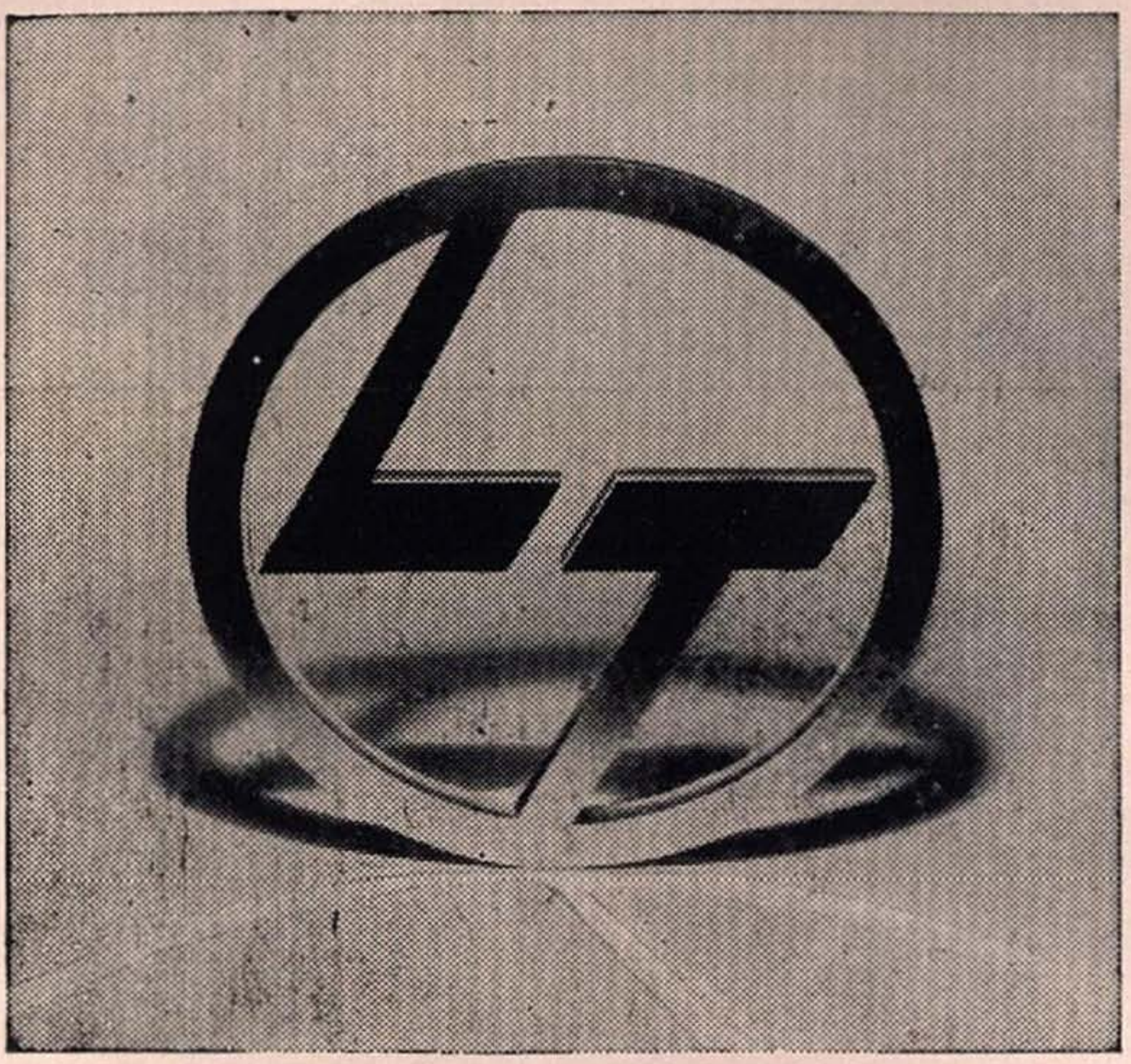
HORNBILL

APRIL–JUNE 1978

BOMBAY NATURAL HISTORY SOCIETY



What's this sign a symbol for?

New ideas in engineering. They originate at L&T where a group of engineers design, manufacture and install plant and equipment for major industries—chemical and pharmaceutical, food and dairy, minerals and oil, pulp and paper, steel and cement, power and irrigation. The L&T sign also symbolises complete plant construction based on process know-how from leading clients and world renowned collaborators. L&T sees plants through from greenfield site to final commissioning. In short, the L&T sign symbolises the development of every vital industry in India.

LARSEN & TOUBRO LIMITED

EDITORIAL

April-June 1978

The lightning and thunder of official wrath played round the editorial heads as post-mortem laid bare the omissions and commissions in their handiwork on the last issue.

Apologies seem to be in order: to the pair of Chital hinds on p.13 misspelt as 'herds'; to Mr. Jagdish Agarwal whose name got mangled in the press on the same page. The editors seem to be haunted by a fairly subtle printers' devil. They shall try to be better exorcists.

Nothing changes the status of a wild animal or plant as rapidly as commercialisation. A better term would be Commercial Vandalism. The Blue Whale, the fur seals, the cats and many other species which are now endangered would not have become so if they had not been hunted for commerce. This is the reason that we view with concern the recent efforts to remove from the protected list the Jackal and the Fox. Another alarming development is the exploitation of plant life. A recent enquiry from West Germany asked for several species of plants in quantities of 10 to 50 tons. This type of enquiry quickens the pulse of the local traders and makes them willing to plough through the forests like maddened wild boars.

We have some old names and new entries among our contributors. Romulus Whitaker is the genesis for the Madras Snake Park and Crocodile Bank. Satish Bhaskar works at the Crocodile Bank more or less exclusively on marine turtles. Johnsingh is on sabbatical from his college in the south and is completing his study of the Indian Dhole or Wild Dog. Monica Jackson, the daughter of R. C. Morris who figures in this issue's PERSONALIA is now settled in the U.K.

CONTENTS

On cover: *Threetoed Forest Kingfisher*

Photo: Mervyn Sequeira

FEEDBACK

'A birdwatcher at large — Ladakh, June-July 1976'

Having spent three years in Ladakh and having travelled extensively in this naturalists' paradise, allow me to put forward my observations on Mr. Prakash Gole's article (*Hornbill,* Oct.-Dec. 1977).

My observations reveal that due to the easily accessible local lakes being disturbed by visitors, the migratory birds prefer to nest on the less accessible ones. Besides, the rate at which the freshwater lakes in Ladakh are drying up has also contributed towards the fast diminishing numbers of these birds. However, contrary to Mr. Gole's views the Barheaded Goose seems to be faring well.

The Red- and Yellowbilled choughs do not normally mix, but I have seen a mixed flight of these truely high altitude birds once near Nissang Jot (16,000 ft) in Kinnaur district of Himachal Pradesh, in August 1967. The only reason I can attribute to their presence around army outposts is the readily available food by way of the left-overs from the 'langars'. I recall a cook, at one of these, feeding choughs as one would domestic fowl by calling them up. Little wonder then that the choughs congregate near villages and cultivation only after the crop has been harvested.

In August 1975 I observed a pair of Blacknecked Cranes with a chick on the Lamtso marsh. It is only after I read about this bird in 1976 that I was certain what I saw the previous year were these cranes.

I have spotted the Hoopoe, and the Golden Oriole near Chumathang (13,800 ft) time and again during July-August. In July 1975 I spotted one solitary Rufous Turtle Dove in a willow grove near Kiari (13,000 ft). Much as I tried later I could not ever see it again.

Yes, the Garganey Teal does nest locally, but I have also not been able to identify the not too common clutches of 'creamy eggs' on the marshes as theirs. I have seen flights of garganey at Tsokar, Kyun Tso and Yeye Tso.

Ram Chukor or the Snowcock moves up beyond 16,000 ft during summer and even in winter only heavy snows force it to come lower. However, this pheasant is faring well and a hike up any *khud* will reveal pairs of these birds during summer, whistling to each other. I have succeeded in calling the male up a number of times. The female, however, seems more cautious and is not readily fooled.

The Chukor and Mrs. Hodgson's or Tibetan Partridge are also steadily increasing. The screes above the cultivations team with chukor and where these disappear Ram Chukor takes over. One can see coveys of Mrs. Hodgson's Partridge in the caranga bushes near cultivations. They pick in the fields especially after ploughing during early mornings and

late afternoons, and are especially plentiful near Chushul, Nyoma, Mud, Fukche and Sumdo.

Flights of Tibetan Sandgrouse (locally called *Ticoh*) can be seen in Hanle, Zarser, Chushul, Tsakala, Fukche, Dungti and Nyoma during the winter. These also alight in the fields after harvesting.

I do not agree with Mr. Gole when he says that Himalayan high altitude game and predators are facing extinction. The assessment of wildlife in Ladakh is made generally from a jeep and hence pertains to only the motorable tracts and therefore is never accurate. For example, I have located no less than four pairs of Snow Leopards within a stretch of 60 km along the Indus. The Tibetan Wolf and the Lynx are plentiful too; so is the fox. The Bharal (Himalayan Blue Sheep), the Nayan (Tibetan Sheep), the Shapu and the Goa (Tibetan Gazelle) are in fair abundance provided one is willing to climb. It is this basic requirement, I am happy to say, that has ensured their survival because fortunately one cannot indulge in the magnificent sport of high altitude shikar from a vehicle and not at all at night. Thank God for that!

Yes, repeated visits and longer investigations by knowledgeable naturalists will prove that the Upper Himalayas are not depleted of their wildlife.

LT. COL. F. F. C. BULSARA
The Parachute Regiment
c/o 56 APO

PRESIDENT'S LETTER

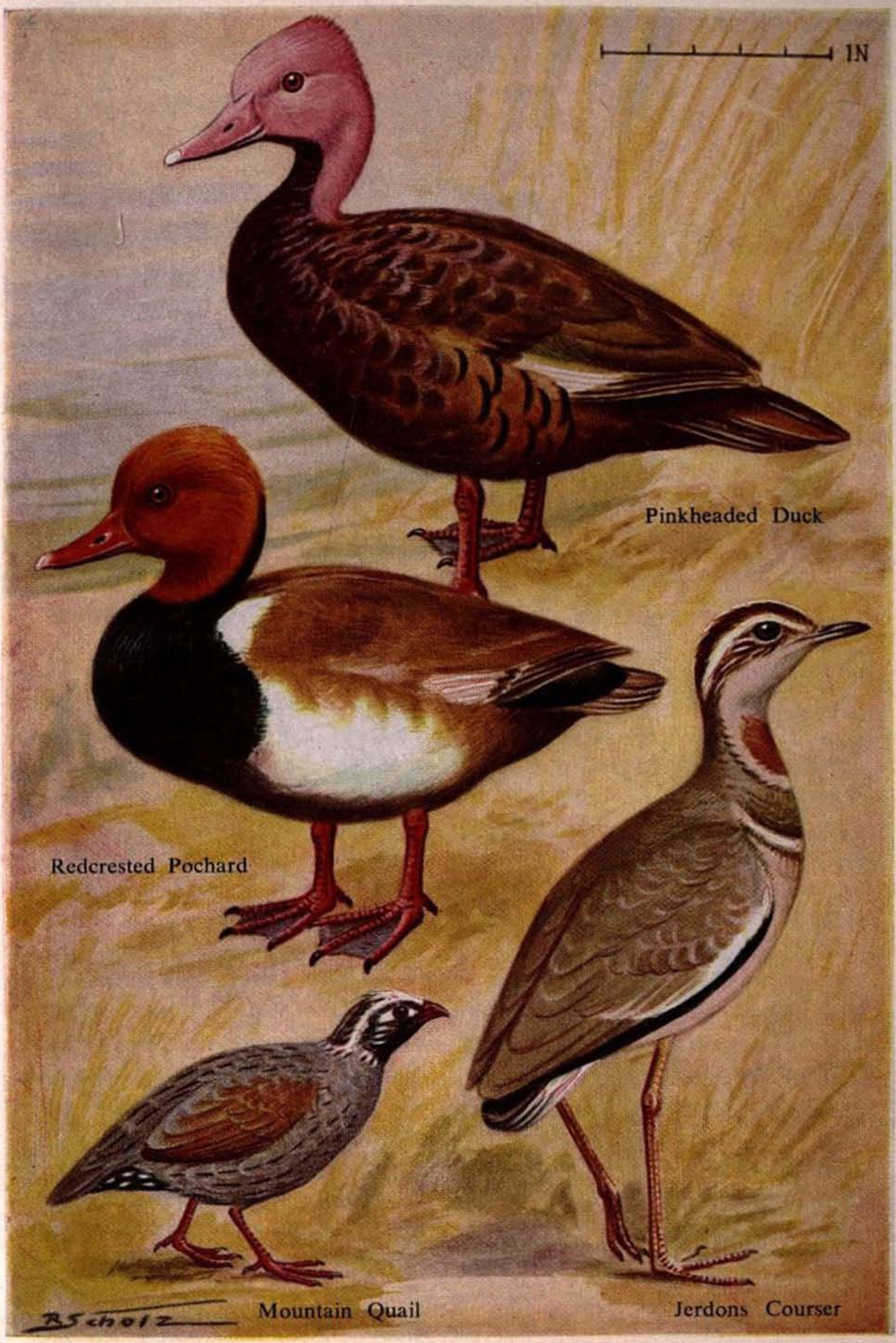
'MYSTERY' BIRDS OF INDIA—4

The Pinkheaded Duck
(Rhodonessa caryophyllacea)

Perhaps the earliest published account of the ecology of the unique Pinkheaded Duck—now probably extinct—is by T. C. Jerdon in his BIRDS OF INDIA, 1864. As few readers may have access to this rare book, that account is reproduced below:

"This very lovely duck is most common in parts of Bengal, but is found at times throughout Northern India, is rare in the NW. Provinces, and still more so in Central and Southern India. I have procured it rarely as far south as Madras, and long ago heard of its occasional visits to the Deccan, but it is only since I have visited Bengal that I have seen it in its native haunts. It shows a decided preference for tanks and jheels well sheltered by overhanging bushes, or abounding in dense reeds, and in such places it may be found in the cold season in flocks of twenty or so occasionally, but generally in smaller parties of from four to eight. During the heat of the day it generally remains near the middle of the tank or jheel, and is somewhat shy and wary. It breeds towards the end of the hot season, and its eggs are said to be laid among thick grass not far from the water. Its cry is very similar to that of the domestic duck. The beautiful pale rosy tint of the under surface of the wings is very conspicuous during flight, and renders this species very readily distinguishable even at some distance. This duck is said also to occur in Burmah. It is excellent eating."

Jerdon's statement that the species was common at that period sounds strange considering that in the next seventy years it had already reached the point of extinction if indeed not passed it. Even as lately as between 1921 and 1923, however, "Flocks [were seen] on several occasions" in the Nowgong district of Assam by J. C. Higgins, a knowledgeable sportsman-naturalist. Thereafter, an accelerated decline seems to have set in. The last authentic sighting of a live Pinkheaded Duck in the wild was in June 1935 by C. M. Inglis, a competent field ornithologist, in the Darbhanga district of Bihar. And probably the last living examples of this very lovely bird in captivity were the eleven specimens I was fortunate enough to see, and photograph, in the pens of the late Alfred Ezra near London in November 1929. The exact provenance of these birds was never disclosed by the owner, but they were believed to have come from the Goalpara district of western Assam. Occasional sightings still continue to be reported from time to time, but it is more than likely that most of the reports relate not to this duck but to the far commoner Redcrested Pochard (*Netta*



From "The Book of Indian Birds" by Sálim Ali

David Ezra's aviary with Pinkheaded and other ducks

Photo: Sálim Ali

rufina) which is liable to be confused with it on a casual observation. Anyhow, it is significant that since the Society brought out coloured illustrations of these two species side by side for ready differentiation and disseminated them widely among shikaris, district officials and other potential informers all over the duck's known range of distribution, the sporadic claims of sighting it have ceased. Thus the sorry portent seems confirmed that the bird has become extinct in its former haunts. But hope dies hard: That some examples may still survive in remote swampy jungles farther east is hopefully suggested by a report dated September 1976 from U Tun Yin, a well-informed Burmese naturalist, of small flocks of 4 or 5 birds regularly visiting a certain locality in the Putao district of Kachin State, around the source of the Irrawady and Salween rivers, near the Burma-Tibet border. Since he makes a special point of mentioning that the birds are seen only in winter contrary to the other rare species, the Whitewinged Wood Duck (*Cairina scutulata*)—a resident and breeding bird in that area—there would seem to be little uncertainty in the identity of the species. The area, however, is so remote—"three days' march from the Burmese border"—that there seems no early likelihood of the report being verified.

A few years ago, in an attempt to ferret some indication of the former numerical status of this rather mysterious duck — which taxonomically seems midway between the surface-feeders like our Spotbill (*Anas*

Pinkheaded Duck in David Ezra's aviary

Photo: Sálim Ali

poecilorhyncha) and the pochard-like diving group—I collected data from a number of likely natural history museums of the world of all the skins preserved in their collections. The total number, excluding two destroyed in the wartime bombing of Japan, came to around 80. This also excludes China whence information was unavailable, and USSR where there are possibly some skins in Moscow and Leningrad, so let's say 100 specimens on the outside. The oldest skin was in the Paris Museum dated 1825 and the most recent in the U.S. National Museum, Washington, dated 1936—no doubt one of Ezra's aviary birds.

Considering the vast scale on which duck shooting and commercial netting were done in India in pre-independence days, and among the tens of thousand duck killed every winter, it is surprising that getting a Pinkheaded Duck was a rare enough event to draw notice and comment. The paucity of museum skins of this much sought after species, even in the 19th century when the zealous field collector was much less worried by considerations of conscience or conservation, can surely be taken as an indication of its rarity even then. The causes of its steady march to extinction are difficult to ascribe. Direct human persecution probably was not importantly responsible: rather the destruction of its specialized forest habitat — reclamation of jungle swamps and increasing encroachment by cultivation on its native environment appear to be the chief factors in the extirpation of this uniquely beautiful duck.

SALIM ALI

Threetoed Forest Kingfisher

The photograph of the Threetoed Forest Kingfisher reproduced on the cover is 1.5 *the natural size of the bird. The photographer, Mervyn Sequeira, is by profession a pilot. Aviculture and photography are his hobbies.* — EDS

As the first monsoon showers dampen the hard-crusted embankments of the secluded forest nullahs and out of way scree slopes, the Threetoed Forest Kingfisher, that diminutive, yet splendid creature of shady tropical forest recesses—often overlooked and seldom heard—launches into nesting activities in earnest. Of a modest stature and size the bird nevertheless displays a remarkable ability to attract attention as it darts off round the bend of a rivulet ". . . its brilliant plumage flashing momentarily in dappled sunlight as the bird disappears". All too meteoric glimpse of an otherwise dapper performer! Normally a rather sedate observer of forest goings-on, perched atop a branch overhanging a stream-bed with occasional jabs at the fish below or some other venturesome ground dwellers, the bird, once the rains come and with them its breeding season, abandons its customary savoir faire to indulge in almost comical displays. Though nothing much is known about their courtship displays, Dr. Sálim Ali has recorded agonistic behaviour and territorial fighting between males(?) just arrived in their monsoon breeding quarters.

Though normally a resident of the tropical evergreen forests of north-east Himalayan foothills and the Western Ghats of peninsular India and also Sri Lanka, the bird spreads out to suitable breeding areas during the SW. monsoon, sporadically darting off (often with disastrous results as it is prone to fly into walls and glass windows of buildings) to unexpected localities. Time of breeding varies; April-May in the north-east, July-September in the Peninsula, and February-April and again in July in Sri Lanka. A metre long and 4 cm wide slightly curved, horizontal tunnel is drilled into a vertical earthen bank of a forest stream and 4-5, sometimes 7, eggs are laid in the broadened egg chamber at the end of the tunnel. Nothing much is known about its breeding biology, movements and other details. Four individuals were netted and ringed by the Society's bird ringing party between 15th November and 28th December 1970 at Point Calimere in Tamil Nadu, South India. Very intriguing indeed. Point Calimere is a dry scrub jungle on the eastern sea coast—hardly a place for these natives of evergreen shades. Wrong season too, as it happened in this case. Were they then on their way to nearby Sri Lanka?

SAH

NOTES, NEWS AND COMMENTS

Symbiotic Conservation

RARE CALVARIA TREES MAY BE SAVED BY TURKEYS

In an almost fatal bond, the beautiful *Calvaria major* tree tied its fate to the bulky dodo and has been on a course to join the bird in extinction. But the turkey, a bird specialist says, may rescue the rare tropical tree. Only 13 *Calvaria* trees, each more than 300 years old and dying, remain in their native forests on Mauritius, the Indian Ocean island that is renowned as the last refuge of the flightless dodo. And there is no evidence that a young *Calvaria* has sprouted in the three centuries since the last dodo died, according to a University of Wisconsin ornithologist, Dr. Stanley A. Temple. It may, however, be possible to save the tree species. Dr. Temple asserted that he had successfully allowed the tree to germinate by substituting turkeys for dodos to wear down the thick-hulled *Calvaria* seeds. "These may well have been the first *Calvaria* seeds to germinate in more than 300 years".

Dr. Temple said. "It now appears possible to save the trees from extinction if authorities in Mauritius want to do this." Dr. Temple said that indirect evidence indicated that the thick seeds had to be worn down in the dodo's digestive tract before the seeds could germinate. Without this help from the heavy bird, the seed embryo could not break through the shell to grow. The last dodo was

The Dodo, now extinct
British Museum exhibit

reported seen on Mauritius in 1681, and the tree began to die out.

To test this theory, Dr. Temple force-fed fresh *Calvaria* seeds to turkeys, whose gizzards contain stones for crushing food, much like those of the dodos. Three of the seeds germinated after being excreted or regurgitated by the turkeys several days later. Dr. Temple said that the bond between the pigeon-like dodo and the attractive *Calvaria* came from the species evolving together over tens of thousands of years. The dodo, described as about 3 feet high and from 25 to 30 pounds, was exterminated by Euro-

peans who settled on Mauritius in the 16th century. The bird was hunted for food, and its eggs and young were destroyed by newly introduced domestic animals. The *Calvaria,* a hardwood, was also ravaged by settlers for its beautiful lumber. The evolutionary drama played out on the island is the first known example of the extinction of an animal causing the decline of a plant which points out the close interrelations in nature and how an intrusion upon one species can have long term ramifications upon others.'

(From *The Explorers Newsletter,* Vol. 4 (3). Fall issue 1977)

The Mammals of Pakistan

One of the best books on the animals of the Indian subcontinent published in 1977 is THE MAMMALS OF PAKISTAN by T. J. Roberts. The 158 species of mammals found in Pakistan, the majority of which are shared with India, are described in detail. The notes on biology are particularly interesting. We quote some vignettes:

Asiatic Jackal, p. 99. "In the irrigated canal colonies there is some evidence that jackals have decreased in number in recent years which might be the result of increased human disturbances as well as the effect of chemical pesticides which are usually highly toxic to mammals. Certainly it is rare to hear jackals calling at night around the outskirts of many larger towns in the Punjab and Bahawalpur, where in the 1950s their nightly chorus of calls was common-place.

"As carriers of diseases like rabies as well as raiding sugar cane or orchard crops, the jackal may be harmful to man but all available evidence of their food habits would seem to indicate that they are of far greater benefit in controlling rodent populations particularly in crop areas.

". . . . In Baluchistan there is evidence from talking to several local hunters that jackals frequently kill and eat hedgehogs."

Striped Hyaena, p. 137. ". . . . Hyaenas in Baluchistan are also known to eat the Four-toed Tortoise (*Testudo horsfieldi*) and presumably would experience no difficulty in crushing the bony carapace. It is noteworthy that a hyaena in Palestine was also observed crushing and eating a tortoise (Hatt, 1959). They will also eat fruit when available and are reported to be especially fond of the ripe berries of the Russian Olive (*Eleagnus hortensis*) in Baluchistan."

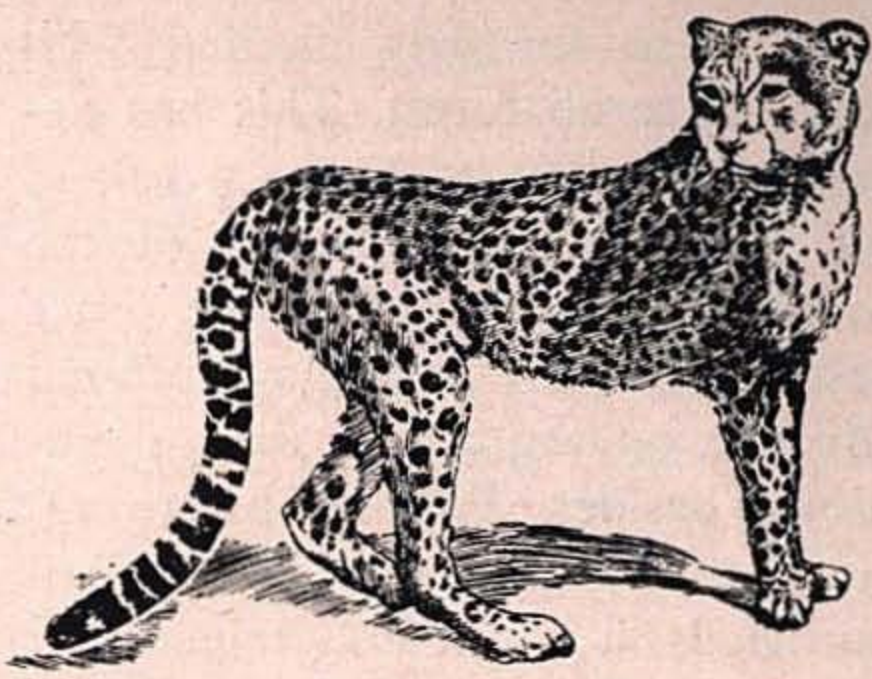
Himalayan Lynx, p. 147. "According to observations in the U.S.A. (Giles, 1969) and Russia (Ognev, 1935) the lynx occasionally hides or partly buries its prey if this is a large animal and cannot be consumed at one time. This characteristic does not seem to be exhibited by any of the other medium or small sized *Felidae.*"

Fishing Cat, p. 152. "According to my own observations, and information from local animal trappers, the Fishing Cat is very much at home in water, being able to swim powerfully with its body complete-

ly submerged as well as on the surface. . . . In Sind its main food appears to consist of waterfowl, which it catches by swimming up to them whilst fully submerged and seizing them from underneath. Coots (*Fulica atra*) and ducks are secured in this way."

Tiger, p. 155. "The tiger is of course extinct in Pakistan but it should be a sobering thought that it has only become so within the last 70 years, in a region which cradled man's civilization for over 4000 years. J. A. Murray, in describing the fauna of Sind in 1884, stated that Khairpur State in the Indus riverine forest tracts was its last stronghold. The last survivor, a tigress was shot in 1886 by Col. McRae (Eates, 1968). The late Amir of Bahawalpur, H.H. Sir Sadiq Muhammad Khan Abbasi, related how his father had shot 13 tigers within Bahawalpur State territory in the Indus riverine jungles and that the last specimen was shot by him in 1906 a few miles below Panjnad. . ."

Cheetah, p. 158. "It is generally considered that the cheetah has become extinct within the Indo-Pakistan subcontinent where it once was widely scattered throughout the dryer regions of central India and the Deccan Plateau .... However, it is still probable that the Asiatic Cheetah enters Pakistan territory in the extreme south west of Baluchistan even if it is not permanently resident in that region. Due to the region's extreme inaccessibility, both geographic and political, it has not



Indian Cheetah

been adequately surveyed by any zoologists in recent decades. . . . In the extreme south west of Fars Province of Iranian Baluchistan, cheetahs have been recently discovered still surviving in small numbers. The Chicago Field Museum has a specimen from Bampur close to the border of Kharan District in Pakistan in Baluchistan. . . . There is still a widespread population of gazelles (*Gazella gazella*) in these regions bordering Iran which would provide the natural food prey of the cheetah . . "

The author's remarks on the state of the environment in Pakistan could equally well apply to any other country in southeast Asia. The population of Pakistan increased by 51.83 per cent between the censuses of 1960 and 1973, and showed an annual high growth rate of 3.7 per cent. The impact on the environment has been disastrous. According to the author "Demand for fuel-wood resources from the scanty vegetation in Baluchistan and the North West Frontier Province has already led to total denudation of many hillsides

which were formerly clothed with scattered scrub forest. This has aggravated erosion problems which in turn reduces the efficacy of the ground water recharging cycle. Since these changes are having a profound influence on the mammalian population, besides limiting future resource use and availability for human needs, it is sincerely hoped that more careful long range planning and consideration will be given to this overall problem of resource exploitation. Reference to many of the books written about this region at the turn of the century corroborates the evidence of profound change. The foothills a few miles northwest of Peshawar were then thickly covered with forests of wild olive, in which the Asiatic wild sheep (*Ovis orientalis*), the Markhor wild goat (*Capra falconeri*), and the Chinkara gazelle (*Gazella gazella*) roamed. They could be hunted within one day's horseback ride from Peshawar town (Warburton, 1898). Today these hills are devoid of a single bush taller than 1 m and there are no Chinkara or Urial even within a day's car journey from Peshawar, though a very few Markhor survive on some relatively precipitous mountain peaks."

The writing on the wall is written in big, bold letters but as far as Conservation of Natural Resources is concerned, most people, particularly those in authority, are illiterate.

Photographs of type specimens of Indian plants

The Botanical Survey of India has started a collection of photographs of type/authentic specimens of Indian plants held in the 'Red Covers' in the Herbarium of the Royal Botanic Gardens, Kew, U.K.

In order to make prints of these photographs available to bonafide research workers in plant taxonomy, arrangements have been made to make prints in the size 16.5 cm × 21.5 cm ($6\frac{1}{2} \times 8\frac{1}{2}$ inches) available at a cost of Rs. 10/- only for each print. Requests for photographs indicating purpose may be sent to

The Director
Botanical Survey of India
P. O. Botanic Garden
Howrah 711 103.

Common Indian Snakes

COMMON INDIAN SNAKES: A FIELD GUIDE, by Romulus Whitaker represents, as its title indicates, a field guide to the snakes of India. It is intended to create and further an interest in Indian snakes. Written for the layman rather than for the specialist, it describes concisely 30 of the most common species of Indian snakes, both harmful and harmless, and makes easy identification possible through accompanying photographs. The main text provides a key, and an authoritative account of size, distribution, habits, habitat, young, food and the status of each snake.

Extensively and beautifully illustrated, this pioneering work will go a long way towards exploding fears and prejudices and in enhancing a better understanding of snakes. The book is published by The Macmillan Co. of India Ltd. and is priced Rs. 12/-.

World's largest crocodile skull

In the Society's *Journal* Vol. 52:213, 937 there was a discussion on the largest recorded crocodile skull. Apparently the largest then recorded was a 94 cm skull of *Crocodylus porosus* in the Elgin Museum. Banks (*Journal* 34: 1086) measured 41 *Crocodylus porosus* up to 5 metres and concluded, as have done several other authors, that the skull length is one-seventh of the total length of the animal. With this formula the largest previously recorded skull belonged to a crocodile 6.58 m (21 ft) in length. The supposed length of 10 m (33 ft) faithfully quoted in every reference to size of *Crocodylus porosus* is apparently exaggerated by about 3 metres.

A *Crocodylus porosus* skull in the collection of His Highness, the ex-Raja of Kanika (Orissa) was examined by Messrs J. C. Daniel and S. A. Hussain jointly and later by Dr. H. R. Bustard and myself. In *situ* on the wall the massive skull (with all teeth missing) measures 98 cm × 52 cm. This works out slightly less than 7 metres, or 23 ft. It was shot by a Calcutta boat captain[1] in 1926 in the Dhamra river near Bhitar Kanika.

Dr. Angus Bellairs in his book THE LIFE OF REPTILES (Vol. 2, p. 472) gives measurements of several record crocodile skulls:

	Snout to occiput	*Lower jaw*
C. porosus—Museum of Comparative Zoology, Harvard	66 cm	84.4 cm
C. porosus—British Museum, London	71.1 cm	91.4 cm
C. acutus—American Museum of Nat. Hist.	73.5 cm	—
C. niloticus—H. Cott	62 cm	—

In 1975 Zahida Whitaker measured a crocodile skull (*C. porosus*) belonging to a crocodile hunter in Diglipur, North Andaman 94 cm (lower jaw) × 42 cm at its widest. One tooth of this skull is 14 cm long (with root), 10.5 cm in circumference and weighs 75 g.

The Kanika skull is 78 cm from snout to occiput and lower jaw is 98 cm.

With careful protection in India's three *C. porosus* habitats, namely Sundarbans, Bhitar Kanika and the Andamans and Nicobars we may some day see 20 ft crocodiles. Few, if any, of such gigantic sizes are seen these days.

[1] See page 14.

Crocodylus porosus
Skull in the collection of the former Raja of Kanika, Orissa
Photo: R. Whitaker R. WHITAKER

[1] *The story of the killing of this particular crocodile is quoted from a letter to J. C. Daniel from the Raja of Kanika and is published in the Society's* Journal *Vol.* 71: 309. *It reads thus: 'This crocodile was about* 23 *to* 24 *ft and was known as* Kalia. *It was very dark skinned. It was very notorious. It had a range of* 10 *miles in the Dhamra river. It eluded shikaris for about* 50 *years. My grandfather, my father's elder brother and my father tried to shoot it. Nobody succeeded. The story goes that it was shot by the Captain of a ship which was on its run from Chandbali to Calcutta. Previously small coasting tramps had regular sailing between Chandbali and Calcutta. The crocodile after being hit and wounded went into the bank where there was a lot of reed and dry grass. The villagers set fire to the grass and the crocodile died. This crocodile was well known to every boatman and every villager.' —* EDS

Can a solitary dhole bitch raise her litter ?

Data gathered during my study on the ecology and behaviour of the wild dog at Bandipur suggest the possibility of this in the dhole world. One major reason for the success of my study was the co-operation of the local tribals—kurubas and Jane kurubas—who helped me by informing me of the movement of the predators and the location of kills. In fact, during my presence, the tribals were only the losers as I, with the assistance of the Forest Department, prevented them from stealing the kills, which are the major source of protein for them, and also from removing tender bamboo shoots and directed them to collect fire wood only from areas where there was less concentration of wildlife. However, gradually I had access to their confidence as I spoke to them, whenever possible, of the need for preserving and improving the ecosystem and wildlife of Bandipur which is the only means of assuring a reliable future for the tribals whose destiny is irrevocably intertwined with the future well-being of the Tiger Preserve.

One piece of information I got was about a lone dhole bitch which denned 3 km away from Bandipur when my study pack denned in the vicinity of Bandipur. As the study pack fully engaged my time and energy, I failed to check the den site of the lone bitch which was occasionally watched by the tribal fire watchers who patrolled the parched Tiger Reserve from February to April. Repeatedly they saw a lone bitch, with conspicuous nipples, going to a particular place. Once it was also seen carrying a blacknaped hare. The last observation was made when the dhole played with 3 pups near the den site.

On 14th April 1978 around 06.00 hrs my pack killed a prime adult chital stag with 74 cm long velvet antlers. Nine adults and nine pups fed on the kill, which should have weighed 70 kg, till it was reduced to 22 kg of bone, skin and rumen content within a period of 90 minutes. Next day early in the morning, I saw two adult dholes and a boar scavenging on the remains. As I expected the dholes not to hunt that morning, I walked to a pond 2 km away to wait for the local tiger family which used to frequent a deep sandy stream bed, covered with dense growth of brush, close to the pool. I climbed a *Terminalia bellerica* tree, the fresh flowers of which emitted the fragrance of honey, and waited. At 07.45 hrs there was repeated langur alarm from the stream bed area and when I sat anxiously for the tiger to appear at 07.50, there came a dhole bitch followed by five 3-month old pups. The pups were in good physical condition but the mother, when compared to the bitch of my pack, which was raising 9 pups, was thin and a bit emaciated.

Earlier I had come across fresh evidence of two dholes killing a chital doe and three killing sambar

The solitary dhole bitch with four of her five pups

Photo: A. J. T. Johnsingh

fawns but have not seen a single dhole killing a larger animal though it is obvious that one can easily kill chital fawns and blacknaped hare. It is conjecturable that the dhole, in the absence of assistance from other dogs, should have raised the litter by killing smaller and younger mammals. Crucial periods for any solitary predator are the late prenatal period, early postnatal period and the transitional stage of the young from juvenile to adolescent period when the young give extra strain to their mothers by the greater amount of their food requirements and inability to successfully participate in hunts. For the lone bitch, the first two crucial periods are already over and the question of how far she fared in the final and crucial period could be answered only by further observations.

A. J. T. JOHNSINGH

PERSONALIA

Ralph Morris: A portrait in a landscape

Apart from a semi-mythical figure, possibly a Government Surveyor, who, according to the local hill-tribe, came to the hills riding on an elephant and scattering a largesse of silver coins 'a very long time ago', the first foreigner to visit the Billigirirangan range in Mysore district arrived there in 1885. He was Randolph Morris, son of the rector of a church in Perthshire whose pioneering adventures accorded with the spirit of his day. Having run away to sea in his youth, he became a successful prospector in the rapidly expanding Kolar gold-fields in Mysore, and graduated to coffee planting at the height of the coffee boom in Coorg. The range, clearly visible from the summit of Chamundi, the hill above Mysore city, attracted the attention of R. H. Morris, but his enquiries elicited no information other than warnings that the area was a trackless wilderness infested with elephants. Determined to explore the hills he approached on horseback and then on foot from the taluk town of Chamarajnagar, and discovered a hinterland which in his view bordered on paradise: an area of great natural beauty and, in the high central valleys of the range, ideal conditions for the cultivation of coffee. He made up his mind to settle there.

R. C. Morris in camp in the Billigirirangans *Photo*: Sálim Ali

R. H. Morris had no difficulty in acquiring land in the hills from the Forest Department, since his acquisition of such a solitary tract was regarded as the height of folly. In 1888 he set up camp, accompanied by his tough and resolute wife, and began, under extreme difficulties, not the least of which was the presence of numerous herds of resentful elephants, to open up Attikan, the first estate. In 1888 Morris began building the ghat road into the hills. In 1892 Attikan bungalow was built, and in 1894 his son Ralph Camroux Morris was born there. In the course of the next twenty years four more estates were opened up, but the last and largest, Honnametti, was the work of Ralph Morris. His father, Randolph, had been severely gored by a bison and never recovered his health. He died in 1918, and was buried on a hill-top of the range, where his grave is carefully tended to this day. In 1919 Ralph Morris married Heather Kinloch, daughter of a Scottish planter and naturalist (her own father had also been wounded by a bison, and was subsequently killed by a wild boar), and the couple set about establishing a house and demesne near the summit of one of the high hills on the central spine of the range.

After R. H. Morris died the other estates passed to members of his family. Three of the estates were under a series of managers for much of this period. Apart from Ralph and Heather Morris the other permanent couple, Ralph's paternal uncle and his wife, were elderly and only interested in the immediate problems of plantation and household. Ralph and Heather, on the other hand, were deeply involved with the local people, that is, with the aboriginal inhabitants of the hills, the Sholaga tribe, and also with the villagers from the plain who came to work on the estate. They were constantly called upon to mediate, to rescue, and to settle disputes; to organise in fact an unofficial social service, not only on the hills but on the taluk plain. One of Heather's roles was that of medical practitioner to the estate, and she acquired a far-reaching reputation for altruism when she nursed patients others feared to approach, during three epidemics which struck the estate, of smallpox, bubonic plague and rabies. They were equally concerned with the wildlife of the area, and though Ralph's reputation in this context rests locally on his exploits as a hunter of man-killing rogue elephants and cattle-slaying tigers, he established a wider renown as one of the leading authorities on South Indian wildlife.

Although travel to and from the hills became easier over the years life on the estate was (and still is) isolated, not only from the social life of planters in other areas, but from the social life of the villages, Chamarajnagar town, the adjoining Nilgiri hills, and the cities of Mysore and Bangalore. It was a self-sufficient microcosmos into which no outsider, apart from the occasional Forestry official, penetrated except at the invitation of the Morris

family. In the eyes of the Sholagas, the inhabitants of the taluk villages, and of Chamarajnagar town, Ralph and Heather Morris appeared to be the central figures of this small universe. Today, only twenty-two years after their departure, the reign of the Morris family has already taken on many of the characteristics of a 'golden age' myth in the region. Exaggerated and amplified tales of their exploits, their generosity and their life-style gain steadily in the telling and are repeated with nostalgia by a new generation which has never encountered them. They have achieved the rare privilege of becoming a legend in their own time.

Throughout his career Ralph Morris combined an adventurous spirit with an enquiring mind. He was a man of remarkable courage and sang-froid: characteristics which have not only stood him in good stead in the course of his frequent encounters with the more ferocious denizens of his jungle world, but have led him on a number of memorable occasions to perform what his family have tended to regard as eccentric and even unnecessary feats of valour (such as crawling after a sloth bear into its cave), from which he always emerged not only unscathed but mildly astonished that everyone was making such a fuss about a little thing like that.

Although in his youth he was an old-fashioned sportsman, more skilled with a rifle than with a camera, he also became an all-round naturalist, sensitive to and capable of interpreting the sights, sounds and scents of the jungle in which he spent so much of his active life. He had, too, a strict code of behaviour which he once committed to paper and which is worth quoting even though its relevance is limited now in a world where over-population and increasing industrialisation threaten not only wildlife but the wilderness itself with extermination.

Emphasising that *regulated* shooting by good and licensed sportsmen has never had an adverse effect on wildlife, providing that the natural prey of carnivores exists in sufficient numbers, and that careful culling can actually be beneficial to the stock in the wild, he goes on to point out that many notable hunters of the past have also been leading conservationists. "But for the experience of these hunters the rules governing our wildlife sanctuaries and national parks and the knowledge of the habits of the fauna and their ecology, would be poor indeed . . . Outside sanctuaries and national parks the only real curb to the activities of bands of systematic and commercial poachers is the presence in the jungle of good sportsmen of either sex. It is an acknowledged fact that their presence in the forest is of great assistance in the matter of wildlife preservation. By the term 'good' I mean the man or woman in whom is uppermost, not blood-lust but the love of the chase for the test of skill it provides, and the love of nature as represented by the flora and fauna he or she observes. I refer to people who love

the forest for the insights they gain from it into the workings of nature . . . There are certain rules every right-minded sportsman must follow: first and foremost is the duty to follow up and finish off a wounded animal so as to put it out of pain. No consideration of personal safety or convenience should be allowed to obstruct this humane purpose. On the other hand the obvious precautions to be taken when following up wounded dangerous animals must be taken, for the hunter should pay due regard to the safety of his trackers as well as himself. Furthermore the trackers should never be asked to do anything he (or she) himself is unwilling to do. Finally, no shooting of deer or bison by car or torchlight, nor from machans or hides over pools, salt-licks or game-paths, nor, I would add, from elephant-back, which I consider just as unsporting."

Thus my father, Ralph Morris, travelled the jungle on foot. And, though he does not mention it as an attribute of the good sportsman, the most valued article he carried with him, apart from his binoculars, was a fat pocket-diary and a stub of pencil. Observing, enquiring, listening, he made notes constantly of everything he learnt in and from the jungle.

Although he acquired a great deal of information on the habits of all the fauna of the hills, and although he had innumerable encounters, sometimes hair-raising, with tiger, panther, bear, boar and bison, he had perhaps more experience of the behaviour of elephants than of any other species, partly because of the large elephant population of the hills, and surrounding scrub jungles, partly because he acquired a good deal of information on their habits from his father, who had been a friend of Sanderson, and partly because he enjoyed the excitement of pitting himself against a really dangerous adversary, and, while the hills and their surrounding jungles were not often troubled by man-eating felines, they had more than their share of aggressive rogue elephants. It was, above, all, as a hunter of rogue elephants, that he was locally admired and renowned.

Ralph Morris died on December 19th 1977, after a long illness borne with his usual courage and sense of humour. It is to be hoped that he will be remembered for his love of, and unfailing interest in, the Indian forests and their wildlife, as well as for his long and affectionate relationship with the people of his corner of South India and with his friends among the ornithologists, zoologists and conservationists of India. He was an enthusiastic contributor to the *Journal of the Bombay Natural History Society*. His death is a sad loss for the cause of wildlife preservation, but his example will remain an inspiration.

MONICA JACKSON

Sea turtles and other marine life in Lakshadweep

Sea turtles of three species occur commonly in the waters around India's Lakshadweep islands, situated 120-200 miles off Kerala's coast.

A beach walker on Minicoy, the southernmost of the group, will see Green and Hawksbill turtles as they come close inshore to feed, about the time of high tide. The same may be said of many of the remaining 9 inhabited and 16 uninhabited islands forming the Union Territory.

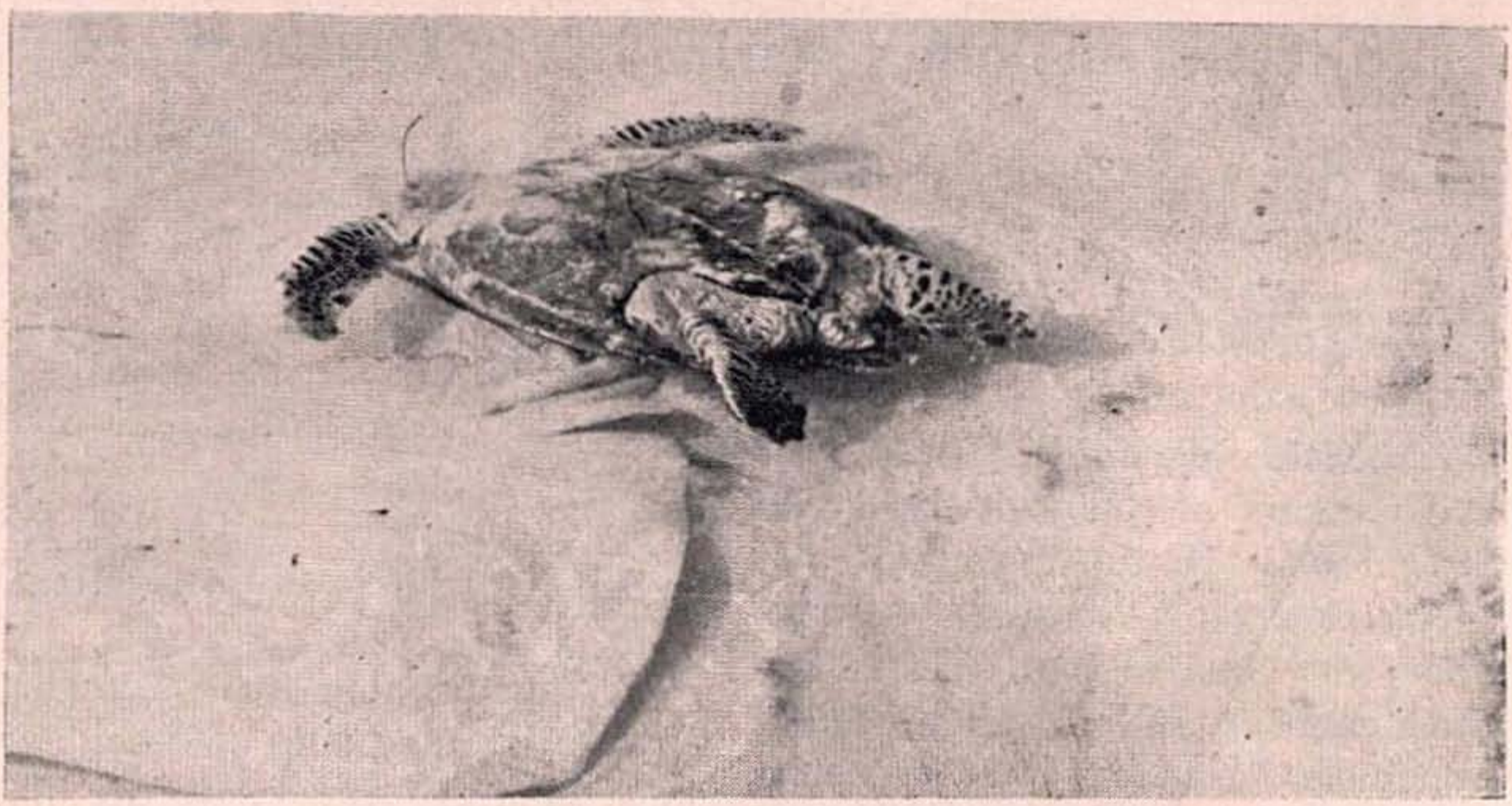
There is a difference, however. On the latter islands, turtles are sighted only during the period of the southwest monsoon and, to a lesser extent, in the month following (October). On Minicoy, turtles are seen throughout the year.

Sea turtles are actively hunted on all islands barring Minicoy, where turtling is sporadic. This appears to be the most likely explanation for the seasonal difference in sightings.

The law banning turtle catching seems to be difficult to enforce. The Green and the Hawksbill are the species that are heavily exploited. Whether this is the reason for the apparent preponderance of the third species, the Olive Ridley, in the five islands of the Amindivi group, is not clear.

An anti-turtle fence

Photo: S. Bhaskar



Suheli Cheriyakara. A Green turtle catch by a single boat

Photo: S. Bhaskar

Unlike in many places, only the fat of the Green turtle is utilized, its meat being wasted. Turtle fat from Greens, Ridleys and the occasional Leatherback turtle is used to waterproof the joints of country boats, in which copra produced in the islands is often transported to the mainland. The laminae on the shell of the Hawksbill fetch about Rs 150 per kg on the mainland.

While many turtles are caught on land as they come ashore to nest, the more usual method employed is harpooning by hand at sea—both from country craft as well as from mechanized fishing boats.

Off the seasonally uninhabited island of Suheli Valiyakara where turtles nest in large numbers during the monsoon, many Green turtles are harpooned as they mate at the water surface.

Sharks often prey on young and adult turtles, but man poses a far greater threat to the turtles' future.

On Suheli Valiyakara, the most important turtle-nesting island in Lakshadweep, parts of the half mile long nesting beach have been fenced off by coconut cultivators in order to prevent nesting Green turtles from coming ashore to lay, the reason being that a few coconut saplings may inadvertently be uprooted by nesting turtles.

Green turtles, by and large, have forsaken Suheli Cheriyakara island as a nesting site after the construction of the lighthouse there three years ago. Now, another light source is planned for neighbouring Suheli Valiyakara island.

The rat eradication programme on many islands where rodent damage to coconuts is heavy, includes the "destruction of dwelling and breeding places of rats such as wild thick growths of perennial bushes and shrubs". Most of the vegetation referred to (*Scaevola, Tournefortia, Pemphis*, etc.) grows on the sea-

shore of the islands, the interiors of which have been given over almost exclusively to the cultivation of coconuts. Their destruction will result in the total disappearance of the islands' endemic vegetation, in addition to removing the nesting habitat preferred by Green turtles and exposing the shores to the sea's erosion effects.

On the brighter side, other marine fauna in Lakshadweep does not appear to suffer from over-exploitation.

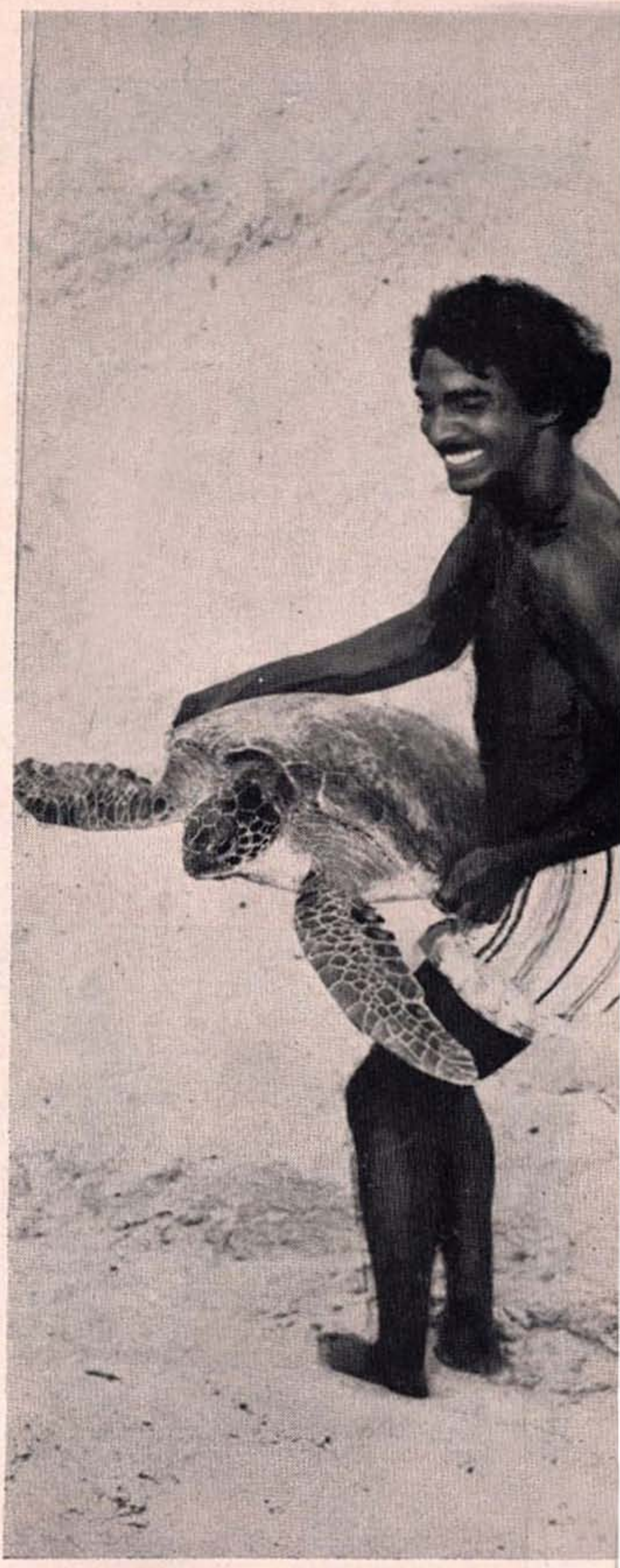
Dead coral is sometimes extracted, for construction purposes, from the reefs and lagoons inspite of a law prohibiting this.

Cowries—mainly *Cypraea caputserpentis* and *Cypraea moneta*—are collected commercially from the reefs bordering many islands. Of approximately 180 species of cowrie known world wide, about forty odd may be found in Lakshadweep waters. Of these, I collected 21 of the more common varieties (almost all were known to Linnaeus in 1758).

Those identified are listed below:

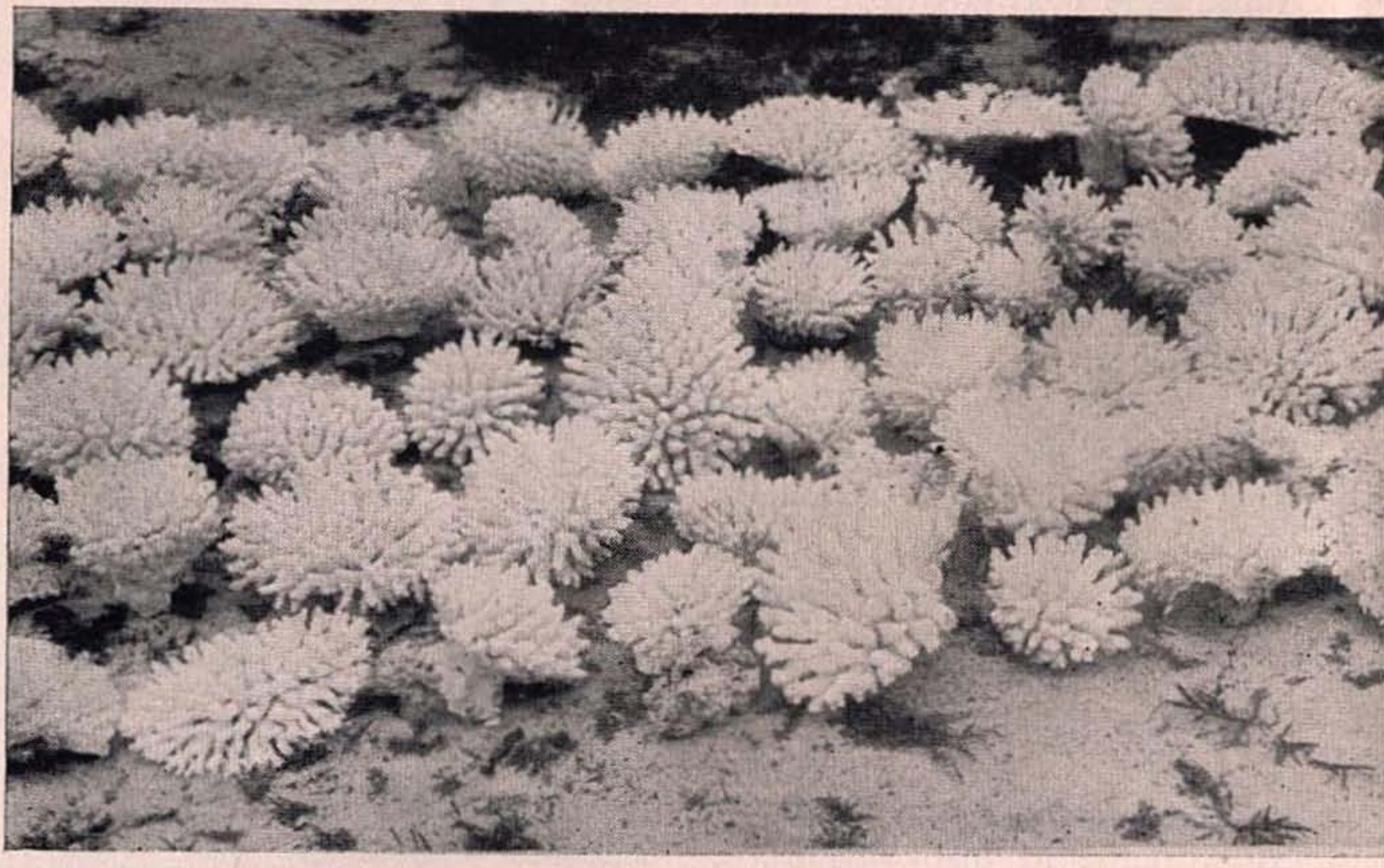
C. tigris
C. histrio
C. arabica
C. caputserpentis
C. moneta
C. erosa
C. iynx
C. carneola
C. scurra
C. isabella
C. vitellus
C. nucleus
C. poraria
C. argus
C. talpa
C. helvola
C. cribraria
C. depressa

The last five species are included from dead shells cast up on shore. Also, *C. mauritiana* is reliably reported to occur in Minicoy.



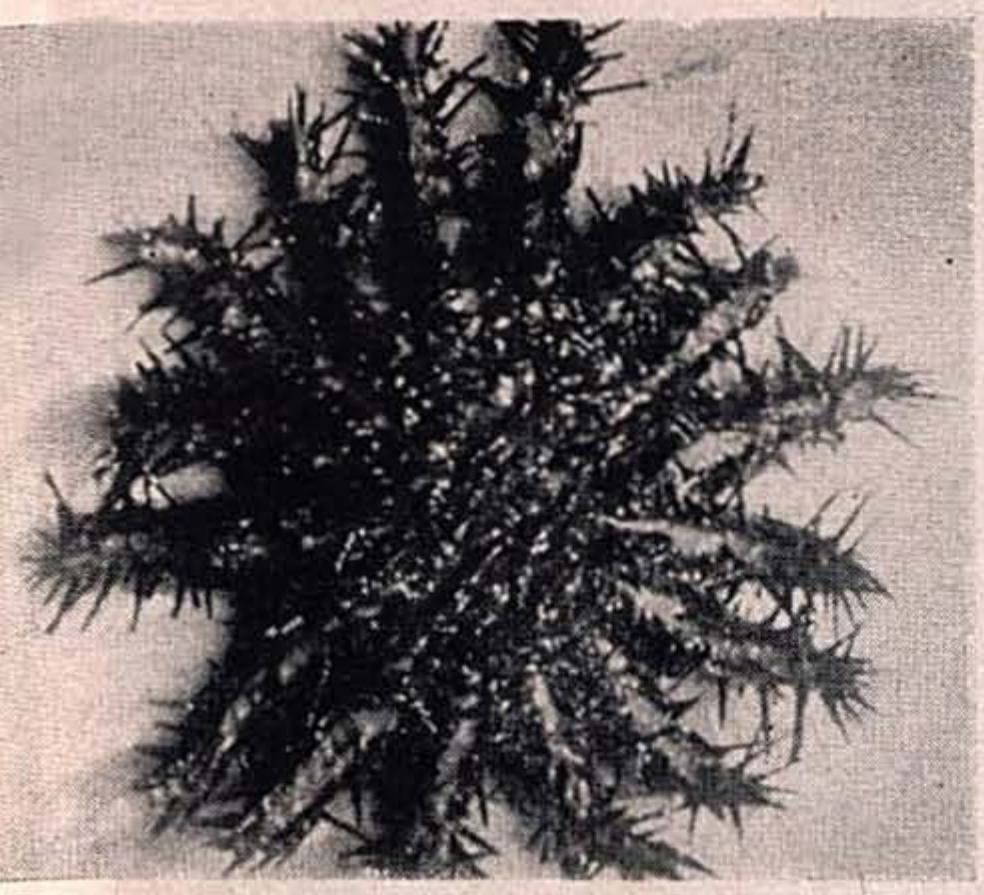
The author with a Green Turtle caught in shore seine

Corals of many species collected from off Suheli Cheriyakara

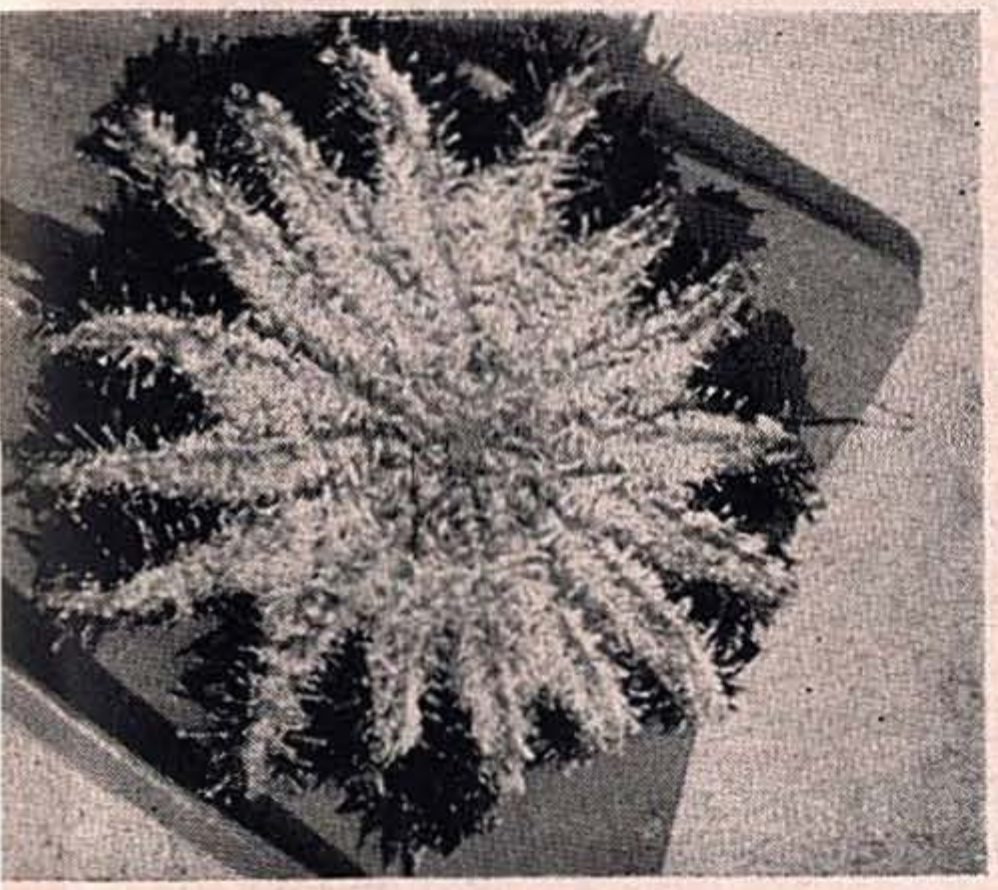


Photos: S. Bhaskar

The disturbed sand that marks a Green Turtle nest on Minicoy



A Crown-of-thorns Starfish just below low-tide line
(from above)



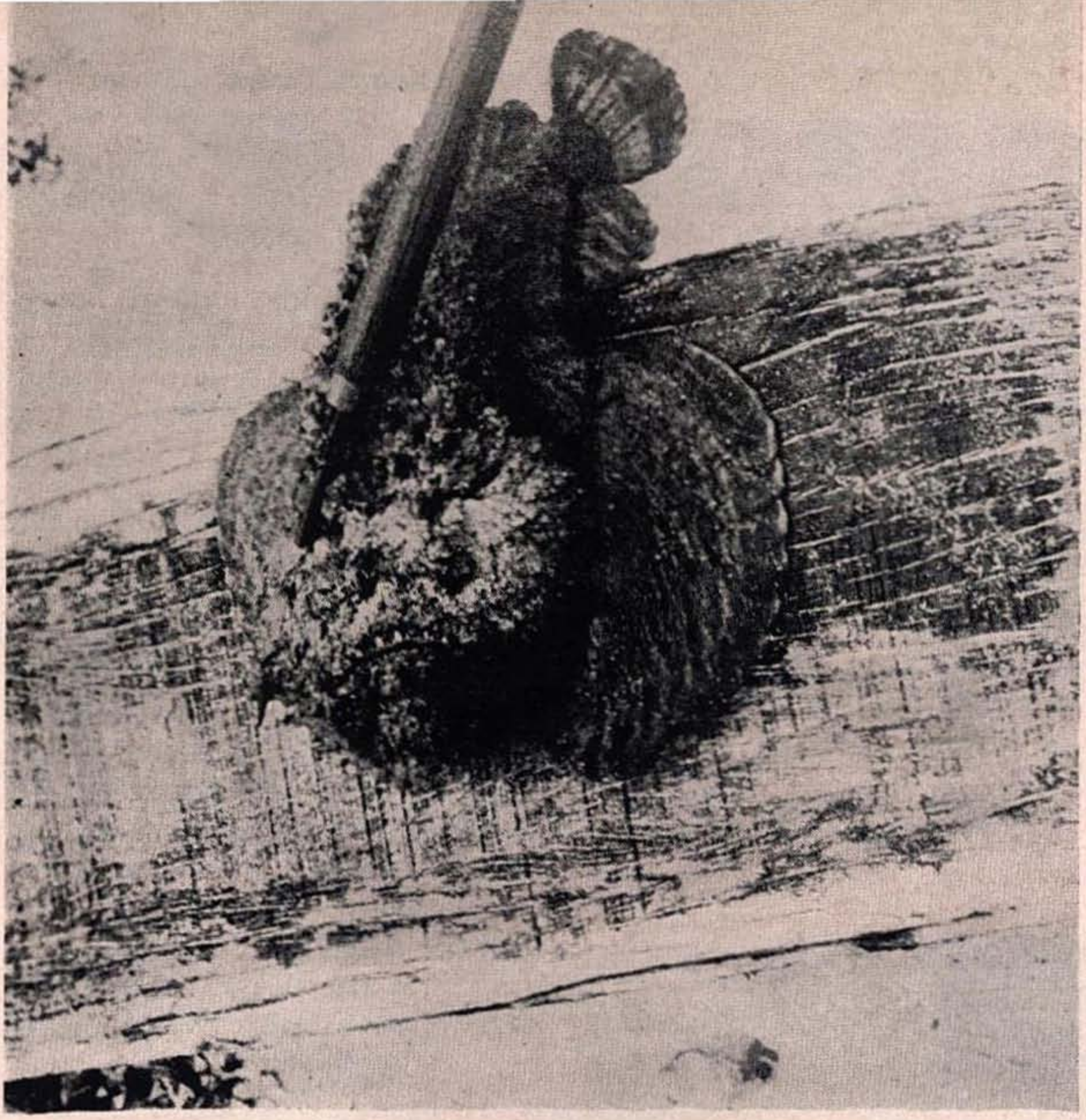
A Crown-of-thorns Starfish
(from below)
Photos: S. Bhaskar

On Kalpeni island, where the October 1977 cyclone had washed ashore multitudes of ocean-going purple snails (*Janthina* sp.), molluscs were abundant.

Here I acquired a glossy Olive shell of an unidentified species. It was 83 mm long; the largest species of Olive in existence grows to 100 mm.

The lagoon at Kavaratti typifies a snorkeller's paradise; whether one can always pick a location suitable to explore—the depth ranges from 0 to 12′. In the calm, clear water may be observed the Crown-of-thorns starfish, *Acanthaster planci;* large moray eels and lobsters sheltering in crevices; sand eating sea cucumbers of at least 4 species; innumerable colourful coral fishes; the occasional shark, small and harmless; sting rays camouflaged in the sand of the lagoon bed; octopuses peeping warily from their dens; large Cone shells, *Tridacna* clams and spider conches, among other creatures.

Hopefully, this coral wonderland will remain as free from commercial exploitation as it is today, and will continue to make the trip to the islands intensely rewarding for the layman, or the marine biologist or the fisheries scientist.



A Stone Fish (Synanceja verrucosa), *one of the most painfully venomous creatures in existence. This lethargic one-footer specimen was speared from where it lived by the side of a steel rail (ramp) used to launch motor boats. Kavaratti lagoon, depth 5 ft.*

Photo: S. Bhaskar

Now that all marine turtles are on Schedule I of the Wildlife protection act, the Government must urgently fulfill its commitment by taking appropriate protective measures at this most important base for at least 4 genera of sea turtles. Public education, a subsidized substitute for turtle oil, and a more ecologically informed development to halt the destruction and fencing off of nesting beaches and re-examining the proposal to populate and put a lighthouse on Suheli Valiyakara is called for. Perhaps Minicoy, with turtles even around the docks, could qualify as a Sea Turtle Preserve and encourage our zoologists to study the fascinating reptiles where the islanders have left them untouched and therefore unafraid.

S. BHASKAR

Encounters with elephants on the Billigirirangan Hills

SCENE: CAMP NAMAGUNDI—BILLIGIRIRANGANS

Event I—

A party of four were in camp: two men and two ladies. Soon after nightfall, a herd of elephants started trumpeting near camp, and shortly after this the herd entered the shola the camp was in from the western side, surrounded the camp on three sides, commenced to demonstrate, and things looked decidedly nasty. The Sholagas (jungle tribe, excellent trackers) feverishly made a ring of fires round the camp with all available firewood, and shots were fired. Every now and then an elephant would crash through the jungle with a shrill trumpet, to within a few yards of the ring of fires, to be met with shouts and yells and a volley of shots. It was a weird and wild scene; the glare of the fires round the camp lighting up the figures of the two sportsmen standing with guns at the ready (shot guns were being used) with loaded rifles at hand for any elephant that might break through the ring of fires, the two women standing behind trees, and the Sholagas running from fire to fire, waving fire-brands, banging kerosene tins, and yelling vociferously. There was not a tree in the vicinity that an elephant could not knock down with ease. Beyond the light shed by the fires was inky blackness, and from here issued terrifying roars, trumpets, and a medley of other sounds and crashes from the elephants. Every now and then the whole herd seemed to advance, and once or twice it looked as if they would charge over the camp *en bloc*. It was during one of these attacks that one of the women, in an extremity of fear, climbed a small tree which was little more than a sapling (even so how she managed it she could not say later) and the sapling bent over and deposited her gently into a small stream that flowed past the camp! It was a succession of advances and retreats, sometimes by the whole herd, at others by elephants singly, or in twos and threes. One tusker, bolder than the rest, very nearly broke through the ring, and the rifles were quickly seized, but he turned and went back into the darkness just in time. After fully three hours of this, the whole herd finally retreated, but could be heard venting their rage on trees in the vicinity: and then a series of trumpets and thuds gave one the impression that two tuskers were fighting, which turned out to be correct on the following morning: still later, the noise subsided, except for now and then low grumbling like the rumblings of a distant thunderstorm. There was, however, no sleep for the party in camp: there was a possibility of the elephants returning to the attack, which fortunately did not occur. The

morning dawned on a scene of destruction for about 200 yards to the south, east and north of the camp where the jungle had been smashed up and trodden down by the elephants for several hours. Sholagas reported that the elephants were still within a half-mile of camp, and the two men went out with their rifles, and watched a Homeric fight between two tuskers—a battle of the Giants. One was a bit smaller than its adversary, but had larger tusks, and distinctly had the advantage, and finally defeated its opponent, and could be seen chasing it through the jungle, away from the proximity of camp, followed by the rest of the herd. A broken piece of tusk was later picked up. Thus ended an extraordinary incident. It was supposed that the elephants found that the camp was on their path, and decided to try to oust the intruders, but it is possible that the two tuskers had already commenced their battle and were in no pleasant frame of mind, and became more infuriated when they discovered the camp pitched on the elephant path (unknowingly), and led them on to the attack. It is stated that African elephants have been known to do this, but, in connection with Indian elephants, a case such as this must be very rare.

The ladies decided that they had their fill of shikar experiences for the time being and were escorted back to the Estate by one of the men. On their way back they encountered a cow elephant with a calf which demonstrated at them, and seemed to be of two minds as to whether to charge down on them or not, luckily deciding not to.

Event II—

M. and his sister were out in camp some years ago; the latter had elected to remain in camp one morning, while the former went out for a stalk. A rogue elephant, described as the Dodsampagai Rogue, was known to be wandering somewhere in the vicinity. At 10 a.m., while M.'s sister was reading at the door of her tent, a wild shriek from the chokra made her start up, and she was horrified to see that a large tusker had stalked quietly into the camp: she then felt her Miniature .22 Rifle thrust into her hand by the chokra from inside the tent; and heard his agonised whispers of 'Shoot, Missie, shoot!' Finding that she was not yielding to his entreaties in this respect, he skimmed up a tree alongside the tent in a marvellous fashion. All this time the tusker stood still taking everything in, but luckily decided not to attack. It turned and walked out of camp as slowly and quietly as it had come in, and made for the narrow strip of shola which was known to be its usual habitat. At midday M. and his trackers, while returning from the morning stalk, and passing this shola (incidentally giving it their wind) were startled by a short sharp trumpet and out charged the Dodsampagai Rogue. M. was carrying a .500 Express Modified Cordite Rifle and had just time to fire at the charging rogue's head, which made

it swerve and present his broad side. A second shot fired behind the shoulder was a lucky one, and got the elephant through, or in the region of the heart, and, rushing on for another 200 yards or so, he collapsed dead. Thus were avenged the deaths of Dod Toddy Mada and his son Jeddia, two Sholagas, who had walked right into the rogue on a misty monsoon day near the same spot a year before and were killed, and torn limb from limb.

Event III—

M., his wife and a friend were in camp, and had retired to bed. At midnight M. was woken up by his wife who said, 'I am sure there is an elephant in camp' (the same old camp).—'Rats!' was the unfeeling and sleepy reply, but hardly was this spoken when M.'s Irish Terrier, which was sleeping at the door of the hut, rushed out barking furiously and then was heard a shrill trumpet and crashing as an elephant careered out of camp with the dog after it. For a few moments pandemonium reigned, shouts and yells from the camp Sholagas and shots from M. and his friend helped to speed the uninvited and undesired departing intruder! It turned out that this elephant was one of a herd feeding near, and had wandered in the direction of the camp and found itself in it before it knew where it was!

Event IV—

M., his wife and the same friend decided to visit Bellagulla for bear. It got dark when the party were within a mile of camp, and M. stopped at a nullah to light a lantern, resting his .375 Mauser Rifle he had been carrying against a rock. Absent-mindedly he picked up the lantern and the party moved on along the path, leaving the rifle behind! When within 200 yards of camp, shouts from Sholagas up trees warned them that the Bellagulla rogue had temporarily taken possession of camp; and to make matters worse, 'Peter' the Irish Terrier scented the elephant and, probably remembering how he chased an elephant out of camp on a previous occasion, rushed in and bayed the rogue! Followed a devil-of-a-to-do, and a nasty situation for the group, as it was pitch dark, and the rogue could be heard kicking up the dickens of a hooroosh, 'Peter' barking wildly, and the elephant trumpeting, but not retreating. Soon 'Peter' realized that he was up against a different proposition altogether, and raced back to M. and the others, followed, however, by the now infuriated tusker. Shots were fired into the air, and the Sholagas yelled and tried to light the grass, which however was too green to burn. Luckily the elephant turned aside when just short of the party and they got to camp without further trouble. Seizing his .450 H.V. Rifle when they first heard the elephant, M. had not had occasion to think about the .375 Mauser and it was not till camp had been reached that he remembered that it had been left behind in the nullah. It was decided to send for the rifle in the morning. This was done and, when

they returned from the morning stalk, M.'s rifle, or what remained of it, was lying in front of the hut. It was literally smashed to smithereens. The woodwork was matchwood, and the barrel and breech and bolt were hopelessly damaged. The rogue had apparently gone along the path that the party had taken to camp, and, scenting human taint on the rifle in passing, had given vent to its rage by smashing it to pieces on the rocks. Not satisfied with this, proceeding further, the rogue had come on a cow, which M. had tied up for tiger, and kicked the wretched animal to death! M. and his friend vowed they would do the rogue in at the earliest opportunity: this soon came, the rogue was marked down, and laid low—an enormous elephant, 10′ in height at the shoulder, with a large single 6′ tusk.

Event V—

M. was shikaring at Bailur, a good spot in the old days, and was one morning walking down a fireline with a Sholaga tracker. When round a corner ahead a call was heard, which, the Sholaga insisted, was a bear. Advancing forward rapidly, M. and the Sholaga came face to face with a tusker which immediately charged. The tracker lost his head and must have achieved well nigh a record for a half-mile sprint down the fireline with a heavy rifle on his shoulder, omitting in his hurry to pass it to M. Followed a few intensely exicting moments from bamboo clump to clump with the elephant in close pursuit. The elephant soon tired of this however made off much to M.'s relief. What followed when the Sholaga returned jauntily carrying the rifle, having viewed the elephant's departure from a safe distance and congratulated M. on his escape, need not be recounted.

Event VI—

On a hot day some years ago, M. and his sister, companions in shikar, were resting on a patch of sheet rock on the bank of a stream waiting for the tiffin basket to come down from camp, when they saw a cow elephant and two small calves pass across their front on the opposite bank of the stream. The Sholaga tracker was very emphatic that the elephant could not cross to their side of the stream, the banks being very steep for two or three miles down. Thus reassured, they lay themselves down and slept, and so did the tracker. After they had been dozing for about an hour, a loud crack awoke them, and slowly turning his head, M. saw the cow and her two calves towering over them barely 30 feet away. Shades of unholy pachyderms! Of all the nasty situations this was the worst. M.'s sister pluckily did not move, but the Sholaga whispered incessantly, terrified with terror, 'Shoot, shoot!' and nearly gave them away. Luckily he had the sense not to get up, and was hidden from view of the elephants by a boulder. The rifles were unloaded (it was mid-day, very hot, the jungle burnt clean, and ordinarily there was little possibility of any game being seen till later); it would have been a fatal

move at such close quarters to try and load them. After standing motionless, a calf on either side, the cow and her calves advanced and passed close to M., within a few paces, and slid down the steep bank into the stream passing below the sheet rock up the stream so close that the back of the nearest calf could have been touched with an outstretched rifle. They then climbed up the bank on the opposite side, and soon disappeared from view. The tracker was quietly crying with relief! On a previous occasion, when sent to the camp with a message in the moonlight, he had come face to face with an elephant and emitted, rooted to the spot, a series of the most ghastly shrieks imaginable. Luckily the elephant was not inclined to do him any harm, although encountered at such close quarters, and, watching him for a minute or two, turned off into the jungle.

Event VII—

M. had wounded a boar in a valley covered with thick deciduous forest, and followed it up into a gully in which grew several large clumps of bamboo. Here the pig was found lying on its side at its last gasp, and was given a finishing shot. The results were startling: crashes to the left and right, and a tusker came into view on M.'s left front and a solitary bull bison on his right! Game paths running on either side converged and met behind bamboos to the front and on these paths the two huge animals rushed, and met! There was a terrible thud, preceded by a short trumpet from the elephant and followed by a bellow from the bison, and then a crash and a struggling in the bamboos, and the elephant appeared to the right moving rapidly off. Advancing cautiously, M. and his men saw the bull bison, a magnificent specimen, lying against a clump of bamboos, breathing heavily, and with a horrible wound in its near side, undoubtedly caused by the elephant's off tusk. The tusk had penetrated one of the bull's lungs, and a hissing noise sounded from the wound as the poor brute breathed. A bullet in a vital spot soon put it out of its distress: and thus closed a very extraordinary occurrence, one which M. can be said to have been in a way responsible for, as it was his shot, magnified in the gully they were in, that roused the tusker and the bull, and in their flight the elephant, alarmed and angry, saw the bison approaching along the other path and deliberately rammed the old bull, probably attributing to it the cause of the disturbance. The elephant later met M.'s tiffin cooly, who said he had just escaped with his life up a tree as the elephant had chased him: and to prove this he showed M. the contents of the tiffin basket—a mass of broken crockery and glass mixed with food, and no beer to drink!

Event VIII—

M., his wife and children were motoring up the ghat road one evening, returning from a trip to the

Nilgiris, when round a corner they came on a herd of elephants. M. jumped out with his rifle, while his wife reversed back and out of sight. M. stood watching the elephants move slowly off the road into the jungle below, when round the corner the car came buzzing again, another elephant had apparently made its presence known behind them!! In the meantime the last of the herd had moved into the jungle, and the car rushed past them, much to their consternation and surprise. On another occasion, motoring up the road at night, an elephant trumpeted just off the road as the car passed it, and was heard to rush swiftly through the grass, whether after the car or not it was difficult to tell for certain. Elephants were all over the place; M. and his wife expected to meet one round every corner, and suddenly, when within half a mile of the first Estate, the expected happened. An elephant stood facing the headlights of the car standing on the roadside, so close that their only chance lay in an attempt to rush past it, and this they did; M.'s wife driving, with M. holding his rifle levelled on the elephant. The elephant neither moved nor gave any signs of ruffled feelings: it was the local Government Timber Elephant.

R. C. MORRIS

Honnametti Estate,
July 10, 1929.

The encounters described above are one of the several articles written by R. C. Morris in the Society's Journal. *Morris whose biography appears under Personalia was one of the best among field naturalists of India in the first half of this century.* — EDS.

The cost of printing the coloured front cover of this issue is borne by United Phosphorous Pvt. Ltd., of Worli, Bombay, whose Managing Director, Mr Rajju Shroff is a Life Member of the Society. While thanking Mr Shroff for his continuing support to the activities of the Society, we hope that others among our members would assist with advertisements, and donations for the *Hornbill.* — EDS

Printed at St. Francis I.T.I., Borivli West, Bombay 400 092.