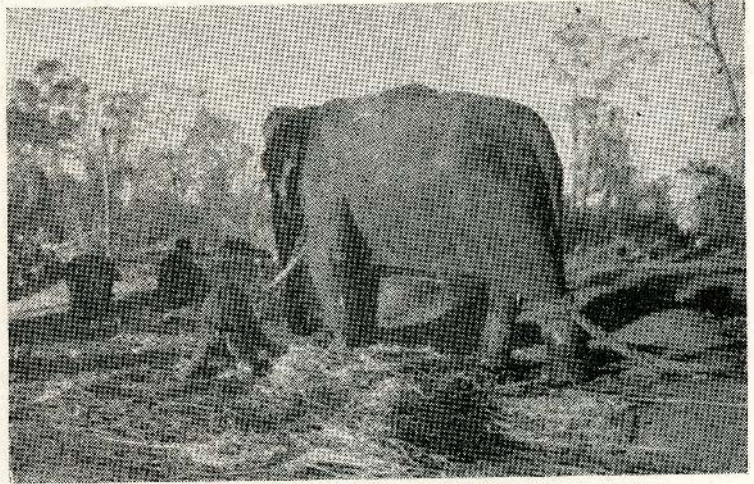


The neonate immediately after it hit the ground and the subsequent expulsion of fluid by the female. Note the tumescence of the female mammary glands.



The neonate lying on its side and the mother standing over it. The mother paid little attention to the young until it began to move. The foetal membranes had been broken during the passage through the vagina and uro-genital sinus.

The mother commenced sniffing the baby with her trunk when it started to move. The baby made several attempts to stand and was able to do so by 17.55 hours.



The mother attempting to draw the baby towards her with her trunk. Frequently the baby's efforts to stand were accompanied by attempts by the mother to draw it towards her with her trunk.

A Night in the Jungle

By J. A. A. P.

"The story of an 'elephant charmer' whose courage failed him in the presence of a stampeding herd of wild elephants was told by a party of about twenty-five villagers, who were proceeding on a journey from Ranna, in the Tangalle district. An hour later they reached the Kattakaduwa Tank, where a party of sportsmen had gathered on a platform up a tree for the purpose of watching wild elephants disporting themselves in the water by moonlight."

Thus ran a news para in the "Ceylon Daily News" some years ago, and my mind went back to that day, or rather night, now far distant, when I too was one of a party watching at this same tank. I saw once again before me my friend, old Babun, a one time police officer of Ranna, Babun the grizzled old veteran shikari. Babun with his cheerful face, his shuffling gait and slight stoop, his clear eye and steady hand. Babun with his wonderful knowledge of the jungle and the ways of the jungle! But I am anticipating.

Picture the dry season in Tangalle district at noon. A pitiless sun, blazing down on parched earth—small streams and ponds dry, showing sometimes on their hard baked beds, whitened bones of some hapless animal. Trees and plants, withered and dying, the very grass parched to the likeness of straw. Heat unbearable, intolerable. Not a breath of air. Nothing stirs. Nothing moves. Only the hardy thorny shrubs hold up their heads. In the thickets of the jungle, the birds and beasts take what little shelter there is. The animals lie gasping and panting athirst, tongues lolling out. The waterholes are dry. What water remains can only be found in one or two of the ancient tanks.

Came Babun, one such sultry day.

"Sir, the messa (platform) is ready. I have fixed it on the big tree this time so the ladies also can go. The elephants came to drink even last night. Don't fail to be there early. I have made everything ready."

Four O'clock that evening saw us start out from Tangalle in my friend Peter's car. There were four ladies, Peter and myself. The car also carried cameras, three rifles, blankets and pillows as well as a lunch basket with a snack, and several thermos flasks with hot cocoa.

Babun met us at his house on our arrival at Ranna, and he had four boys ready as carriers. As soon as the car was unloaded and their packages distributed among the boys, we started off on foot for Kattakaduwa Tank, a mile away. Taking short cuts over neglected paddy fields where the mud was hard baked we came to a fair sized tank with a bund round it. Here the monotony of the parched landscape was relieved by traces of verdant foliage.

The bund partly encircled the tank on two sides. The forest came right up to the waters' edge on the third, and on the remaining side a glade of lush grass rolled on for about 50—100 yards, and then again the jungle. A good many gnarled, lofty trees reared their heads at the edge of the glade; and on the biggest of these was a crow's nest of a platform, 50 feet from the ground. A rickety ladder led up to it—a Heath Robinson drawing to the life!

"Good gracious" cried the ladies, "how ever, are we to get up this ladder?" "Will this platform hold us all? Is it strong enough?" Peter climbed up to reconnoitre, and reported that the ladder was strong enough and the platform big enough. Thus reassured up they went. Once secure on the messa a floor space of about 10 ft. $\times$ 10 ft., was available, we set about making ourselves comfortable. On the planks forming the messa Babun had strewn fresh straw covered over with mats. We piled our blankets and pillows on this. The edges of the platform had a 2 ft. cadjan "wall" all round. Babun and his son ensconced themselves in a partitioned off corner. Night falls rapidly in the jungle. Before we were quite bedded down, it was dusk. "Better keep still now," cautioned Babun, and we settled down to watch.

Darkness and solemn stillness pervades. A light breeze stirs the leaves and our lofty perch sways gently. The night air is cold, and we are thankful for the blankets. Eagerly we watch, eyes straining to pierce the gloom. Soon a myriad jungle noises first singly, but gradually in chorus, break the silence. The chirping of crickets, the croaking of frogs, the hooting of owls, blend in magic harmony softened by the sound of water lapping on the bund. A wailing night bird adds a discordant note. Close by, a deer barks.

But look, the darkness is no more, over the tree tops the moon rises, a wondrous gleaming orb, turning night into day. The rippling wavelets of the tank, shimmer and gleam in the moonlight. Nothing moves. Peace reigns.

"Ssh," whispers Babun, and we are all agog. A lone stag steps warily out from the jungle, pauses awhile with poised head, then advances boldly on to the sward. Close on his heels comes a herd of deer, pretty spotted deer, some big, some small. The small ones especially are very interesting to watch as they gambol about in the wake of their elders, now heading for the water. They drink and return to the sward once more. They are only about 30 yards from the foot of our tree and are in plain view. There are about 25 in the herd. Even as we watch one holds up its head as if listening, or sniffing the air; and the herd darts off, getting back into cover in the twinkling of an eye. What could have sent them scampering off like that? A cheetah perhaps, who knows?

Our whispered speculations are interrupted by Babun's soft whistle. And this time he only points with his finger. With slow majestic tread, looming extraordinarily large in the half light of the moon, advances a lone elephant. Picking his way carefully, he goes knee deep into the water and then has a long drink. His thirst quenched, he gives himself a shower bath.

As serenely and majestically as he came, he now turns round and goes off to the edge of the

jungle. Here the tender branches of the trees afford him a meal. As he eats he moves further and further away from us and near the edge of the bund turns into the jungle. A grand sight, indeed.

"How swell to see a herd of those" says Peter, and even his whisper sounds loud after the breathless silence during the period of watch, "and now for a bite, I'm hungry."

We fall to and make short work of the sandwiches. The hot cocoa is very welcome. We doze and nod, watching and waiting for a herd of elephants. In fact for over half an hour, we hear the crashing and cracking of branches of a herd close by, but whether owing to the presence of the lone elephant, probably a rogue, or due to some other cause, not one shows up. The moon is waning, the jungle is still, we struggle to keep our eyes open.

Towards dawn, we are all roused from fitful naps as a small herd of sambhur comes to drink. They remain longer on the grassy patch than the deer, but are not so interesting to watch. They go off quietly.

Dawn—the birds awaken and trill out their songs of welcome to the new day. Many with bright plumage flit from tree to tree. We stretch cramped limbs and climb down the ladder. Water is fetched from the tank and we try to wash all signs of sleep from our faces.

While we are enjoying a cold breakfast, our bearers who had gone home the previous evening return. They are quite surprised to learn that only one elephant turned up. A fortnight later some friends who went on this same watch saw a herd of over 50.

"Come again, master" calls out Babun as we tumble into the car and start off for home.

You can bet I'm going!

Note by the Editor:—Babun is long since dead. His son Robert A. Piyadasa, the town arachchi of Ranna still constructs a messa round about August and awaits visitors who contact him earlier.

As to the Good and Bad Points of Elephants, their Marks Auspicious and Inauspicious

By A. H. E. MOLAMURE

“OUT of a thousand elephants not one is endowed with all the marks (of excellence); indeed, it is a truism that such a one is never born.”—The *Gajāṅga lakṣaṇa*.

The earliest historical evidence for the elephant tamed in the service of man is furnished by seals of Indian provenance dating from the second millenium B.C. Never a mere domesticated animal, from the beginning in the sub-continent there has been something of the prodigious about it — complementary to the splendour of kings, inseparable from ceremonial display and forming, with cavalry, chariots and infantry, the “four limbs” of the fighting forces, the *caturāṅgiṇi senāva*. Accounted royal property, capital punishment was the sentence ordained by law for any person causing the death of one. Among the sixty four subjects traditionally taught to princes and nobles, the *hasti śilpaya*—knowledge and skill in all that has to do with elephants—ranked high in importance. The host of elephants a ruler could deploy being a not inaccurate measure of his prestige and military standing he for his part strove to have at his command the maximum number his resources permitted and the responsibility for their maintenance devolved on the state. The *Arthaśāstra* of Kautīliya, a treatise on statecraft and government (assigned to a date variously between ca. 300 B.C. and 300 A.D.), includes a brief exegesis on the capture, care and feeding of elephants, the duties of the king’s officer in charge of them, the division into castes and so on, suggesting that by the time of its composition, the *gaja śāstra*, the systematic study of elephants, was already far advanced—an inference supported by other evidence although independent works devoted entirely to the elephant did not begin to appear until somewhat later.

Fascinating to contemplate is the manner in which the idea of the elephant penetrated the

Indian mind “as through a mirror or water or crystal,” permeating every level of consciousness. There, reworked, reordered by the creative imagination it was to manifest itself in diverse forms—in myth and legend, literature, painting, sculpture and the humbler crafts. Nor did familiarity with the animal in everyday life impoverish the sense of grandeur and wonder it evoked. For, in India, the elephant has always been regarded as lucky and sacred. It is the mount of Gods, the bearer of victory to kings. The exceedingly rare good fortune to possess a white elephant is one of the attributes of a *Cakravartin*, a Universal Emperor. The Buddha, in one of his previous births, was the noble elephant *Chaddanta* and before his final incarnation in this world his mother dreamed a most auspicious dream—that a white tusked elephant entered her womb. The very early *Hastāyurveda* gives piquant details of the origin of elephants; of their descent from the sixteen whom the Unborn (Creator) brought into being, using as receptacles the two halves of the shell of the cosmic egg out of which he had created the sun. Long ago they could fly. One day they alighted upon an immense banyan tree and, by their weight, a branch of it broke and fell on to the dwelling place of a hermit. He, in anger, cursed them to be earth-bound thenceforth and to be ridden as mounts by humankind. None were immune save the elephants of the eight quarters. Not even Brahma himself could undo the imprecation but, moved to pity by their distress, he promised them a physician who would minister to them and assuage their suffering. This was *Pālakāpya* who, having “lived as an elephant among elephants learning about them, what they should and should not eat, their joys and griefs, their gestures and what is good and bad for them,” revealed to *Romapāda*, king of *Aṅga*—and so for the first time to the world of

men—"the origin of elephants, their favourable and other marks, their medical treatment and other things, one after another."

Wherever, in the course of diffusive movements in history, the impact of Indian (more exactly, Hindu-Buddhist) civilization was felt in those countries of the East sustaining indigenous wild elephant populations—in Assam, Burma, Thailand, Indo-China and Ceylon, for example—there grew up a like awareness, a comparable ambivalence of feeling—realism held in tension by awe and esteem—towards the elephant. Conceived of as auspicious, a symbol of majesty and stateliness, it was accepted into the life of the imagination with as felicitous results for art there as in India. Accordingly, in all elephant countries—if one may so describe them—a matrix of uniformity can be discerned in the myths, beliefs and practices concerning elephants despite each of these countries having accumulated layer upon layer—as inevitably they did with the lapse of centuries—a body of elephant lore peculiar to itself, formulated out of its singular experience.

What is of exceptional interest is the persistence up to the present day, in these lands, of a genuine, ancient tradition or rather a whole basic aspect of it, even if damaged or fragmentary in varying degrees. Its age and authenticity become amply evident on a comparison with the contents of old Indian elephant treatises like the *Mātāṅga-līlā* and *Hastāyurveda*, the sections dealing with elephants incorporated in works such as the *Bṛihat Saṁhitā* of Varāhamihira, the *Śukranī-tisāra*, Somadeva's *Yasastilaka* and the palm-leaf manuscript elephant books from Ceylon while innumerable references throughout Indian and Sinhala literature provide corroboration and, at the same time, give the impression of a more pervasive general knowledge of the *gaja śāstra* in India and Ceylon of those times than is commonly allowed. G. P. Sanderson, who was for years in charge of the government elephant establishments in Mysore and Bengal and whose book "Thirteen Years among the Wild Beasts of India," published towards the later half of the

19th century, contains a great deal of valuable information about elephants in India of that period, touched the heart of the matter when he wrote of the situation he encountered: "The elephant is essentially a native's animal. Natives alone have fully studied his peculiarities and classified him into castes; his capture, training and keeping, are in native hands, as well as the trade; and the native standard of merit regulates the market . . . The native requirements in an elephant differ essentially from ours. They prize the animal chiefly as an adjunct to court display and temple processions. Consequently, perfection of form and carriage are paramount from their point of view. As we require it for economic purposes, strength, docility, and courage are first considerations with us . . . The native standard of a good elephant does, however, comprise all essentials to excellence for any purpose; and putting aside minor and whimsical requirements, consisting in certain lucky or unlucky marks, correctly distinguishes the most desirable animals." He might have been speaking for all the elephant countries of Asia. Not the least for Ceylon—at any rate in the middle of the 19th century—of which Sir Emerson Tennent was able to write: "So conversant are the natives with the structure and 'points' of the elephant, that they divide them readily into castes, and describe with particularity their distinctive excellences and defects."

There is a convention which distinguishes good and bad points in horses, cattle and other animals, founded on the recognition that intra-specific individuals differ from each other within a fairly wide range. So is it with elephants, from of old. Implicit in the theory is the existence of a type, imagined or otherwise, which constitutes the standard of excellence (and its converse.) Here, elephant men and cognoscenti all over Asia are in agreement and their views accord with those expressed in ancient writings on elephants. Perfection of form is, in general, not to be found apart from the following characteristics: a powerfully built physique; a deep square chest and great girth; massive forelegs, convex on the forward

side due to development of muscle; a large head surmounted by symmetrical temporal bosses and carried high, the line of the head and dorsal parts showing as a gradual slope from the summit of the head to the withers and from there, down a broad level back to generous loins borne on short, sturdy hindlegs; a short thick neck forming on the lower side one or more pendulous transverse folds; a long trunk, broad at the base and proportionately heavy down its length; full cheeks and broad forehead; large ears with undamaged lobes; eyes bright and good humoured; palate, tongue and mouth of a reddish copper colour; flesh-pink spots about the ears and face; a smooth straight tail set in a broad pad of flesh at the root and ending in a complete tuft of bristles—long but not sweeping the ground; twenty or eighteen toe-nails, smooth clear in colour and shaped like the half moon; a soft dense skin. Proportion is of prime importance—no single part too large or too small in relation to the others lest it become a blemish and / or a mark of ill-luck. An ugly animal is no less distinctive—mainly the direct opposite of the above—and has a narrow chest, scraggy fore-quarters and spindly legs; a high, arched back with a prominent spinal ridge; a short trunk and tail; a lean face and head, hollow cheeks; eyes small dull and restless¹—altogether a miserable specimen, unprepossessing in appearance and unreliable in disposition.

The division into breeds and castes of the early Sanskrit texts turns on variations of physical type—in the final analysis, on points good and bad. Three primary breeds are defined; bhadra

(state, noble and auspicious), manda (slow) and mrga (deer). A fourth, saṁkīrṇa or mīśra is also acknowledged as a mixture of all three types with no clear cut characteristics. Sanderson records a three-fold classification from Bengal under the terms Koomeria, Dwāsala and Meerga. Koomeria is a derivative from the Sanskrit kumāra, royal, princely and — to judge from his description — is almost certainly identical with bhadra, signifying the finest kind of elephant, impressive to look at and gifted with the qualities of equanimity, intelligence and courage in a high degree. Mrga and meerga are obviously the same, so called from the resemblance to a deer: leggy, weedy, with a small head and neck, mean and nervous in temperament—by far the least estimable of the three breeds. Dwāsala which, according to Sanderson, stands for “the blending of the first and third castes into an intermediate one,” is none other than saṁkīrṇa and probably includes manda as well because the latter, too, holds an intermediate position between bhadra and mrga although the Sanskrit texts award to manda a definite type of its own, not to be confused with saṁkīrṇa. Sanderson is of the opinion that the characteristics, on which the division into breeds or castes rests, are not a fixed or even hereditary variation. The types of extreme divergence—koomeria and meerga—do not occur by herds, as in the case of dwāsala, but only sporadically. This is consistent with the non-selective breeding habits of elephants in the wild; and, it is from wild herds that elephants have always been captured for use by man. It may be presumed that the typical representatives of the three breeds of the Sanskrit texts were

1. Cf. Evans: “Those animals possessed of lean heads, hollow cheeks, small restless eyes, shortish thin trunks, should be treated with suspicion as they very often are bad tempered.” He was closely connected with elephants in Burma for a long period of time and his book, although primarily veterinary, contains useful information on traditional beliefs and practices pertaining to elephants in that country.

In “Elephant Gold” by P. D. Stracey, the author, after briefly discussing some of the good points in elephants

as accepted in Assam, contributes his own opinion: “Invariably the best animals from the point of view of docility, courage, endurance and freedom from vices had many, if not all, of the above good points. On the other hand it was common to find an elephant with some one or other of the bad points—particularly white eyes, sixteen nails and a broom tail (i.e. sweeping the ground) prove unreliable on occasions. I have had experience of a very large number of koonkis—at one time I had a hundred of the best from all over Assam in my kheddās”

likewise sporadic and *saṃkīrṇa* or "ordinary" elephants vastly preponderant².

The above division finds no place in the elephant-lore of Ceylon, still less the other and more recondite classifications³ elaborated in Indian treatises—except in passing. The *Śrī Yoga Satakaya*—a work on medicine for elephants composed in Sanskrit śloka with a companion translation into Siṃhala—exhorts the practitioner to take into account several factors such as season, habitat and even the breed (*jāti*)—whether *bhadra*, *maṇḍa*, *mṛga* or *miśra*—in prescribing treatment. On the other hand, there appears to be no parallel elsewhere for the classification, prevalent in Ceylon⁴, into the ten castes (*kula*.) Neatly fitted into the mnemonic :—

kālavakaṇḍa gaṅgeiyaṃ—paṇḍaraṃ tamba piṅgalaṃ gandha maṅgala hemaṇḍa—upōsatha chaddanta medasa—

the castes, *kālavaka*, *gaṅgeiya*, *paṇḍara*, *tamba*, *piṅgala*, *gandha*, *maṅgala*, *hema*, *upōsatha* and *chaddanta*, are set down in ascending order, so graded that a single elephant of a particular *kula*, it is said, rates ten of the next preceding kind in worth. The basis of differentiation is, here again, both physical and temperamental. Elephants of the *chaddanta kula* are the highest in type but their semi-divine nature sets them apart and it is the *upōsatha kula* which most

nearly resembles the *bhadra* and *koomeria* breeds. The following is a translation of the pair of stanzas describing the *upōsatha kula*, taken from the *Maha Gaja Lakṣaṇa Saṅgarāva*, a Siṃhala treatise on elephants:—

Having a pair of broad ears, a long well-knit torso, a straight tail, reddish mouth and tongue; broad cheeks, and developed temporal bosses, eyes like a house sparrow's; disciplined; limb-joints inconspicuous as if moulded in wax, long face and trunk, toenails smooth like lotus petals; high withers and tusks upcurved.

Having a large body, a broad chest and big bones; wide of girth and stout-necked; a large head, body-hair long and glossy, loud-trumpeting; a gait like that of a parrot. Lord of all. This elephant will bring good fortune to the king. Life-span a hundred years.

At the other end of the scale is the *kālavaka kula*:—

Has the look of a demon's image; thin body, small head, bulging eyes, hollow cheeks, low-slung back and hind-quarters, short trunk, no tail-brush; calls out loudly at night; has no liking for the food it eats; body shakes like a plantain leaf; fond of rain-water and mud; eyes tearing continuously; very lazy although strong; the skin always puckered as if with cold; ill-disposed towards everybody. Nothing good can be

2. It is probably as true to surmise that typical representatives of the ten-fold caste system of Ceylon appear as individuals and that whole herds do not exhibit uniform characteristics of a caste. Certainly, to assign a given elephant to the appropriate caste of the ten is an extremely difficult undertaking. Nevertheless if the *Indian Gaja Śāstra* and also the references contained in the Sanskrit sections of Siṃhala manuscripts are to be relied on, elephants from different regions of India can be told apart and even form the basis of a classification. This would surely imply the recurrence of a broadly constant type. In Ceylon it is common knowledge that the elephants of the swamps of the Mahavāli Gaṅga are the biggest in size; not so familiar, perhaps, is the fact that the Wilpattu elephants are, on the whole, among the worst specimens in this country.

3. One is an eight-fold division related to seven sorts of supernatural beings—*deva* (gods), *gandharva* (heavenly musicians), *rākṣasa* (ogres), *sarpa* (serpents—semidivine in Hindu belief) etc. and, as eighth, human beings (*manuṣya*), the last again subdivided into four castes—*brahmins*, *kṣatriyas*, *vaiśyas* and *śūdras*. Another takes cognizance of the degree of sensitivity to the goad or elephant hook (Skt: *aṃkusa*; Siṃh: *heṇḍuva*). The

seven degrees ultimately resolve themselves into three main types—those that are easily quickened, those that respond only to violent goading and those that show the correct reaction—neither over nor under-sensitive (with reference to the castes of Ceylon, sensitivity to the goad becomes progressively less the higher the caste of an elephant.) Most classifications are dependent on mental and physical characteristics into which enter subtle considerations such as smell and sheen. But there are other bases: e.g. place of birth (*vāraṇṭpatti sthānaya*) and habitat preference—whether mountain ranging (*giricara*), river-valley ranging (*nadicara*) or intermediate—terrain ranging (*miśracara*). Not the least interesting is the three-fold division which adopts as criterion the predominant strand or quality (*guṇa*) of the three—*sattva*, *rajas* and *tamas*—which, according to a reputed theory of Indian philosophy, inheres in the substance of all material nature.

4. Certain other aspects of elephant lore are unique to Ceylon. For example, the names given to the parts of an elephant's external anatomy are completely different from those used elsewhere, as are the words of command (elephant language, so called) they are trained to obey.

expected of it. Life-span a hundred and thirteen years.

The description of the remaining eight castes runs in a similar strain. It will be seen, then, that the physical features of an elephant have been examined from two further points of view: a belief in their capacity to bring good luck or misfortune to the owner of the animal and as indicators of the length of the animal's life.

Good and bad points—even the division into castes—in so far as they signify a concept of excellence and its opposite—are logical and intelligible; they are the outcome of centuries of experience with elephants and provide a useful means of assessing the worth of a particular animal. But, to evaluate certain marks or physical signs in terms of “auspicious and inauspicious, favourable and unfavourable,” as inherently fraught with good or evil to its owner, is to enter a far different territory of the mind. Sanderson, who was nothing if not practical—“every native prince or nobleman of distinction in India” he wrote, “keeps elephants to swell his retinue: Government and private persons, as timber contractors etc. require them for work”—thought the notion “whimsical”. Nevertheless, the belief that animals possessing special characteristics of physique, temper and behaviour can influence their immediate surroundings beneficially or malefically roves back to an incalculably distant past. It is perhaps an extension of a very early habit of thought which in most parts of the world preceded animism and has sometimes been described as animatism: the natural object, animate and inanimate, comprehended not as the abode

of a spirit but as itself possessed of divine or magic power. In any event, the interpretation of certain marks and characteristics in elephants as auspicious or inauspicious is widely acknowledged in all elephant countries of the East.

To analyse the verdict marked against each of the ten castes in the *Maha Gaja Lakṣaṇa Saṅgarāva* on the score of auspicious or inauspicious is to arrive at the following result: the characteristics of the *chaddanta* and *upōsatha kula* are invariably favourable; *gandha*, *maṅgala* and *hema kula* elephants can be either good or bad depending on the individual animal while those of the *kālavaka*, *gaṅgeiya*, *paṇḍara*, *tamba* and *piṅgala kula* are irredeemably inauspicious. The *Gajāṅga lakṣaṇa*⁵ is more explicit in that it singles out for mention the marks both good (*uttama lakṣaṇa*) and bad (*pāpa lakṣaṇa*). A study of this and other available sources discloses the interesting fact that auspicious marks are almost without exception identical with the good points of an elephant. The auspicious characteristics, as set out in the *Gajāṅga lakṣaṇa*, are :—

Quarters of good proportions fore and hind, a powerful body muscled in the correct places; fore-parts elevated, hind-parts like a pig's; well-formed rounded limbs, full toes with nails shaped like the waxing half-moon; a square wide chest and stout neck; a massive head with a broad forehead and two symmetrical temporal bosses broad at the summit and cleft by a deep furrow; a face both broad and long; pleasing in the sounds⁶ it makes and having a gait like a parrot's.

The *Mātaṅga-līlā* takes up much the same standpoint and adds: “a vehicle fit for a king is an elephant in whom these six parts are elevated—

5. The book consists of a number of Sanskrit ślokaś to each of which is appended a phrase by phrase translation into Sinhala. Unfortunately, the Sanskrit is often corrupt; in result the Sinhala is unreliable. (Knowing no Sanskrit I have had to rely on the Sinhala when translating, aiming at a literal version). The verses are addressed to a king or ruler because in India (and Ceylon) elephants were the property of the king. Nobles and high officers of state usually obtained elephants as recipients of royal gifts. But the implication is clear: it is the owner of the elephant who is affected by the influence of marks good or bad. The work certainly owes its origin to Indian sources but when and how it came to Ceylon is probably impossible to determine with

accuracy. (This, the *Maha Gaja Lakṣaṇa Saṅgarāva* and the *Gaja Yōga Satakaya* are among the mss included in the Ceylon National Museum's publication: Ali Piḷibaṇḍa Vidyāva.)

6. The *Mātaṅga-līlā* specifies them: “The sounds of elephants that are due to hunger, thirst, grief and fright are declared to be very inauspicious. The sounds that are deep, pleasant, joyous, healthy, amorous and bland—these six, O king, are declared to be auspicious sounds of noble elephants. The sounds like those of a *haṁsa* (goose), crane, peacock, koel, tiger, lion and bull are rated high; inauspicious are those like a camel, crow, jackal, boar and ape.”

the two temporal bosses, the two tusks, withers and backbone;" "an excellent elephant is one who has these seven parts red coloured—the two trunk ends, penis, tongue, lip, anus and palate;" "good is an elephant whose ears are red and the edges not frayed, whose tusks are honey coloured and the right one higher⁷; whose body is variegated with spots like one thickly painted with vermilion" and "characterised by the fragrance of the water he spurts from his trunk; such an elephant is worthy of a king." The Gajāṅga lakṣaṇa continues:

Very soft-skinned with twenty smooth toenails—or even eighteen; eyes like doṃba flowers⁸ and a straight long penis—such a noble elephant, O king, will be the cause of contentment and prosperity to your Majesty.

Palate, lips and tongue reddish like the hue of copper, eyes like a house-sparrow's, a clearly defined pair of temporal bosses, broad ears, a generous shapely mouth; a tail both long and straight—such a noble elephant O king, will give your Majesty glory and renown.

The tip of the right tusk higher (than the left), a long face and trunk picked out in reddish spots, the joints of the limbs and knees hidden; well developed hind-parts—such an elephant, O king, is an appropriate mount for your Majesty.

Two additional points deserve mention, though they do not appear to be recorded in any book foreign or local and would seem to belong to an oral tradition peculiar to Ceylon: it is an auspicious behavioural act in an elephant and denotes a higher type if, in eating, food is taken up in the

trunk and delivered into the mouth from the right side; similarly, if in drinking water it does so neatly without blowing some of it out⁹.

Because inauspicious marks are believed to give rise to baneful consequences a careful watch is maintained for them by elephant men. Sometimes, the value of a seemingly first-rate animal can be set at naught by a single unfavourable sign. The Mātaṅga-lilā is curtly lucid: "if elephants are complete in all the list of good qualities but have too few or too many toe-nails, they accomplish only evils". Just as physical beauty is closely bound up with auspiciousness, so too, a wretched-looking animal is inauspicious. To cite the Gajāṅga lakṣaṇa:—

Having an unsightly form, weak hind-quarters, a poor tail, trunk, ears and penis; very long tusks and thin neck; unpleasant smelling, wicked in temper and black of tongue and palate—this ill-favoured elephant will bring about the destruction of the country, its resources, rulers and people; all its stable-mates will die of the fever called pākala.

Exaggerated physical features are just as obnoxious:—

If, in an elephant, the fore and hind quarters, tusks, trunk, ears, eyes, top of the head, tail, penis, head or neck are so large as to be disproportionate—such a one is ill-favoured; the country, the army, the royal family, the king himself, his wives, relatives, sons, friends and riches will perish in war.

In sizing up an elephant certain defects are looked for first because they inspire the greatest

7. It is my personal observation over many years that rarely does a tusked-elephant have the tip of the right tusk higher than the left.

8. The doṃba flower (*Calophyllum inophyllum*) is white, the padmarāga, a gem stone reddish-pink, orange-pink, typically the colour of pomegranate seed-coats. Abu'l Fazl writing of elephants in the days of Akbar, the Moghul emperor, has it that "white eyes dyed with yellow, black and red" were looked upon as signs of excellence. Mr. Stracey, commenting on this passage says the reference is probably to light-coloured eyes and remarks that "this belief is not shared by elephant men of today who consider such elephants to be dangerous and unreliable. White or yellow eyes, in fact, are anathema to the elephant connoisseur." He concurs with this opinion in the light of his experience with

elephants in Assam. Cf. also this śloka from the Gajāṅga lakṣaṇa:—

If an elephant with reddish eyes is captured the chief person in the land will die within two months, it is said.

9. My informant was Mr. T. B. Beligodapitiya, retired President of Village Tribunals, Rambukkana, whose knowledge of elephants is perhaps unrivalled in Ceylon. Ever since he told me this I have watched for these movements in elephants especially in wild ones. Some eat from the right side of their mouths, some from the left. Some take water into their mouths letting fall scarcely a drop while others are not so careful. Yet others expel the last part of each draught abruptly as if unable to contain breath.

dread and are, for that reason perhaps, most familiar to elephant people.

The following are regarded with grave misgiving:—

1. Mouth, palate, lips and tongue—if one or more of them is black (or dark blue) or blotched or marbled with these colours. “If such a one is captured the king, his chief counsellor (*purōhita*) and ministers will perish.”
2. Toe-nails—if they are of a number other than twenty or eighteen; or, if black or dark in colour, attenuated, decayed or entirely wanting; or, if freakishly double. “An elephant with double toe-nails should be sent away on sight, O king, where it lives, the ruler, the ministers, the *purōhita*, the army with its transports—all these, their children and relatives will perish.”
3. Eyes—if they resemble a drongo's, *vaṇḍura*'s (leaf monkey or langur) or cobra's; or, if very dark, restless and suspicious; or if, they tear constantly. “Should tears stream all the time from an elephant's eyes there will be tears ever present in the owner's house.”
4. Tail—if similar to a dog's or lion's; or, if crooked, kinky¹⁰, too short¹¹ or too long¹²; if the tail hairs are of mixed colours—black and white—or totally absent.

Other marks occur, less widely understood it may be, but scarcely less potent for evil:—

- (i) Testes (which are normally hidden within the body)—if they are prominent and conspicuous.

- (ii) Penis—if too long, too small or limp; black (dark blue), mottled with black or white or both; scabrous, scaly.

- (iii) The two sides of the body—if they lack proportion and one is lopsided or malformed, specially in respect of the fore and hind quarters; the two cheeks and sides of the mouth not matching each other and also the eyes.

- (iv) Ears—if one is missing.

- (v) Tusks—if an elephant has the right tusk only, it will never get on with its keeper; if the left only it will destroy the royal family; if the right tusk grows askew to the right, the king will go to war, if the left tusk grows earthwards, the king, his *purōhita* and ministers will die.

- (vi) Body-hair—if it is too copious or too sparse; most important, there should be hair about the lips and the mouth and the tail complete with a full brush.

- (vii) Skin—if it is dull, scruffy, scaly or too thin¹³.

- (viii) Fold of skin—if there is a loose fold of skin descending from the throat down to the forelegs, resembling bees settling in a swarm; the same, but where the fold is continued between the fore legs on to the abdomen; neither of these should be confused with the transverse folds of skin across the lower part of the neck which enhance the good points in an elephant. (This is a Burmese belief mentioned by Evans).

10. Here again, in my observation, elephants with kinky tails have uncertain tempers.

11. In the Ruhuna National Park I have, more than once, seen a young elephant, whose tail has a full brush but is kinky and not more than eighteen inches in length brush and all. In other respects, too, it is a wretched looking animal. Once, we came upon it rocking forward and back in an extraordinary diagonal fashion with its left fore-foot and right hind-leg raised off the ground—a creature charged with every presage of disaster.

12. It is a saying among Siṅhala elephant men about a good elephant that seven points should touch the ground: the four feet, trunk, tail and penis when distended. There is an anomaly here, as too long a tail is inauspicious; besides, a tail brushing the ground makes the tail hairs ragged and worn out—itself a blemish. Ideally, the tail should extend to the hocks or just short of the ground.

13. Cf. Evans: “Elephants with thin, light-coloured skins, even if they possess many good points should be avoided; they are as a rule not strong, and frequently fall sick.”

(ix) Chāyā¹⁴—if this not as it should be in an elephant, it “will bring every kind of grief upon all”.

(x) If a female elephant has some of the characteristics of the male, (from the *Brihat Samhitā*, a work on astrology in Sanskrit).

An inference of maleficence is drawn not only from a reading of marks connected with the external anatomy of an elephant; certain modes of behaviour are also relevant. Thus, unlucky is the elephant which keeps touching its genitals all the while. The one “which continually swings its trunk will bring destruction upon the royal family; if it is the head that is rocked, the king’s vehicles will be destroyed.” Evans distinguishes three such kinds of movement in the context of Burmese beliefs:—

1. “Moving the head up and down, and simultaneously from left to right, like the action of pounding rice in a Burmese rice mortar.
2. Swinging the trunk only to the left and right, rocking the cradle.
3. A restlessness of the whole body, somewhat after the fashion of bears, the action of a winnowing tray.”

According to Evans the following is a bad sign in an elephant—“holding the trunk up in the air and putting it into the mouth, called in Burmese ‘eating the clouds’, star gazing.” To revert to the *Gajāṅga lakṣaṇa*: if, early in the morning before the calls of birds, an elephant trumpets and rears up shivering and its skin crinkles as if with goose-pimples, if it scatters water with its tail and is not obedient to its keeper, it should be regarded as a difficult and wicked animal; such an elephant should never be bought and if

captured must be let loose forthwith. An elephant which eats everything that is given and yet is never satisfied, which dislikes being stroked—know it to be a demon; if such an elephant is captured the king and all his treasures will be destroyed. If an elephant is one which rinses its mouth (taking water into its mouth blows out and draws in its cheeks in rapid succession)—such a one will bring destruction upon the king, his army, vehicles and clan. According to the *Mātāṅga-līlā*, “an elephant cow that is pregnant or that is accompanied by a calf, if taken, causes destruction to vehicular animals and treasury”. She should be allowed to go free at the place of capture and “homage rendered to the elephants of the quarters (*dikgaja*) and the gods.” This prejudice has, apparently, no counterpart in Ceylon; neither has the analogous prohibition, very old in India, against breeding elephants in captivity. The latter was considered most unlucky and Akbar, the Moghul emperor, is said to have been the first to go against orthodox belief by conducting breeding experiments which resulted in the production of superior strains. Augury proper—foretelling the future from signs physical and behavioural—underlies the purport of the following śloka:—

If an elephant picks up in its trunk a piece of broken pottery or a dead stick and rubs or strikes it against its tusks—that is an ominous sign.

It has been remarked that a correlation is deemed to exist between length of life and the characteristics of an elephant physical and temperamental. Long life is indicated when an elephant is powerfully built, of good proportions and has smooth, shining tusks and toe-nails, healthy body hair and eyes the colour of padmarāga

14. What *chāyā* stands for precisely is obscure. Franklin Edgerton, in his edition of the *Mātāṅga-līlā*, has a note wherein he cites a manuscript from Tanjore that “the bodies of elephants show a *chāyā*, ‘shadow’ or ‘sheen’ which may be of five sorts, one derived from each of the five elements—earth, water, fire, air or wind, and ether. The first three are auspicious, the last two

inauspicious. The *chāyā* has the peculiar effect of annulling the significance of the bodily marks (*lakṣaṇa*): so that an elephant with auspicious marks but an inauspicious *chāyā*, is dangerous and to be rejected; and vice-versa.” (The five elements are: *prthivi*, *śasila*, *agni*, *vāyu* and *nabhas* respectively.)

stones¹⁵. The *Mātaṅga-līlā* declares long-lived elephants to be those which have the seven parts red-coloured, the six parts elevated and are of majestic spirit, fragrant, having the colour of dark-blue clouds, loud-roaring, having a double or triple skin" (a soft, thick, loose skin). According to the same source, there are twelve kṣetra "sections" or "departments" of an elephant—the foreparts, head, eyes, face, ears, neck, belly, tusks, trunk, character, colour and the hind-members—which have a bearing on the length of life; for, each of them, if unflawed, represents and accounts for a decade of life; moreover, the life-span of a bhadra elephant is twelve decades or a hundred and twenty years, of a manda eight decades and of a mrga four decades respectively. An affinity of a like nature connects bad points with shortness of life. It is sufficient here to select a typical example from the *Gajāṅga lakṣaṇa*:—

Very long-tusked, thin-necked, a few or no hairs on the tail; body unpleasant in smell; of evil disposition; tongue lips and palate black—such an elephant is shortlived; nor should it be in the king's service for it brings destruction on his country and his people.

Any consideration of the good and bad points of the elephant brings to mind, irresistibly, the report of many travellers to the East during the 16th and 17th centuries to the effect that the elephant of Ceylon surpassed all others in size, strength and sagacity. The Portuguese who took over the trade in elephants from the Moors went so far as to declare that its pre-eminence was acknowledged by elephants of other lands—when they met—by an act of homage. Tavernier, the 17th century French traveller to the Indies vouches for it from his personal experience. "Those of Ceylon," he writes less fancifully,

"are more highly esteemed than the elephants of other countries because they are more courageous in war." Tenment discounts the proposition as fallacious. Yet, numerous writers who knew the Indies at first-hand insist on the superiority of the Ceylon elephant. Doubtless they give expression to an opinion widely current in their day, whether founded on fact or not. This much is undeniable: elephants from Ceylon were greatly in demand, notably at the court of the Moghul emperors in India. From Ribeiro's account in his *Ceilao*, cubits of height was the measure by which elephants were sold and those from Ceylon unfailingly fetched the best prices, the buyer paying more "according to the perfection of the animal, its carriage and its points, just as in the case of a horse."

What of the tradition of elephant-lore in Ceylon at the present day? Etiolated beyond recovery, it must wither away in a few years more and with it the phenomenon of the elephant as a tame animal—so integral and so long a part of the life of the island. Meanwhile, the timber contractor and the values he personifies, prevail. He might conceivably take note of a black patch in an elephant's mouth or dark toe-nails, if indeed he has the knowledge, but these are trifles when set against the animal's usefulness in the timber trade. For, what is required of an elephant today, chiefly if not solely, is a capacity for hard work. In a wider scale of reference, the spectacle of elephants in perahera processions, shackled, barely able to hobble along, shorn of all but a semblance of dignity, the reaction of modern crowds to a mildly restive animal—the shouting and panic—these are intimations of significance; for one thing, of an increasing inability on our part to live with elephants. The elephant, in fine, is passing out of the ambience of our culture.

15. Vide note 8 above.

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Mating Leopards

By J. D. N. BANKS

AT 5 p.m. on 12th November, 1968 my wife and I, accompanied by tracker Punchi Banda, were motoring slowly along the track which circles Kokkari Villu in Wilpattu National Park when we came upon a leopard rolling on the road ahead. The animal regained its feet as we approached and entered the jungle between the track and the villu as we approached. When we arrived at that spot we heard loud purring and the close inspection of the undergrowth revealed a large male leopard lying against a tree and a female displaying a considerable amount of affection much in the manner of a domestic cat. We were discouraged from approaching too close by an angry growl and ferocious look from the male but his attentions were soon diverted from us to the female and, in a short time the pair mated. Immediately afterwards the female rolled over on her back and struck out with fang and claw making the male spring away to the accompaniment of growls and snarls. The pair separated briefly but soon

came together again and walked slowly out on to the track where they stood looking at us for some time before crossing to enter the jungle again. They soon settled down again to their love making only some 15-20 feet from our vehicle and mating took place again with the same vicious aftermath seen on the earlier occasion.

By this time we had been joined by a tourist car and the fortunate occupants had the unique experience of seeing leopards mating on the first occasion they had ever seen these animals in the wild!

Since leopards have a gestation period in the region of 90 days, there should be some cubs somewhere in Wilpattu National Park, possibly in the Kokkari/Nelum Villu area in the first half of February, 1969. Unfortunately, owing to the heavy undergrowth, bad light and uncertainty over a possible reaction to a closer approach, we were not able to obtain any film except when they were crossing the track from one "bed" to another.

Lore, Legend, and Local Folk-Ideas on Wildlife

By R. L. BROHIER D. Litt.,

CEYLON is unique in its possession of a historical background which diffuses a very long-established kinship between man and wildlife. This was no doubt animated by the hermit life, which the early Indo-Aryan settlers—in common with all peoples of the past, led in early times. The kinship was moreover fostered by, and grew through intimate contact with the surrounding forest and glade where doubtless wildlife in plenty then lived and roamed. It is a world of fantasy such as this, which has bequeathed to us the many simple but delightful

home and folklore stories woven around beasts, birds and reptiles.

More often than not it fell to the lot of the gamarala (a village elder) to pass on the stories to a band of younger people gathered around him. Maybe, the same stories were told during the long hours of darkness when perhaps two or three adult rustics sat in scantily protected watch-huts at night, keeping weary vigil, guarding their ripening crops, from the inroads of elephant, buffalo or boar. They came to be told and retold as the years rolled by. Thus, then, does tradition live.

These few quaint conceptions and naturalistic folk—ideas which I now set down are from the forest villages of both the wet, and the more ancient dry-zone districts of Ceylon. I got to know them from the rustic people who lived there in isolation until more recently, in travels extending over many decades. You may do so too, provided you can today find the “story-teller” in the new jungle of education which has sprung up to choke the traditions and folklore of the past.

To reach the story-teller’s innermost mind you must first attune yourself to a sympathetic appreciation of his simple, conservative ideas. Remembering that his repertoire derives from unwritten thoughts which have deeply influenced past generations, and above all that they defy close observations—you have fitted yourself to venture into the realm of lore and legend.

Nearly all folk—stories present a crystallised precept or moral. Thus for instance, we find a vivid picture of the retribution which comes in the wake of cruelty and primitive passions illustrated in the story of the elephant who trampled to death the young of the quail merely because the nest happened to be in his track. The mother-bird distracted with sorrow, carries her tale of woe to the crow, the fly, and the frog. The crow helped to wreak vengeance by pecking at the elephant’s eyes. The fly, by depositing her eggs on the wound. Blinded, in the grip of agony, and tormented by thirst, the elephant hearing the croaking of the frog is enticed on to the brink of a precipice and falling headlong over its steep side pays with his life for unwonted cruelty. The story also tends to present the truth that tyrants may come by their deserts even from sources which they might be inclined to treat with scorn.

We have all heard of the docility, sagacity and tractability in elephantine character. These traits cannot be better illustrated than by a story from the Hambantota district. The elephant involved was a harmless rogue and amused himself by waylaying the tappal carrier who in the early years of this century daily trotted from Tangalle, carrying Her Majesty’s mails,

It may be supposed that initially it was purely mischief which excited parchyderm curiosity, but a new taste was awakened when he found a parcel in the letter-bag containing a couple of loaves of bread. From that day he watched for the tappal runner with eager expectation, and trumpeted: “stand and deliver”! The tappal runner effected a compromise by flinging the parcel of loaves at him and bolting. The mail went through but the Assistant Government Agent, who was deprived of his bread supply could hardly be expected to have taken a complacent view. He could not have the elephant shot since he was not a man-killer.

The elephant however began to widen his curiosity and turned from the A.G.A.’s loaves to compelling the traders and pingo-carriers who passed by to lay down their loads. The animal thus appropriated to himself the coconut, the dry fish, the jaggery, and all such bazaar articles which were finding their way to Hambantota. One day, the elephant found in his spoil a large bag of chillies. Crushing a goodly quantity with his foot he took a sniff at it. The bruised spice set his brain afire, and the contact of the crushed chillies with the delicate skin at the tip of his trunk brought on a smarting sensation which drove him berserk. Maddened by pain and furious with rage, he dashed round breaking and destroying everything within reach. From that day he became a confirmed misanthrope, and a menace to man, woman or child within the reach of his trunk. He eventually fell to the rifle of the official whose bread he had been plundering.

The leopard is the only formidable member of the feline race in Ceylon. Until Tennent denied the existence of the cheetah in Ceylon, the Ceylon leopard was universally dignified by that title. In many a back-block you will hear the legend that the cat and the leopard were at one time “guru” and pupil. Making sure of always maintaining its superiority over the pupil, the cat taught the leopard to climb up a tree but left him ignorant of the way of climbing down. Here we have the traditional theory as to why the leopard is always compelled to spring down from a tree

or come down backwards, also why he ever bears a hatred for his tutor. He will kill the cat should he get the chance—says village tradition, but remembering that the cat was his master he does not make a meal off the body, but is believed to elevate and worship it.

I once saw in the jungles off Kebitagollewa evidence of the ineptitude of the leopard to come down a tree. The beast had gone up one tree which was growing close to another—probably bird-nesting. While slipping down one of the trees backward, he was caught by his neck in the trunks of the two trees. They served as a trap from which all his struggles could not extricate him. His rotting carcass led to the discovery.

It is the excited chatter and antics of the *rilawa* and *wanderoo* which disclose the presence of the only animal they fear—the leopard. The sagacity of the monkey is best illustrated in the story of a troop of them, who had made up their minds to do some work. Approaching the king's gardener, they offered to help him, and were told that they might do so by daily pouring water on the plants. The monkeys however soon found that the supply of water was not sufficient to go round. Consequently they took counsel among themselves, and were mighty happy when he whom they declared the wisest of them all suggested as a way out of the difficulty that they should divide the water in proportion to the length of the root. Accordingly they set about rooting up each plant before watering it. At first sight there would appear to be nothing but naive simplicity in the story. Behind this there lurks the moral: "Kindness backed by ignorance generally produces more harm than good."

The cunning of the fox is represented in Ceylon by his cousin the jackal. Though a gregarious animal jackals do not form large communities. They hunt in packs seldom exceeding a dozen, led by the oldest dog among them. They act under well understood rules. A cycle of amusing stories cluster round the jackal assigning him the craft and stratagem usually associated with the fox. One of the best pictures him at a trick

to rid himself of the fleas which have taken refuge in his shaggy coat.

Wading into a sheet of water with a tuft of coconut husk in his mouth, he lies submerged with merely the tip of his nose and the coconut husk out of the water. The drowning fleas scramble for refuge on the tuft of husk which they take to be the brush of the jackal's tail. When the husk is black with the blood-sucking pest the cunning animal loosens his hold of the husk and wades back to shore.

The jackals once upon a time waged war against the wild-fowl. The latter summoned to their aid a party of men who, wandering into the jungle, captured the king of the jackals, and to teach his tribe a lesson dashed him on a rock breaking his jaw. As the king received this blow he set up a howl: *Apoi mage hakka* . . . "Oh my jaw". This same note it is declared is echoed to this day in the jackal's howl.

Other glimpses of animal lore from village stories pictures the belief that the grey mongoose before and after its fight with the cobra rushes back to the jungle to ward off ill effect by taking a bite off a herb known as the *visa-kumba*, an infallible antidote.

We might open into snake-lore with by no means a rare story which recounts the origin of the bad feeling between the cobra and the polanga. The two of them once met at the height of a drought, and perceiving that the cobra had evidently slaked his thirst, the polanga enquired of the other where he might find water. "Out in that direction" said the cobra, "you will find a little child at play, and nearby a basin of water, but mind you do not harm the child." The polanga followed the direction indicated and found both the child and the water, but enraged at a playful smack which the child gave it, turned round and bit the child. Well aware of the vile temper of the polanga, the cobra felt that all might not be well, so going back to the spot he saw what had happened. Blinded by rage, he hunted out the polanga. The two of them settled down to a terrific fight and sowed the seeds of a hatred which is cherished to this day. In this memorable battle the cobra is

said to have bitten off the end of the polanga's tail. This then is the reason why all polangas have short stumpy tails.

Reference to the cobra leaves us with a few other interesting beliefs, one of which is that the snake loses a joint of its tail on every occasion it expends its poison, and that it is able to fly when its length is reduced in this manner. Equally fascinating is the theory that when about to make a meal at night, the cobra ejects a luminous stone which gives out a bluish light and thus attracts the flies on which it feeds. It is however said that the jewel is only ejected by the cobra of royal caste, and that the only fly it preys on is the male fire-fly or "white-food". The female fire-fly, being accepted as a wingless insect, finds itself in consequence out of the picture.

Further enquiry in this direction brings to light the existence of a recognised belief that there is a cobra of the Brahman caste, which feeds on fragrant flowers and lives in temples; a cobra of the "Vaisya" caste which feeds on sweet-meats and dwells by houses; and a cobra of the Govie or peasant cast whose habitation is a hole in an ant-hill. It feeds on rice.

The "Mapilla" is reputed to be a serpent which sucks the blood of its victim, and folklore has it that they travel in parties of eight. This circumstance has given rise to a further belief that they help each other to reach a sleeping person by suspending themselves in succession from the roof of a house.

The more dreaded "karawela" is supposed to coil itself up in some hiding place and to haunt the spot after it has stung any person until the victim dies. Consequently to rid themselves of this reptile's presence, the villagers set up a series of mock lamentations immediately they suspect that the victim has been stung by this species of snake. The sounds of mourning are really what the reptile waits for, they declare; and having heard them it, wanders away satisfied.

Rather a quaint story drawn from bird-lore is that concerning a water-fowl, the common "corawakka" who once went across a river to procure a supply of arecanuts. Having completed

the purchase and filled the nuts into bags, he arrived at the bank of the river with the load and arranged for the woodpecker's boat to convey it across. In mid-stream the boat capsized. The waterfowl's appeal for help brought a flock of geese on the scene. They immediately set about diving after the bags, but try as they would they could not raise them to the surface on account of their weight. In the vain effort they are said to have overstrained their necks and even to this day are always trying to rid themselves of the twitch!

The woodpecker still flies from tree to tree, tapping in search of a suitable piece of wood to build a boat, while the "corawakka" continues to complain to the world at large of the loss of the arecanuts. From the fringe of any marsh one may hear its persistent onomatopoeic cry "puwak! puwak!"

The sad note of the dove has given rise to another story of a similar type. It is said that a woman placed some berries to dry in the sun and cautioned her little boy to carefully guard them. When she returned some time later she cast her eye on the spot and could not see the berries, so, thinking that the boy had been neglectful and that some birds had carried them away, she dealt the boy a blow which killed him. Her grief knew no bounds when she later found out that the berries were on the spot, but that she had failed to see them as they had been scorched and shrunk by the heat. In her remorse she put an end to her life, and was turned into a dove. Through the wild world she now mourns for her son and cries, *Pubaru pute pu pu!* which means, "Little son—where are you. . . where are you".

One of the commonest of all jungle cries is that of the lapwing, which as plain as the human voice could utter constantly enquires "Did you do it? Did you . . . do it?" From the circumstances that this alarming question is raised in daylight or in the still night hours from the fringe of every marshy stretch even in the most remote parts of the island, the bird has come to be commonly called the hunter's curse. There is the quaint folk-belief that the mother bird lies on her eggs with feet raised to the sky. She is

said to do this being afraid that the universe will fall and crush her treasure. Another story declares in token of her watchfulness, that he who eats the eggs of the plover (*kirala*) wards off drowsiness, and induces vigilance.

There is a charming little folk-study in a story about a partridge, a monkey and an elephant. These three friends were living in great harmony, but soon a discussion arose as to which of them was the eldest to be the leader of them. Pointing to a lordly banyan tree that was growing near by, the elephant said: "I remember when I was young I came to this spot and I could then walk over it without touching its topmost branch." The monkey then said, "In that case I must be older than you, because I remember it as a tiny sapling and I could then touch its topmost bud without standing." The partridge concluded by saying that when he was fairly grown he used to fly about in search of food and once he came across a mighty banyan tree whose fruit he enjoyed. "One of its seeds," he said, "fell here, and out of that seed grew this great tree." So the other two worshipped him as their senior and obeyed him in every way.

Time was, when to the village child these folk-sayings were realities. Naturally, they had a great effect in the training and discipline of the unfolding consciousness. Many of their games too introduced bird or beast, and vividly called to mind the simple forest setting. Who among the adult readers of these jottings has not seen groups of children in the past amusing themselves by holding on to the back of a leader's hand with thumb and forefinger, and moving the arms up and down, singing the while:—

"Kaputu kah! kah! kah! Goraka den"
den! den! Amutu! va! va! va!
Dorakoda gahe puwak! puwak!
batapandura bulath! bulath—Usi!
kaputa, Usi!"

At the end of the refrain suiting action to words, they let go their hold, and raising arms make

believe they are chasing away crows from the *goraka* tree. The other bird-cry referred to in the jingle other than that of the "corawakka", is bulath! bulath!—the cry of the "cotoruwa".

Much depends on the manner you receive these traditional saying, whether you will, or will not hear many other gems of old-times wisdom. For instance did you know that lightning strikes the graves of cruel men. That to every 27 leopards there is reputed to be a "king" or that the leopard is supposed to have the power of understanding and of listening to human conversation.

Bears, elephants, cobras and buffalo are influenced by spells which are cast by incantation or mantrams. The nage-darana root protects a person from snake-bite.

A thread spun by a virgin, and soaked in turmeric, charmed over coals and resin smoke, and tied round the arm or waist or neck of a person is a preventive against harmful jungle influences.

Loud thunder induces conception in the female crocodile. A bear throws sand on the eyes of its victim when attacking. Peacocks dance in the morning and evening to pay homage to the sun-god. Rain helps to burst open the pea-hen's eggs.

The naga-maru-ala or the yam of an orchid found in low country jungles excites passion. It is called the "yam which killed the younger sister" from a legend of a girl who was killed by her brother when she accidentally tasted it and made amorous gestures to him.

These impressions, doled out with a sparing hand, will I hope give some idea of the lure of the jungle, and the legacies of a past, handed down to delight posterity.

The future of the world will be brighter if we can get back some of these old ideals, and teach in schools the lessons of love to animals and selflessness—a profound philosophy of the ages, which more than even in the atmosphere of the present day affords a way of escape.

Present-day Veddhas of Dambana

By C. G. URAGODA

THE traditional Veddha village of Dambana lies half-way on the Mahiyangana-Padiyatalawa road. This 20-mile highway is broad and straight, and as one drives along, one could see mile upon mile of gently undulating road glistening in the relentless noon-day sun. The jungle has been pushed back a few hundred yards on either side, and forced to yield paddy, tobacco and chena produce. Shortly after crossing the beautiful sylvan stream, the Ulhitiya Oya, one comes upon two new buildings on the right, which is the modern dispensary of Dambana. The buildings with water service and drainage are perhaps a little out of step with the quiet jungle surroundings.

One would look in vain for a collection of huts and boutiques to justify its status as a village, for it is an invisible population that is dispersed in chena-huts deep in the jungle. The Veddhas too were part of this population, leading a nomadic existence, moving their temporary habitations from chena to chena each season. The government in 1956 selected 28 families with the purest available Veddha blood, and settled them in huts built at Kandeganwela, six miles to the interior. The intention of the authorities was to convert them into an agricultural community, while at the same time preserving their original ancestry.

This village is reached by a jeep-track that traverses difficult terrain. It crosses a few streams here and there, and is flanked by jungle interspersed with beautiful parkland. It is the home of the elephant, bear and deer. The recent construction of a culvert has made the approach to the village a little less difficult.

When one comes upon this Veddha settlement for the first time, one is surprised at how far they have come since the time they were denizens of caves, and later of temporary, primitive huts. The 28 huts are all of the same design, and are of permanent construction, roofed with tiles. Each house is built in the midst of 5 acres of land, three of which were meant for paddy cultivation,

and the other two for chena produce. These intentions have not been realised.

Today one sees the huts nestling in a sea of low jungle. Only the immediate vicinity of each hut is cultivated with maize, plantains, sweet potatoes, manioc and similar plants. But the authorities have succeeded in trimming their migratory habits by providing them with a permanent home to which they return every evening after the day's work in a distant chena. One man even complained that the house was not big enough for his family. Each house has been provided with a lavatory which apparently is unused. A few Sinhalese workers who were employed in building these houses have now settled down with their families in the vicinity, though it was not the intention of the authorities to have any Sinhalese in the proximity of the colony. Such a mixed settlement, though unexpected in its development, may mean the further dilution of the strain, and one cannot help but visualize a distant future when they will merge with the Sinhalese.

In addition to working on their chenas, these Veddha settlers have the option of earning some money by being employed on the construction of roads in the neighbourhood. These are roads that have been planned to ultimately benefit the Veddhas themselves in their new way of life.

There are two boutiques in the settlement which sell necessities such as betel and maize. If any commodity is not available here, they have to walk the six miles to Dambana where they could also sell any meat or honey they happen to procure. Powder and cartridges for their guns are available only at Mahiyangana or Padiyatalawa. Only a few guns probably are licensed, and this makes the purchase of ammunition more difficult and expensive. The majority are muzzle-loaders, being family heirlooms. They are used only on large animals, as small fry such as hare and jungle fowl are not worth the money.

A few Veddha families, led by a fine man of about 60 named Tissahamy, spurned the offer of

houses at Kandeganwela as they did not wish to change their traditional way of living. Tissahamy is perhaps the finest Veddha of Dambana hunting being still a strong trait in him.

On one of our visits, we saw him about to set out on a hunting trip, with the hatchet hooked on to his shoulder, accompanied by his son carrying the gun and with dogs nosing after them. These families live three miles from Kandeganwela. Tissahamy prefers to live in a one-roomed mud hut with the roof thatched with straw. His house was surrounded by his cattle and dogs. His children too, with their long unkempt hair looked more primitive than their counterparts at Kandeganwela.

When Tissahamy was asked to pose for a photograph he first demanded money, and when this was conceded he promptly pulled out a bow and arrow and posed in front of his hut for the photograph. It appears to be a common practice to demand money from a photographer. Tissahamy's name, of late, has become familiar to the Ceylonese as he acted in a Sinhalese film, and later headed the Veddha delegation that was invited for its premiere in Colombo. His recent debut in an open archery contest at Anuradhapura was not very successful.

At Kandeganwela only the men spoke to us in the Veddha language. All the women and children spoke Sinhalese fluently, and this in the presence of their men who pretended they could not speak the language. Some children attend the Dambana Sinhalese school four miles away. A new school was put up at Kandeganwela, but it collapsed shortly after. A second building is almost complete. We met a Veddha youth who was educated at the Dambana school. He looked every inch a Sinhalese villager, but was honest enough to admit his true ancestry. Some small boys we met said they attended the Dambana school but a few others philosophically said perhaps with a touch of Micawber in them, that they were awaiting the establishment of the Kandeganwela school.

With the appointment of a registrar of births and deaths for Dambana, these events among

the Veddhas are now being registered. The majority of deaths have occurred at childbirth or infancy. As most of the Veddhas were ignorant of counting, it was not surprising that they were unable to give their age. Some of the Veddhas, specially the infants who had died, had borne Sinhalese surnames such as Somapala and Ran Menike, though the clan-names were still retained. The registrar had misgivings as to how long even these clan-names such as Unnapane, would survive, and he complained how hard put to it he was to differentiate the Veddhas from the Sinhalese for official purposes.

The opening of the modern dispensary at Dambana about two years ago has been a real boon to the people of the area, both Sinhalese and Veddha. The Veddhas, in the event of illness, would resort to charms and devil-dancing, but now, when these fail, they would turn to the dispensary. Sometimes both methods of treatment may be combined simultaneously. Parangi which was a scourge among them has now been completely eradicated with medical treatment.

On one of our visits, we saw a devil-dancing ceremony in progress. The spirits of the dead had got angry with the young man, who became ill as a result. While we were watching, two or three men joined the principal performer and soon went into what appeared to be a trance. However, Tissahamy, who was one of them, when called by us to pose for a photograph promptly got out of the trance to oblige us. He did not fail to mention that the spirits would not be too pleased with his action, but the prospect of payment was probably too much of an inducement.

Veddhas of Dambana even today possess impassive faces that are rarely illuminated by the flicker of a smile. A few could still talk in their strange Veddha dialect. Only a handful have still retained the loin-cloth as their sole sartorial attire. Archery is a lost art, bows and arrows being only for demonstration purposes now. It will only be a matter of time before further changes overtake them and mask their identity still more.

To a Veddah Child Suffering from Hydrophobia

bitten on her face by a rabid jackal

By R. L. Spittel

What woe, what awful woe is yours, poor child:
What lowering fear is striving you to tame,
Giving to that scarred face that aspect wild,
Those piteous gestures to that starving frame?

'Tis yours to die, I see it in those eyes
That haunt me now and through the years will haunt:
Those open orbs, once rapturous and wise,
Now wear the shadows that do ever daunt,

The stricken one, as with pale, withered hands,
And falt'ring brain, he moves from life apart,
And gropes towards chaos and dim-visioned lands,
Upborne by tear and prayer and broken heart.

How lonely is your doom, oh little thing:
You crave for drink, but though your want is great,
You shudder from the cup the loved ones bring,
Fearful of what will smooth the path of fate.

And clutching at your sorrowing mother's breast,
You look away, afrighted and afar,
As looks some wounded beast when close in quest
The hunter comes his ebbing life to mar.

You who did laugh with infant's holy glee,
And joyous took you glad salubrious breath,
While others laugh and frolic and are free,
You bear the sorrow of a dreadful death.

What can be likened to an infant's woe,
To that forlornness and that mute despair?
Not even the pangs a mother's heart must know
When she devoutly yearns such grief to share.

Now you are dead—your lines the impress bear
Of spended agony and harrowing bane:
Oh Death, thy touch is soft, thy face is fair—
Thou conquerest pain, oh friend, thou conquerest pain.

First Impressions of Sukumaland

By Dr. D. L. EBBELS, M.B.O.U.

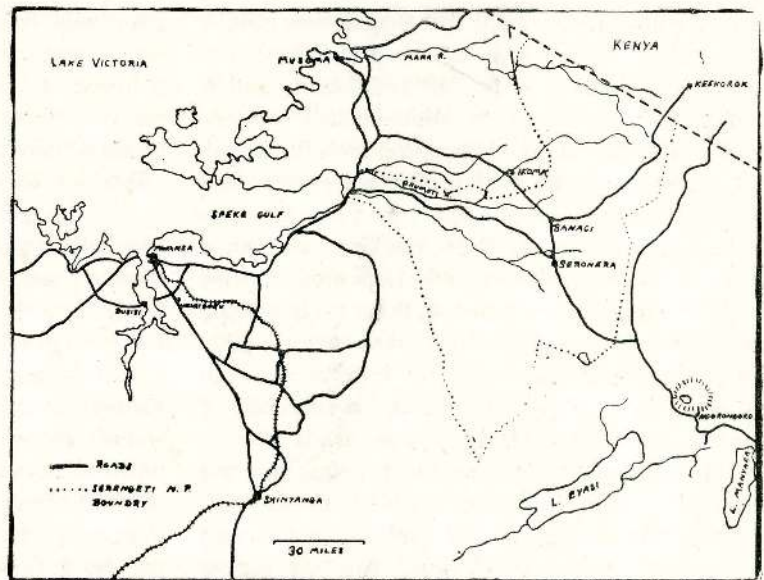
A SPELL in the wilderness of temperate urban England makes one appreciate the wealth of wildlife to be found in a warm climate, and after seven years it is pleasant to be in the tropics once more.

After a bumpy flight from Nairobi over the shimmering plains of the Serengeti the shining expanse of Lake Victoria appeared from the haze and soon we were flying along the shores of Speke Gulf. Landing at Mwanza airport, I emerged into the baking heat of a September afternoon. Although at nearly 4,000 ft. Mwanza is over 450 miles inland and only two degrees south of the equator. The climate is moderated by the great lake, but the temperature is more akin to that expected at 2,000 ft. in Ceylon, and this was the height of the dry season. Only the mango trees cast a heavy shade with their dense green foliage, other trees having dispensed with most of their canopy at the onset of the drought.

Driving through the town, somewhat reminiscent of Badulla, we sped out towards the research station on the main road south. Although we were keeping our speed down to avoid being shaken to pieces on the potholes and corrugations, some familiar birds could be seen along our route. African black kites circled overhead, pied crows (so much smarter than their funereal cousins) hopped here and there on the roadside, and dazzling white cattle egrets (in non-breeding plumage) stalked sedately amongst the herds of village cattle.

Once installed in our new home, we could begin to take note of our surroundings. Being used to the lush green of upcountry Ceylon, the countryside at first seemed very dry and brown. From

the top of the small hill behind the laboratories one can see many other similar rocky kopjes (inselbergs) dotted here and there as the land undulates gently to the horizon on either hand. To the west the sparkle of water, marks the course of Smith sound, a fjord-like tongue of the lake running south from Mwanza for over 50 miles.



This is the land of the Wasukuma, an agricultural people who have long since eliminated most of the original vegetation in this area except for a few trees and shrubs which survive, on the kopjes where the granite rocks impede cultivation. In all directions small collections of thatched huts provide evidence of intensive settlement, each group spaced half a mile or so from its neighbours and each encircled by its sisal or manyara (*Euphorbia*) hedge. Between, the land is divided into an endless series of shambas (chenas), which in the rains are green with maize, sweet potatoes, cassava and cotton.

Many of the birds which visit our garden are waxbills or finches. They live largely on the seeds of the many different grasses which compose our

rather sparse and unkempt lawn. At almost any hour of the day one can see a small mixed flock of red-cheeked and blue-capped cordon-blues, yellow-rumped and streaky seed eaters, yellow-fronted canaries, and perhaps a pair of purple grenadiers all busily foraging.

It is interesting to see so many species apparently occupying the same ecological niche, but perhaps the unlimited food supply or small differences in habits obviate any competition. Bronze mannikins are also very common and have much the same feeding habits except that they do not usually form mixed flocks with other species but keep more to themselves. They are small birds, rather similar in appearance to white-backed munias, to which group the mannikins are closely related. They should not be confused with the manakins of South America which are a very different group of birds. Like munias, the mannikins build many nests for roosting purposes, and I am often startled in the evening when a dozen of them explode from one of their nests in the creeper over our verandah. This creeper (*Bignonia venusta*, known in Tamil as tanga-pu) is a great attraction to sunbirds, of which four species regularly visit us.

The commonest ones are the mariqua and the variable sunbird, the latter reminding me very much of the purple-rumped sunbirds which used to visit my garden in Ceylon. Another garden bird which is also familiar in Ceylon is the bulbul. Here, however, the bulbuls have yellow instead of red under the tail, but otherwise there is little difference in appearance or call notes.

Occasionally we get more exciting visitors to our garden, such as the pale chanting goshawk which frequents the farm, a dignified black-headed heron, or some white-bellied storks with their knee joints like bright blobs of red sealing wax. These storks are intratropical migrants with amazing powers of flight. They breed in the southern Sudan and sometimes in Kenya, migrating southwards with the rains and appearing here about the end of October. Large flocks of over 100 birds can often be seen exploiting the updrafts around kopjes or wheeled high up by billowing thunder clouds.

As might be expected in such intensively settled country, very few of the larger wild animals remain. Spotted hyenas are numerous, and an occasional leopard is reported from the larger kopjes. Rock hyraxes are extremely common, but there are few monkeys left except near the lake at Mwanza, where black-faced vervets are often seen in the town.

Much of the lake shore is fringed with deep beds of papyrus, which provide shelter for many interesting birds, but which also hide them most effectively from any observer on the land. At other places the shore is rocky, and there are of course no tidal flats, so that there is little to attract waders. Great chunks of the papyrus beds often break off and float away, rather as a glacier "calves" icebergs. These floating islands are often more than a hundred yards long, and support a large population of bird and animal life. Usually they come to rest somewhere else along the shore, but I suppose that those which drift out into the open Lake eventually break up.

Although without a boat, the work of investigating cotton diseases often entails crossing Smith sound on the ferry from Kigongo to Busisi, and on these occasions I have been able to see more of the bird life in the papyrus and on the open water. Weaver birds are common of course, including the beautiful golden-backed weaver with black head and chestnut underparts. The yellow weavers of Africa belong to the same genus (*Ploceus*) as the weaverbirds of Ceylon and India, but are usually rather larger birds than the baya and striated weavers.

The Ploceidae seem to have undergone an explosive evolution in Africa south of the Sahara, and besides the many species of true weavers in the Polceinae, there are large numbers of species in another subfamily within the Ploceidae, the Passerinae (which includes the sparrows, sparrowweavers, and scaly weavers). Male bishop birds are often most spectacular. The red and the black-winged bishops are common in this area and seem to come into breeding plumage about the end of December, when they are most conspicuous in their black and fiery red.

The nearest place where one can be sure of seeing wild animals of reasonable size is the Serengeti National Park. That part of the park known as the western corridor stretches westwards as far as the main Mwanza-Musoma road and one can enter the park at this point, if the season is not too wet, through the Ndabaka gate. Very few tourists enter the park from this direction and the track from Ndabaka is consequently poor, in places almost nonexistent.

My first visit to the Serengeti was at the end of January. After two hours' drive, the open semi-cultivated country suddenly changed to acacia thornbush at the park boundary. The weather had been rather wet for a few days and we were soon ploughing our way through mud, the like of which I have seldom seen even on Bagura Plain. The alkaline black cotton soil, which here is characteristic of areas with impeded drainage, becomes extremely sticky when wet and provides little grip for car tyres unless covered with a thick mat of grass.

Large numbers of plains game move into the corridor at the end of the rains in May and remain in the area through the dry season until November. On the Ndabaka Plain we saw many herds of impala, zebra, topi, wildebeest, giraffe, buffalo, hartebeest, Thomson's and Grant's gazelles, and

a few eland. Crowned cranes gracefully moved away as we drew near, and at one pool we saw a magnificent saddle-bill stork.

Presently we came upon an unfortunate party in a large car which had been stuck fast for five hours. Hitching a tow rope to the Land-Rover, we eventually managed to pull them free. However, after this process had been repeated several times we began to run short of fuel and so had to carry on and report the stranded party at Seronera, where we camped for the night.

The following morning we toured the environs of Seronera, seeing several of the numerous prides of lions which frequent the area, and also a lone cheetah. Rain could be seen falling to the west and on the distant hills to the north-east, and we were anxious lest we should not be able to negotiate the deep water and mud on the Ndabaka Plain. Accordingly, after an excellent lunch at Seronera, we left the park via Banagi and Ikoma on the Musoma road.

Giraffe were very common along our route, and at one point just outside the park boundary (there is no gate on this road) a wonderful herd of 32 crossed the road in front of us. Of course one can see only a small part of the Serengeti in so short a visit, but we hope to return many more times to explore this attractive area.

The Fauna Conservation Ordinance of Sabah

By G. S. de SILVA

THE Fauna Conservation Ordinance, 1963* came into force in Sabah on 15th July, 1964. It repealed the Turtle Preservation Ordinance, and the Wild Animals and Birds Preservation Ordinance.

*Section 2 (1) of the Fauna Conservation Ordinance, 1963, defines trophy as follows:—"It means any scheduled species, alive or dead, and any bone, claw, feather, hair, hoof, horn, ivory, skin, tooth, tusk, or other durable portion

It is administered by the Forest Department. The Conservator of Forests is ex-officio the chief game warden, and other officers of the department have been appointed deputy game wardens, assistant game wardens and game rangers.

whatsoever of any scheduled species, whether processed or not, which is readily recognisable as a durable portion of any scheduled species and the egg of any protected bird other than the megapode."

Honorary game wardens have also been appointed under the act. Some of the important features of the ordinance are briefly explained here.



Orang hutan in Sipilok Forest Reserve Photo: G. S. de Silva.

PROTECTED ANIMALS : The Sumatran rhinoceros (*Didermoceros sumatrensis*), dugong, (*Dugong dugon*), tarsier (*Tarsius tarsier*), orang hutan, (*Pongo pygmaeus*), gibbon (*Hylobates moloch*) and proboscis monkey (*Nasalis larvatus*) are protected animals and very severe penalties are prescribed under the ordinance for illegally hunting, or capturing them, the maximum penalty being five years' imprisonment and a fine of \$5,000.

GAME ANIMALS : Elephant, (*Elephas maximus*) clouded leopard. (*Neofelia nebulosa*), banteng (*Bos babteng*) and Malay bear (*Helarctos malayanus*) are game animals and can be hunted under a game licence which is issued by a game warden at his absolute discretion.

Licence fees are, elephant \$100, clouded leopard \$40, banteng \$50 and Malay bear \$20 per head.

No game licence may authorise the hunting of female elephants.

Barking deer (*Muntiacus muntjak*), the larger mouse deer (*Tragulus javanicus*), the smaller mouse deer (*Tragulus kanchil*) and sambhur (*Cervus unicolor*) cannot be hunted in game sanctuaries and forest reserves, but a game warden may at his absolute discretion issue forest game licences to hunt deer in forest reserves. According to the present policy no forest game licences are issued to shoot animals or birds in any forest reserve.

It is illegal to keep any wild animal of the scheduled species listed below in captivity.

Sumatran rhinoceros, dugong, tarsier, orang hutan, (plate at left) gibbon, proboscis monkey, elephant, clouded leopard, banteng, Malay bear, sambhur, mouse deer and Barking deer; or any bird of the scheduled species (see list on page 330) without a permit issued by a game warden, and no permits will be issued for the first six protected animals on the list.

BIRDS : The act affords protection to several species of birds and a comprehensive list is on page 330.

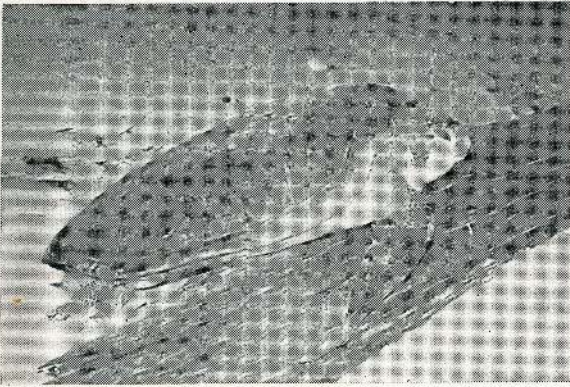
Although the megapode enjoys protection its eggs can be collected under licence issued by a game warden. The licence fee for egg collection is \$10. The maximum penalty for illegally hunting a protected bird is imprisonment for three months and a fine of \$500.

SANCTUARIES : There are five bird sanctuaries namely Kota Belud, Mantanani, Sipadan, Labuan and Bohaydulong.

It is illegal to hunt, disturb or take the nest of any wild bird in any bird sanctuary. It is also illegal to carry a firearm, net, snare, trap or other apparatus for hunting in a bird sanctuary or a

forest reserve without a permit from a game warden.

Trophies may only be retained when they have been taken from animals killed under licence, or

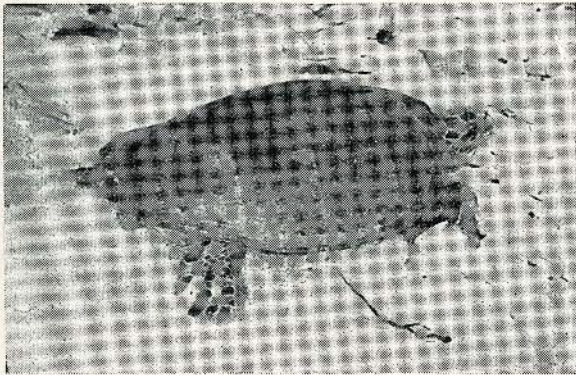


Green turtle scrambling over log

Photo: G. S. de Silva

when a certificate of ownership has been issued for them by a game warden.

It is illegal to hunt any animal from a stationary or moving vehicle or to drive or disturb any pro-



Hawksbill turtle

Photo: G. S. de Silva

tected animal, from a car or aeroplane. Hunting within half a mile of a saline or mineral lick is illegal and so is the setting of any trap or snare which is likely to cause injury to humans.

EXCEPTIONS : It is not an offence to kill or injure an animal in the immediate defence of human life. Nor is it an offence to kill any animal or bird which is trespassing or attempting to trespass on any cultivated land (this exemption does not apply to orange hutan or rhinoceros which may only be killed in defence of human life). Such killing has to be reported forthwith to a game officer or police officer and the burden of proof that such killing or wounding was necessary is on the person who did so.

Birds and animals not protected under the ordinance can be hunted without a licence outside game sanctuaries, bird sanctuaries and forest reserves.

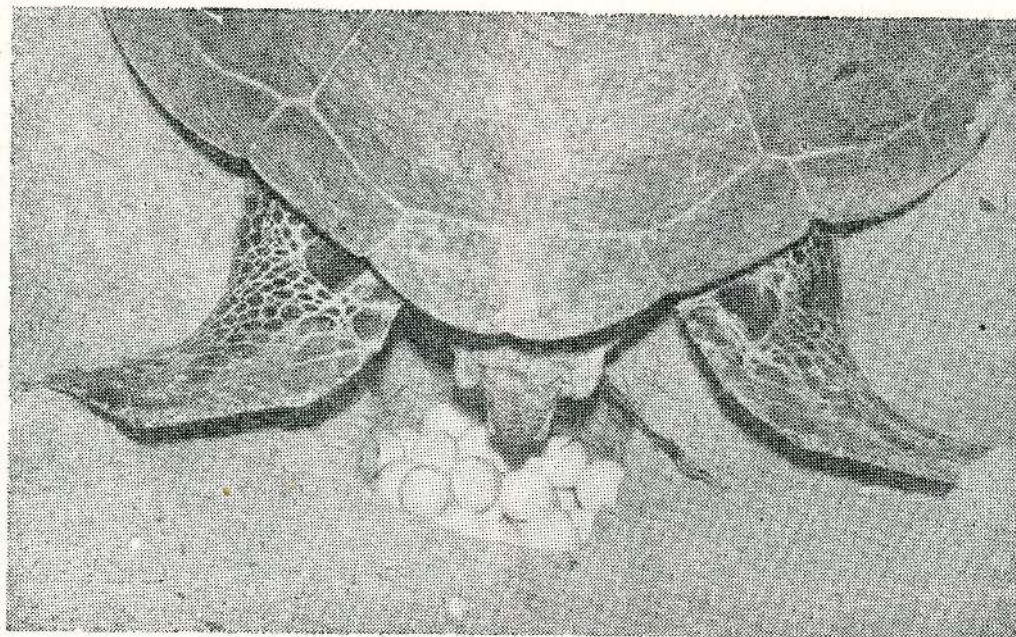
TURTLES : The green turtle (*Chelonia mydas*) and the hawksbill turtle (*Eretmochelys imbricata*) cannot be hunted except under licence. The present policy is not to issue any licences for the hunting of these turtles. The indigenous races of Sabah, can without a licence collect turtle eggs in the area from Nosong point in Kimanis Bay to Jesselton (*Kota Kinabalu*) wharf, including Pulau Tiga, Pulau Gaya, and the Kudat district and on Sipidan Island in the Tawau residency.

In March, 1968 the whole of the Kota Belud district including the islands of Pulau Mantanani Besar, Pulau Mantanani Kechil, Pulau Manggisan, Pulau Usukan, Pulau Silar, Pulau Pandan-Pandan and Pulau Egot was declared a turtle eggs native reserve.

In the Sandakan Residency the following islands have been declared turtle farms and the rights to collect turtle eggs are disposed of each year by the deputy game warden (circle forest officer, Sandakan) Pulau Selingan, Pulau Gulisan, Pulau Bakkungan Kechil, Pulau Tegaipil, Pulau Lankayan, Pulau Bilean, Pulau Koyan and Pulau Nunu Nunukan.

Turtle eggs can be collected in other areas in the state only on a licence issued by a game warden. March is the close season, and turtle eggs cannot be collected anywhere in the state during this month.

(For names of protected birds see page 330)



Green turtle laying eggs

Photo: G. S. de Silva

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The Fauna Conservation Ordinance, 1963 (Act No. 11 of 1963) pp 146—166.
Government Gazette No. S 93 of 15th July, 1964.
Government Gazette No. S 94 of 15th July, 1964.

Government Gazette No. 169 of 7th March, 1968.
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In the Forests of the Night

By C. F. DUNBAR JONKLAAS

The author although seriously physically handicapped for many years has continued his jungle pursuits and has organized several big game hunting and observing expeditions to India. A keen nature lover he has sent the above article written many years ago as a special tribute to the W. L. P. S. Jubilee celebrations—Editor.

ONE of the most fascinating methods of big game shooting is "sitting up", and this is one I like best for carnivorae.

Some consider it tame and unsporting, but in my opinion it is perfectly justified, especially, the big cats—getting them to come to you is not all that easy, and it is after careful study of their

habits and weaknesses that one is sometimes lucky.

Tiger and leopard have great similarities. They are usually nocturnal, doing their hunting by night and lying up in the coolth of the jungle during the day. They prefer to keep clear of the heavy undergrowth and use the beaten track in their

wanderings through the jungle. Game paths, fire lines, dry river beds, and of course, water holes and rock pools during the dry weather are their haunts and it is in the neighbourhood of these that one should 'sit up'.

The hide is the method adopted for 'sitting up.' This could either be built on a tree (machan) or on the ground. The building of the hide especially on the ground, should be done with great care. Camouflage must take first place and the hide blend with its surroundings. Comfort and roominess are essential as one may have to remain quiet and motionless for hours. Patience is both a necessity and a virtue. There is always danger and one must keep wide awake and watchful at all times—I know—I have had some very narrow squeaks.

"Sitting up" in a machan amongst the branches of a tree is much safer and gives one more advantages. It is far less noticeable and does not attract attention from the point of view of sight and scent providing also a good range of vision. If a suitable tree is available, always take it.

The construction and position of a hide whether on a tree or on the ground, must always be personally supervised—even the best shikaris make mistakes and are careless with regard to detail and mistakes are difficult to remedy afterwards. Pay special attention to roominess, comfort and strength. It must point in the correct direction to give a clear view, and freedom of action. You are bound to fidget. Noise and movement will scare away approaching game.

Machans must be built a certain height. This is especially necessary in elephant country. The jungle could be uncomfortably cold at nights. Take all the blankets you have. This also helps to stop creaking noises and deadens sound.

I always prefer to sit alone if I can. There is much less noise and movement. Silence is all important. The smallest noise is exaggerated and amplified in the depths of the jungle. Animals, especially the big cats, are extremely sensitive to the smallest sound and are cunning and wary. It has been told me by one of India's best known hunters with years of experience of tiger that even

the ticking of a wrist watch is heard up to 15 feet. I can well believe this, and have often wondered if they heard the pounding of my heart.

Their sense of smell however, is poor and although I have lain as close as three feet from a leopard with an unfavourable wind, it was not aware of my presence. Thank God for that.

When natural kills and water holes are not available it is necessary to attract your quarry with a tie-up to entice it to your hide. Live bait is used for this purpose. This method is commonly used in India but I have not seen it done in Ceylon.

I have used dead flesh for leopard in Ceylon and found it most effective. Leopards are partial to carrion. For tiger the tie-up normally used is buffalo and for leopard—goat.

Tie-ups should on no account be tethered by the neck but always by one front and one back leg to stakes securely driven into the ground. They must be made to look natural and comfortable, with room to lie down.

Tie-ups should be brought in and tethered only after the hunter is comfortably settled in his hide. They should not know the position of the hide and their proximity to man. If they do, they give the show away by constantly gazing in the direction of the hide, lying down and going to sleep in silence. Goats only bleat when forgotten and not from fear. I have known them to keep as silent as the grave when danger is about.

I have 'sat up' on many a moonlit night all by myself in the depths of Indian and Ceylon forests and immensely enjoyed every moment of my solitary vigil. The charm of those nights is unforgettable. Sitting up gives one lots of scope to study the habits of our jungle friends, both bird and beast, and, for the camera lover it offers great opportunity.

The evenings bring with them a chorus of the song of birds—the raucous call of the peafowl mingles with the "whistling school boy" the "George Joyce" of the jungle fowl and the pleasant little warbling song of the shrike to make a symphony far lovelier, exciting and real to me than even than the rendering of *Caprice Venier* by

Fritsz Kriestler. Give me the jungle noises and I am happy.

With fading day the branches of trees silhouette against the crimson glory of a sunset and when the stars come twinkling through, the jungle begins to stir and come to life. The call of the night jar and the monotonous shrill soaring cry of the cicada, is heard everywhere.

One's nerves grow tense and the heart thumps with every little rustling of leaves and a snapping of twigs. There is an unmistakable grunt—a sounder of pigs is rooting and passing lazily under the machan. There is thrill after thrill with every little fresh sound as animals pass by like ghostly shadows to disappear into the gloom.

The moon has now arisen behind the hide and filters through the trees to bathe the forest with mellow and translucent light, to touch the tree tops and the fringe of the jungle with silver. This is the best time of the night. Visibility is much better and the tie-up takes shape.

I relax and settle down as quietly as possible into a more comfortable position and continue to keep alert and watchful. Suddenly I hear a sambhur go belling through the forest—then the frightened bark of a jungle sheep, and the cursing of monkeys. I know that “stripes” is on the prowl and coming along his usual beat, and I am now wide awake with nerves keyed up and taut

like the strings of the violin and feel that something is going to happen.

With the rifle in my hands, I keep watching the tie-up, who is now standing motionless and gazing in the direction of the shadowy path. A twig snaps, and I definitely hear the soft footfalls of a heavy creature.

It's any time now, and then the head and shoulders of a tiger break through into a moonlit patch. It comes on, quite unconcerned, glowing with sleek loveliness in the moonlight. A picture of wonderment to any sportsman.

It sees the buffalo, stops for a bit and watches, then comes on with a dynamic rush and the buffalo is dead with a broken neck and a trickle of blood seeping from its throat. All this happens in a split second.

I have done nothing up to now except watch electrified and fascinated, the tiger standing over the dead buffalo its eyes sparkling like emeralds in the moonlight.

I have just awoken to reality, the rifle comes automatically to the shoulder, and I have squeezed the trigger without knowing it. The tiger rolls over with a cough and lies still.

I feel no elation or excitement, only happy that now at last I could relax and go to sleep, knowing that a notorious cattle killer is dead.

I awake with the song of birds in my ears and the sunlight in my eyes.

The Ceylon Jungle Cat. Part II

By T. S. U. de ZYLVA

THIS was indeed a strange experience. Sitting inside a haystack-shaped hide, in the middle of a recently harvested paddy field at seven in the evening, with visibility almost nil. My thoughts went back to Jim Corbett sitting alone in a machan waiting for a man-eater and being guided solely by jungle sounds. In this case our quarry was only a jungle cat and the sounds I could hear were the mellow notes of a flute somewhere in

the adjoining village and the occasional mewing of the little kitten a few feet in front of me. The darkness made me feel so helpless that I could not help but marvel at the great Jim Corbett. Had I not resorted to modern electronics, I would have had to abandon my attempt.

A faint crackling noise was followed by Monty's voice coming over the walkie-talkie, “The cat is now very close to you, get ready”. Erlson

Modder and family comprised my team and they were seated in a jeep beside a village hut about fifty yards away. They followed the movements of the mother cat with the aid of a powerful torch-light and transmitted the information to me. In my cramped surroundings I was straining every nerve trying to acquire even a slight degree of night vision. I finally saw a glistening bluish speck which could only be the eye of the mother cat and what's more it moved in the expected direction.

The mewling of the kitten became louder and I heard scratchings on the wire mesh of the wooden box in which we had temporarily imprisoned the kitten. There was no point using my torch to check up because that could frighten her away, so I took a chance and released the camera shutter and with it the synchronised flash. This was the nearest I came to photographing this female jungle cat. When we sorted things out it was not the mother cat after all. The kitten was old enough to scratch the mesh and I had forgotten the fireflies!

We continued our vigil till midnight. The mother cat was always in the vicinity but she never came up to the kitten even once. It was even more frustrating to hear radio messages that announced "The cat is now right behind you", "We can see her very clearly on the niyara (ridge) to your left" and so on. Thus ended this good chance of photographing the jungle cat in the wild state.

The reader may think that we were being highly optimistic in expecting the cat to come in these circumstances. The events of the previous evening should however justify our attempt. Sad to say, they also contributed to our failure.

A village youth was in possession of a male kitten taken from a litter of three. He apparently had problems with feeding the three-week old kitten. So at dusk, he had left it in the same spot from where he collected it only two days earlier. While there was still a little daylight left, the mother cat came in fearlessly, lay on her side and began to suckle her hungry youngster.

Not fifteen feet away, standing on the niyara (ridge) armed with torches, a small party of villagers

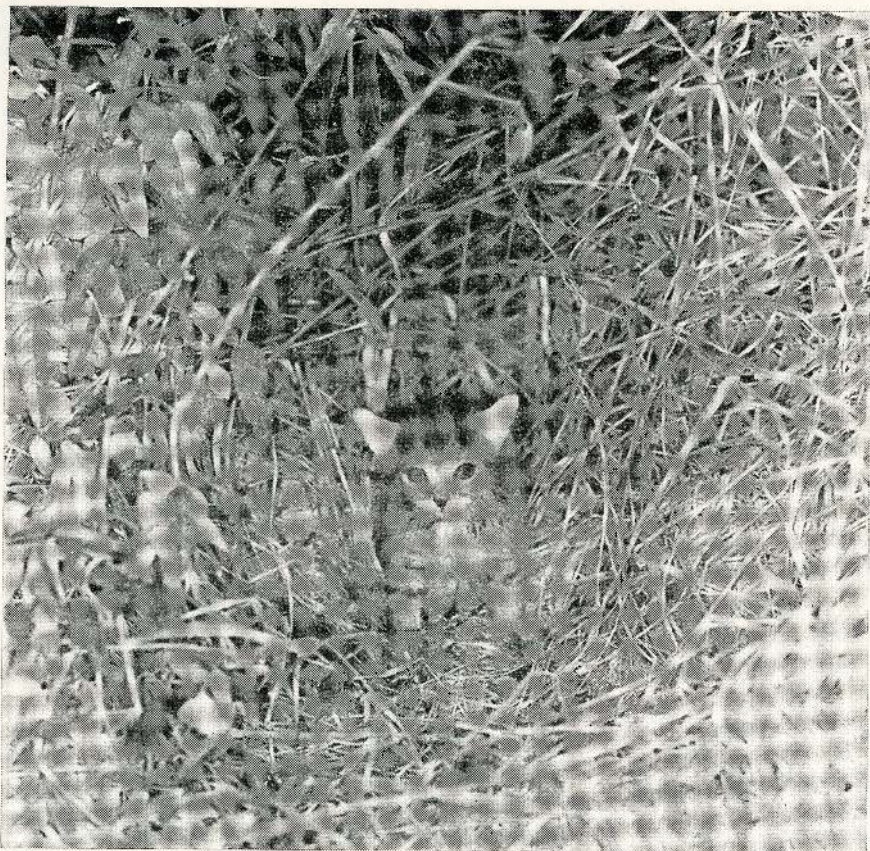
was witnessing this unique sight. They had even heard the sucking of the kitten quite loud and clear. After about twenty minutes had elapsed, the mother took the offspring in her mouth and began to move off. The villagers had then frightened her and retrieved the kitten. (This part of the information was of course withheld from us.) So by the time we organised ourselves the next evening the mother cat was wary. The instinct for self preservation had got the better of her maternal instinct.

All the above events would not have taken place if Soothi the village woman had not discovered a litter of jungle kittens for us. Once again it was in the neighbourhood of Wellawa and the stretch of paddy field was only half a mile behind the residence of Mr. Modder. When Erlson's daughter Monty rang me up the very next morning, I realised the efficiency of our network of observers. Within minutes I got to the spot, gathered all the relevant information and photographed the site.

On January 30th Soothi and her child were walking along a niyara carrying tea for the cultivators. In a clump of tall grass beside the niyara she heard a hissing sound. She brushed the child aside thinking it was a serpent and hurried past. In the evening when she passed that way again, she heard the hissing in the same place. This time she flung a lump of dried mud in the direction of the sound. A big cat sprang out of the tall grass and ran away.

In the clump of grass she discovered three little kittens. The kittens were very small and in her estimation had opened their eyes only a day or two previously. Since they were of no use to her she replaced all three. Soothi referred to the place where the kittens were deposited as a kooduwa (nest) and said that there were two pathways leading to the spot. On the next day the mother cat had shifted the kittens elsewhere. It was a day or two after this discovery that she came to hear of our interest in the kittens.

Luckily for us, on February 12th, Soothi rediscovered the three kittens in a beaten down patch in the paddy field about fifty yards from the original



Single kitten in a beaten down patch

Photo: T. S. U. de Zylva

place. She handed over two of them to Erlson and left the third for the mother cat. A lad from a rival faction in the village had promptly taken over the third. This was the one we used to lure the mother cat to within photographing range. The two handed over to Erlson are doing well in the safe hands of Mr. E. D. W. Jayawardena of Kandy.

Inquires in the village revealed that for three years running they have found kittens of the jungle cat in this same stretch of paddy fields. Two in 1967, two in 1968 and now three in 1969. The villagers are of opinion that all three litters belonged to this same mother cat. On every occasion the young were found in a beaten down patch in the paddy field and invariably in February.

We have now established beyond doubt that (at least in our district) the jungle cat breeds early in the year and chooses tall grass or paddy in which to bring up the young.

The following are a few more extracts from our dossier on the Ceylon jungle cat.

A forest officer in the Anamaduwa area has observed jungle cats digging up crab holes during the rainy season. This same trait was observed in the two cats reared by us.

A few years ago, a villager in the Wellawa area had come upon a litter of kittens in which one was fully black. (Melanin versions of this have been reported from India.)

Sadiris Appuhamy, a villager from Rambawa (Hettipola district) was set upon and bitten on his left leg by a male jungle cat on the June 21st, last year.

This is his story. "At about 9 p.m. after I had got to bed my dog barked. I stepped into the compound with the bottle lamp to investigate and saw an animal which I assumed was a dog. I flung a mammoty that was at hand at the beast and turned to get back to my hut.

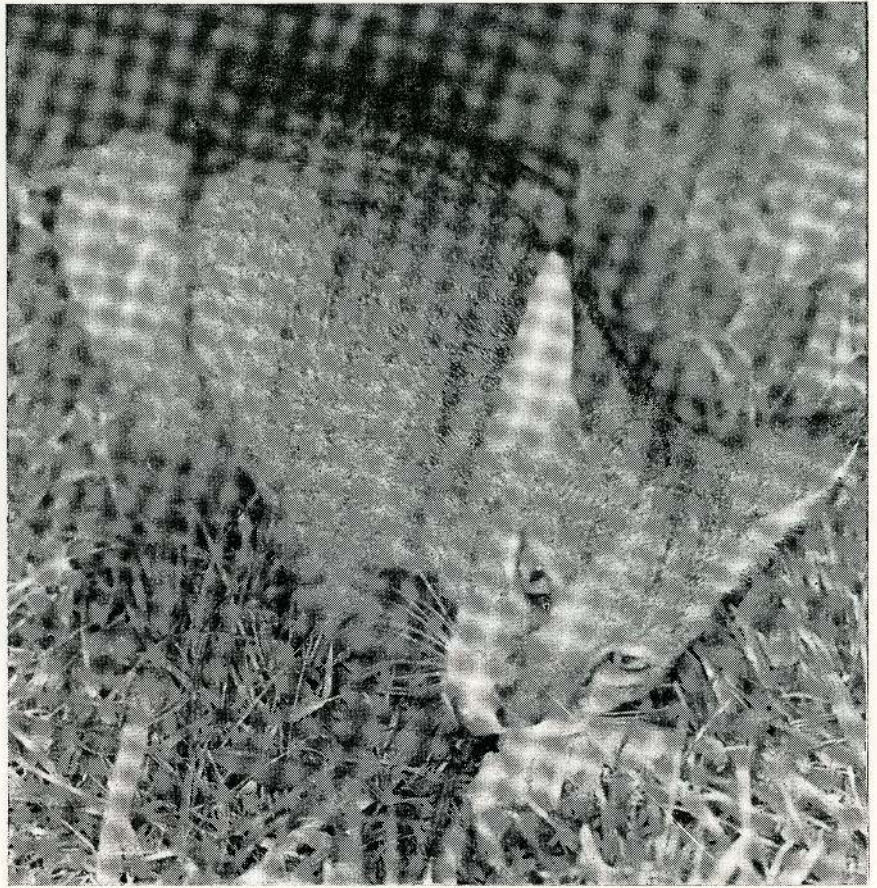
After I had proceeded a few paces, the animal attacked me from behind and bit my left leg. I kicked the beast aside but it did not run away. Placing the lamp on the ground I picked up a stick and hit the animal. It kept on leaping at me after each blow. After I had dealt about five or six blows it moved away and sat on its haunches.

I called out to my wife to fetch me a heavier stick but before she could so do the animal came at me again. I hit it with all my might and managed to kill it right at my doorstep. The animal turned out to be a big male jungle cat though all the while I thought it was a mad dog."

Observations on living jungle cats reveal that the full grown animal carries itself slightly higher on its hind legs than on the fore. This of course is not so marked as in the lynx or the caracal and is also not apparent in a dead specimen.

The two female jungle cats described in the December Loris, stayed on with us till they were fully grown. They visited us less frequently as they grew up, sometimes staying away for weeks. They had been absconding for thirteen days when on November 21st around midnight, I heard a gun-shot in the neighbourhood. Fearing the worst had happened I went out into the rear compound and called out to the cats. One of them promptly came up to me from somewhere out of the darkness, looking thoroughly scared. I stroked it gently to calm it down and then gave it some food. The other cat did not show up that night.

Weeks later news reached us that this cat had actually been shot. Unknown to us the two cat had unleashed a reign of terror on the poultry in the neighbourhood, and one of them paid for

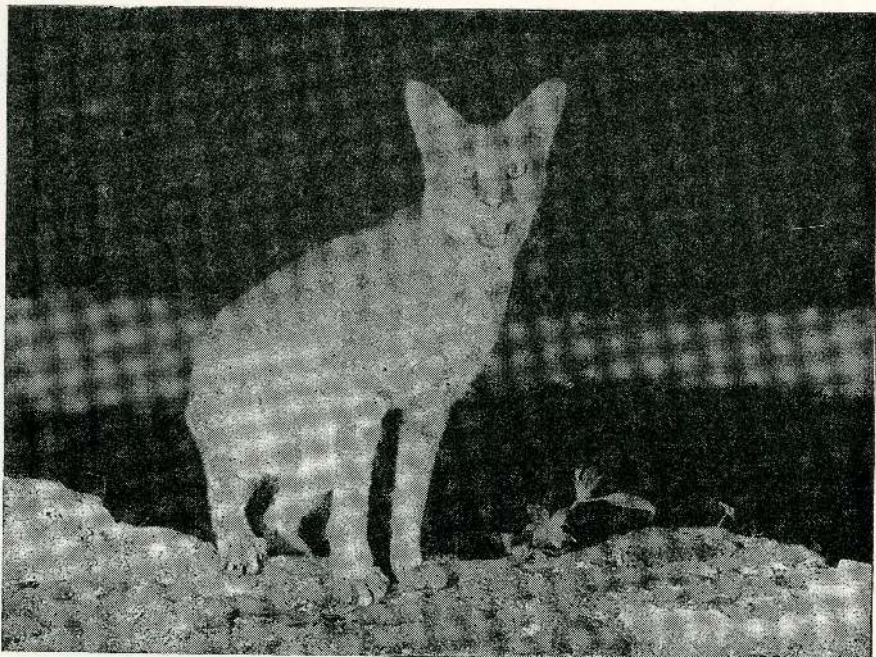


Finishing off a kill

Photo: T. S. U. de Zylva

it with its life. The one that escaped visited us regularly and remained very friendly and tame. After December 16th, it was missing again. When we were just beginning to get anxious, it returned on the morning of January 3rd, looking very thin and haggard. It stayed with us continuously till the January 12th when it left after its night meal and we have never seen it since.

It may also have been shot but somehow no fowls had been lost from the vicinity and all my inquiries drew a blank. It did not show any obvious signs of pregnancy when it left but considering the time of the year this is a remote possibility. We are however confident that if it is alive it will come back again. If we are lucky



A few days before she left us

Photo: T. S. U. de Zylva

enough it may even turn up like Elsa with her offspring. The accompanying photographs of it were taken a few days before it left us forever.

P.S. News reached us that two kittens had been taken from a paddy field in Wehera sometime during February. Pelis, the cultivator who found them had replaced the kittens because he was not able to feed them. Wehera is within two miles of my residence.

(Part I was published in the Dec. 1968 issue Ed.)

Lorisiana

Culled From Past Issues

By NOEL DE COSTA

OF DEER : With our deer, the average time for a good and healthy stag to develop a normal and well grown head is about four to five years. More often than not, the fine and large antler is a small animal.

All Ceylon heads are recorded by measuring along the outside curve of the longest antler from the burr to the tip.

Well grown antlers show fine and deep "pearling". Antlers which are fairly smooth denote age or sickness.

There is no definite rutting season in Ceylon. After a few years the stag drops its antlers after the "rut".

OF LEOPARD : The Punani leopard was shot by R. S. Agar at 3 p.m. after a heavy shower.

You might hear a leopard sawing once, twice or very often in the distance. This indicates that it is content and happy and is not searching for game. If the sawing suddenly stops, it indicates that it may have spotted something. If the sound is very close and you hear it again more clearly, the leopard is coming your way.

If you do not hear it after the first and second call, you have been spotted or the leopard has turned away. Leopards are ventriloquists and often deceive their victims in this manner.

Leopards have no or very little sense of smell.

They are carrion feeders and have no regular feeding hours. Little and often is their motto. Therefore they remain close by until the victim is finished.

The best is the head shot, just above the eye and near the ear. A shot between the forelegs where the neck joins the body is fatal (Agar).

The leopard, like the lion, hunts at night; but whereas a lion usually hunts in company and only when hungry, the leopard hunts alone and displays a greater inclination towards hunting and killing for their own sake.

It is likely to be in wait in a tree from which it springs down on its victim. At the moment of impact, the claws sink in to establish a grip, from which there is little or no chance of release and the teeth are plunged into the neck, either at the back or front depending on readiness of access.

Possibly the victim's throat will be torn out and the blood drunk as it flows from the wound. Thereafter the leopard, like the lion, and a number of other animals will show a preference for the entrails. The muscular part of the body is likely to be ignored (*T. H. Gillespie*)

The Ceylon record for a leopard, nose to tail tip is 8 ft. 3 ins.

OF ELEPHANT: Age of Asiatic wild elephants is 60-70 years. Their life span depends entirely on the time the teeth are available for use. In the case of the elephant the last molar tooth is of the greatest importance. Tame elephants may live longer and be kept alive on softer foods even after the teeth are gone.

A cow elephant gives birth at about 13 or 14 years. A famous elephant Ortela is mentioned as having lived 170 years. It was adult prior to the siege of Colombo in 1656 and was still alive in 1796.

Elephants were domesticated and used by the Carthagians in the 1st Punic War (BC 264—261) While in the second Punic War Hannibal took 37 over the Alps.

A rough and fairly accurate method of ascertaining the approximate age of an elephant, is by observing the overturn of the top lap of the ear.

In old animals, this overlap is quite pronounced. If the overlap is about 1 inch wide, the elephant is supposed to be between 25—30 years of age. Between one and two inches, 40—60 years. Other outward signs of great age are deeply, sunken eyes, loss of all hair and yellow and worn tusks.

There is no record of a Ceylon elephant over 10 feet. Hennessy writing to Loris said that the Ceylon record was 9 ft. 2 ins, an animal shot by Charles Northway near Kirinda. He said that E. L. Walker shot an elephant with a foot circumference of 64 ins, making the height 10 ft. 8 ins. While he himself shot an elephant at Tanglebam, which had a foot circumference of 63 ins. making his height 10 ft. 2 ins. These are exceptional measurements for Ceylon.

A rough method of calculating height is to take the circumference of the foot and multiply it by 2.

The period of gestation is about 22 months.

"Musth", the cause of which is uncertain has never been seen in the African elephant. The presence of the female does not quell or satisfy the animal in musth which may last a few days or several weeks.

"Any other animal will kneel before the Ceylon specimen." (*Baldeus 1672*)

A curious trait is that it cannot step across a ditch 6 feet wide. This is well known in India. This ditch—six feet wide and six feet deep—completely defies the elephant. (*Philip Fowke*)

Elephants and the woodapple myth: Major Weinman confirmed that when an elephant is given a woodapple, he puts it on the ground and crushes it with his foreleg before eating the pulp. Or, he crushes the fruit in his jaws. The woodapple is never swallowed whole.

G. M. R. Henry, the entomologist stated that the empty woodapple is due to *Vihachola isocrates*—a butterfly which has its various larval stages in the woodapple on the pulp of which the larva feeds.

In a wild state, an elephant will feed for 18-20 hours out of twenty-four. He sleeps very little and does so like a horse, standing up, an hour or

two at a time. A youngster can be put to work at 16 and is fully developed at 25.

Females may carry calves at 25. Elephants seldom live over 75 years. The age cycle is similar to humans. It is not easy to tell when a cow is pregnant.

An elephant does not drink with his trunk. He takes up water with his trunk and squirts it back into his mouth. The calf sucks with his mouth with his trunk curled up. Elephants seldom lie down to sleep.*

The Pothuvil rogue shot by A. J. Wickwar, destroyed three bullock carts and on one occasion killed both bulls.

Elephants are good swimmers. They can submerge but can only stay under for as long as a man. Elephants dislike ponies and hate and fear dogs.

OF SNIPE : There are eight species to be found in India :—

Eastern solitary snipe;

Wood snipe (rare in Ceylon);

Pintail (found in Ceylon);

Swinhoe's snipe (specimen shot in Mannar by Spencer Schrader on 12/4/34); in colour indistinguishable from the pintail; slightly larger, tail contains only 20 feathers;

Common or fantail snipe. (found in Ceylon);

Great snipe (Recorded in Ceylon only once on 15/12/40—rare even in India);

Jack snipe (found in Ceylon); which is no snipe at all in fact but belongs to the genus *Rostratulidae* which is more closely allied to the jacanas or water pheasants than to the true snipe.

Snipe do not breed in Ceylon. Pintail and fantail prefer cover and moist ground where both these conditions exist. You will continually flush both species at the same spot, but while the pintail, if unable to get both will stick to grass and such like cover, even if there be little perceptible moisture on the ground, the fantail will stick to the wet ground even if there was only little cover available.

The bill of the pintail is shorter and stouter and less sensitive than the fantail. That is why

it likes dry ground because it depends on getting its food on, rather than under, the ground. There is supposed to be a difference in the flight and cry of these two snipe, but experts are divided on this issue.

The jack snipe is smaller than other snipe being about two inches shorter than the pintail and about half its weight. When it settles, it does not, like other snipe, run along the ground.

Tail feathers, 26 in pintail; outer 16, much attenuated, hence the name;

18 in wood snipe

14 in fantail—none attenuated;

12 in jack snipe and

20 in Swinhoe's.

When migrating, snipe are said to fly in the stratosphere (though the statement has not been authenticated.) Here the wind is said to carry them with stupendous speed with little or no effort on their part which may be one of the reasons why they are not seen migrating in numbers.

The flight of the snipe is quicker and wilder in England than out East; but it must be remembered that the conditions under which we shoot here are much more difficult than shooting in the marshes, and bogs of the Scottish moors on a frosty day. The differences, which go a long way to level up the chances between the bird and the gun in England and out here are bad stance, being balanced on the bund of a field, stuck in the mud, a double dose of sun, direct and reflected light from the water, snipe mixed up with a lot of snippets, the danger of peppering workers, buffaloes etc, heat, perspiration in one's eyes and hot gun barrels.

There appears to be an amazing variation in conditions from season to season. The best fields of one year are devoid of birds the next and vice versa.

OF CROCODILE : Being without gills, they must come up for air periodically. As they are carrion eaters, the teeth are for seizing only and not for mastication. Crocodiles swallow without chewing and are not wanton killers.

*Note by Editor: We have seen a movie showing elephants lying down on their sides and another in the act of joining them.

Once a crocodile has gripped an object it is almost impossible, short of killing it, to free it. When travelling over land they move with their bodies right off the ground and legs straight. The tail drags along the ground leaving a furrow-like trail. The footprints are almost human in appearance.

Digestion is extremely rapid.

Alligators are confined to the American continent and parts of China.

The largest specimen of estuarine crocodile recorded is 33 feet. The other specimen is the marsh (or swamp), or mugger. Crocodiles are not mute and make harsh bellowing sounds.

Fifty to seventy eggs are deposited in a nest and the sun does the incubation. Eggs are 3—3 1/2 inches long and 2 inches wide. Apparently the female micturates to keep soil damp, but whether this is deliberate or natural is not certain. Incubation period is 90 days.

Crocodiles are cannibalistic and eat their young.

Growth is extremely slow in the early stages and does not exceed an inch per annum. A two foot crocodile would be about 15 years old. Breeding females of less than 10 feet are seldom found.

OF PIGEON AND DOVE : *The green fruit pigeons are :—*

Southern green pigeon—has chrome yellow legs, rare in Ceylon. One was seen in the Jaffna district;

Pompadour green pigeon—common, red legs; Ceylon orange-breasted green pigeon—common, red legs.

The imperial pigeons are :—

Southern brown backed imperial pigeon—Recorded only once in the Sabaragamuwa province. It is the largest of all our pigeons, the Ceylon green imperial pigeon—mylagoya.

*Bronze-wing pigeons :—*Only one pigeon belonging to this sub-species is found throughout the Indian region. The Ceylon form is the Ceylon bronze-winged pigeon—nila kobbheya.

Rock and wood pigeons :—

The Indian blue rock pigeon : gal pareyya ; Ceylon wood pigeon—Lady Torrington.

Easily identified by the characteristic patch of broadly white tipped black feathers on the back of its neck. Found only in the hills. Seldom seen below 2,500 feet.

DOVE : Indian rufous turtle dove—very rare, shot in Ceylon on two occasions only;

Spotted or ash dove—alu kobbheya, very common up to 3,000 feet;

Indian ring dove—identified by characteristic black collar, larger than the spotted dove;

Indian red turtle dove—unlikely to be found outside Jaffna, much smaller than the spotted dove.

OF SNAKE : Up to 1931, the Indian krait was considered very rare in Ceylon. Although deadly poisonous, it is a gentle snake and will not attack. The krait is the most inoffensive snake I know. (Wall)

Anti-venine is not effective in the case of krait bite. All one can do is to treat the symptom and hope that the quantity of venom injected is sub-fatal. The Ceylon krait, *Bungaris ceylonica* is smaller than the Indian, being about 36 inches. Easily distinguishable from the latter because it has black bands on the underside of its body.

The branded krait has not yet been identified in Ceylon. Gharfinney describes this snake in his "The Snakes of India" as a "highly poisonous and deadly snake, its venom being estimated to be sixteen times as potent as that of the cobra." But, Wall says, its bite rarely if ever occasions death.

Cobras and Russel's vipers do not mate. Cobras are of the order *Columbrine* and lay eggs. The Russel's viper belongs to the *viperine* order and bear young.

With few exceptions, snakes are not aggressive and will do their best to get away from any large animal that approaches.

The only aggressive snakes are :—

Echis carinatus :

The deadly sand scaled viper of the sandy tracts in the north of Ceylon. It is said to be much more poisonous than the cobra or Russel's viper. It is seldom more than 12" long. It is very aggressive, deadly and desperately quick in action.

Norodia piscator :

Non-poisonous water snake.

Chequered keel back : (diya polonga)

Snakes have no ears such as we understand them and cannot hear sounds that travel through the air. They have instead nerves connected with the auditory system that enables them to hear sounds that travel along the ground. A snake lying in contact with the ground can thus hear the approach of anything that makes a sound on the surface of the ground. Bare feet and probably rubber shoes make no sounds. This may account for the fact that people wearing leather shoes seldom meet snakes at close quarters.

There is a belief among the Sinhalese that cobras will not bite a blind man. This is probably due to the fact that blind people usually walk with a stick which they tap on the ground, and not to any compassion that the snake may feel for the disability of the blind. In nearly all snake bite cases the victim is someone who has walked with bare feet and whose approach it has not heard.

A majority of the land snakes of Ceylon are non-poisonous.

The Ceylon krait is probably deadly but quite inoffensive. There is no report of an authentic bite.

The rare coral snake *Callophis tremanculatis* is probably also deadly.

The only vipers in Ceylon are :

The tic polonga and the Echis—both deadly;

The hump-backed viper (kunakattuwa.)

Ancistrodon millardi—closely related to the kunakattuwa;

The green tic pala polonga.

The venom of last three types are not sufficiently toxic to kill human beings.

The fang of the viper is perfectly hollow and in this respect differs from the fang of a columbrine (cobra) which is grooved. As each fang gets blunted however slightly, a new fang already grown takes its place. Nature sees to it that the defensive mechanism of the snake is maintained at 100% efficiency.

Identification of snakes is a most difficult matter. It is only by careful examination,

particularly of the scales, which in some cases have to be counted and reference made to a standard work such as "Snakes of Ceylon" by Wall. Local names do not help, the same name being given to different varieties.

The common wolf snake is perfectly harmless and is rather like the deadly Indian krait. The Sinhalese name is tel karawala. Almost black with narrow white bands across the body.

The green keel back is harmless and the green tic (poisonous but not deadly) resemble each other and have the same Sinhalese name—pala polonga.

Only poisonous snakes have fangs, the more poisonous with the fangs right in front and the less poisonous with the fangs at the back of the mouth.

In the case of snake bite, if there are two distinct punctures (or in some cases only one) accompanied by swelling and pain, you can be pretty sure that the bite has been inflicted by a poisonous snake.

If there are a number of punctures and scratches, no swelling, only the sort of pain associated with the prick of a thorn and bleeding, it is quite safe to presume that the bite is that of a harmless snake.

There are five kinds of mapila or cat snakes in Ceylon :—Gunther's cat snake;

Barnes cat snake;

Beddomes cat snake,

Forster's cat snake and the

Common Indian cat snake.

They are called cat snakes due to the fact that the pupil of the eye is vertical like a cat's. They are only feebly poisonous and their bite can produce only trivial local effects in man, though they are aggressive and will often strike at the least provocation. The largest is Forster's cat snake and is called the maha mapila or ley polonga or maga mapila.

The hump-nosed viper kunakattuwa, bears a resemblance to the mapilas, but the nose is turned up into a small hump. Some authorities agree that its bite is not generally fatal to man; others think it can be exceptionally so.

It is possible in a case of snake bite terminating fatally to say from the symptoms whether the offending reptile was a cobra or polonga.

The specific action of snake venom is still imperfectly known (Dr. Spittel).

The neurotoxins predominate in the case of *columbrines*, the cardiovascular toxins, in the case of *viperines*.

In other words, cobra poison affects the nervous system, polonga venom coagulates the blood. Wall says that paralysis always characterises *columbrine* poisoning.

There may also be haemorrhage. In *viperine* poisoning there are haemorrhages but no paralysis.

According to the Manual of Tropical Medicine, "a given species of snake usually has venom that is predominantly of one type or the other, although more or less equal mixtures of the two occur in a few cases. This is perhaps the right view to hold. Toxin affecting both the nerve cells and the blood elements are present in both *columbrine* and *viperine* venoms.

In Ceylon, there are 64 species of land snakes, of which only five carry poison that is lethal to man. In regard to the potency of the venom, the following figures indicate the capacity of the gland and the maximum lethal dose for each of the main killer types in the Island :—

	Capacity of Gland	Maximum lethal dose.
Cobra	200 mgs.	15 mgs.
Polonga	80 mgs.	40 mgs.
Saw-scaled viper	12 mgs.	5 mgs.
Kraits	5 mgs.	1 mg.

In regard to treatment as far as western medicine knows, the only specific remedy is anti-venine. This bivalent serum prepared by the Kasuli Pasteur Institute of India is available in Ceylon and is an absolute specific against the venom of the cobra and viper, and partially effective against the bite of the krait. The only difficulty is that unless administered promptly it loses much of its efficacy. Even in the late stages, it may prove to be life saving if injected intravenously in large doses.

Some years ago, two scientists in India tested about 500 different indigenous remedies for snake bite and after very carefully controlled experiments, gave the following verdict.

"We may safely conclude that none of the Indian plants recommended for treatment of snake bite, has any preventive, or antidotal or therapeutic effect."

Raufoia serpentina was long known in Ceylon by the name of "ekaweriya or rata-ekaweriya—" the herb eaten by the mongoose as an antidote to the poison of the cobra. Hence also called ophnoxylon or shakewood.

OF BEAR : Hennessy writes . . . "Neither Yakka nor Dikky showed resentment or sulked after punishment. A great trait in the character of a bear and one which could be profitably cultivated by human beings."

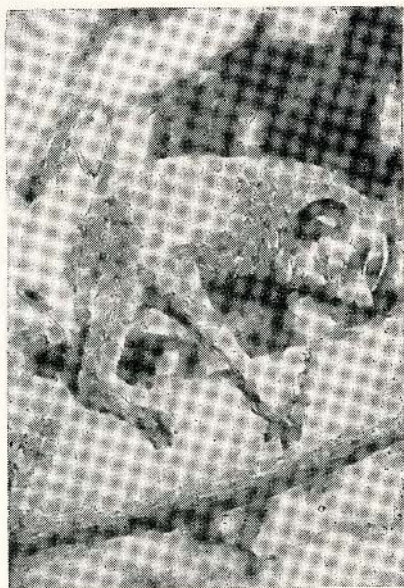
"It is generally thought that bears will not touch any kind of flesh, fresh or putrid; but, from observation of my animals, I can definitely say that they will eat putrid meat, with relish whenever they find it—but, fresh meat and bones, no matter how hungry they are do not appear to please them."

"It is an interesting fact that a bear when pleased puts its ears back, and forward when it is ferocious in direct contrast to the habits of a leopard or a dog. When he is "white-anting" he gets so engrossed that he forgets where he is and the slightest sound makes him whip round with a loud whoof and ears forward. That is why bears are so easily surprised in the jungle."

"I do not know whether wild bears are fond of water, but Dikky loves splashing about in the tanks, washing his face vigorously with one paw."

"The significance of the notes on which a bear sucks his paw is interesting. A high whine and rapid sucking denotes impatience and anger, a deep note like the humming of a hive full of bees on a summer's day, indicates that he is contented and pleased with life; a barely audible note shows great happiness, while a silent suck in which he usually indulges before going to sleep on a full stomach, denotes the acme of bliss."

"The best shot is the heart shot or behind the ear. If he is coming straight for you, aim just below the chin."



Ceylon's Slender Loris

(Queer habits of a small, nocturnal forest monkey).

By S. V. O. SOMANADER

THIS article, on the loris, which traditionally illustrates our cover page was specially contributed at our request by Mr. S. V. O. Somanader, F.R.G.S., F.Z.S., the well known nature observer and writer.

AMONG the curious creatures which inhabit the forests of Ceylon is the little loris of which there is only one genus represented in the island, with three subspecies inhabiting the three main climatic zones—all of them peculiar to this country.

It is also called the slender loris by reason of its thin body and slight build. And this smallest member of the monkey tribe has also acquired the name of the Ceylon sloth owing to its deliberate, slow movements and comparative inaction.

Always asleep during the day and never seen to rush or spring among the branches like the other monkeys of the jungle, this sluggish creature, nocturnal in habit, is very difficult to discover in the deep recesses of the forest, except, by those who know our wild tracts well. But such people, alas! are too few.

From dawn to sunset, the loris rests in the hollow of a tree or in the fork of a branch, curving its body or rolling itself, somewhat hedgehog-fashion, "into the semblance of a ball." And the peculiar thing about it all is that, when it slumbers, it holds on to its perch with feet and hands, and with the head tucked between the arms, or buried between the legs. Very few people have seen the loris sleeping in this strange position, not only because of its small size, protective colouration and quiet

movements, but because of the difficulty of access into the heart of the forest, which is its abode.

Russet-coated with a woolly fur, the loris is not only slender-limbed but tail-less. What makes it look even more queer is the presence of the large circular eyes directed forwards and separated merely by a narrow space, with also a protruding nose just below and in between.

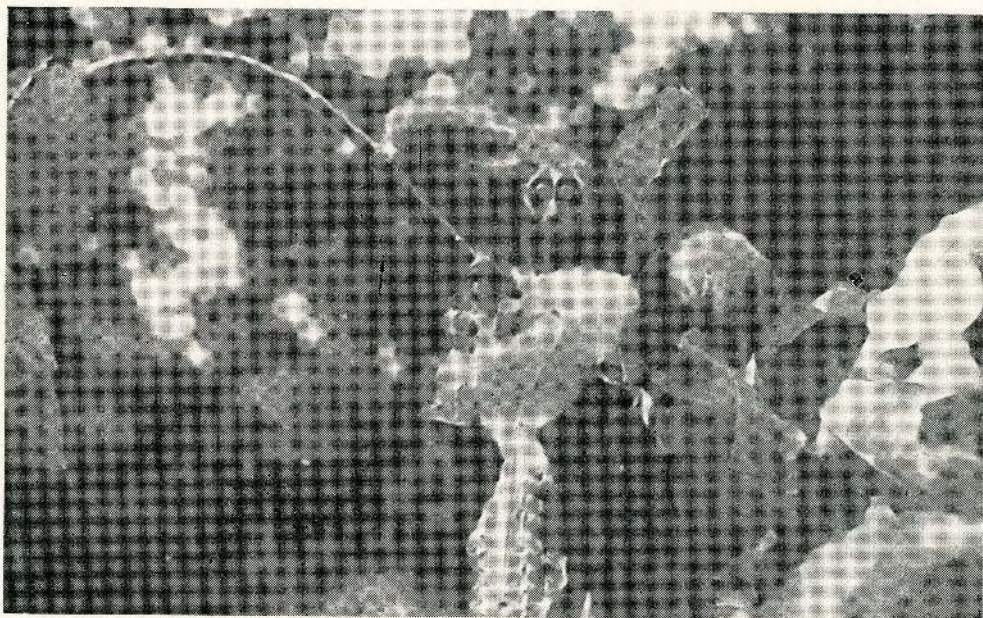
The manner in which the loris captures its prey is not a little interesting. Approaching stealthily but quickly, it pounces upon its victim, grabbing it with both hands with the rapidity of lightning, before the captive has had time to notice that danger is near. After seizing its victim, it pins it down and bites it through the head. Village folks state that it can even strangle a peafowl at night while the bird is roosting, and feed on its brain.

In this way, the loris hunts birds, insects, frogs, lizards and other small vertebrates, not to mention its feeding on bird eggs. Being catholic in taste, it believes in a mixed diet, for its food consists also of leaves, young shoots and wild fruits as well.

When tame, however, it feeds on rice, milk, fruits (like plantains and papaws) and vegetables—besides being eager for chicken bones. Few people rear the loris as a pet, and fewer still regard it as a lovable and lively pet, not only because it

is weird and ugly, but owing to its shy and retiring nature, and its propensity to pass the whole day in slumber.

Though the loris, in its wild state, descends to the ground only very occasionally, it never by choice leaves the trees. Being thus arboreal in



A couple moving stealthily along the dense foliage

Photo: S. V. O. Somanader

habit, it climbs the trunks and branches readily, grasping them with great tenacity as it wakes up at dusk to stalk its prey in its nightly rambles. Unlike the other Ceylon monkeys, like the langur, the loris is not seen in troops. They are found solitary or in pairs, and the short cries they utter, when alarmed for instance, can be heard often in the forest in the silence of the night—by those who have ears to hear!

The loris brings forth only one baby at birth, and the young—like the offspring of other monkeys—clings to the ventral side of the mother's fur, and is carried about by her in that position, wherever she goes. But here, too, it is not easy to discern their presence, for these animals are not only small and slow-moving, but, being nocturnal are not readily noticed. Their very name, which is derived from the Dutch word "loeris" meaning a "clown", is suggestive of all that is fantastic, eerie and spectral. And it is for this reason that there is a vast amount of folk-lore concerning these queer denizens of the Ceylon wilds.

The Tamils of Ceylon, for example, have a proverb which says that the "thevangoo" (loris)

on the coconut palm does not seem to realise (although it shows faces at others) there are people mocking it (for its ugliness). This, in essence, is something like the English saying that "people living in glass houses should not throw stones"; or, it may amount to "the pot calling the kettle black"; or it may even find an echo or parallel to the words of the Scottish poet Robert Burns, who sang:—

*"Oh, wud some Pow'r the giftie gie us,
To see ourselves as others see us".*

Tennent, in his authoritative book on Ceylon, written over a hundred years ago, makes mention of the fact that the Tamil word "thevangoo" for the loris means "thin-bodied". Hence, this vernacular epithet is applied scornfully when attributing ugliness to a "deformed child", or an "emaciated person". The same distinguished writer also refers to the attention attracted by "the singularly large and intense eyes of the loris" which is captured by certain local folks "for the purpose of extracting them as charms and love-potions"—this being effected "by holding the little animal to the fire till its eye-balls burst."

This seems very cruel no doubt, but we must not forget that, in this strange world, there are still some heartless people who hold the view that "all is fair in love and war."

Despite this belief, which subjects the loris to inhuman treatment, and the fact that it is

an ugly creature which does not make an entertaining pet, there is no doubt that it is a very interesting and harmless animal, typical of the wild life of our jungles, and "redolent of the mystic aspect" of our Ceylon wilds.

Where Have all the Monkeys Gone?

By MANEL VAN-DER-POORTEN

CONSIDERING that the monkey is as much a member of our wildlife community as is the elephant, deer, or leopard it is sad to think that the destruction of these animals—so human—goes on from day to day. The massacre of these animals and the inhuman suffering inflicted on them is so great that one wishes every bit of jungle was a National Park Reserve until actually needed for human habitation. More often than not these monkeys are beaten or stabbed to death then cooked and eaten. Can this be checked in any way or is it that monkeys living in the vicinity of humans are doomed?

Then again how advantageous it would have been if the 'adoption' of monkeys was an act of cruelty punishable by law. In most cases these creatures are better off dead than alive—spending their entire lives as chained prisoners all alone and bored to death and whose natural intelligence must deteriorate by this sort of upbringing.

Konrad Lorenz tells us that "monkeys are the only captive animals which can derive serious bodily harm from their mental suffering . . ."

Journeying quite recently from Matale to the east coast *via* Polonnaruwa we were quite surprised at not seeing a single monkey on the way even for the odd shot of a film. We stopped many times on the trip enjoying and breathing in the stillness of the jungle and the highway itself—and though we saw peafowl in plenty, jungle fowl, rock squirrels, jackals, even two

wild cats, we missed the monkeys who were conspicuously absent!

One place where one sees a happy family of monkeys is at the Kandy Nursing Home where they are almost tame and behave as if they are in a sort of sanctuary.

Very often in the mornings patients would be greeted by a happy, curious face and blinking brown eyes peering through the window, looking in at the breakfast table or maybe a mother carrying her young one would decide to pay an afternoon visit and venturing on to the verandah would stand gazing into the room at their human counterparts.

I was interested in watching one particular monkey who used to browse around. She had twins and her whole day seemed to be spent in checking the mischief of her offspring. The babies chased each other all day long and every game seemed to end in real horseplay, when they would bite each other and roll each other over and in the midst of the tussle there was Mama with a stern look of disapproval on her face.

She would watch for a while and then with a firm swing of her arm drag the weaker one with her ignoring the other and leaving him to follow close behind sulking like a naughty child.

Observing the habits of these animals one wonders how they can be destroyed.

If monkeys are wanton destructors are not some humans worse offenders?

The Jungle Fowls of the World with Notes on the Ceylon Jungle Fowl

(*Gallus lafayettei*)

By Dr. S. B. DHANAPALA

JUNGLE fowls are of greater importance to man than any other bird as, through domestication, they have contributed greatly to his welfare. These very beautiful birds are regarded as the ancestors of the present day domestic fowl.

They were domesticated in south-east Asia in pre-historic times. In the wild state they inhabit the warmer regions of Asia, particularly India, Burma, Ceylon, Thailand, Indonesia, Vietnam, Malaysia, the extreme south of China and the Philippines. They have also been introduced by man into some of the islands in the Pacific Ocean.

There are four well defined species of jungle fowl :—*Gallus sonnerati*, *G. bankiva*, *G. varius* and *G. lafayettei*.

Gallus sonnerati is the grey jungle fowl of western, central and southern India.

Gallus bankiva (synonyms : *G. ferrugineus*; *G. gallus*; *G. murghi*; *G. jabouillet*) is commonly known as the red jungle fowl of north-eastern and central India, Burma, Thailand, Indonesia and Malaysia. It is regarded as the progenitor of the present day domestic fowl. Indeed the brown leghorn cock closely resembles the male of this species.

Gallus varius (synonyms : *G. javanicus*; *G. furcatus*; *G. violaceus*) is the green jungle fowl peculiar to Indonesia. The name arose from the variegated character of its plumage.

Gallus lafayettei (synonyms : *G. stanleyi*; *G. lineatus*) is the jungle fowl confined to Ceylon only.

The Ceylon Jungle Fowl (*Gallus lafayettei*)*

These handsome birds are easily distinguished from the other species of jungle fowls by their yellow combs with red margins, the red breast and the double-note cry of the male. They are

found scattered throughout the scrub jungles of the low country and hills of the central province up to an altitude of about 5,000 feet.

They dwell entirely in cover but in the mornings and evenings especially after a shower of rain, they come out into the vicinity of open paths and tracks to feed. During the heat of the day they keep well inside the jungle.

The cry of the cock is a double note "cluck, joy-joyce" and may be heard constantly from sunrise till about 8.30 a.m. They roost at a considerable height from the ground on the branches of trees and at daybreak fly down to the ground to feed. The cocks challenge each other with a loud cry and every now and then flap their wings.

The natural food of the jungle fowl is extremely varied and consists of animal and vegetable matter. They feed on a wide variety of arthropods, berries and seeds and have a particular fondness for *Strobilanthus* seeds.

Beebe (1921) found centipedes, hemipterid insects, termites, beetles, ants, grasshoppers, wood lice, small molluscs, grass seeds, seed pods and berries in the crop contents of jungle fowls shot in the south of Ceylon.

Phillips (1958) analysed the crop contents of some jungle fowls shot in the north central province of Ceylon. He found centipedes, millipedes, scorpions, cockroaches, weevils, beetle grubs, caterpillars, ants, spiders, mites, glow worms, earthworms and also a large variety of grass seeds, seeds and berries.

Though these jungle fowls frequent the vicinity of desolate paths and tracks, it is very difficult to observe or shoot them as their senses of sight and hearing are extremely acute. If they see or hear

*The first mention of this species was by Lesson in 1831 who named it *Gallus lafayettei* after La Fayette. Subsequent authors have spelt the name as *G. lafayeti*, *G. lafayettii*,

G. lafayetii. The correct spelling is *G. lafayettei* (vide Article 32 (a) (i), International Code of Zoological Nomenclature, 1961)

an approaching human, they quietly make their way off to a safe distance.

Their numbers are fast dwindling now as more and more areas of scrub jungle are being

cleared for cultivation and colonisation schemes.

Deraniyagala (1957, 1958) has been successful in breeding hybrids from female domestic fowls crossed with male jungle fowls.

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Birds at Ragama

By Dr. U. S. WALGAMA

BIRD life at Ragama is plentiful. A reasonably big cross section of the birds of Ceylon is found here due to the abundance of grasslands, scrub jungle, streams, paddy fields and so on. I have however, mentioned in the following paragraphs only some of the birds which were observed in January and February while the migrants were also with us.

In the garden the black crow, mynah, common babbler, black-headed oriole, drongo, pied robin, red-vented bulbul, and the brown-headed barbet were numerous. The small Ceylon barbet was seen in flocks sometimes to the tune of twenty amongst the taller trees. In the hedges the sun-bird, tailor bird, grey tit, Tickell's flower-pecker were seen. The restless small Ceylon white eye was also seen in pairs searching for insects amongst small branches, sometimes in an upside down posture, while the common iora of similar habit was also seen with its long whistle "whee-too" and other chirrups. The unimpressive brown flycatcher who hardly had an audible cry was seen tirelessly sallying out for insects from branches of some height. Often I have seen the same bird from morning till evening in the same tree.

The paradise flycatcher (orange coloured) was seen only twice. The common woodshrike

associated in pairs, mostly among branches uttering its little phrase incessantly. Jerdon's chloropsis with its repertoire of fine notes usually kept to the higher branches. It was often seen on the fronds of coconut trees. The Indian roller was usually seen alone. It would perch at a vantage point coming down to the ground time and again for its prey and returning usually to the same place. It has a loud croaking note which was heard when chased away by nesting crows. The little minivet with its weak continuous 'wee-wee' was not uncommon. The rose-ringed parakeet was also commonly seen in the garden.

In scrub jungle, the white-browed bulbul brought its presence to notice by exploding into loud song. It also had another subdued cry. The white-throated babbler in parties and the ashy wren warbler in pairs were also seen. Indian pitta was seen only once at dusk, although this bird is thought to be commoner by the villagers here who believe that there is enmity between it and the peacock as the former has stolen its feathers from the latter.

In open grassland the black robin, the spotted munia and the Indian pipit were common while the eastern swallow and the Ceylon swallow were seen in large numbers sweeping low over the

ground. The house swift and the Indian edible-nest swift were common and the palm swift was occasionally seen. A solitary brahminy kite too was sometimes seen gliding beautifully overhead.

Wood sandpiper is very common—perhaps the commonest bird—in the paddy fields here. Seen in flocks they are hardly visible due to the brown spotted upper surface providing good camouflage except when bobbing its back up and down which it often does. I have occasionally seen the snipe rising high into the air suddenly when disturbed in the evenings with its characteristic cry.

Out of the birds with a predilection for water the obvious ones were the pond heron, egrets (including cattle egret), white-breasted water hen, tern, red-wattled lapwing, blue-tailed bee-cater, and the pygmy cormorant. The white-breasted kingfisher was also common.

The common Ceylon kingfisher, stork-billed kingfisher and the pied kingfisher were sometimes seen. The feeding habit of the pied kingfisher is fascinating. It flies over the water, stops in mid-air with its wings flapping and drops vertically downwards like an inanimate object before emerging with the prey in its beak. The chestnut bittorn was seen by accident when I approached

a clump of water plants which was providing ample cover to the skulking bird. It flew off and hid in another clump. When it broke cover once or twice however, I was able to see it in detail.

In conclusion let me reproduce a few lines by William Henry Davies dedicated to the kingfisher—

*It was the rainbow gave thee birth,
And left thee all her lovely hues;
And as her mother's name was Tears,
So runs it in thy blood to choose,
For haunts the lonely pools, and keep
In company with trees that weep.*

*Go you and with such lovely hues,
Live with proud peacocks in green parks;
On lawns as smooth as shining glass,
Let every feather show its mark;
Get thee on boughs and clap thy wings,
Before the windows of proud kings.*

*Nay, lovely Bird, thou art not vain;
Thou hast no proud ambitious mind;
I also love a quiet place,
That's green, away from all mankind;
A lonely pool, let a tree
Sigh with her bosom over me.*

Sinhalese Bird Lore

By ANDREW SCOTT

FROM time immemorial the Sinhalese villager, who usually made a living as a cultivator, always came in direct contact with nature, specially wild animals, about whom there developed superstitious stories and sayings, most of which are rich in humour. Some of these wild animals were the friends of the villager while others, the majority, were his foes.

The Sinhalese villager is a strong believer of transmigration as a result of which observations

of the habits and characteristics of wild animals, specially of the feathered race, increased immensely. Some of this bird lore, is both interesting and humorous while some is philosophic too.

The house sparrow is a cheery little bird whose habits have been under close observation for a long time. The black patch according to folk lore, on the male's throat came into being when a house under the eaves of which a pair of these birds were nursing their young in a nest caught

fire. The mother fled in terror while the father fought bravely to save its young ones from the rude flames.

In so doing the male is said to have burnt its throat and the mark, testifying to its bravery and paternal love still remains.

The Sinhalese villager is of strong opinion that breeding of sparrows in houses brings good fortune. Hence, to encourage these birds to build their nests in homes, people hang damaged pots on the walls.

There is yet another strong belief that if a sparrow builds a nest in a house and begins to rear its young in that building itself, the next child that would be born to the inmate would be a boy.

It is also well known that house sparrow eggs are used to charm objectionable tom-tom beating whereby the collapse of the instrument is caused, and the egg-shell itself, powdered and placed on a betel leaf along with numerous other ingredients is well-known among the villagers as a notable love philtre.

A common village saying connected with the domestic fowl is :

“Kukula andalana kota negitapan”—rise when the cock crows.

Villagers believe that a white cock brings about happiness and luck and is therefore lovingly reared in many houses and even in temples. The cock has also been a bird which has served the purpose of a chronometer in ancient Ceylon.

Another strong belief is that if a white cock is kept in a coconut estate the trees will not be attacked by beetles and it is also considered a good omen if a cock crows when one sets out on an important journey.

The owl is seldom seen during the day and on such rare occasions crows mercilessly attack it. There is an interesting reason for this too.

The story has it that the owl was proposed as the king of the birds when the crow told those assembled : —

“Brethren, our other kings have punished only those guilty of some offence, but if we accept the owl as our king the continual sight of his ugly face will be a terrible punishment

which will affect both the guilty as well as the innocent.”

In very remote areas, the ashes of the feathers of the owl mixed with the ashes of a human skull, bees wax and a few other ingredients are used by local ayurvedic physicians for curing large sores.

The screeching of owls in the vicinity of houses is considered an ill-omen. When the screeching begins villagers put a door key (or even a piece of iron) under a fire to counteract its ill-effects.

The bark of a tree taken off while the owl is on it but before it has screeched thrice is used for charming purposes. However, it is extremely difficult to do this as the bird gets frightened even before one could get near the tree and flies off.

The controversial devil bird so named because of its haunting cry, remains a mystery of this land and those living close to thick jungles, consider it to be a bird of terror and ill-omen and children tremble at its spine-chilling cry.

Villagers say that its cry will surely be followed by the death of someone in the village.

The parrot, of which three varieties, rena, labu and alu, are known in Ceylon, has been immortalized in the Jataka stories. In fact the Sinhalese attribute the power of speech to an unique honour bestowed on these birds by Lord Buddha himself.

The magpie robbin, known in the villages as both polkichcha (coconut bird) as well as pahan-kichcha (dawn bird) is known to sing in the early morning and late evening.

Usually it has a melodious voice while sometimes it emits a low ominous sound because of which the villagers have established it to be a bird of ill-omen. It must be remembered that even some townsfolk consider the magpie robbin with a certain amount of horror mingled with superstition.

This bird is believed to be an incarnation of Huniyan Yakka (a devil) and its voice, specially the ominous singing, is believed to announce bad news and is considered a message of misfortune. If this bird builds its nest in their houses, villagers consider it a great misfortune and they try to prevent this by chasing these birds from the neighbourhood.

The black robbin (kalu polkichcha) is believed to be an incarnation of Mahasona (a ghost) and its body is used by the villagers in the preparation of charms. One of these preparations, kalu kumara anduna is as follows :—

A king coconut is taken, its water emptied and the body of a polkichcha placed in it. Then it is buried and three months later unearthed. What remains is put into a pot, taken to a quiet spot, usually a burial ground, and the oil is extracted over a fire. During the process of extraction every care is taken to stop the demon from spilling it. Village lore has it that the yakka (devil) always succeeds in overturning the vessel in which the oil is collected.

Another bird, the Indian koel (koha) has excited the admiration of the villager by its loud, musical voice. They imagine the koha's peculiar cry to sound: 'Daruwa ko?' Daruwa ko? (Where is my child? Where is my child?)

The paradise flycatcher popularly known as the gini hora (fire thief), kapu hora (cotton thief) or redi hora (cloth thief) is considered to be the transmigrated representatives of human beings, who have been dishonest and the colour (red or white) of the birds is believed to depict the colour of the articles that had been stolen. However, it must be noted that the different names given to it are solely due to the appearance which the bird has of carrying away a piece of cotton or a fire brand.

The spotted dove (kobeyya) is a bird whose somewhat mournful voice has attracted the attention of the villager. There is a widespread legend among them which accounts for the mournful voice of this bird. A woman had put some berries to dry and went away instructing her little son to take care of them during her short absence.

No sooner the berries got dried they adhered to the ground and could not be seen at all. Later the woman returned and on not seeing the berries thought the boy had eaten them. She lost her temper and killed the little one with a blow. Just then she saw the berries on the exact spot where she had left them. In her remorse she killed herself and was transformed into the kobeyya and it is believed that up to this day the bird goes round the world lamenting her dead son.

The pond heron (koka) or the night heron (kana koka) is known for its cry at night which is said to be a great ill-omen. It is also said that if the bird cries while in flight over a house it is a sure warning that death will come soon to an inmate.

It is also worth noting that most of the early Sinhalese poems were written in the form of messages or sandesayas. Following are some of the better known sandesayas, most of which begin with a poetic description of the bird entrusted with its delivery :—Mayura sandesaya (peacock); salalihini sandesaya (mynah); paravi sandesaya (pigeon); tisara sandesaya (swan); diyasevul sandesaya (water-cock) and gira sandesaya (parrot).

Sentinel of the Marshes

By T. S. U. de ZYLVA

WHEN the north-east monsoon rains inundate the dry zone and the irrigation tanks spill over, the low-lying scrub is converted into swamps and marshes. These swamps and marshes which also include the shallower ends of tanks and flooded out paddy fields, are an unfailing attraction to a great variety of aquatic birds. They are

attracted primarily by the abundance of good feeding but the undisturbed marshes also provide them with security.

Hundreds of our indigenous birds can be seen feeding side by side with large flocks of foreign visitors from the colder climes. Commonest among the local birds are the various families of

storks, herons, egrets, ibises and spoonbills. In the coastal districts one always comes across a fair sprinkling of black-winged stilts. This black and white bird standing on slender, "sealing wax" legs cannot be mistaken for any other. It wades silently in the clear waters among the reeds, pecking hither and thither at aquatic insects and worms. At the slightest disturbance however, it will take off uttering its incessant, piping, *ik, ik, ik, ik*, and form a compact flock with the other stilts in the vicinity. These cries can be heard far and wide and serve as a very effective alarm for the entire bird population of that particular area.

During the breeding season in May and June, when the marshes become their home, stilts are even more alert. They nest on the ground in scattered company, in vast open stretches of marshland and will take off at the first sight of an intruder. This is one reason why it is so difficult to find the nests of stilts. It is very rarely that one can get a chance of seeing a stilt actually sitting on its nest. Probably the stilt with its striking plumage, is aware that when sitting on its nest it is more conspicuous than the other drab ground-nesting birds. Thus it prefers to be airborne whenever an intruder is sighted.

I have seen stilts nesting on scrapes in the ground, among cowpats, in the midst of short reeds and even on bare rock. The typical nest I think is the one that is built amongst the short reeds. (at top of page). To begin with, this type of nest is surrounded by water about an inch or two in depth. As incubation proceeds, the waters gradually dry up and recede, so that when the young stilts hatch out the nests are really on dry

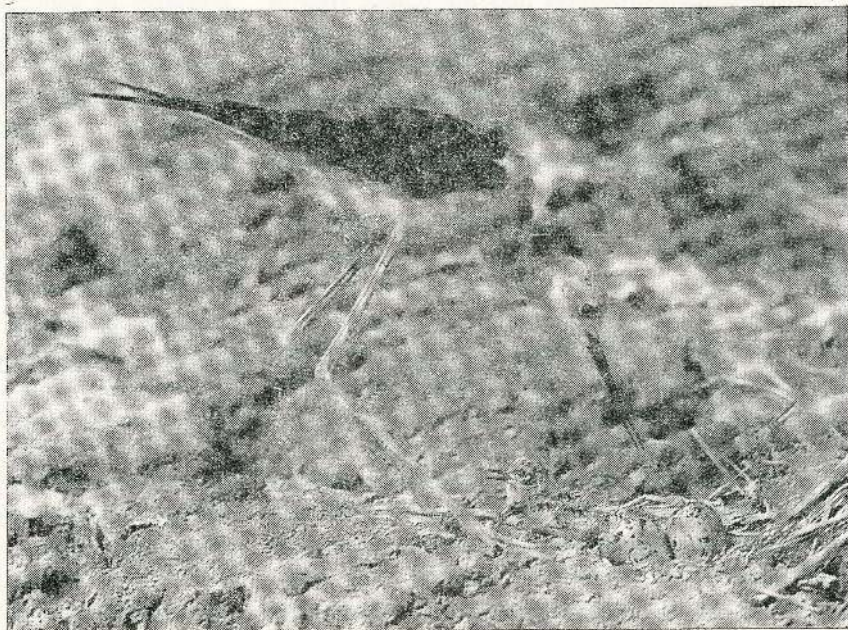


Stilt's nest

Photo: T. S. U. de Zylva

ground. It is amusing to watch a stilt approach this type of nest. He or she (both sexes incubate), comes wading through the water and on reaching the nest, always jerks its legs to get rid of any adhering water, before settling down on the eggs.

There is a little island amidst a vast stretch of reed beds in the eastern province, where I have counted well over forty nests of stilts. The stilts were nesting in the company of little terns, Kentish



Minutes after the hatching

Photo: T. S. U. de Zylva

plover and painted snipe. This island comes into existence only in May when the waters recede due to the intense evaporation caused by the dry south-west monsoon winds.

To begin with it is only a few square yards in extent but by the end of June it may measure about half an acre. All along the periphery of the island were the stilts nests, most of them on little elevations far out in the shallow waters.

The painted snipe had their nests in the reeds well clear of the water. On the island itself dozens of little terns and Kentish plover were nesting on the soft sand.

On this little island paradise, I was lucky enough to film a baby stilt hatching out. The mother stilt capped it all up by flying off with the egg shell. The photograph reproduced here was taken a few minutes after the chick hatched out.

The Ceylon Orange-breasted Blue Flycatcher

By T. S. U. de ZYLVA.

THE dense patches of jungle that clothe the big rocks of Kurunegala, give shelter to a great variety of birds. In addition to a gorgeous array of the commoner garden birds there are many interesting species to be found there.

Many Kurunegala residents are not aware that the shama, Ceylon's melodious singer, can be seen and heard on the way up to Ibbagala. I went up there with a friend, a good whistler, who was however sceptical about seeing or hearing the shama. Within a few minutes of entering the rock jungle we heard the shama and my friend imitated its call. The shama replied from a closer spot to be answered immediately by my friend. This procedure was repeated with the shama getting closer each time and at the fourth call my doubting friend almost lost his hat to a rather pugnacious shama.

The grey hornbill, Layard's parakeet, black-capped bulbul, the orange minivet, Ceylon wood shrike, velvet-fronted nuthatch, large cuckoo-shrike, Ceylon spur fowl, and the orange-breasted blue flycatcher are some of the more interesting birds found here. Among the birds of prey, the Ceylon hawk-eagle and the serpent-eagle have been seen now and then but the wood owl and the Ceylon fish owl are quite common. This is

especially so in the vast compound of the Government Agent's residence (The Maligawa) which is contiguous with this rock jungle.

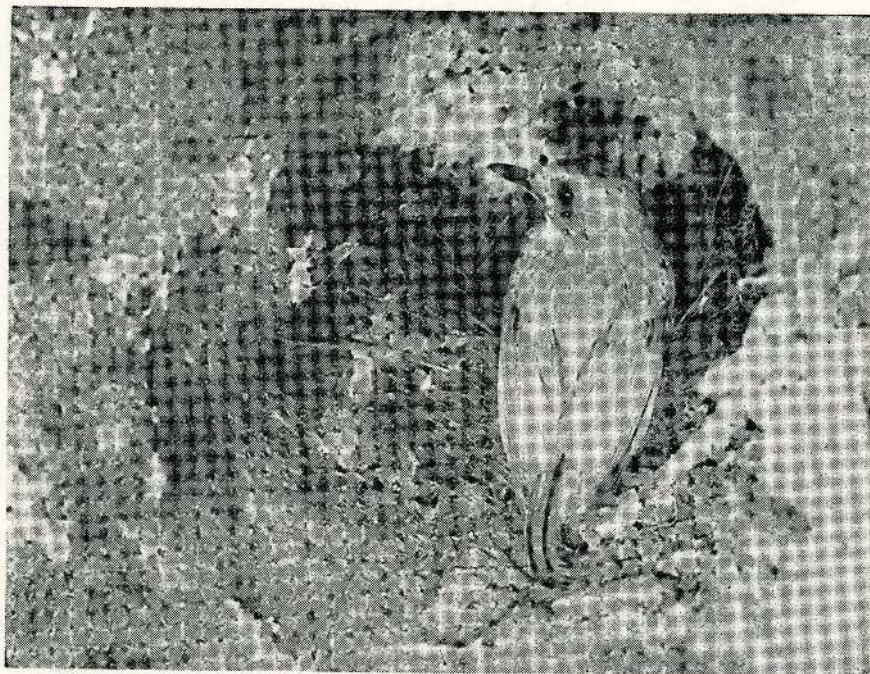
Mr. Mitford of the Ceylon Civil Service was residing at the Maligawa in 1861. It was while here that he heard the devil bird and passed on the information to Emerson Tennent. On the first page of the supplement on the Devil Birds of Ceylon Dr. Spittel quotes Mr. Mitford's letter to Tennent. "I never heard it until I came to Kernegalle where it haunts a rocky hill at the back of Government House". Though a hundred years have passed, these eerie sounds can be heard even today at the Maligawa, specially after the north-east monsoon rains. These calls are still referred to, as sounds produced by the devil bird. Though certainly weird, the sounds are only the moaning, deep-throated, almost human calls of the wood owl and the Ceylon fish owl.

Whenever I roamed these jungles, I invariably heard a quaint little warble consisting of about six notes but never succeeded in spotting the bird that uttered it. I assumed it was a warbler but was frustrated that I could not know for certain who the author of the song was. Being unable to whistle I was not in a position to seek any help to solve the mystery. I had to wait several

years for the answer and it came to me quite by chance.

Two years ago, the bird watching group of Trinity College informed me that an orange-breasted blue flycatcher was nesting at Mowbray school and invited me to come over for photography. No sooner I had my photographic equipment installed beside the nest, the little flycatcher came over with a tit bit in its beak, sat on a nearby twig and sang a hurried song. Her nostalgic song had me smiling quietly inside my hide. Oberholser's flycatcher had teased me for many many years.

This sparrow-sized flycatcher is found throughout the island. Nowhere is it very common being more often heard than seen. With its blue upper plumage and bright orange breast it looks like the Indian blue chat but the blue chat has an unmistakable white supercilium. Like all flycatchers it is a very agile bird. What appeared to be dry leaf that was swiftly blown down the face of a rock boulder turned out to be this flycatcher performing



Ceylon orange-breasted blue flycatcher

Photo: T. S. U. de Zylva

acrobatics while trying to catch insects on the wing.

It invariably nests in a hollow in a bank only a couple of feet above the ground. In this hollow it builds a neat cup-shaped nest out of moss and fibres. The eggs are olive-brown. The very young nestlings are sooty-black and are hardly visible in the nest which is also almost black. The juveniles are brown and buff and most unlike the adult birds. Those interested in this bird should visit Kandy and look for it at Udawattekele and along the upper part of Gregory's road.

Kumana Revisited

By R. I. C. KURUPPU

WE had reached Pottuvil only the previous evening. Later, when pacing the Arugam Bay bridge, I looked longingly on the snaky wisp of tarred metal which was the Panama road.

Kumana lay still beyond. The prospect of a trip there is always pleasing and never fails to excite me, hence my state of pleasant, almost heady anticipation.

Kumana—the southernmost extremity of the eastern province, is approached through the Yala east intermediate zone, yet does not strictly form part of it. The conditions of this co-existence are peculiar, necessitated by the uniqueness of its location. The Kumbakkan Oya—on the bank of which some homesteads of the village actually stand—forms a natural boundary, separating Kumana village from the Yala strict natural reserve. A little way ahead is the estuary. Appropriately enough, this singular combination of river, sea, jungle and village contribute in the main to the allure of Kumana, the story of which is much more than the often repeated tale of the village in the jungle.

Kumana is remote, but there are areas more remote; it is not easy of access, yet others are almost inaccessible. This idyllic spot is no more a forgotten corner of Ceylon, as for a few like me, the lure of Kumana is unfailingly present. With the passage of time and more resources, its devotees would undertake the more ambitious through journey from Okande to Palatupana. Then, the twin attractions of the intermediate zone and strict natural reserve would be ours to enjoy.

Leaving Pottuvil at dawn, we quickly passed Ullai and Pasarachenai. At Naval Aru, the permanent bridge over the Heda Oya was almost complete. And so to Panama—the last frontier as it were. Kumana was nearer by 10 miles, yet 22 miles from here. Panama is not without its own charm and appeal. A short walk along its unpretentious one street bazaar, gave me sufficient time to indulge in random reminiscence with certain acquaintances. So much is the homage paid to Panama. Even roadwise a detour is made to enter it. Few indeed of those bound for Kumana, would care to linger long at Panama, and perhaps the people of Panama sense that the interest evinced is mostly affected and cursory, not genuine. If so they hardly show it, it is all taken for granted and to be apologetic about it is quite unnecessary.

This sylvan pilgrimage proper began with the exit from Panama. Beyond, the environment

takes on a different aspect. At Helawa a few of the more enterprising men of Panama have their cultivations. At the solitary wayside stall we sipped weak tea. I did not really feel the need for it though—the journey itself was refreshment enough. In the stall I noticed a transistor too. This symbol of urbanised sophistication was not in place anyway. I reminded myself that these were men from Panama. Shortly, another brief stop was made; this time to make propitiatory offering before the guardian deity of the place. It is a ritual both inadvisable and unsafe to overlook.

On this approach road, Okande marks the commencement of the intermediate zone. A slight detour is needed to approach Okande rock. Close by is the very pleasantly situated departmental circuit bungalow. The swami is no longer at Okande Temple, and without him the place is not the same. He had had differences with the trustees of the shrine regarding the collections and subsequent developments had been far from religious. At Okande, the checkpoint for visitors to the intermediate zone, we checked in at the ranger's quarters. To view the collection of avifaunal specimens so intelligently exhibited here is always profitable.

Passing Okande the jungle comes alive with herds of bounding deer. Sandy plains and villus are passed more regularly and the Bagura Plains suddenly spreads before us. The Bagura Oya flows across the vastness of this plain, making it always a much desired camping place, particularly on moonlit nights.

The progress from Panama to Kumana is easily and more interestingly measured by the succession of the seven lagoons—Panakala, Kunukala, Helawa, Bagura, Andarakala, Ittikala and Yakkala. To those of Kumana village who use this road, they serve as mileposts. It is to Ittikala that the flamingoes come. Between Bagura and Andarakala are the waterholes of Tunmulla and Kotalindawala. The former is frequented by many species of water birds, and particularly the black-winged stilt. The waterhole at Kotalindawala is a sure place for crocodiles, and most of them very

arresting specimens too. Yakkala is the last of these lagoons and is very near Kumana.

Very soon Kumana villu was sighted. This mangrove swamp, in season a world famed breeding ground of birds, was strangely silent. Just as the jeep cleared the length of the villu, there was for me the unmistakably characteristic sign of welcome. The wind-swept crowns of the coconut trees seemed to beckon me. Kumana lay close at hand.

Once in the village I was irresistibly drawn to the waters' edge at Madametota, a popular camping place. At this point the Kumbukkan Oya is usually crossed, and also from here the Kebilitta road begins. The waters have that extra coolness, drawn perhaps from the roots of the giant kumbuk which flank either bank. For the lone human at the riverside, here was found a soothing tranquility beyond compare.

On the opposite bank, and from what is his very own territory a single elephant emerged to drink at the river. Very suddenly I realised his presence—so noiseless had been his entry. Looking around I was struck by the veritable colonnade of high trees, their branches intertwined by thick greeny creepers. And between these the river flowed out to sea. Flitting shadows fell on the water as the hornbills returned to a communal roost. Their harsh, grating cries rent the pervasive silence. A solitary Brahminy kite—disturbed in its fishing no doubt—flew to a different perch upstream. The voices of the bathers at Tunminigala mingled with the sounds of the jungle.

From here I drove on to the Kumana wewa. To visit it I had to enlist the services of a village elder, none other than the famed one-armed Garuwa. A sterling character and of indomitable spirit in spite of his obvious physical privation. He alas, is now no more. The tank was difficult of approach. The track showed only in places, and there were also the low thorn bushes to contend with. Kumana wewa had nothing spectacular to offer, other than the solitary elephant which had taken to its waters in the cool of the evening. A creature of ample proportions, it was perhaps only

beginning a long feed and was not easily disturbed. The churned up mud in the lower reaches of the tank spoke to the activities of a much larger number of his fellows. I watched fascinated. Merely to gaze and gaze is thrill enough, if one appreciates the economy of movement to which this massive beast disciplines itself.

I thought of others like him in less congenial and restricted environments. Here in Kumana wewa—a place literally back of beyond—this solitary feeder was just one of a fortunate few. Saddened by these thoughts, I set out towards the village again. Garuwa was silent awhile, and perhaps sensed my need for it just then.

At my suggestion, we went across to the Kumana villu. Here it was off season. I tried to recapture the scenes enacted here at nesting time. The reality before me was such a contrast. This villu was an irresistible draw with certain species of birds during the breeding season. Chiefly, I remembered the pelican, ibis, painted stork and egret. With the hatching out of the fledglings, the entire villu took on the aspect of a giant nursery. To observe the feeding of the young birds was always a rewarding study. The nests though perched rather precariously, presented a striking array.

I often wondered what the secret of the villu was. Perhaps, only the birds knew. Certain events of 1965 came to mind, when the birds had not come to Kumana villu in their usual numbers and the nesting was poor. The swami at Okande made gloomy prognostications. The dying mangroves proffered another. In Kumana, the village elders were worried, but more than hopeful for the future. Happily, the worst was not to be, and in 1966 and 1967 the birds more than compensated.

The opportunity for a river bath in the late evening was more than I could resist. Weariness in body and mind was no more after the first dip in those healing waters. It was a necessary prelude to the rest and relaxation that were soon to follow. Dusk found me lazily stretched out on a camp cot, placed as usual on the gently sloped pathway leading to Piyadasa's cottage.

I had once again come to Kumana, which since 1965 continues to hold me entranced in its deep spell. As the pilgrim is drawn to a place of worship, so am I drawn to Kumana. Outside I heard a leopard saw. Piyadasa, on a mat by my side, nonchalantly continued to chew. I was momentarily ruffled, but lay down again, reassured by recalling that a stout stockaded fence ran around this homestead. I also remembered that elephants often roamed the thorny scrub-lined avenues of the village after nightfall. Again I lay quite still. Far above me was the star-studded canopy

of the sky. Very soon I was immersed in a reverie.

It was really in the nature of a mental resume of the events and sights of an evening in Kumana. I now looked forward to the following morning when I would renew old friendships and see familiar places. "Thappal" Garuwa, in spite of his enfeebled condition, would certainly be an early caller. Then there were Menike, Podda, Wastuwa and also old Palany. Kumana was changing said some. This pained me, and I longed to be reassured that it was not so.

Birds of Colombo South

By A. C. YAPA

ALMOST one hundred species of birds can be seen in Colombo South. In fact, I have personally observed no less than eighty-five species.

Almost all my observations were made near Nugegoda, Boralesgamuwa, Dehiwela and Mount Lavinia. The area has endless rows of gardens and houses strung out monotonously. Yet, however, there are a handful of places possessing a distinctly rural character—for example Rattana-pitiya and Attidiya. Here, verdant paddy fields lie side by side with humid marshes, now yielding inevitably to the determined hand of the farmer.

It is impossible to observe all these birds within a short time. A large number of waders and sea birds have been recorded and this underscores the importance of the marshes, the paddy fields and its location adjacent to the sea.

The iora has not been deprived of the leafy trees upon which it loves to forage unobtrusively, the two barbets have fruits aplenty, the bulbuls, sunbirds and tailor-birds populate and breed in the gardens, while the munias enjoy seasonal bonuses of paddy. The common coucal which has achieved considerable infamy and aroused plenty of ire over its depredations on nestlings of other birds, has made amends by eating snails

which are the plague of the gardener. The white-breasted kingfisher which feeds mainly on lizards, earthworms, small amphibians and insects is also recorded. The white-breasted waterhen which is found in marshy or wet habitats, rarely takes to the water even to escape.

The birds that I have already mentioned, plus a few more like the koel, pond heron, and egret are the common birds that are found in the Colombo South area. They can be seen on any day, if one takes the trouble to look for them in the right places. For instance, you simply won't find pond herons and egrets in your garden. You will have to tramp a bit to a paddy field to see them.

Then there are the less common ones. Prinias and the fantail warbler are present in sizeable numbers in the paddy fields and marshes. But they are rarely noticed as the prinias are much like tailor-birds, while the latter are very hard to notice while they thread their way amongst the weeds and paddy stalks, or when they fly at a considerable height, as I have often seen them do. The Indian pipit, which does not migrate, is far from rare, for it is frequently seen in paddy fields and often even on playing fields. The five raptors

that have been recorded may also be placed in this category. The shikras are the commonest of these, for they are seen living in definite territories every quarter mile or so. Its cries of "kik-keew, kik-keew" frighten squirrels and babblers, so that they cry out in alarm. The brahminy kites occur rather occasionally in the Colombo South area. At Rattanapitiya or Mt. Lavinia, they are seen wheeling round and round, dark specks against the azure sky. One pair nested in 1966 and 1967 at Rattanapitiya. Of this quintet of carnivores, two are nocturnal. Sundry squeals and abrupt 'wa' mark the collared scops owl, while hauntingly mellifluous cries of "ku-ook, ku-ook . . ." distinguish the hawk owl. The common nightjar lives in small numbers at Rattanapitiya, and I have seen one in Nugegoda. I have recorded three species of swifts. The lorikeet is seen occasionally, but there is something like a population explosion when the red-cotton tree bursts into bloom. A distant cousin, the Alexandrine parakeet is very rare and is found only in the feral state. The status of the spotted dove is also similar, for the only ones I know frequent the paddy fields and vegetable plots off Rattanapitiya. Indian rollers, usually solitary, have been recorded in Nugegoda. They have been frequently recorded at Mt. Lavinia as well. A larger bird, and definitely more majestic is the stork-billed kingfisher, which I have seen in small but conspicuous numbers at Rattanapitiya and Bellanwila. The pied kingfisher has a similar distribution. Despite its rather small size, it generates great interest, if only because of its unique method of hunting.

I have divided the migrants into three categories, 'land' migrants, the sandpipers and waders, and lastly the sea birds for convenience.

By the term 'land migrant', I refer to those which are not found living in a watery habitat. Of these, the brown flycatcher, the pitta, the Indian paradise flycatcher, Blyth's reed warbler and

the blue-tailed bee-eater are to be frequently seen.

Quite a large percentage of the birds found in the Colombo South area are waders or snipe. In addition to the wood sandpipers and the common sandpipers, which are abundant in paddy fields and marshes, there are the pintail and fantail snipe. A great snipe was shot by Mr. E. C. Fernando at Nedimale, Dehiwela in 1950, the last known record of this bird in Ceylon according to G. M. Henry. I first saw the purple coots on April 1st, this year. Two migrant rails occur, but mainly on passage.

Terns of many species are found especially near the sea in marshes and mud flats, where they hunt tirelessly for tadpoles, small fish and insects. The Indian whiskered tern is by far the commonest and is often seen near the sea, as well as inland. In winter plumage it is extremely difficult to differentiate this bird from the rare white-winged black tern. They can be identified in late March or April however, for at this time their moult into the breeding plumage is well advanced. So I did not make any mistake when I saw three of them with whiskered terns, on March 30th. On the same day I saw a little tern, but I was unable to make out the subspecies. On December 7th, 1967 a gloomy, turbulent day when gale-force squalls whipped myriads of terns inland, I saw a group of four brown-headed gulls sailing along with grace and majesty. The tropic-bird is rarely seen, simply because it is driven to land only on the wildest days. So I was lucky to see a pair on June 26th. Two shearwaters have also occurred at Mount Lavinia. Many species that may have been swept ashore in the past are not on the Ceylon bird list because they have not been observed and identified. This can be rectified only by more observation. I hope that many more people will take to bird watching even if the birds don't turn up!

Dawn Over the Lagoons

By SEPALA KULATUNGA

THE sun takes its time to rise above the lagoons. One moment it is dark and the lagoons are covered with a thin mist—and as it rises one is able to distinguish colour and form. My favourite approach to the lagoon is by a rough path through shrub jungle. The rains have come, the gray-brown plains by the lagoons have turned a beautiful green, wild lillies that lay dormant during the drought, have sprung to life almost overnight. Spikes of beautiful white lillies dot the plains, withered dry shrubs of yesterday are a riot of colour. The transformation of the dead shrub jungle of the dry zone, with the first shower of monsoon rain has to be seen to be believed. To the privileged few a revealing experience indeed.

It is November and the full quota of our feathered friends from the frozen arctic are with us once again. The salt lewayas round Hambantota are teeming with bird life. Gargany and pintail, golden plover, curlew, and wimbrel, sanderling and little stint, they are all here.

When the winter approaches some irresistible force prompts these birds to start out on their annual migration in search of the sun, always flying south, covering thousands of miles over sea and land. They come in vast flocks braving the weather, flying by night, and feeding by day, predators taking heavy toll on the way.

When these feathered friends reach our lagoons and journey's end, they are worn out and weak from sheer exhaustion. For weeks they do nothing but gorge and fatten themselves on the plentiful supply of snails, worms and other delicacies that gladden the hearts of these weary travellers. The migrants recover very fast and within a few days all traces of their gruelling journey are not visible. Their bodies are firm, their breasts are soft and round. The birds are once again preening in the glory of full plumage.

The vast salt water lagoons of Hambantota are a bird watcher's paradise. Karagan lewaya, Sittaragala, Malala Kalapuwa, Udamalala—Palle Malala, Embiligala and Bundala, all vast stretches

of water surpassing one another in their scenic splendour and wealth of bird life. These lagoons offer sanctuary to millions of migrants every year. A sharp breeze is blowing across the lagoons, gargany and pintail ducks are flying in pairs, their wings whistling as they glide into the water. Members of their clan are feeding noisily near the thick moss by the edge of the lagoon, the newcomers swim with heads high, soon to be swallowed up in the flock.

The flamingoes are feeding in the shallows, tall stately birds, their long pink legs glistening in the morning sun, heads completely submerged in their eternal search for delicacies of the lagoon bed.

A pair of black winged stilts are wading into water almost above their leg joints, noisy quarrelsome birds, their sharp "kik—kik—kik" becoming louder and louder as they take to the air at the slightest disturbance. A solitary curlew is feeding along the water's edge, its down curved bill probing for molluscs and crustaceans. Now and then the curlew stops feeding to utter its famous trill, rising to a crescendo of bubbling notes.

The liquid notes of a flock of golden plover running on the grass, picking up insects and seeds; lively birds bowing to one another, scraping, chasing, wing lifting all on the run. A few lapwings have joined the plovers, they mix well. Vast flocks of little stints, tiny birds of passage, these mighty midgets are the smallest of the waders that visit our lagoons, always first to arrive and last to go, they skim over the water gracefully to alight on the plain to blend with the surroundings and disappear from view within seconds, a perfect camouflage.

In this brightly lit world of open plains the birds and animals blend beautifully with their surroundings. The little pile of decayed leaves at your feet may be really a yellow wattled lapwing nesting, their eggs usually earth-coloured with dark markings are extremely difficult to notice. The young lapwings, defenceless creatures of the plains, flatten themselves against the ground and remain com-

pletely still, the passing shadow may mean a bird of prey. When it is spring once again in the arctic, these migrants will leave us. Farewell little

travellers, we shall meet once again in the lagoons of the sunny south.

“If winter comes can spring be far behind?”

A Black Crow Anting

By A. H. E. MOLAMURE

KEGALLA, the 20th of January, this year : throughout the day a sky emptied of colour save that of ashes; since midmorning a soft, thin scribble of rain; the crows—they are all black here (*Corvus macrorhynchos culminatus*)—dank, bedraggled.

It was approximately 1.10 p.m. when, happening to look up from the book I was reading on the verandah of the house I live in, my glance fell upon a crow perched on a tree picking at something held down by its toes—or so it seemed. This it did not eat but made a gesture as though preening an under-wing. Quickly fetching a binocular I looked through it. The bird was anting. A mango tree grows up from a level lower than the verandah, about twentyfive feet away and in front of it. Slightly above eye-level (in relation to the verandah) it branches out in a massive fork. On this the crow stood amid scurrying red ants (*Oecophylla smagdarina*; Sinh: *Dimiya*). As they

clambered up its legs it would pick them off—more than one at times—and with a swift downward sweep of its bill apply them to the under-side of wings and tail. At the end of each stroke the bill was clearly seen to be empty.

All the while, ants were swarming over the bird's body and head but no attempt was made to shake or brush them off. About six minutes afterwards another crow arrived and, taking up a position near but a few inches below the first, commenced anting. Not more than twice or thrice; for, someone walked out on to the verandah; at which both birds took wing. The tree being unclimbable it was not possible to examine the place of anting more closely.

For references to anting, in Loris vide:—

Vol. VIII, pt 6, p 390, Vol. IX, pt 1, p 44, Vol. IX, pt 2, p 116, Vol. IX, pt 5, p 334 and Vol. XI, pt 1, pp 29-31.

Yala

By HEMA ROHINI PATIRAJA

Yala, my heart yearns for thy green vaults,
Thy arbours and flower-starred festooned walks;
Where roams the elephant in unhurried might,
See their giant bones on a hushed rocky height;
In sun-flecked secret haunts meet shy jungle eyes,
Hear the gorgeous peacock's strident cries.

Plumage spread in wondrous beauty aglow
Capering, captivating friend and foe.
A ballerina of grace with dainty feet,
Charming, a shy-pea-hen with dazzling feet.
See the deer with lustrous haunting eyes
A poem of grace, a beauteous dream realised

I hear the sobbing wind on a sandy hill
 Cold, biting as I stand motionless and still
 The bears hold court, shaggy, hostile and dark;
 The breathless hush broken only by a lark
 Warbling sweet and long to a restless mate.
 Wrapped in solitude and dreams I wait.

It breaks my heart to grow old with doubts and fears,
 Worn out with bitter longing and lonely tears
 Through a veiled mist of broken dreams I see
 A royal stag proudly scanning the lea;
 A gentle doe and fawn in leafy glade,
 A myriad jewels as fire-flies gleam and fade.

Beneath giant trees rustling with ancient dreams
 I watch elephants at a jungle stream;
 Great, majestic, disdaining human dreams
 Slowly the kingly leader leads his team.
 I sit in suspense at a water-hole
 In rippling grace a leopard creeps to his goal.

I wander down many a vanished trail
 Where sleeps many a buried citadel
 Swept by the jungle-tide and steeped in lore,
 Where time is forgotten and counts no more,
 No 'might have been' but sun and stars.
 And a mystic moon lighting an enchanting Park

Each unbeaten track opens paradise!
 Shy green recesses where the shama flies
 Unfold, healing lending an anodyne for pain;
 Until its silence has closed round me again,
 Its myriad tongues welcoming, comforting me,
 Wrapping me in a green primordial sea.

The night jar cries; the ceaseless cicadas hum
 The trumpeting paeon of praise to the morning sun
 From far an elephant thrills me with its refrain;
 Waking the green innocence with its strain;
 I hear its heart throb calling me from afar
 Tenderly Yala gathers me to her heart.

A Remarkable Snail from Ceylon

By P. E. P. Deraniyagala

(with three illustrations by the author)

ONE of the most extraordinary members of the snail family was secured from the sea off Mihiripanna, eight miles south of Galle. It was dredged from between the shore and the reef by a coral gatherer and secured by Mr. Cedric Martenstyn who kindly sent it to me for identification.

It belongs to the little known genus *Magilus* Montfort, and was described by me as *Magilus lankae* in the *Proceedings of the 24th Annual Sessions of the Ceylon Association for the Advancement of Science* (Nov. 1968).

These snails are thin shelled and possess a cover to the opening.

When young, the mollusc settles in a crevice within coral and as the latter grows upward, the former keeps pace by constructing a shell tube which also grows upward, zig-zagging through the coral until it is about ten times as long as the original spirally coiled shell. The entire snail's shell and most of the tube become filled with white, solid, shell material, and the living animal occupies the upper end of the tube.

The surface of the shell is finely sculpted and traversed by fifteen longitudinal lines; the right and the left margins of the tube are depressed into two lateral ridges.

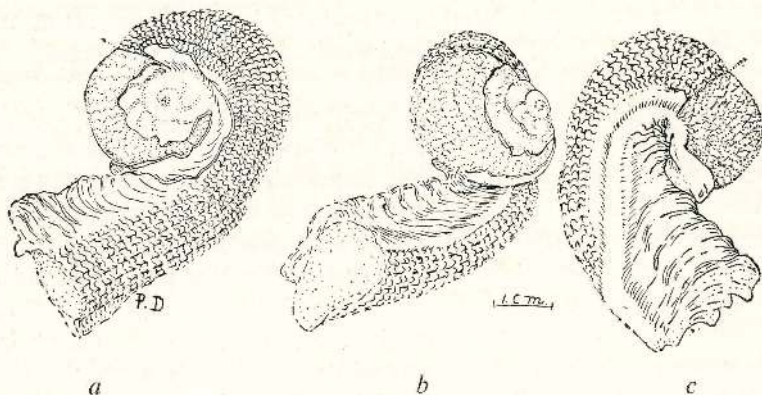


Fig: I. The *a* dorsal, *b* posterior, and *c* ventral views of the holotype of *Magilus lankae* Deraniyagala.

The nearest relatives of *Magilus lankae* are *Magilus antiquus* from the Red Sea and Mauritius and *Magilus japonicus* from the cooler sea off Honshu, Japan.

The upper part of the tube of the single specimen that is known from Ceylon had been broken off short.

The dimensions in mm of the solid translucent white cast are as follows:—

Straight transverse width of helicoid shell across spire and proto-conch 23, height of helicoid shell 24, its width 23, its antero-posterior length 43, lateral width of tube 23, dorsiventral depth of tube with frill 20, bilateral width of tube and shell 29.

Since so little is known about this strange genus Ceylon's conchologists might make a special effort to secure some living specimens for further study.

At Kali Villu

By R. D. B. JAYASEKERE

C. V. RAMAN, the celebrated Indian scientist once said, "water in a landscape is like the eyes of the human face." This dictum proves itself to be true in the case of the Wilpattu National Park which is gifted with a number of villus or shallow pans varying in size so dotted that an aerial view would look like the smaller Mare of the moon. A remarkable one on the west of this national park is Kali Villu which is a great tank in the wilderness serving the animals in the same way the Colombo citizens are fed by the Labugama tank.

It is suggestive that even the prehistoric and the protohistoric man must have used this great water reservoir for his subsistence. This villu with rippling placid waters is situated within an area where the first Aryan settlers had established themselves. The ruins in the neighbourhood provide evidence of human habitation.

The vegetation of the western sector of its environs is of the parkland or damana type which is probably man made. B. H. Farmer supports the view that damana (savannah) are probably man made. In the eastern sector is the secondary and tertiary forest. It is suggestive that, at least, paddy cultivation had taken place in some parts in the past. Today man is not the inhabitant in this area but the denizens of the jungle.

Tens of thousands of generations of animals must have drunk in the villu. If one is observant one notes that beast after beast comes there to quench his thirst or for a dip in the water. From morn till evening the diyakawas are holding a conference—at the edge of the villu. As the sun blazes families of wild boar come for water and spend hours in the mud. What a realistic scene!

A stag with his mate will make an appearance. Herds of wild buffaloes will spend the heat of the day sunk in the villu waters. Elephants come in singles or herds. You will see a jackal coming for a drink and retreating cautiously. Herds of deer will graze at the villu bank, spend the

night there manifesting their group habit. Such is the diurnal drama at Kali Villu.

My wife and I spent three fine days at Kali Villu in August, 1965. The appearance of elephants made the first day of our stay memorable. Between five and six in the evening five elephants, two large and three small, came in a group and descended to the water. The elephants advanced till their limbs were covered.

I think that this group (enlarged thumpathrala) consisted of the mother with three calves accompanied by another female. Sometimes calves stay with the mother till they are fully grown up.

The general belief that the 'thumpathrala' is constituted by the mother calf and the bull elephant is not quite correct according to the Smithsonian Elephant Survey. This research tells us that in this group (thumpathrala) the bull is replaced by a female—an aunt perhaps. In this particular herd of five probably the two larger ones represented the mother and aunt.

The five animals stayed for fifteen minutes in the pleasant environment. Their thirst, they quenched. Then the two adults ascended to the bank expecting the younger ones to follow them. Two followed but the youngest stayed back reluctant to leave the wet surroundings. Then the mother came back to the villu and carried it away. They assembled on the western bank of the villu.

A few minutes later four elephants arrived at the villu. At dusk two large bulls came to the villu from two directions. Finally all the elephants congregated on the western bank. As darkness set in we could see them having great fun in a "social." Their party must have continued far into the night as evidenced by their trumpeting.

I well remember the calm and gentle mobility of a leopard on the third day of our stay. It was four p.m. and we could hear the unceasing chatter of monkeys; the tracker and John, the caretaker of Kali Villu bungalow told us that it was the noise

made by frightened monkeys when they encounter a leopard.

They were right. Our eyes were pointed towards the villu, and at about 5.30 p.m. I could see a lone leopard moving slowly and silently towards the bed of the villu. Fearlessly the animal descended to the villu, had his fill and ascended to the bank.

A herd of deer had assembled on the bank in the meanwhile. The leopard looked at them with piercing eyes. There was ample opportunity for it to attack and the deer hadn't a chance. At this perilous moment between life and death one deer raised his ears and marched two steps forward towards his foe. The leopard halted and then started moving slowly into the woods. Once more he looked majestically at the herd of deer and calmly moved towards the parkland country. I think the leopard had been after a hearty meal. The animal looked charming and exceedingly bright and had attained maximum stature.

The gentle gait and penetrating gaze of this leopard can be likened to the behaviour of the

solitary leopard encountered by John Still in Jungle Tide.

A nocturnal feature at Kali Villu is the roaming of wild boar under madan trees. In the environs of Kali Villu is a peculiar kind of coloured gecko, possibly a Mesozoic cryptogamic animal having some affinity to the crocodile. It may be a hybrid.

Selwyn Samaraweera's hypothesis is that these frightening objects might be a distant cross between a crocodile and a gecko (Loris June, 1968). This is in his own submission a mere guess and genetical investigations are necessary before one concludes the matter zoologically.*

Crocodiles have tenanted Kali Villu too. The hornbill with attractive and strange nesting habits is also a frequent visitor which we noticed on madan trees.

Nature is at its best at Kali Villu; the fauna distribution of Kali Villu and environs makes it a laboratory for the naturalist.

"A whole forest, healthy and beautiful, giving colour to the light, giving perfume to the air: what is this but the most imposing piece in nature's repertory."

*Not a guess but merely an attempt at humour which seems to have misfired!—Ed.

The Pearl Banks

—Off that antique land near the Gulf of Mannar

By R. L. SPITTEL

OVER the tranquil sea of the Gulf of Mannar the morning breeze blew fresh. The blue unruffled sheet stretched to the low horizon where it met the vast immensity of the pastel sky, with its soft cloud masses motionless as in a picture. It was a scene of breathless beauty, a glory of the firmament that whispered to the heart of man: It is God.

But the few fishers on the shore gave it no thought, being used to it from the beginning of their days.

The desolate coast of that arid land was covered with patches of scrub; standing here and there amidst which, singly or in clumps were columns of gaunt palmyrah palms centuries old, breaking the monotony of the landscape and giving it a character of its own. A brace of brahminy kites quartered the sky watchful for the stir of a lizard or snake amid the spiny tussocks of the beach or a fish in the lazy shoals. Kitti-clar-clar. Kitti-clar-clar, came the fitful calls of partridge coveys from the brakes.

In the Gulf of Mannar is found the turtle, the dugong and the pearl oyster. No place in the East Indies abounds more with rare shells than here; for here they remain sheltered from the turbulent seas and the fury of the surf.

This is an antique land. The mounded beach is sequined with the fragmented shell of pearl oysters that have accumulated here from the innumerable fisheries of two or three thousand years, carried out under the same conditions as they always were.

The coastal landmarks of the gulf are of interest. Poised like a cobra's hood to the north is the island of Mannar now connected at its lower end by a bridge to the mainland. From its other extremity, the nose of the cobra, a chain of islands and shoals called Adam's Bridge is slung like a hammock connecting it with Dhanushkodi, the southernmost point of India.

Beneath the glittering waters of the gulf, lie the famous Pearl Banks or Paars as they are called—many of them with distinctive names; Cheval Paar, North and South Modaragams, Muthuvarutu etc.

Two great rivers, the Arivu Aru and Modaragam Aru pour their waters into the gulf, with much detritus from the land, during the south-west monsoon. South of the gulf is Kudramalai Point cliff sheering down to the sea.

Here in A.D. 47 came a Roman ship which was despatched to the coast of Arabia to collect Red Sea revenues, but having been caught by the monsoon (the winds of Hippalus) it was carried to Kudramalai (Hippuros). The officer in command was courteously received by the King, who struck with admiration of the Romans, despatched an embassy to Italy. From those envoys Pliny learned about Ceylon and its people; its precious stones and corals; and the pearls that abound in the Gulf of Mannar.

From here the pearls of Cleopatra probably came. And the fleets of Solomon carrying ivory, apes and peacocks, must surely also have had pearls from Ceylon.

According to an ancient tradition there once lived at Kudramalai a powerful queen named

Alarasamy. She is said to have had the dead of her city buried in an island nearby which has since disappeared, and now exists as a ridge of sand (a paar) about three fathoms down. Fishers say that this bank is covered with pearl oysters to the height of a man, and that those on the surface alone are alive.

South of Kudramalai Point is Portugal Bay sheltered from the sea by the long, eroded shoal called Karativu island. Below that is Dutch Bay which merges into the Puttalam lagoon at Kalpitiya (with its Dutch fortress) standing near the point of an up-thrusting peninsula, shaped like a lobster's claw, enclosing the bay and lagoon.

But older than all is a tiny patch of rock near Puttalam (Tabowa) which tells of an epoch when it formed part of the great Indo-African-Australian continent (Lemuria) on which formed the great coal fields of India, Australia and South Africa, and on which roamed enormous reptiles of the dinosaur types.

Friends and foes : Surrounding the entire island of Ceylon is a shallow platform caused by filling up of the sea by soil washed into it from the land. In the Gulf of Mannar spits of sand deposited from the mouths of rivers opening into it are cemented into calcareous sandstones to form the pearl banks or paars. This is done chiefly through the agency of minute marine animals (polyzoa that multiply by budding) and lime-secreting coralline algae (nullipores) of the vegetable world.

These are the tiny architects of the coral reefs which are here found in all stages of growth and decay from living reefs to bare compact limestone. Some banks are formed of this sandstone rock and the shells of dead oysters, cockles, etc. Others are sandy with the underlying flat rock cropping up at intervals.

The pearl lie, 9 to 12 miles off shore, and in depths of 5 to 10 fathoms. They occupy a large shallow area nearly 50 miles long and where broadest are 20 miles wide. On the western edge of this area is a steep declivity deepening to 100 fathoms and in one part to 1,000 to 2,000 fathoms. In these abysses there are only ooze and green

LORIS, June, 1969

mud, quite different from the cemented sands of the coral beds.

Associated with the oysters on their banks are corals, seaweed, sponges, minute shelled animals (foraminifera), small crabs and worms; also star fishes, holothurians (beche-de-mer) cockles and chanks, including the elephant chank that preys on oysters.

The sea over the pearl is the home of the turtle and of the dugong which basks on the surface or browses on the submarine pastures. Here are fishes of every kind—a predaceous world of coraline beauties of brilliant hues and fantastic forms.

From many of these denizens of the reefs the pearl oysters, despite their strong armour, are not secure. Star-fishes and boring sponges and molluscs destroy their shells and suck out their flesh; a large conch the elephant chank preys on them. So do the carnivorous fishes of the rocks and reefs whom nature has endowed with special weapons to deal with corals and crustaceans.

The sluggish ground-loving sting rays crunch up the shells of oysters and sea urchins with their powerful tooth plates: the trigger of file-fishes (leather-jackets clartec or 'old woman') gnaw open the shell with their sharp cutting teeth to reach the animal within; those living torpedoes, the voracious sharks, whose mouth like those of the rays are set on their under surfaces rake up adhering oysters and devour them. In all these fishes the crushed shells of the molluscs and even pearls have been found.

Life-Cycle : The oysters, ripe for the taking, lay thick on the Cheval Paar. Four to six years previously they had been born. Their fathers had emitted sperm into the sea and snapped their valves to disperse it through the water. Of the myriads of sperms set free only a minute proportion found the floating ova released by the females, and fertilised them.

By the second day the ciliated embryos swam freely. On the third day their shells began to form; at first clear and transparent, they soon became bipartite. The embryos drifted floating like those of fishes in profusion in the sea, some

clinging in dense crowds to floating filamentous algae (sargassum). Many were devoured by fishes before their shells were hard enough to protect them.

As the shells ossified they sank in heaps of brood oysters the size of a finger nail, to the bottom of the sea; a few attached themselves by their byssus to floating timber or buoys. Those that fell on hard ground adhered to it. Of those that dropped on sand, some were buried or got scoured out or were rasped to pieces by the sand grains; but those that settled in clear sandy bottom saved themselves by adhering to shells or fragments of coral that lay about, and then to one another in agglomerate heaps. Some fell on beds of a large mussel called pinna to which they clung.

Feeding on microscopic spores of algae, minute animal and plant organisms (infusorians) and the embryos of fish and shell-fish, the oysters grew to maturity.

In the first two years of life their shell growth was vigorous. Thereafter growth was concentrated on the thickening of the nacreous internal layer of the shell to counteract the ravages of boring sponges and anelids. From the third to the fifth year of the oyster's life pearls were formed, this being the period of greatest pearl production. In the fifth year the oysters reached maturity. One or two years more, and they would release their hold and drop off and die—and what pearls they contain would bestrew the ocean bed.

A MOLLUSC : The pearl oyster is not a true oyster but a mollusc more nearly related to the mussels. Unlike the oyster it has a byssus, a bundle of tough muscular threads placed between the shells near the hinge which is broad unlike that of the ordinary oyster.

Its shells are unequal : Near the hinge is the adductor muscle enabling the oyster to close and open its valves. Adjacent to the hinge too is the byssus or foot of dark sea-green colour, by means of which the oyster can attach itself to an object or crawl from place to place, about a foot an hour. It does this by protruding its byssus and reattaching it to a new spot. While advancing the foot

the valves are widely open; as it drags its body forward the valves are snapped together, thus aiding its progress.

The oysters that now lay on the paa's, had escaped many devastating influences to which myriads of their kind had succumbed. Oceanic currents; monsoon storms and shifting sands had scattered and overwhelmed them; they had fallen prey to elephant chanks, and boring sponges and molluscs, predaceous rays, file-fishes and sharks.

But though those that survived had escaped their external enemies, they harboured minute foes within their gates.

By a subtle dispensation of nature some of the very fishes that destroyed the oysters were the means by which pearls were created in those oysters that survived.

Sand grains, foreign particles, and damaged splinters of nacre might gain access to the fleshy body of the oyster and by their irritation form the nuclei of pearls—'ampullor pearls' in pockets of the equidermis, and 'muscle of the insertion of muscles'. But the more common way by which pearls were produced was by the agency of living creatures. Boring sponges and burrowing worms might penetrate the shells. To repair such damage the oyster thickened its nacreous layer (the inner iridescent surface of the shell) and so piled up excrescences on the inside. These when separated formed 'shell pearls', useful for setting in rings and ornaments.

The process of shell formation was the same whether it took place outside the flesh of the oyster or within it. In both limy salts were deposited in the living tissues. This nacre was produced most freely when the oysters were three-and-a-half to four years old—the time of rapid pearl formation.

The finest pearls of all—the 'cyst' or 'orient pearls' were caused by the tapeworm of fishes (Tetrarhynchus). They were formed by the deposit of concentric layers of nacre (like the coats of an onion) on the cysts containing the larvae of the tapeworm (larval cestodes).

The cycle was this: the adult worm in the intestines of the ray or shark set free young embryo

into the sea. These passed into the body of the oyster with food particles or got lodged in the gills and entered the liver or connective tissue and became encysted; many by the irritation they produced induced a reaction in the oyster and were formed into pearls.

Nor did it end there. Some of the oysters with the encysted parasites—and pearls—were eaten by file-fishes which in turn were devoured by rays or sharks or these may have preyed directly on the infected oysters—and in them the larvae matured into the adult tapeworm—and so the cycle was repeated.

Truly has Dobois said. 'La plus belle perle n'est donc, en definitive, que le brillant sarcophage d'un ver'.

NOT BELOW 4 YEARS : It is considered possible to say from the appearance of an oyster whether it is likely to contain pearls or not. All oysters do not have pearls; some have many, others none; as many as 15 pearls of various sizes (mostly seed) have been found in one oyster. In the 1828 fishery 67 pearls were found in one.

We have seen that oysters below the age of four years are not likely to contain pearls of value.

In young oysters the edges of the shells are soft; as they become older the shells become harder and the soft rim is worn away.

The hinges too become thicker and the groove at the back of the hinge (which admits of the oyster opening its shell) becomes wider and deeper.

After the fifth year the oysters fall off rocks and are scattered and more easily collected—but that is near the time of their deaths. Oysters, though they are one species and of the same regular form tend to differ in appearance according to the nature of ground to which they are attached, and the zoophytes (plant-like animals such as sea anemones and sponges) that encumber them.

On one bank oysters are found with cup-shaped sponges covering them—kuday chippi or umbrella oysters. On another bank they may be smaller and reddish like betel spit codda pakku chippi or betel oyster. These two classes are reputed to produce valuable pearls.

Dr. Roxburg says that those oysters with a thick calcareous crust on them to which sea tubes (serpulae) and other zoophytes are fastened are at full growth and usually contain the best pearls; but those with smooth shells contain none or small ones only.

Some of the zoophytes encrusting oysters are trees of coral, even five times their own weight; others have sponges of tubular and branching forms full of small holes. Sometimes a large cluster of young oysters is brought up with one old in their midst (Cordiner).

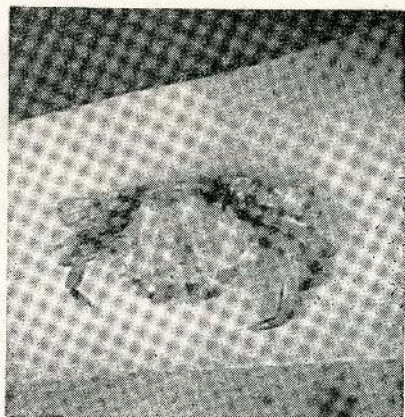
The Angelic Crab

By S. SIVATHASAN

A CRAB was seen in the Puttalam market on the 10th March, 1969 with a resemblance of a cross and two angels on either side on its shell. I was made to understand that it is a rare species said to be the descendants of the crab which helped St. Francis Xavier.

When St. Francis was on one of his voyages a storm broke out and the ship was tossed about. His frightened disciples soon awoke the sleeping saint.

St. Francis Xavier immediately took his rosary and dropped it into the sea and the sea became calm. When they came to the end of the voyage and when all were busy getting ready to go inland, St. Francis Xavier knelt on the shore facing the sea and started reciting his prayers. As he was doing so a crab came ashore with the rosary he had dropped into the sea. He was so pleased that he decided to honour the crab by drawing a cross and two angels on either side of the cross on its shell. Even to this day, the



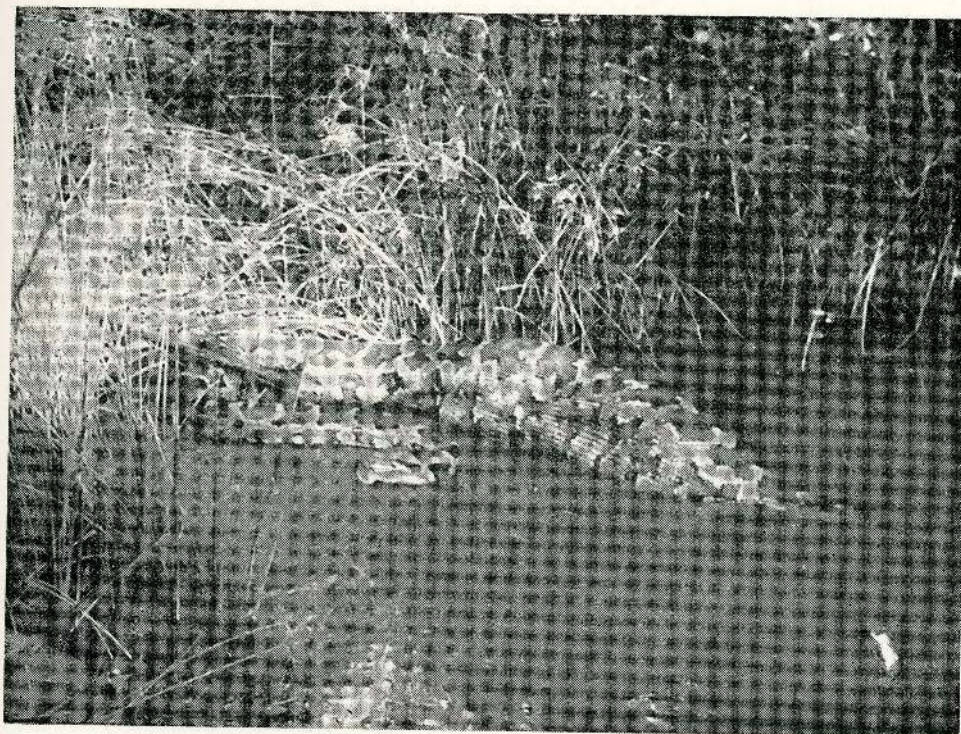
Crab in the market Photo: S. Sivathasan

descendants of this crab bear these emblems on their shells.

The people of the area do not eat this crab but they preserve the shell which is much prized. One person said that this incident occurred when St. Francis Xavier visited Mannar.

PYTHON AFTER DINNER

You are looking at the picture of a python rendered harmless by the king-sized dinner of a deer he had swallowed a day or two before. The intrepid cameraman walked down to the water's edge and yanked it out to take this magnificent picture for the delectation of readers of *Loris* and the immediate joy it gave a thrilled audience. (Picture by Dr. T. N. T. Gunawardana)



LETTERS

Gentlemen,

The National Recreation and Park Association is pleased to announce the publication, of a new magazine, *THE JOURNAL OF RECREATION AND LEISURE RESEARCH*. It will publish timely and significant research, book reviews, state-of-the-art papers and scholarly articles dealing with all aspects of recreation and leisure programming and activities. The prime purposes of the *JOURNAL* are to provide the recreator, practitioner, educator and researcher with a sound research information base upon which to build meaningful recreation programs in the future and to inform individuals of innovations and methodologies which will increase the scope and quality of education and services in the field.

Developments of international significance in recreation may stimulate domestic research programs in new areas and may provide constructive models for innovation in American recreation organizations. To educate and inform our readers, we are interested in including news items, notes, articles and research studies which originate outside the United States.

As general editor of the *JOURNAL*, I am requesting your comments, suggestions and recommendations concerning the future direction of the publication. Your contribution of descriptive articles, abstracts, research studies and news items would add much to the interest and scope of the *JOURNAL*.

We would also appreciate your efforts to inform others of this publication, particularly those who

are in a position to contribute their ideas and research to this new communication vehicle (or forward the names of individuals who should be contacted directly).

Your assistance would be greatly appreciated. The association staff believes that an international exchange of ideas and developments in recreation has both immediate and long-range potential for strengthening recreation systems throughout the world.

DONALD E. HAWKINS,
Editor.

A PLURALITY OF BIRDS

Dear Sir,

Over the years men have coined a host of special terms to describe birds in groups. I wish to point

out some of them, that still survive in the English language and I hope this would serve as an addition to the earlier lists.

A SIEGE OF herons (or bitterns).
A PLUMP OF wild fowl.
A GAGGLE OF geese.
A SKEIN OF geese while flying.
A HERD OF cranes or curlews.
A FLIGHT OF swallows.
AN EXALTATION OF larks.
A FALL OF woodcock.
A DESERT OF lapwings.
A MUSTER OF peacocks.
A CAST OF hawks.
A BADELYNG OF ducks.
A SORD or SUTE OF mallards.

S. M. S. FAROOK.

Juniors' Page

My First Glimpse of Wild Life

By N. W.

OUR five day visit to Yala which is one of the national parks situated in the south-east of Ceylon was a very interesting one and we found peace of mind as well as excitement too. We motored along the Ratnapura road with a minimum of clothing and plenty of food for five days. I was lucky enough to have been one of the thirteen members of the party and I was eagerly looking forward to seeing many wild animals as this was my first visit to the jungle. If my first impressions determined the reactions of a normal visitor, then surely anyone coming to Yala would carry only the pleasantest of memories. Our destination, the Yala bungalow situated within the park by the Menik Ganga, was a spacious one. The door seemed to lie most hospitably open,

On our arrival at Palatupana we were welcomed by a monkey, who was sitting on a palu tree. As I knew him to be a harmless creature I could not return his smiles with any degree of severity.

On our way to the bungalow we passed a herd of elephants at a distance of about ten feet which gave me a bit of a scare. As we motored along we heard the trumpeting of the leader from a distance, which at once impressed us as we were within the confines of the park and hardly aware of it.

As we bumped along the narrow gravel road we spotted a solitary elephant on the way near the bare land along the tree-lined roadway making its way into the jungle. Having reached the

bungalow we retired for the day and relaxed merrily on camp beds.

The next morning we woke up early and set out. Just a few yards from the bungalow were a few peacocks. Their beautiful tail feathers were spread out like great fans which shone like velvet under the rays of the sun. They made wonderful camera subjects.

Those magnificent clouds special only to tropical skies were reflected in the still waters of the lake on which floated thousands of brown wild ducks. Colours glowed with fresh radiance and the wealth of the forest took on new hues. A large variety of birds abound in this region. Woodland birds with strong and chisel-shaped beaks were seen. The presence of the painted stork added more colour to this picturesque spot. The chattering of the parrots was heard.

At the water holes also called villus, the presence of algae made the water seem green. At these villus were many other species of storks, pelicans, and 'did-you--do-its'. The doves were seen to be flying in flocks in the serene sky.

Butterflies and birds are the creatures I like most. There were many beautifully coloured butterflies flying to and fro. Buffaloes by the dozen were out that sunny day. Some of them had dug themselves into the mud in the lake with their horned heads above the water level. They looked very cool indeed. We also saw a herd of thirsty deer rushing to a nearby water hole. This reminded us of the murrukku and the cool passiona we had brought and then we stopped for a while. Our tracker Amaradasa regaled us with exciting and interesting adventure stories.

After having something to munch and drink, we went up to the Patanangala rock, situated by the sea. As we went on the track that was flanked by the jungle, scenery changed into a brownish beach which was strewn with sand and sea weeds and with flying blotches of sea foam. This seemed to be one of the fishing centres and we saw many fishing boats making their way home after a full night out in the sea bringing fresh fish.

Just then an old fisherman had spotted an elephant on the rock and we all rushed to catch

a glimpse of jumbo. Most of us reached for our cameras and jumped with such excitement that we had not even felt the prickly thorns and splashes of mud on our legs. We went in very quietly and were very lucky to have had a close view. We saw the elephant breaking branches and feeding itself. (Several photographs were taken but I'm sure that the editor of the magazine would not be satisfied and approve them at all as he himself is a clever photographer.)

With our hunger not satisfied we drove back to the bungalow and there to a most delicious lunch prepared by our cook. Again in the evening after a dip in the cool waters we continued our journey along the tracks. We had to depend much upon the weather which kept fine that evening. Beyond the lake we saw elephants eating grass, herds of spotted deer, running away as though they were chased by one of the carnivorous animals.

On our way back we saw two leopards crossing the road, and when we peered into the thicket they had disappeared.

While continuing our journey the next day we saw two leopards sun bathing on the rock and walking silently away on their padded feet. One of them turned round to face us, while I sat horrified and speechless. I was dreadfully nervous, but we remained unseen by the animals.

There were hundreds of healthy looking wild boar. Their coats were thick and brown which made them look very wild. We also saw an old frightened looking sambhur and monkeys and other species of mammals. Jungle fowl were in plenty by the bungalow.

While returning, the car engine stalled and some of us gave out murmurs of discontent as the sun was scorchingly hot and we felt tired and thirsty too. There we observed toads croaking. The holes in which the toads were discovered invariably communicate with the outside world through cracks. Along the small unseen channels life giving air and small insects can find their way into the holes.

Just then, we heard the trumpeting of a baby elephant and when we looked back we saw a

herd of about seven elephants advance irritably towards our vehicle. It was indeed a great surprise to all of us, as they were only about twenty yards from us. "Chunk, chunk" the accelerator went. "Mage ammo" the driver shouted, our tracker Amaradasa started to chant mantrams and off we went. We could see them following and we could hardly breathe as clouds of dust were raised.

I hardly raised my head to see what was happening, the only thing I knew was that the jeep was moving very fast. All the excitement was lost when we realised that the elephants were not chasing us any more. We were greatly relieved.

We had just one more day left and we certainly took every possible chance of seeing more animals. On the sundrenched rocks by the tank was a medium sized crocodile whose scaly body looked very dry. He was just about to plunge into the water. During our stay there we had the fortune of seeing a bear at a reasonable distance. We

saw him sniffing the air suspiciously and advancing towards the Menik Ganga bungalow. His footsteps in the vast silence were loud to his own ears. He seemed to gaze hungrily at us.

One could hardly imagine that there are thousands of wild animals and birds wandering peacefully, and it was indeed a great pleasure to see them in their natural surroundings.

The film of clouds passing over the darkness of forests' blues were of the most subtle shades.

The flora too was very interesting, the *Mimosa pudica*, which had grown into shrubs, the yellow cassia, the purple ipomea that grew on the plains and the conspicuous *Musanda frondosa* and tall palm trees made cool and elegant silhouettes against the deep blue sky.

So we ended our happy days. The daytime bustle and lively activity of the town contrasted with the quiet charm of this Ruhunu park.

For those who wish to discover what is beautiful and interesting in wildlife, a visit to this park of enchantment is a must.

Junior Quiz

Calling all Juniors!

Try this simple and interesting quiz and send your answers to the address given below. Attempt as many questions as possible.

It's open only to members and if you are not one join the Wild Life Protection Society now and learn and enjoy many more interesting things about the avifauna and flora of Ceylon and the world.

There are 25 questions, set in two parts. The first part is based on our fauna and flora and the second part on general natural history. Attempts should be made only after you have read the questions carefully.

Send neat and legible answers indicating the correct question number and if you cannot answer any, leave a blank. Hurry now and invite your friends also to join the W.L.P.S.

Part I

(1) Who is the author of the book "A Guide to the Birds of Ceylon"? When was it first published?

(2) If an animal lives entirely without the aid and care of man what is it called?

(3) What is meant by the terms Ornithoscopy and Ornithology?

(4) What do you call the young of a hare?

(5) Who are the "seven sisters"?

(6) Is the grackle a mynah?

(7) Who introduced the hog deer to Ceylon?

(8) Is the foxtail protected in Ceylon? If so in which district or province is it mostly found.

(9) Which bird is considered to be the cousin of the Ceylon shama?

(10) Which fish found in Ceylon can climb on trees to a certain extent?

- (11) Do house sparrows eat insects?
- (12) What is the difference between the ash dove and Ceylon spotted dove?
- (13) What is the Sinhalese name given to the Indian paradise flycatcher?
- (14) Why is the oriole called the 'waraka madura' in Sinhalese?
- (15) How many eyes has the earthworm?

Part II

- (16) Which two birds found in Ceylon lay its eggs in other birds' nests? (Name the bird and whose nest it uses).
- (17) How many teeth has an elephant?
- (18) Is the jak tree protected in Ceylon?
- (19) Is the python poisonous?
- (20) Is the owl a nocturnal or diurnal bird?
- (21) Do penguins build nests?
- (22) Which three birds cannot fly?
- (23) How many toes has the woodpecker got in each leg?

- (24) Which is more powerful, the lion or the tiger?

(25) Identify the birds with the following characteristics:—ashy grey in colour with pale blue beak; about the size of a red-vented bulbul; it has a short tail but long wings. A beautiful flier it eats insects, usually while flying. It prefers the palm tree for nesting but is not a swallow. It is not a shrike.

Send your answers to :-

Mr. S. M. S. FAROOK,

147, DEMATAGODA ROAD,
COLOMBO 9.

*State your name, address and age
and whether you are a member or not.*

W.L.P.S. Film Festival and Dinner-Dance

THE spacious hall of Ladies' College was daily filled to capacity when the Wildlife Protection Society screened several outstanding wildlife films of Ceylon and the outside world, notably Africa.

The local film of Dr. T. S. U. de Zylva was indeed a classic and the best film displayed by him at any time.

Through the courtesy of the British High Commissioner several films were got down for showing at the highly successful Film Festival. The World Wildlife Fund was specially helpful and the films sent by it and screened at the festival were greatly appreciated.

The following films were shown at the festival on different days:—"Escape to Samburu"—wildlife in a game reserve in Northern Kenya. "Wildlife in Danger"—of endangered species—narration Peter Scott. "S. Rhodesian Wildlife"

"Wildlife in Trust" the work of the Berks., Bucks. and Oxfordshire Naturalists' Trust

"A Million Flamingoes"—Nairobi National Park.

"Kaziranga Sanctuary"—wildlife of the Assam sanctuary and "Kaziranga 2"

"The Rain Forest"—about orang utans.

"The New Ark"—the saving of flamingoes, white rhinos and game herds by the World Wildlife Fund in Africa.

"Operation Oryx" 16 mm silent film—the F. P. S. expedition to Arabia to collect individual Arabian oryx for captive breeding.

The special dinner-dance in celebration of the society's 75th anniversary was held at the Hotel Taprobane and was attended by nearly 300 diners. The Prime Minister was the chief guest and the Minister of State, Mr. J. R. Jayewardene who is keenly interested in wildlife work was also present with Mrs. Jayewardene. A very pleasant

evening was spent in social enjoyment by all. The excellent music of the Harold Seneviratne Combo and the Army Band provided fitting accompaniment. All credit goes to the organisers

who spared no pains in planning a very pleasant evening's entertainment. The Hotel Taprobane put out a sumptuous menu which was greatly appreciated and enjoyed.

WILD LIFE PROTECTION SOCIETY OF CEYLON

MINUTES OF THE 75th ANNUAL GENERAL MEETING OF THE WLPS HELD AT THE NEW TOWN HALL, GREEN PATH, COLOMBO 7, ON NOVEMBER 26th, 1968, AT 6 P.M.

Mr. E. B. Wikramanayake, Q.C., presided and there were approximately 100 members present.

1. The Hony. General Secretary read the notice convening the meeting.

2. The minutes of the 74th annual general meeting held on December, 22nd, 1967, as circularised in the June 1968 issue of Loris, were confirmed as correct by the house and signed by the President.

3. The Hony. General Secretary's report and the audited statement of accounts for the year 1967/68 which had been circulated to all members were then formally moved and adopted unanimously by the house, and proposed by Dr. L. D. C. Austin and seconded by Dr. C. W. A. de Silva.

4. The President, Mr. E. B. Wikramanayake then delivered his Presidential address as follows:-

Ladies and Gentlemen,

Next year the society will be celebrating its 75th anniversary and I trust we can look back with pride on our achievements during the past 75 years. A society called the Game Protection Society was formed in 1894 by a band of sportsmen who were appalled at the indiscriminate slaughter of deer for the export of hides and horns. The society steadily increased in numbers until today we have a membership of over 2,000 and are moreover in a very sound financial position. A great deal of this is due to the unbounded enthusiasm and untiring energy of our Hony. Secretary, Mr. T. W. Hoffmann who during the last six years has not spared himself in the cause of the society. I am glad to announce to you that he is to be your next President. The society was originally intended to benefit sportsmen, the complaint being a lack of trophies owing to excessive slaughter. We have passed that stage now and the society is the Wildlife Protection Society, the object of which is to prevent the destruction of wildlife and to preserve it intact in its natural conditions. I still read letters in the newspapers sneering at wildlife photographers and bird watchers and suggesting the conservation can best be done

by sportsmen. This contention is, to my mind, absurd. It is true that at times it may be necessary to reduce the number of animals in a given locality but this must be done scientifically. It is a matter for the Wild Life Department and not for any person who takes out a licence and shoots the best animals he meets. The ban on shooting however, is not something for which the society was responsible although speaking for myself, I welcome it.

The year under review has seen a good deal of activity on the part of the society. We have had several interviews with the Minister of State and one with the Prime Minister. Members will be glad to know that the Yala National Park has been increased by about 100 square miles. The Wilpattu West Sanctuary has been acquired by the crown and will soon form part of the National Park. Attention is also being given to the Horton Plains and the Hakgalla Gardens which are being threatened by squatters. Amendments to the Flora and Fauna Protection Ordinance bringing it up to date to suit modern requirements are now ready, and the Bill will soon be presented to Parliament. We have pressed for protection for the dugong and leathery turtle and the new ordinance will make provision for their protection. The society itself has been incorporated by Act of Parliament. The debates on the Bill in both Houses indicate that the government and opposition are both interested in the preservation of wildlife. The society's bungalow at Wilpattu has now been completed and is being occupied by members. We have been unable to make a start on the Yala bungalow, but hope to have it ready by the end of next year. It is hoped in course of time to have bungalows in other places as well so that members can have ample opportunity to study wildlife.

I would invite members to make greater use of the society's library which contains a large number of interesting books. We are grateful to Mrs. B. S. C. Ratwatte, our Hony. Librarian for the time and trouble she has taken in cataloguing these books and also for attending the library. We also thank the Asia Foundation and other donors of books for their generous contributions.

MINUTES OF THE 75th ANNUAL GENERAL MEETING

I would also appeal to members to try their best to enroll new members. The membership of 2,000 is good but is not enough. We need to create a strong public opinion in this country if wildlife is to survive because the threat to it is still extremely strong. There are still many politicians in this country who insist that men are more important than animals and that the national parks should be reclaimed for cultivation. We agree that men are more important than animals but there is plenty of room in this country for both men and animals. The Land Use Committee which has now issued its report is of the view that neither Yala nor Willpattu is suitable for cultivation. It is necessary that this view should be publicised. What the country needs is not a haphazard clearing of forests for chena cultivation but a planned economy which will produce the maximum result without unnecessary waste.

The committee has met regularly, once a month, and has always been well attended. I am grateful to the committee for the interest and enthusiasm it has always shown in the work of the society. Mr. J. D. N. Banks in particular has also attended a number of district meetings and screened his films and has been responsible for collecting a large sum of money towards the building fund. The society is very grateful to him for this. Mr. Selwyn Samaraweera has kindly undertaken the Editorship of *Loris*. I would appeal to members to send more contributions and help to make the magazine a greater success than it is. We have had a number of compliments paid to the journal from abroad but there is still room for improvement. The district representatives have also been very active during the year. We rely on them to spread the gospel of wildlife throughout the country. I wish in conclusion to thank all the office-bearers and the staff for their close co-operation and to express the hope that next year will see an increased activity in the affairs of the society.

SGD. E. B. WIKRAMANAYAKE.

5. The following office-bearers for 1968/69, elected under rule 5 were then announced by the President.—

<i>President</i>	..	Mr. Th. W. Hoffmann
<i>Vice-Presidents</i>	..	Dr. L. D. C. Austin
		Dr. C. W. A. de Silva
<i>Hony. Gen. Secretary</i>	..	Mr. C. E. Jayewardene
<i>Hony. Treasurer</i>	..	Mr. Charitha P. de Silva
<i>Hony. Asst. Secretaries</i>	..	Mr. Lalith Senanayake
		Miss Leela Dias
		Bandaranayake

The newly elected President, Mr. Th. W. Hoffmann then took the chair, amidst applause from the House, and thanked the general committee and members for electing him to his highest office in the society. He paid a warm tribute to the outgoing President, Mr. E. B. Wikramanayake, for all the valuable work he had done during his tenure of office of three years. His counsel, friendship and support in

his own work for the society had always been a great source of inspiration. Continuing, Mr. Hoffmann said that although the society was formed to look after the interests of wildlife, the scope of its activities recently had enlarged covering the protection of nature in general. He was particularly referring to the society's recent campaign for the protection of mountain forests over 5,000 feet, hill-tops and stream reservations. Before long the society would have to move a step ahead to include nature protection also as one of its objects in the rules book. Mr. Hoffmann said that the society had grown to such an extent both in activities and membership in the past few years, that now it had become necessary to establish and maintain a full time office staff of three for the benefit of the members. The local membership strength now stood at over 2,200 but, he remarked, most members had only an emotional interest in the society and remained satisfied by contributing their annual subscription of Rs. 15 regularly. He appealed for more members to take an active part in the affairs of the society in order to strengthen its presence and voice in all matters affecting wildlife and nature conservation in Ceylon. Mr. Hoffmann also paid tribute to the office-bearers and the few other members on whose shoulders the burden of running the affairs of the society rested.

He thanked the members again for electing him their President.

6. The President then informed the house that the following had been nominated by the general committee for the six vacancies under rule 6 (b). Mr. C. P. de Silva, Dr. C. W. A. de Silva, Dr. Ranjen Fernando, Mr. R. S. V. Poulter, Mr. C. Selwyn Samaraweera and Dr. L. D. C. Austin.

No further nominations having been received the names were formally proposed from the chair and the house unanimously accepted them.

7. The President proposed from the chair that Mr. Noel de Costa be re-elected Hony. Auditor for 1968/69, and this was accepted. The President thanked Mr. de Costa for his willing services to the society in this capacity.

8. There being no further business, the President declared the meeting terminated.

Following the meeting, at 7 p.m., Dr. Fred Kurt, leader of the Smithsonian Elephant Survey Team, delivered a public lecture entitled, "Observation on the Ecology and behaviour of the Ceylon Elephant in Ruhunu National Park". Nearly 300 members and guests were present at the lecture; many participated in the discussion which followed the lecture.

Hony. General Secretary.

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Timaliidae

Trichastoma

perspicillatum

Prionopidae

Pityriasis

gymnocephala

SOME OBSERVATIONS ON CEYLON ELEPHANTS

(Continued from page 243)

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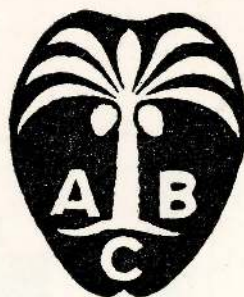


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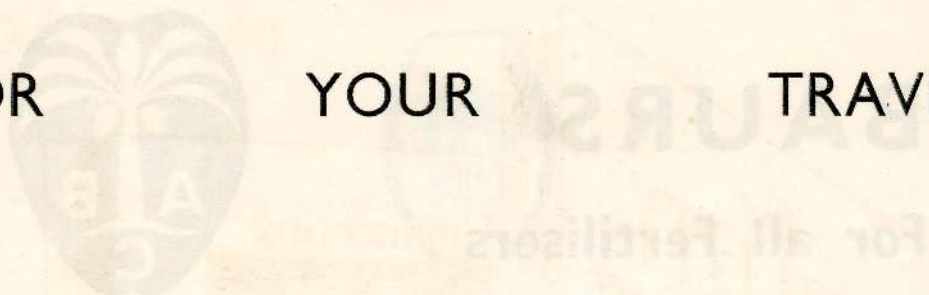
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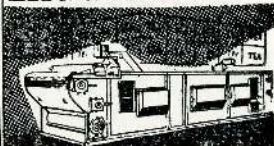
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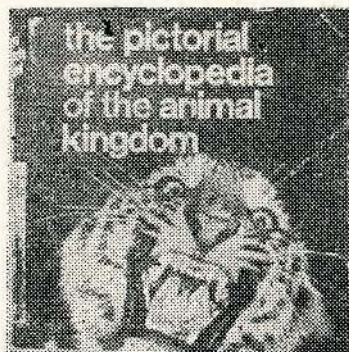
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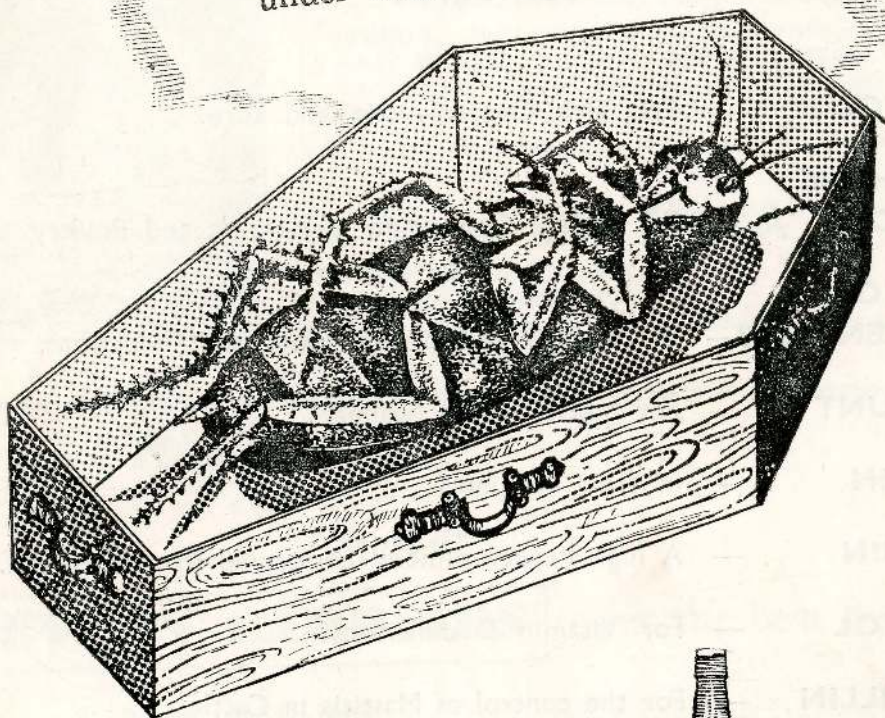
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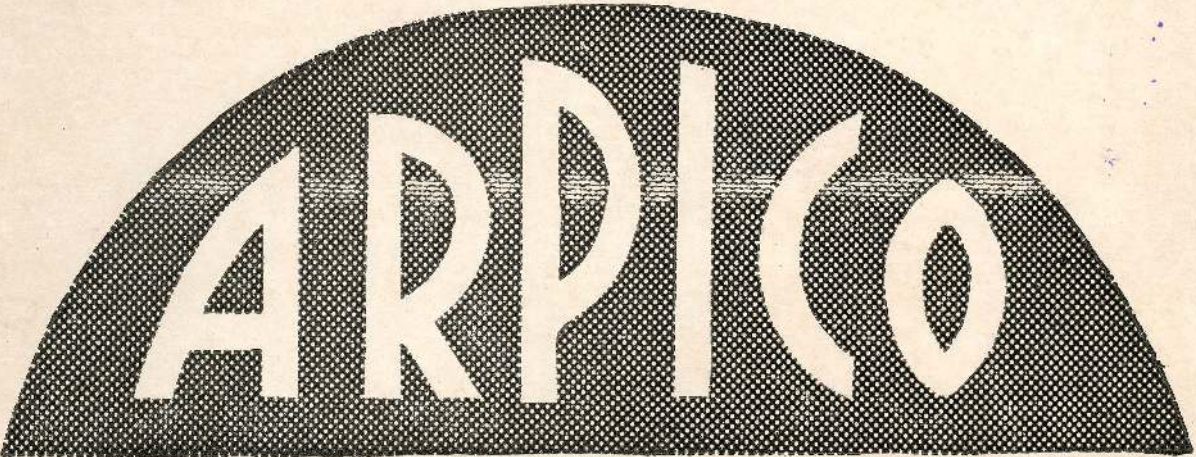
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