HORNBILL

1985 (1)

BOMBAY NATURAL HISTORY SOCIETY

The cover picture shows Bonelli's Eagle (*Hieraaetus fasciatus*) photographed by Anil Dave.

A comparatively slender, but powerful uncrested eagle, its tail is proportionately longer than in true eagles, and extends well beyond closed wings. In overhead flight, its silvery, white body, dark brown under wing-coverts, finely grey barred flight feathers and the broad, black subterminal band to the longish tail are diagnostic pointers to its identity.

Widespread over the Indian subcontinent from about 2400 m in the Himalayas, Bonelli's Eagle is nowhere common, and is a rare vagrant to Sri Lanka.

A bold and an active hunter, it kills mammals and birds much larger than itself, pouncing on its quarry from an ambush in a leafy tree or strikes it by aerial pursuit. Usually a pair hunts in concert -- one stoops and scatters a roosting flock, and picks an individual for isolated and determined chase and harrying, turning and twisting after it, high and low, while its partner cuts off the quarry. Both share the prey when captured. In chasing larger birds, the eagle often gets under them and turns over on its back to attack from below. The death-dealing stoops of the raptor are impressive not only for their speed but also for their astonishing accuracy.

The eagle's courtship display is spectacular. It twists down through space almost perpendicularly for 50 m or more, wings pressed to the sides, and zooms vertically skywards again. On the crest of the wave, the bird stands on its 'tail' for a split second, and then doubles over to repeat the dive or resume sailing. Often it soars or circles aloft like most raptors. Breeding season. December/January.

The Society was founded in 1883 for the purpose of exchanging notes and observations on Zoology and exhibiting interesting specimens of animal life. Its funds are devoted to the advancement of the study of zoology and botany in the Oriental Region. The Society also promotes measures for conservation of nature.

Membership of the Society is open to persons of either sex and of any nationality, proposed and recommended by one or more members of the Society; and also to persons in their official capacity, scientific societies, institutions, clubs, etc. in corporate capacity.

Members receive during a year three issues of the *Journal of the Bombay Natural History Society* now in its 82nd volume, and four issues of *Hornbill*, the Society's popular publication.

Advertisements for publication in *Hornbill* are welcome. Rates: Inside full-page Rs. 500/-; half page Rs. 250/-; back cover Rs. 1000/-.

Annual and other membership subscriptions

Entrance Fees	Rs	25.00
Subscription		
Ordinary individual membership	Rs	60.00
Ordinary corporate membership	Rs	125.00
Life membership	Rs	800.00
Compound corporate membership	Rs	2500.00

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The first annual subscription of members elected in October, November, or December will extend to the 31st December of the year following the election.

Write to:

The Honorary Secretary
Bombay Natural History Society
Hornbill House, opp. Lion Gate
Shahid Bhagat Singh Road
Bombay 400 023

EDITED BY
J. C. DANIEL
J. S. SERRAO
I. D. KEHIMKAR
Lay-out
JETASHREE JAVERI

EDITORIAL

Occasionally our editorial knuckles are sharply rapped for carelessness by alert members. While wringing our hands in distress, we apologise for the following errors in *Hornbill* 1984(4):

(a) listing on p. 5 the Koel *Eudynamys scolopacea* as non-parasitic;

(b) naming on p. 19 the sapling being planted by Dr Salim Ali as a banyan (*wad*) while it is a *peepal;*

(c) captioning the 2nd photograph on p. 32 as "Exhibition during Nisarg Sikshan Yatra" instead of *Exhibition during Mumbai Vidnyan Yatra;*

(d) naming the bird in the photograph at p. 40 as a "Grey Heron" while it is a *Purple Heron.*

The first year of the Society's Second Century has also been the year when the Society's total membership reached 3000. However, we have little cause for complacence. The membership dues received in 1984 were Rs. 1,76,725/- but even the two membership facilities, namely the *Journal* and *Hornbill,* cost us Rs. 2,13,314/- for three issues of the former after deducting government subsidies, and Rs. 60,667/- for four issues of the latter. This is a very alarming situation indeed. If the total expenditure of Rs. 9,90,000/- including administrative costs of the Society were to be met from the membership, we should have at the current rate of subscription approximately 16,485 ordinary members, or 12,363 life members whose corpus of Rs. 800/- would realise an interest of Rs. 80/- per member, or 3956 corporate life members whose corpus paying of Rs. 2500/- would realise an interest of Rs. 250/- each. We seek your assistance for a vigorous membership drive.

A PORTFOLIO OF BIRD PAINTINGS

The pictures on pages 2 and on the inside of the back cover are monochrome reproductions of two of the paintings by John Gould in a portfolio of four colour paintings being offered to members at a nominal price of Rs. 50/- by Madura Coats Limited. The proceeds will be credited to the Society. If you are interested please return to us the order form from the loose leaf insertion in this number.

Birds and Monuments

One of the chief virtues of birdwatching as a hobby is the fact that it can be carried out almost anywhere. Being married to an Indologist interested particularly in ancient architecture, I have spent a good deal of my time in India visiting archaeological sites, but this has not prevented me from pursuing my own hobby. Indeed, some of my best birdwatching memories have resulted from chance encounters among the ruins of India's countless temples, palaces, stupas, and mosques.

Recently, while in Orissa, I reacquainted myself with the Whitebellied Sea-eagles that nest beside the Sun Temple at Konarak. The nest is in a tall tree just outside the wall of the temple compound and has been there, to my knowledge, for at least eleven years. I have watched the eagles on at least six visits and I assume that the nest must have been used every year. This year, in December 1982, there were eaglets present, and we saw one member of the pair, presumably the male, return with a fish, and pass it to the other to present to the nestlings. In the evening, when we returned to view the temple by moonlight, the eagles were still calling from time to time, perched close to the nest.

Konarak has proved fruitful for other species too. I saw my first Whistling Tree Duck, apparently prospecting for a nest site, just outside the tourist bungalow, and my first Collard Kingfisher as well.

Pallas's Fishing Eagle *Photo :* Loke Wan Tho

White Collared Kingfisher
Photo : Loke Wan Tho

Certain birds are particularly associated with ruined buildings, and these are most likely to be encountered by the archaeological ornithologist. My only sightings of Barn Owls in India were both associated with old buildings. In Delhi, one chilly winter evening, I saw one fly from a ruined tomb in Nizzam Uddin, while in Tanjore, during a veena recital in the music hall of the old palace, two owlets decided to fledge onto the stage. They were quickly captured by the organizers and thrust out into their proper element, the night, while the *vidwan* continued to play, unperturbed.

In North and Central India the Brown Rock Chat is an invariable occupant of ruins, bouncing from pillar to parapet, and building its nest in crevices in the walls. Another bird usually encountered in such places is the Spotted Owlet, and I particularly recollect a pair which inhabited the exquiste Chola shrine at Kodumballur. We try to do most of our temple visiting in the early morning or late evening and this is when these engaging birds are most active. Of course, parakeets and mynas abound wherever there are holes in masonry to provide suitable nesting sites, but these species adopt any building; they are less impressed by antiquity than the owls, apparently.

Where archaeological sites are extensive, they may preserve a considerable swathe of semi-natural habitat, providing an island reserve in the midst of cultivation. Tughlakabad, outside Delhi, has been a happy hunting ground for Delhi birdwatchers ever since the days of Peter Jackson. The rocky, scrub-covered remains of the former city have yielded many interesting sightings, including India's first Ortolan Buntings, which I was lucky enough to find there one day in company with Peter and the late chronicler of Delhi's birds, Usha Ganguli. In winter it is a good spot for Whitecapped Buntings, Ashycrowned Finch-Larks and that drab little warbler *Phylloscopus neglectus*.

Ruins are not so productive for water-birds, but a few encounters

stand out. The colony of Painted Storks which nests beside the moat of the palace at Deeg, in Rajasthan, is in many ways more spectacular, because of the setting, than the much larger aggregation at Bharatpur. In a similar, though remoter, setting, I saw my only Black Stork from another ruined Rajasthani palace, near Sariskar.

For a combination of a beautiful bird and a superb monument, however, first place in my own experience must go to the Wall Creeper that I saw carefully examining the stonework on the exterior of Humayun's tomb, in Delhi, as I guided a visiting friend on a sightseeing tour of the capital. The moral is clear; don't leave your binoculars at home just because you are going to see an ancient monument, you might regret it!

ANTHONY J. GASTON

The plight of the Jackal

A few decades ago the most common wild mammal of the Indian jungles was the Jackal. Over 80% of India's people had either seen it or were familiar with its howling. There is an old saying that if a jackal started crying the sound reaches up to the Ganges, i.e. the cry was answered by other jackals a few furlongs away and so relayed it on and on till the banks of the mighty Ganges absorbed them. From this we can judge the density of the country's jackal population. The jackal served us very well and still performs its duty by scavenging and disposing off carcasses and offal. It prefers the jungle, but is at ease near habitations also.

In the last few decades the jackal is the only wild animal of India which had been persecuted for its pelt in such large numbers. Jackals in their hundreds of thousands have been killed and its voice is no longer heard.

Though Government has upgraded it and placed it in Schedule I of the Wildlife (Protection) Act, no systematic study has so far been done on this animal to increase its population. It has been neglected by the Wildlife Department of Rajasthan too. In the last census of wild animals of the game sanctuaries of southern Rajasthan this animal was excluded.

The ecological imbalance that may have resulted from this drastic reduction is still to be evaluated.

As they are prone to rabies, the day is not far when this well-known wild animal of India will vanish from this planet.

RAZA TEHSIN

41, Panchwati, Udaipur 313 001

NEWS, NOTES AND COMMENTS

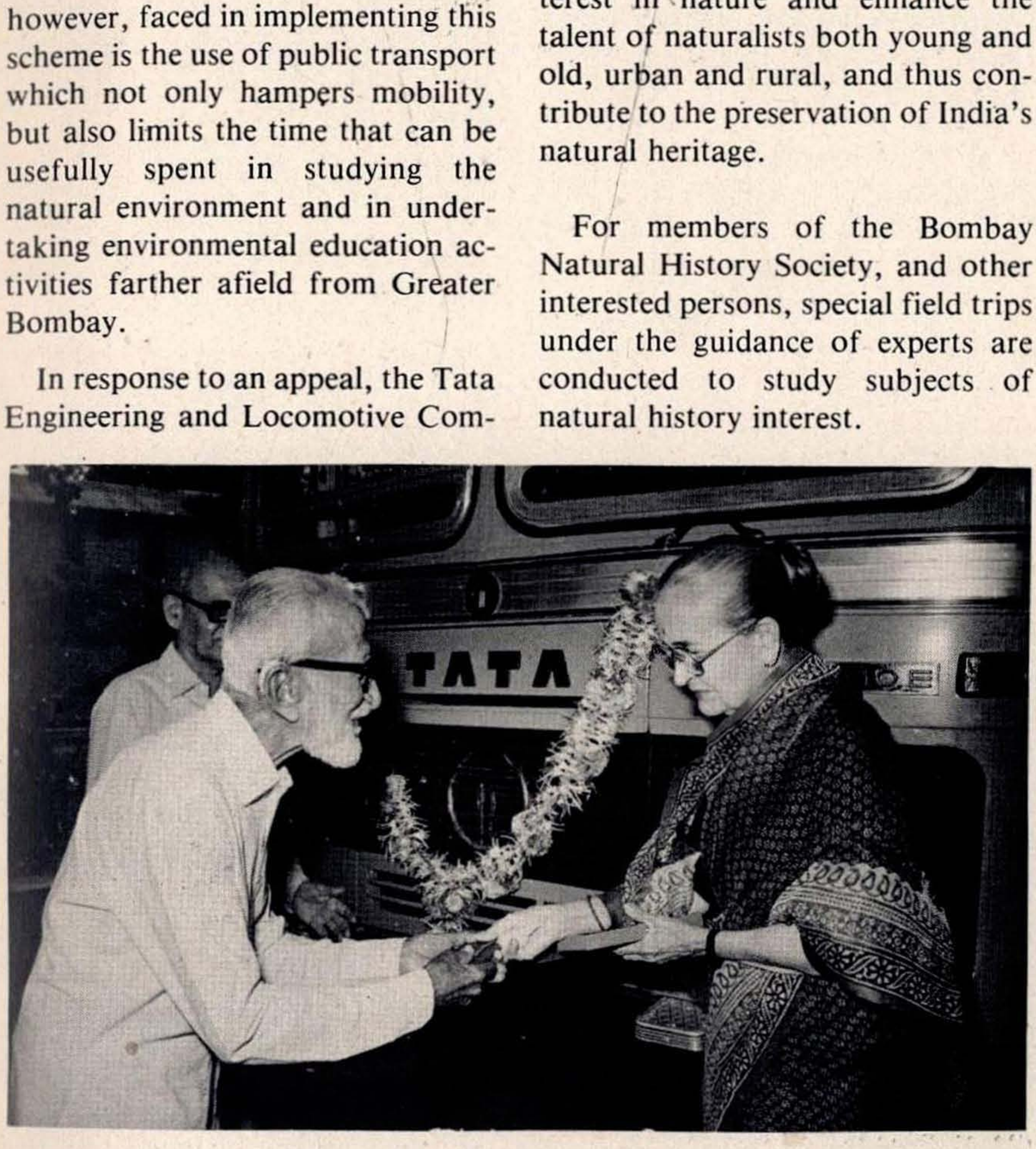
TELCO HELPS TO BRING CHILDREN AND ADULTS TO NATURE

Since 1948 the Society has been reaching out to school children of the lower income groups, who are not in a position to visit areas of natural history interest for lack of proper facilities and guidance.

One of the major difficulties, however, faced in implementing this scheme is the use of public transport which not only hampers mobility, but also limits the time that can be usefully spent in studying the natural environment and in undertaking environmental education activities farther afield from Greater Bombay.

In response to an appeal, the Tata Engineering and Locomotive Company (TELCO) has very generously come forward in full support of the Bombay Natural History Society's Nature Education Scheme. TELCO has presented a unique gift of a twenty-five seater mini-bus to help the Society further nurture an interest in nature and enhance the talent of naturalists both young and old, urban and rural, and thus contribute to the preservation of India's natural heritage.

For members of the Bombay Natural History Society, and other interested persons, special field trips under the guidance of experts are conducted to study subjects of natural history interest.



Dr Salim Ali receiving the keys of the bus donated by TELCO *from Mrs Leela Moolgaokar*
Photo : G. C. Patel

Third World and Pesticides

Every year about 375,000 people are poisoned in the Third World by pesticides and 10,000 of them die. To help citizen groups working on this issue, International Organization of Consumer's Unions (IOCU) launched last February in Holland and Malaysia a new publication called *The Pesticide Handbook, Profiles for Action* that contains a profile of 44 pesticides selected on the basis of their harmful effects and extent of usage.

While launching the pesticide handbook the president of IOCU Anwar Fazal, said that "IOCU has compiled this handbook to help groups working on the pesticides issue to stop the violence associated with a technology that is causing a terrible toll in human lives, incalculable damage to the environment and even real financial loss through needless misuse and dependence.

IOCU, which represents a federation of over 120 consumer organisations from 50 countries, operates from its head quarters in the Hague, Netherlands and the Asia-Pacific regional office in Penang.

For more information contact: IOCU, P.O. BOX 1045, GEORGETOWN, PENANG, MALAYSIA.

DONATIONS TO THE BOMBAY NATURAL HISTORY SOCIETY

Donors to the Bombay Natural History Society were so far exempted from 50% Income Tax on the donations made for General Purposes under Section 15B of the Income Tax Act, 1922. In view of the changed rules this used to cause some confusion among prospective donors. The Commisioner of Income Tax, Bombay City IV, has now clarified that in the light of Section 297(2)(K) of the Income Tax Act, 1961, exemption covered by Section 15B of the I.T. Act, 1922 remains effective.

The Society is also approved for 100% tax exemption on donations for Specified Scientific Purposes under section 10(2) (xiii) of the Income Tax Act 1922 corresponding to section 35(ii) and (iii) of 1961 vide Ministry of Finance notification No. 34 dated 23rd November 1946 and that the said notification continues to be in force, under the Act.

We solicit our friends and well wishers for donations.

HONORAY SECRETARY

World Congress of Herpetology

An international Committee has been established to plan the first World Congress of Herpetology with the efforts of major national and international herpetological societies. The congress will be held in 3-5 years at a site yet to be selected. The Planning Committee consists of Donald G. Broadley (Zimbabwe), Harold G. Gogger (Australia), J.C. Daniel (India), Ilya Darevsky (USSR), Marinus Hoogmoed (Netherlands), Toshijiro Kawamura (Japan), Michael Lambert (U.K.), Hubert Saint Girons (France), P. Vanzolini (Brazil), David Wake (U.S.A.) and Kraig Adler (USA) Secretary General.

The Congress will be organised to include a wide range of topics in the scientific study of amphibians and reptiles. The committee currently is setting guideliness for operation, including the establishment of a larger and broadly representative, International Herpetological Committee to provide a self-perpetuating mechanism for future congresses.

The Planning Committee solicits comments from the herpetological community on all aspects, in particular the choice of a convenient site and content of the congress. Potential hosts for the congress are also invited to communicate at the address below.

PROF. K. ADLER,
CORNELL UNIVERSITY, SECTION OF
NEUROBIOLOGY AND BEHAVIOUR,
S.G. MUDD HALL,
ITHACA, NEW YORK 14853 USA.

Problem Birds of Aircraft

At a special function held at the Taj Mahal Hotel, the Governor of Maharashtra, Air Chief Marshal Idris Latif released the book *Potential Problem Birds at Indian Aerodromes* by Robert Grubh and Salim Ali. The main aim of the function, however, was to bring the aviation personnel, public administrators and educated public together to understand and appreciate the research programme conducted by the BNHS to develop effective methods to counter bird strike hazards to aircrafts in India.

The book was prepared at the request of the Aeronautics R & D Board (Ministry of Defence) as a part of the project to enable the pilots and other aviation personnel to identify some very common problem birds and their habits critical to air safety.

ICBP Publications

The International Council for Bird Preservation has brought out three technical publications entitled

1. STATUS AND CONSERVATION OF THE WORLD'S SEABIRDS. Editors J.P. Croxall and others. Price £26.90
2. THREATENED BIRDS OF AFRICA AND RELATED ISLANDS. By N.J. Collar and S.N. Stuart. Price £24.00
3. CONSERVATION OF ISLAND BIRDS. Edit. P.J. Moors. Price £16.00

To keep the prices down to the levels indicated the ICBP has

undergone a considerable strain on its resources. Were they to be brought out by a commercial publisher, the books would have cost 30-50% more. Prices include surface mail charges.

Persons interested in the purchase of these books are requested to place their orders accompanied by payments with

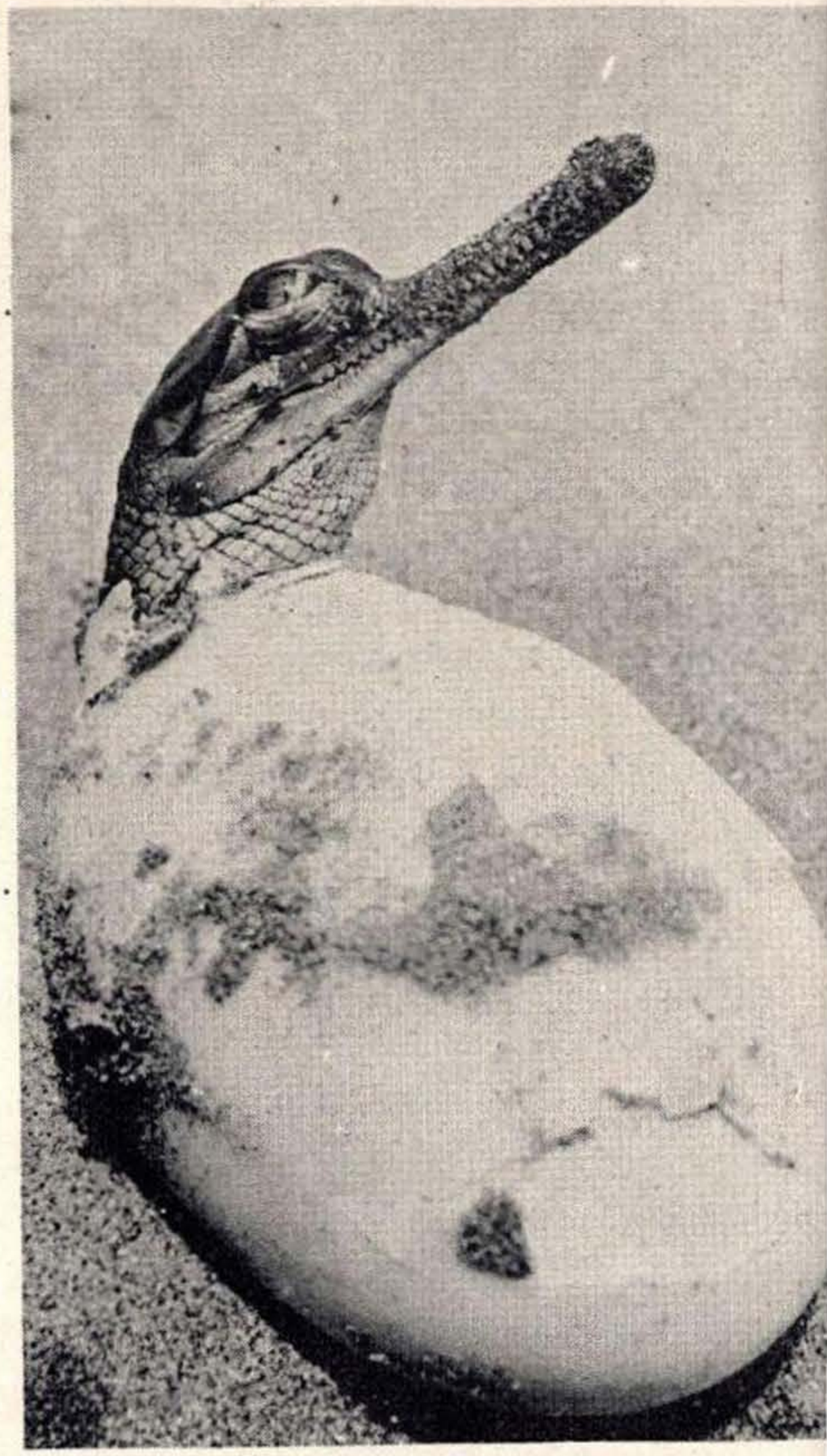
INTERNATIONAL COUNCIL FOR
BIRD PRESERVATION
219c HUNTINGDON ROAD
CAMBRIDGE CB3 ODL,
ENGLAND.

Delivery would take 6 weeks from the receipt of order.

BOOK NOTICE

INDIAN WILDLIFE. Text by Ramesh Bedi; photographs by Rajesh Bedi. 1984. Brijbasi Printers Pvt Ltd, New Delhi 110 020. Price Rs. 395/-

INDIAN WILDLIFE by the Bedis is an epitome of excellence as far as the superb photographs and production values are concerned. The book describes the wildlife of India in eight chapters, divided thus: Himalayas and Trans-Himalayas; Foothills of the Himalayas; Central India; Western India; Eastern India; Arid and Semi-Arid Areas; Southern India; Wildlife on Islands. These sections are preceded by a Foreword and a Preface, and followed by the sections Index and References. The text gives information on Indian wildlife. There are some factual errors as for instance,



Young gharial emerges from the egg
Photo : Rajesh Bedi

the statement that both male and female bustards are involved in the preparation of the nest, an exclusively female function. However, these do not particularly detract the value of the book. We wish that the Bedis had linked the narrative to the superb photographs and limited the text to general information.

A book of excellent value for any library.

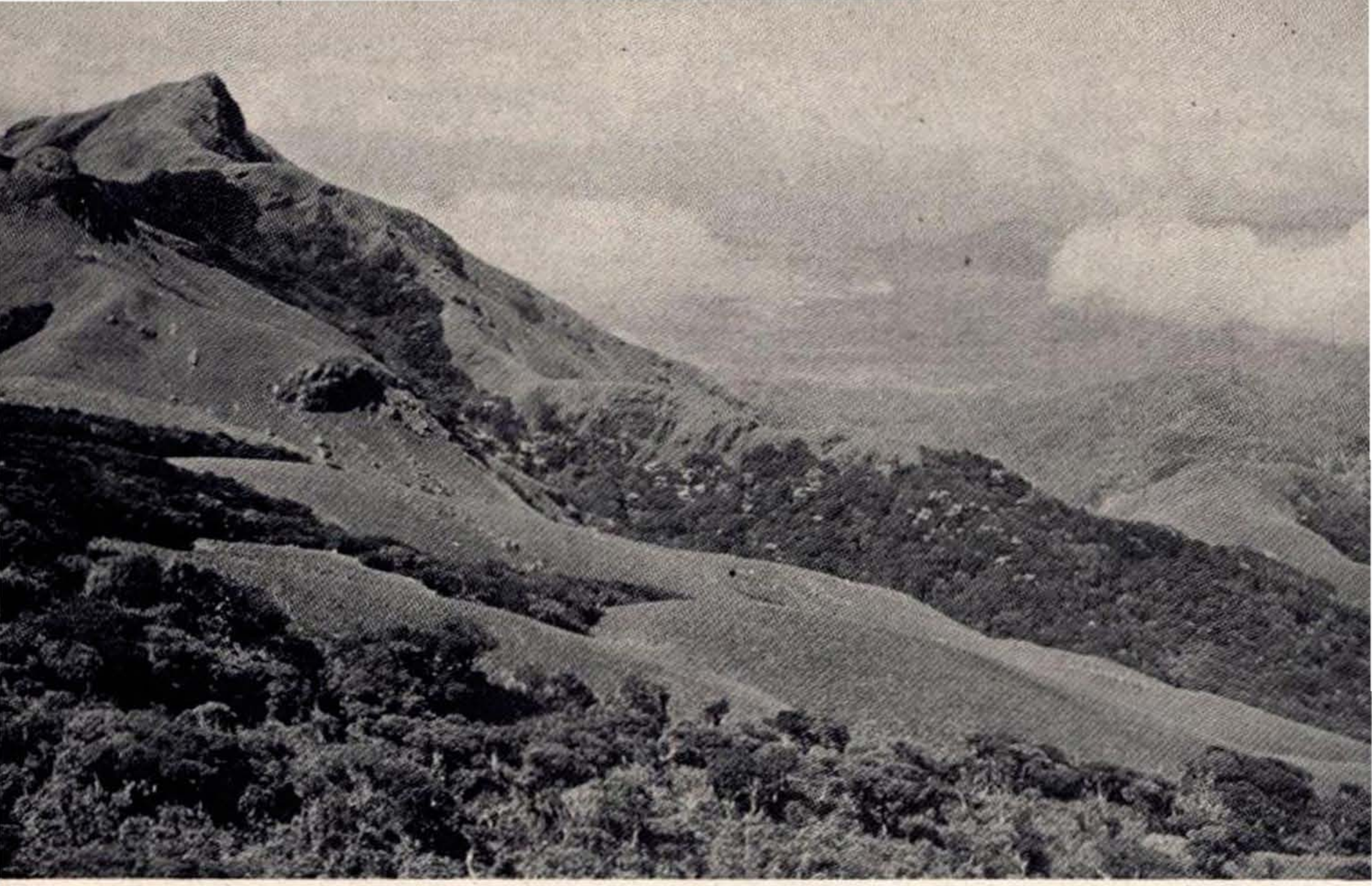
J. C. DANIEL

Naraikadu

Naraikadu — the Grey Jungle — place of rest, of river and pool, the gateway to the nearby mountain peaks and the unending wonder of the flower, bird and animal life around it belongs to the Dohnavur Fellowship in the Tirunelveli district of Tamil Nadu.

The Fellowship is primarily a Children's Home and was built up in the early years of this century by Miss Amy Carmichael. She was a British missionary who arrived in India in 1885 and never left the country till her dying day in 1951. By 1917 Miss Carmichael and her colleagues were looking after a considerable number of children. Holidays had been taken in Ooty but with so large a family this was no longer feasible. So Miss Carmichael began prospecting for a site in the Western Ghats close to the village of Thirukkurungudi on which she could build. She was told she was expecting the impossible. She toiled through the jungle seeing various unsuitable sites. All in vain, until returning from a coffee estate which was not for sale, a kindly Brahmin mentioned the Grey Jungle. "The moment we saw it we knew we had found our heart's desire. How can I describe it? It sets you singing however dull you are!" Thus Miss Carmichael wrote of her first impressions of Naraikadu. The owner was there the day they visited. He asked £ 100. Miss Carmichael prayed for guidance from God as to whether she should buy. That night they returned home to Dohnavur. Letters were waiting. In one was the notification of a legacy for £ 100...

The forty acres of tropical semi-evergreen forest that constitute Naraikadu today are located between 2,500 and 3,000 feet in the southern area of the Kalakadu Wildlife Sanctuary in Tamil Nadu. Three large well-constructed houses are available for groups and small houses for families. The Naraikadu river flows through the property. This river owes its existence to the enterprise of people from Thirukkurungudi who went up into the forest and built banks of earth and stones to divert water high in the mountains. These were originally built in 1060 and the first prevents water going northeast and there is an inscription in the temple of the village to commemorate the building of this anicut. The Lower bank prevents the diverted water from flowing down the Kanya Kumari side of the mountains and diverts it east towards the Tirunelveli side where it reaches the plains and flows into the Thirukkurungudi irrigation tank. We have tapped the river water and filter it through three concrete tubs and into a pipe. It then runs downhill supplying all the houses with piped drinking water. One of our leaders of the past was an engineer and he constructed a dam across the river



Shola and grassland at about 4000 ft with a peak to which we can walk
Photo : Jacqueline A. Woolcock

which has made a lovely pool for swimming. He also designed two strong high bridges over the river on the path up to our land. This is for safety in getting up and down when the river is high.

FOREST LIFE IN MAY AND SEPTEMBER

At present, holidays are only taken in Naraikadu in April, May and September so my own observations are confined to these months. The infrequency of our visits means that the area is less disturbed as our three caretakers live quietly. The senior of these is very interested in wildlife and makes observations of what he sees.

Log books have been maintained and include records of wildlife observed. Records of rainfall have been kept since 1938: Maximum 219.93 inches in 1961; Minimum 59.57 inches in 1976; Average 109.40 inches for 20 years (1961-1980).

Temperature has been recorded from the beginning but only when holiday makers are there. In the hot seasons the highest daily temperatures are about 5.5°C lower than those on the nearby plains.

In the 1930s and 1940s Godfrey Webb-Peploe, who has contributed articles to the *Journal of the Bombay Natural History Society* (Vol: 46, No. 4, April 1947. 'Field notes on the mammals of South Tinnevelly, South India') made extensive observations on the flora and fauna of the area covering most of the year. Occasionally biologists have been glad to stay on the property

and make observations, and such visits have given us much pleasure as they have taught us more about the wildlife around us.

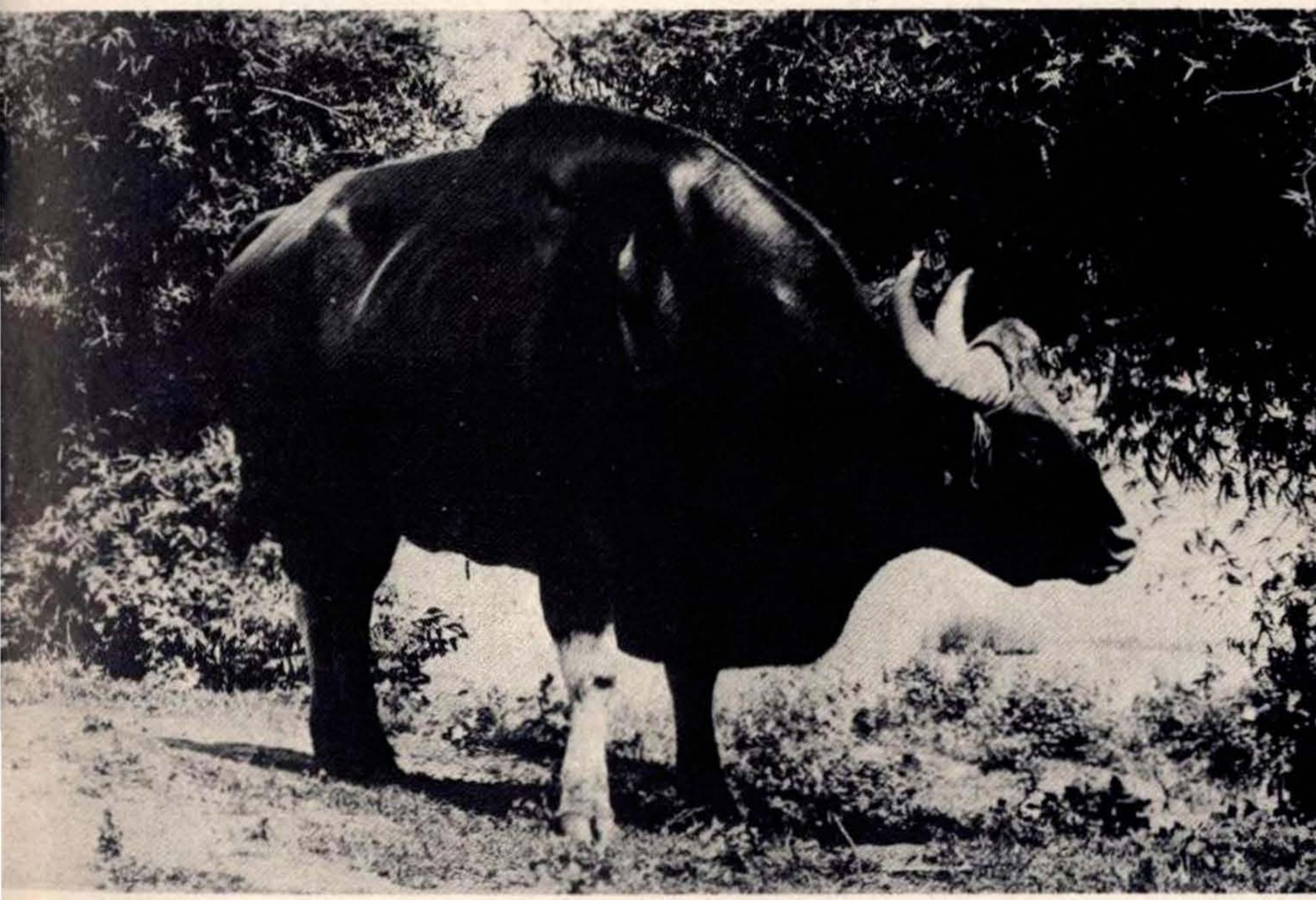
For us women the journey begins with an one-and-half hours ride in a bullock cart. As we travel west, the dawn comes behind us providing a golden orange background to the black silhouettes of the palmyra trees. Arriving at the foothills at about 6 a.m. the 5 mile walk up the valley takes about three or four hours. One of our boys running a cross country race ran the 9 miles home in one hour five minutes and fifty-five seconds. A leisurely and silent walk up gives a good opportunity to see animals and observe the changing flora as altitude is gained. When we stay at Naraikadu we make day trips to the plateau from which grassy peaks arise. We climb these to a maximum height of 5463 ft, and have walked along the ancient anicut which turns the river towards Tirunelveli. Miss Carmichael and her colleagues encouraged the Fellowship children to develop an interest in wildlife and to care for the living world around them. In the oldest extant log book there is a note by Miss Carmichael on the care of the forest which includes these quotations from the Bible and her application of them.

> "Be ye glad and rejoice for ever in that which I create."
> "They shall not hurt nor destroy in all My holy mountain."

'These words (the second verse)

The Gaur or the Indian Bison

Photo : E. Hanumantha Rao



are written about the world as it will be when God has His way everywhere, and no one spoils anything; but why should it not be so now and here? Only foolish people hurt and destroy beautiful things. Do we want to be foolish people? Only the very blind and dull of heart can be other than full of gladness in the midst of such beautiful things as these of ours, "that which" God creates. Do we want to be blind and dull of heart? So let us take care of our Forest and keep our river pure and hurt and destroy nothing in our beautiful mountain world.'

Since the area became a Wildlife Sanctuary in 1976 sloth bears have been seen often after many years of failing to encounter them. Wild pig, red dog, leopard and sambur have all been seen within the last ten years and also tracks of gaur on the plateau. Elephants, although common in the anicut area, do not get down to Naraikadu as the surrounding hills are too steep. Nilgiri langur are common and one happy night a troop roosted in a tree close by one of our houses. The liontailed macaque is seen sometimes in troops and rarely lone males are seen. Bonnet macaques are seen fairly frequently but not nearly so often as the Nilgiri langur. Recently a common langur was seen. Since the area became a Wildlife Sanctuary we reckon that we have seen and heard more of the Indian giant squirrel. One September an individual came several times to eat berries growing close to the end of the verandah,

A Bonnet Macaque female
Photo : E. Hanumantha Rao

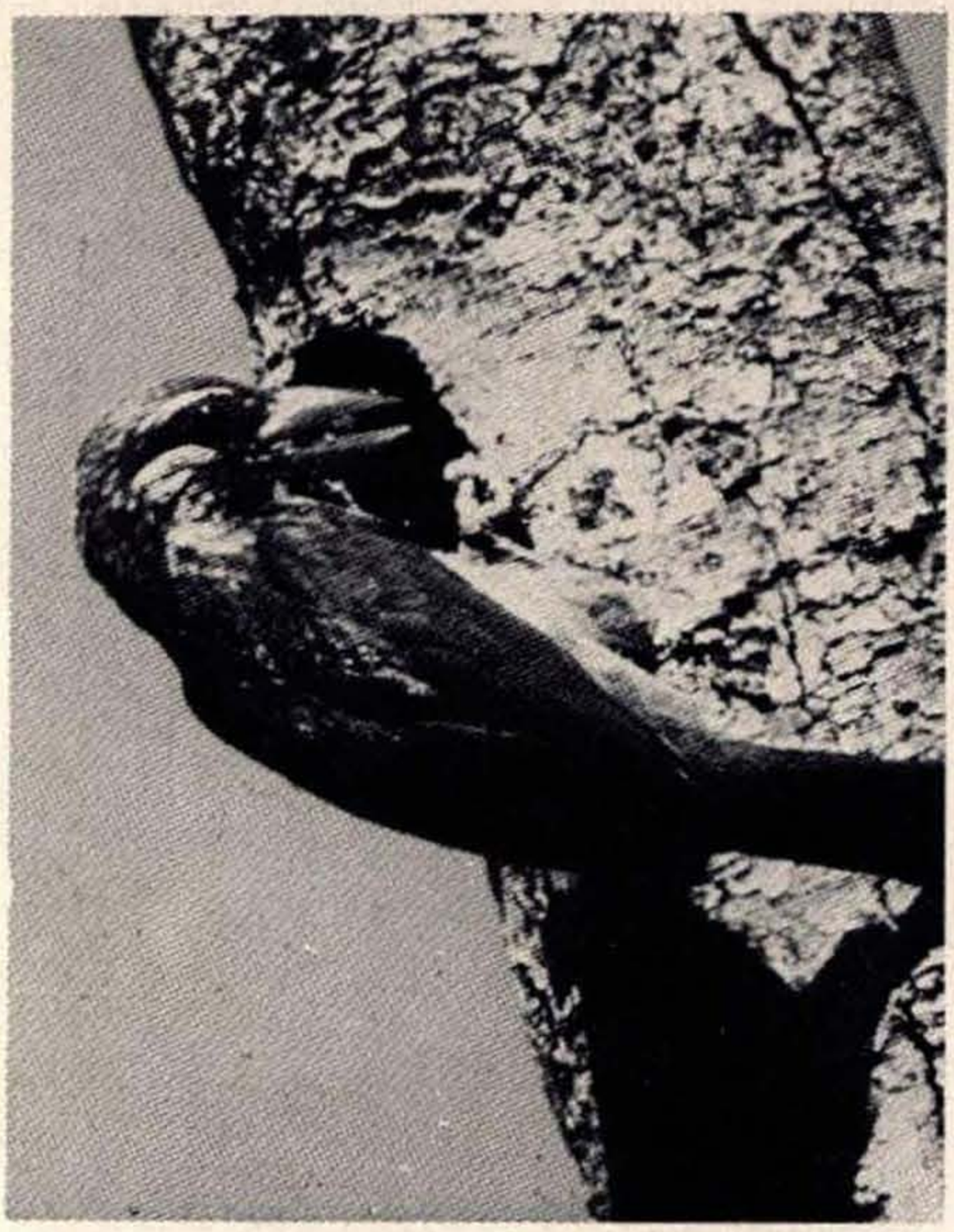
while we were eating breakfast. We had a magnificent view of the rich dark brown fur of the back and the creamy underside as we ate our meals.

Three-striped palm squirrels run about busily but are far less com-

Slender Loris *Photo :* E. Hanumantha Rao

mon than on the plains. Once a slender loris, which had met with an accident, was found by our senior caretaker and brought to the house in half a coconut shell. Sadly it quickly died from its injuries. We often hear the shriek of the porcupine at night and find quills lying around. One year there were large cat droppings with quills in them. There is a brownbacked whitebellied rat that comes to search for food scraps at night. Godfrey Webb-Peploe thought it is possibly a variant of the common house rat. It is quite enchanting to see it with black whiskers above the white front. Its noises at night resemble someone sawing the asbestos roof over our heads! We have not seen the Nilgiri tahr for at least ten years although they were common in the 1950s. We do not know the exact reason for their disappearance. This year (1983) a common palm civet cat was seen in Naraikadu.

Awakening just before dawn in the forest one hears the noise of the nearby river and the wind in the trees and the sounds of the insects and perhaps the occasional soft note of a flycatcher. Then loudly and clearly at about 5.45 a.m. in May and at about 5.50 a.m. in September the Malabar Whistling Thrush starts to sing. Some time using a light meter and an electronic watch I would like to see how exactly the timing of the first song does correlate with the light values. Thus far the bird has been far better time keeper than any watch I ever took on holiday. Soon other birds take up the morning song. Yellowbrowed bulbuls are particularly common. So are Rubythroated bulbuls and Spotted and Scimitar babblers. Sometimes a pair of the last mentioned have hunted their morning food calling to each other as they worked their way past the house. The Small Green Barbet sings his more monotonous song and the harsh sounds of the Southern



Small Green Barbet
Photo : E. Hanumantha Rao

Treepie and the Malabar Golden-backed Three-toed Woodpecker tell us that they are around. During the day a Crested Serpent Eagle or the Black Eagle can be seen soaring above the valley. An Emerald Dove may crash its way along the verandah and the Nilgiri Wood Pigeon clumsily dart from a nearby tree. The Whitebellied Blue Flycatcher is the commonest flycatcher that we see. Less often the Greyheaded and the Madras Blacknaped Blue Flycatchers are seen. The Grey and Forest Wagtails visit often. The sound of the Great Indian Hornbill may call us from whatever we are doing and cause us to run to some vantage point in the hope of seeing it... a hope which is reasonably often rewarded. Equally if someone catches sight of the Malabar Trogan or an Orange Minivet we are all keen to see them. One of our university students visiting the forest during her training commented how fortunate she felt she was to see the things she was studying while on holidays. In the evening Black bulbuls come in flocks and the Fairy Bluebirds sing in the tops of the trees. During two recent Septembers flocks of the Grackle came in the evening.

The flora of the area is immensely varied. I have been interested to discover that over twelve years there are many species I have only seen once even though I have looked in the same place in the same month of the year in subsequent years. Others have become familiar always to be found in the same place at the same time of the year. Godfrey Webb-Peploe lists 67 species of orchids in his records. I have found 21 species. We have been covering a much smaller area on trips than were covered in the 1940s as some paths have disappeared in the wooded areas at and above 4,000 feet. One orchid we were allowed to name as it was thought to be a new species but after World War II Kew Gardens Herbarium, London, identified it as *Odontochilus rotundifolius.* I have seen one bloom. It was a poor weather day and two of us had attempted to take a group of our schoolgirls to the nearest peak but were turned back by the rain. We found the specimen on the way down and it certainly compensated me for the failure to complete the trip! Three species identified in the

Arundina graminifolia
Photo : E. P. Gee

last 10 years are among the "Threatened Plants of India" list of the Botanical Survey of India in their State of the Art Report published in 1980: (*Lilium neilgerrhense, Arundina graminifolia, Drosera peltata). Strobilanthes neilgherrensis* and *S. anceps* were found in full flower in 1946 along the edges of the sholas just above 4,000 feet by Godfrey Webb-Peploe and by myself in 1970 and 1978 so they seem to have an eight year cycle. So does a third *Strobilanthes* found in full flower by myself in 1970 and 78. The first two identifications were made by the Bombay Natural History Society in 1946 and I have hopes of getting proper identification of the third in 1986.

I have been fascinated to meet some of the insects that were necessary study in my last year at school, especially the wide range of stick and leaf insects. We have found the caterpillar of the Atlas Moth and once a dead *Actias selene*.

Red Helen *Photo :* E.P. Gee

Butterflies abound. Walking up from the plains one may be greeted by the eye of the Glad Eye Bushbrown sitting on the path in front of one. Browns rise and settle, never giving an opportunity for proper identification as one walks the forest paths. The Blue Mormon, Common Bird Wing, Tree Nymph, Red Helen and Rustic are common species easily learnt by holiday makers. Others of us pursue and attempt to identify the many other varieties before they have flown out of sight.

Although work a day life is medical practice, these holidays have been a biological education enthusing me to study and observe wildlife and share what I could with others with me on holiday and to learn from the biologists visiting the area.

JACQUELINE A. WOOLCOCK

Medical Officer, Dohnavur Fellowship

Some curious Lycaenid butterflies of the Bombay and Pune area

THE APEFLY (*Spalgis epeus*). This is one of several dull-looking species whose wings are grey-brown on the upperside, nearly black when quite fresh. The underside is distinctive, and beautiful if looked at closely, being of a delicate grey intricately scribbled with wavy dark lines.

Its great interest is that its caterpillar eats the plant-bugs known as Coccids, and does not eat vegetable matter directly like the majority of butterflies. You will find colonies of these Coccids under the leaves of Crotons and other plants. They are easy to see because their fluffy cast skins stick to their waxy excretions and make a woolly white mess on the leaves.

In figure 1 two Coccids have moved slightly away from the group, one to the far left and another just below the central vein of the Croton leaf. You can tell that these examples are not larvae of the Apefly because you can easily see their legs and their body segments; also, they are white, not covered with white skins like the butterfly caterpillar. One of the latter can be made out just above the central vein, and a clear picture of it in profile is shown in figure 2. It is entirely covered by the white skins of its prey. You can only see its own colour if you brush the skins off. It would be a better observation to watch a larva among the Coccids, when you might see it levering empty skins onto its back with the aid of the bristles at its rear

Larva covered with remains of its meals, on croton leaf *Photo :* E. F. Bishop

Apefly larva among its Coccid prey
Photo : E.F. Bishop

end and round the body margin. I have not spent the time to see this action, nor a female of this species laying her eggs. When the female of any species is searching for the right place for her eggs she usually adopts a fluttering flight, and may walk about on the plant or other surface, sensing with her antennae and perhaps tapping with her front legs to make the leaf-scent arise. It would be very interesting to find out if the Apefly lays actually among the Coccids, or, as is quite possible, elsewhere.

Pupa on Croton leaf *Photo :* E. F. Bishop

The pupa is fixed to a leaf by the tail-end only. As will be seen from figure 3 it is extraordinarily like a monkey's head. A bird looking for food turns its head from side to side, peering closely. At these moments, therefore, it will have no idea of scale, and might be surprised into mistaking the pupa for an actual monkey's head and retire, which would be of advantage to the pupa. (This theory has been seriously put forward by the late Dr H.E. Hinton of Bristol University.)

The adult Apefly is quite fast on the wing. The males may be seen sitting in the sunshine on favourite vantage points, usually about twelve feet up, on trees and bushes. The wings are frequently half opened to display the white spot on the upperside. I have most often found the Apefly in places like Lonavla; occasionally in Bombay City, and at Vihar in the Salsette hills. It is on the wing in most months of the year.

REV. A. E. BEAN, S.S.J.E.

S.S.J.E. Priory, Oxford, U.K.

(To be continued)

Articles and notes for *Hornbill*

If you have any interesting natural history notes or if you have been on a trek or visited sanctuaries and wilderness areas, why not write about your experiences for Hornbill?

African Diary

Continuing his African Diary from p. 17 of Hornbill 1984 (4), *Rishad Naoroji, presents Spotted Hyenas in this third installment* —EDS.

Spotted Hyenas have a widespread distribution all over Africa. They are much malinged species being social and effective predators as also very intelligent and adaptive as shown by Hans Kruuk in his classic study of the Hyena in Ngorongoro and Serengeti. In the Ngorongoro Crater the hyenas are the more active predators, the lions many a time scavenging kills from hyenas. These pictures were taken in a beautiful part of the Mara called Musiara. A clan of hyenas had their dens there with young pups of all sizes and ages. The ground for about 100 metres square was literally pockmarked with hyena dens. I used to go to this area frequently, which I named Hyena City.

1. A female with her three very small pups covered with greyish brown fur. Her teats can be clearly seen in this low angle photograph.

Above: Portrait of a young hyena just emerged from its den.

Below: A group of nine young hyenas outside a den.

Photos : Rishad Naoroji

Colour-banding the Great Indian Bustard

Like the law of diminishing returns, in most of the long-term nature studies, a stage comes when new results become difficult to get unless the methodology is changed or modernized. This difficulty becomes acute if the natural history study is based on a few individuals of a species, as in the case of rare ones. After studying the Great Indian Bustard for four years, we are now facing an identical problem. Our studies are based on 20 to 30 birds at the two research centres — Karera in Madhya Pradesh, and Nanaj in Maharashtra. During the last four years we have collected data on the bird's general behaviour, nesting preference, courtship display, food and feeding habits, and its present status (see *Hornbill* 1984(3), pp. 7-14). However, now we have reached a sort of *cul-de-sac*. We have seen territorial fights between adult males at least twenty times but we do not know whether every year the same male occupies the same territory or there is an interchange. We have observed copulation seven times, but we do not know whether the bustard is polygynous or promiscuous. The bustard male has an elaborate courtship display through which he attracts females. The sexual act is elicited by the female who comes near the displaying male and sits beside him. Are the three or four females seen by us in a male's territory mate exclusively with him (polygyny) or do they move from territory to territory and mate indiscriminately (promiscuity)? We have no answer.

For three consecutive years, we found a nest with a single egg almost at the exact spot but we are not sure whether the laying was by the same female or by different females each year. From our observations, the obvious conclusion is that the same bird must have nested at that particular spot all the three years. Many workers have shown nest-site fidelity in geese and ducks but most of these studies were on unmarked birds. James A. Cooper (Wildlife Monograph No. 61, 1978) proved from colour-banded Canada Geese that though nests were found at the same spot for a few years, they were not necessarily occupied by the same pair of geese.

More bustards are seen in December-January in the Ranibennur Blackbuck Sanctuary in Karnataka, when the birds are not present in Nanaj (Solapur, Maharashtra). Do the Nanaj birds migrate to Ranibennur? Can the bustards move long distances or do they have only local movements in search of food?

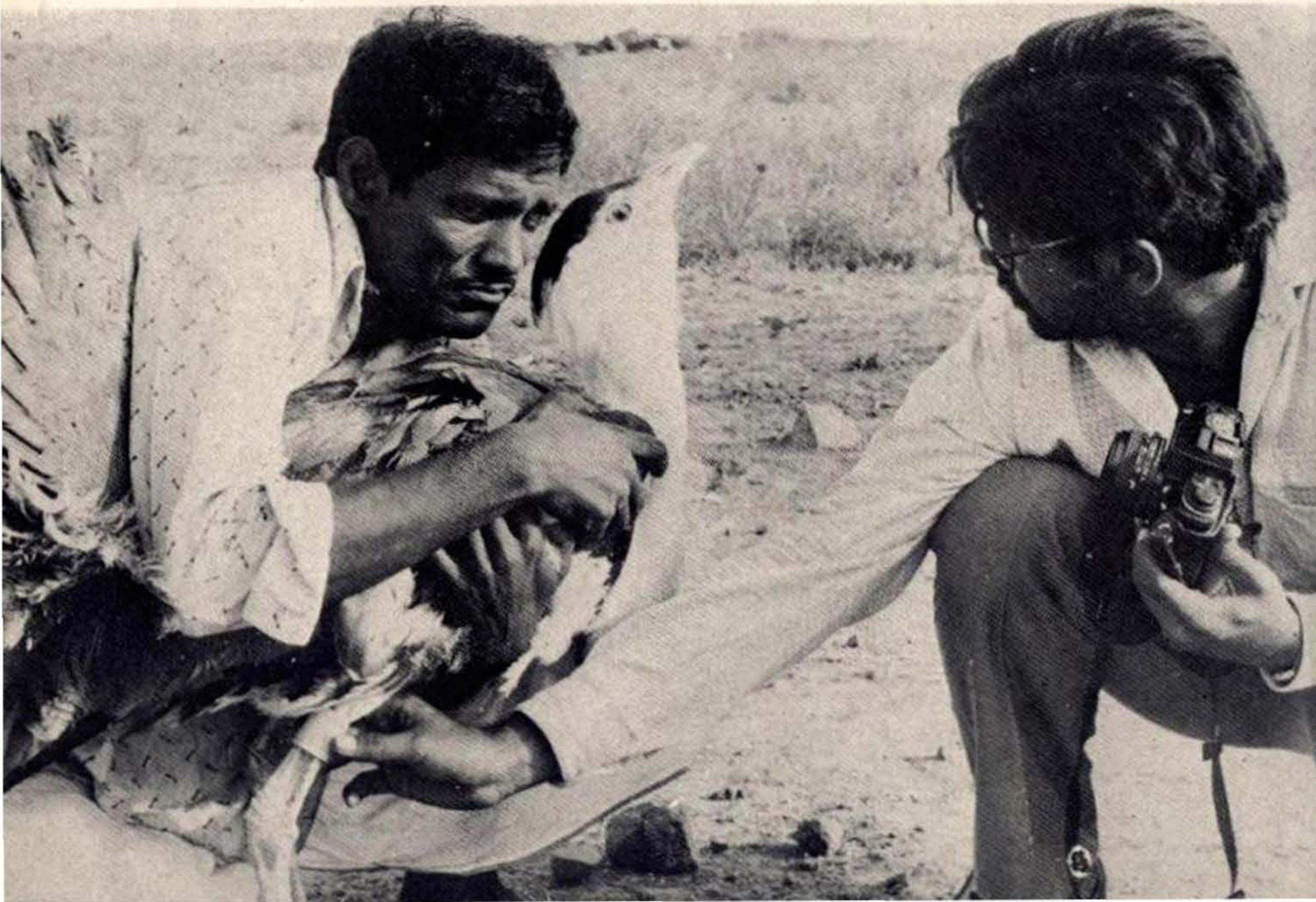
It is clear that if we continue the same method of studying the unmarked birds, we may perhaps find a few more details of the pre- or post-copulatory behaviour, or, see a few more territorial fights, but what

Above: The clap-trap used for catching bustards

Photo : Bharat Bhushan

Below: Checking the colour band

Photo : A. R. Rahmani



about answering the fundamental questions about the biology of the Great Indian Bustard: whether it is polygynous or promiscuous, territory sizes, nest-site fidelity, long-distance migration or local movements, age at breeding, incubation period, fledgling period, longevity, re-nesting frequency, social behaviour, etc. Can we find answers to these basic questions without individual recognition?

Colour-banding, tagging, marking or ringing these days has become such an essential tool to study wildlife that many scientists in their papers and reports even do not mention the methods of marking unless there is something very special in the process. Most of the long-term projects on any particular animal are started with marking the species concerned for individual recognition. Even for studying the Californian Condor, whose population is not above 20 birds, the US Fish & Wildlife Service gave permission to the scientists of the Audubon Society to capture two birds for biotelemetry. Why shouldn't we colour-band 10 to 15 bustards of our study area to observe them in more detail?

Fortunately, the Society for its scientific research rarely lacks cooperation from the various State Forest Departments. Mr J.J. Dutta, the then Special Chief Conservator of Forests of Madhya Pradesh readily agreed to Dr Sálim Ali's proposal to colour-band a few bustards. It was decided to catch two birds as a pilot project before more were attempted.

In early May 1984, two professional trappers of the Society, who proudly and rightly claim to catch any bird, were commissioned. As the bustard breeding season had already started at Karera, we decided not to catch the territorial males and the nesting females so as not to disturb them during the crucial months. That left us with a choice of two subadult males and three to four juvenile females.

For three nights, we tried to catch the bustards in their roosting places, but finding a bird in the vast scrubland was like searching for a needle in the proverbial haystack, and that too in the darkness of the night. Moreover, every night the bustards change their roosting spot; so first we have to see where they are likely to roost and then try our luck.

Not being successful in catching the birds at night, we decided to catch them during the day. A large clap-trap was devised. However, the difficulty was that we could not use it among the bushes and thorns — even a single small bush could entangle the net. Meanwhile, the birds were baited to a particular spot. Within a few days of baiting, the bustards started coming to the spot regularly. A hide for the trappers was kept near the baited spot to familiarize the birds. When the birds became 'hooked' to the bait, the clap-trap was set and left in situ for three days. The net was folded

Releasing the female bustard after colour banding
Photo : Bharat Bhushan

and laid in such a manner on the ground that only its outline was visible.

On 25th May, the targetted subadult males came to the net and started eating the bait. The rope was pulled by the trapper to close the net, but unfortunately the net was hindered by a small bush stem which we overlooked while clearing the area. Before the net could close, the males escaped and landed 400 m away. Next day they left the area and went to another spot, about five kilometres away and remained there for 12 days.

After this failure, we strengthened and modified the trap and removed all the bushes and grasses around the net. We were apprehensive whether the bustards would come to this recently modified spot but the temptation of food is too great even for the usually wily bustard. During all these days, more and more bustards started coming to eat the bait. A non-territorial male who had recently become adult, became 'hooked' to the bait. Every day he used to come and finish off the bait. It was too tempting to leave this bird untrapped. We were intently following his movements. On 29th May, early morning we saw it going towards the net. The trapper ran and hid in the hide, holding the rope to pull the net at the appropriate time. Within 25 minutes the bird was in our hand. After quickly colour-banding him with a yellow band supplied to us by the Vogelpark Walsrode through the courtesy of the International Council for Bird Preservation, we released him. We were thinking he would fly away but on releasing, he coolly walked away, calling agitatedly. He went to a new place

A Great Indian Bustard in its habitat *Photo :* A.R. Rahmani

and his movements and behaviour were continuously monitored throughout the day. Slowly the bustard became normal and resumed his routine activities. He went towards his regular resting areas near the river. In the evening the bustard was seen again at 18.05 hours, cocking his tail after seeing a female. We knew the bird was perfectly normal. We named him 'Ashoka' after the great ancient king.

We became over confident after successfully colour-banding Ashoka as a result of which one young female escaped. The female was looking up when the net was pulled. In a split-second she was out of the net before the net could close. A mild reprimand to the trapper; next day brought the desired results. Another young female bustard was trapped and a blue colour-band was put on her leg. We named it 'Naini', after a local legendary queen who was said to be very generous, kind, and obliging to her subjects. However, our Naini was slightly different. For two months we could not locate her, then one day, among three females, we saw a bird sporting our blue ring. We were happy that Naini had not betrayed us by leaving the area as feared. Now both the banded birds can be recognized among 20 to 25 bustards to be seen in the Karera Bustard Sanctuary and we are getting very interesting results. Plans are under way to colour-band at least four more birds in 1985. One research scholar has been assigned to work exclusively on the behavioural repertoire of the Great Indian Bustard. Would the bustards be able to hide their biology from us any longer?

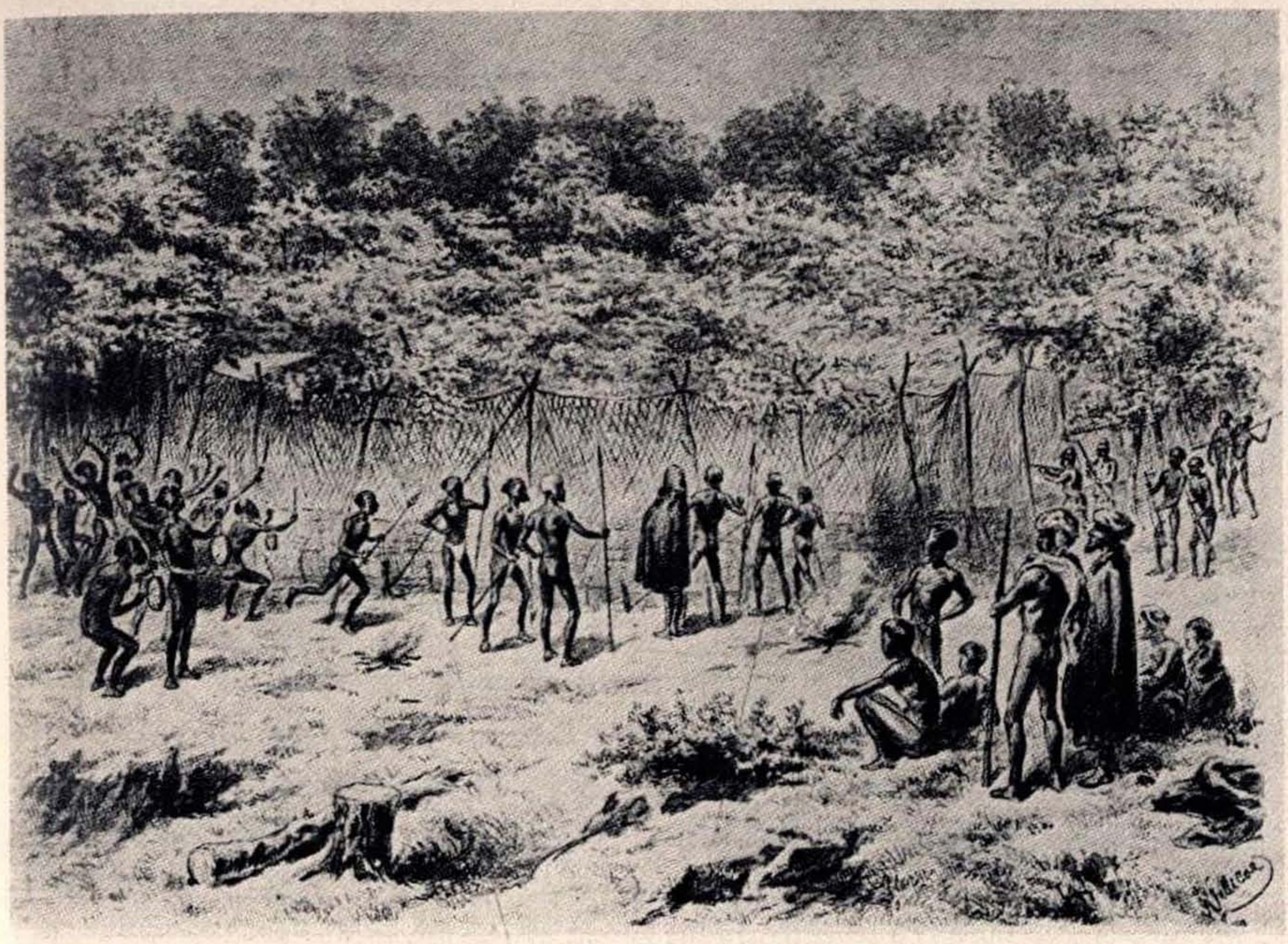
ASAD RAFI RAHMANI

'Tiger netting in Mysore'

The article reproduced below appeared in the Society's Journal *volume 14, pp.388 to 391, 1902. Tiger netting is now a dead art, and the tiger itself an endangered species.* —EDS.

Referring to the shooting trip of some visitors to the Mysore jungles, a local paper recently had the following remark:—"It is reported that the tigers have been netted for their sporting delectation, but we must refuse to believe that the distinguished shikaris will tolerate sport of this kind," and it is probable that, in spite of what Sanderson and others have written, there is still a good deal of misconception about tiger netting, as pursued in Mysore, which is a genuine native sport, well worth witnessing by any one interested in wild beasts and their ways. As Sanderson says: "This is the only method by which they can be brought to bay where the cover is too continuous to be easily driven. It may seem unsportsmanlike to shoot a tiger through a net, but as far as danger goes there is perhaps, as much as in shooting him from a tree." Obviously the fact that the tiger cannot escape takes away the sportsman's pride in his shot, and the man with the rifle feels that he is playing only a subordinate part in the game, but even so the shooting is not easy, and killing a netted tiger is not a case of potting a beast pegged out on the ground like the lion in the familiar picture in Esop's Fables, though this might be supposed from the comments sometimes heard.

The method of enclosing the beast is as follows:—When a tiger is to be caught, the villagers are warned to be ready with their nets, and a buffalo is tied up in a likely jungle. On a kill occurring, the nets are sent ahead a quarter of a mile or so from where the tiger is supposed to be lying up, and erected in a crescent shape across the line which the beast must take when driven. The nets, of which every village in these parts keeps its own stock, are made of stout rope with a large mesh, and run up to 40 feet in length with a depth of 12 feet, and the line will often extend to a quarter of mile or more, reaching right into the open country on either flank. Care is taken to place the nets immediately behind a considerable patch of the very densest thickets, and the consequence is that when the tiger is driven forward by the beat and reaches the net, it almost invariably lies up in the thicket instead of trying to break out with a charge. Men who have been posted on trees signal the moment when the animal has reached the right spot, and immediately the two wings close in from behind and complete the circle of nets, using spare lengths if necessary. Next comes the work of making the enclosure secure. Spearmen are placed at close intervals all round to repel the tiger



Tiger netting in Mysore
From THIRTEEN YEARS AMONG WILD BEASTS IN INDIA,
by G. P. Sanderson. 1896

should he meditate a charge, and the nets, strongly fastened to the ground with pegs and heavy logs of wood, are connected by the main ropes with the trees and, inclining slightly inwards, are supported at a height of 9 or 100 feet by forked sticks stiffened with an interlacing of branches and thorns. A barrier is thus formed, too strong and too elastic to be torn up or broken through by the charge of any tiger. If the animal is to be caught alive, nothing more has to be done but to introduce a trapdoor cage baited with a goat, and wait till hunger compels the tiger to enter; but if it is to be shot, the circumference of the nets is contracted till rather less than an acre of jungle is enclosed. Then begin the preparations for the shoot. As I have said, the jungle inside the nets is necessarily of the thickest, and diagonal tracks, 10 to 20 feet in breadth have to be cut in order to render the tiger visible when moved. For this work a party of some twenty picked spearmen enter the enclosure and form a ring round, a like number of men armed with long handled choppers, a few others with horns and tom-toms accompanying. The task, at close quarters with the beast looks highly dangerous, and the sportsman, who is not content to wait outside the net, may enjoy a certain amount of sensation by joining the cutting party. It might be imagined that the tiger or tigers (in one case there were

four), maddened by rage, hunger and thirst, would seize the chance for a charge, and every now and then, in some particularly thick patch there is a thrill of excitement, when the spearmen stand alert with lowered points and the tom-toming is redoubled, but a charge has never been known, for, no unwounded tiger, and, in my opinion, no wounded one either, would face such a compact and noisy body while there was any way of retreat. When the cutting is finished the men with rifles take their stand outside the nets on *machans,* which command the clearings, and the beaters try to drive the tiger from one block of jungle to another by shouting and rockets. Needless to say, the beast when he moves at all does so at a gallop, and, judging from the amount of missing, which generally occurs, it takes a quick shot to stop the animal when crossing a narrow opening in a large enclosure. The beast may have to make its dash several times before it is killed, and the chief interest to the sportsman is the magnificent spectacle of the angry tiger at large, which ordinary methods of shooting give few and short opportunities for seeing. If the patches of jungle left after cutting are very thick, it is sometimes impossible to make the tiger move and on one occasion we had to give it up at night without getting a shot, and went away with the intention of cutting more of the bushes next day. During the night a tiger always moves round the enclosure and makes many a desperate charge at the net, which is repelled by the spearmen who are on guard by their watch fires at close intervals. On the night after this unsuccessful attempt at moving him, the tiger, an exceptionally large one, evidently gauged the situation and knew that a supreme effort alone would save him. Accordingly, about 5 a.m., when the shikaris, tired with the work of the previous day had dropped off asleep and the fires had burnt low, the tiger crept up to the net and jumped clean over it, pitching right on the top of two of the watchers. When we arrived early in the morning, the truth of the story was proved by the hairs on the top of the forked stick where the beast's stomach grazed the net, by the marks where he pitched, and by the two villagers, both of whom were considerably mauled. The net at the spot was nine feet high and sloping inwards, while the take-off was slightly up-hill and out of thick lantana bushes, so that the leap was a fine one, but the fact that it should have been attempted at all, is still more remarkable, for all the natives bear out Sanderson in his statement that tigers never attempt to jump over the nets, and this is the only instance of such an escape known of in Mysore.

On the last occasion that I was out, the hunt was got up to catch a man-eater which had inspired such terror in the neighbouring villages, that quarrying there for the new Palace Buildings in Mysore was stopped, the toddy drawers petitioned that they were afraid to work,

carts would not pass through, and the annual festival at the local temple was abandoned. As the doings of veritable man-eaters are always a subject of interest I will detail the two cases where men were killed, about which I obtained the official reports. Other subsequent cases were mentioned, but not verified by me.

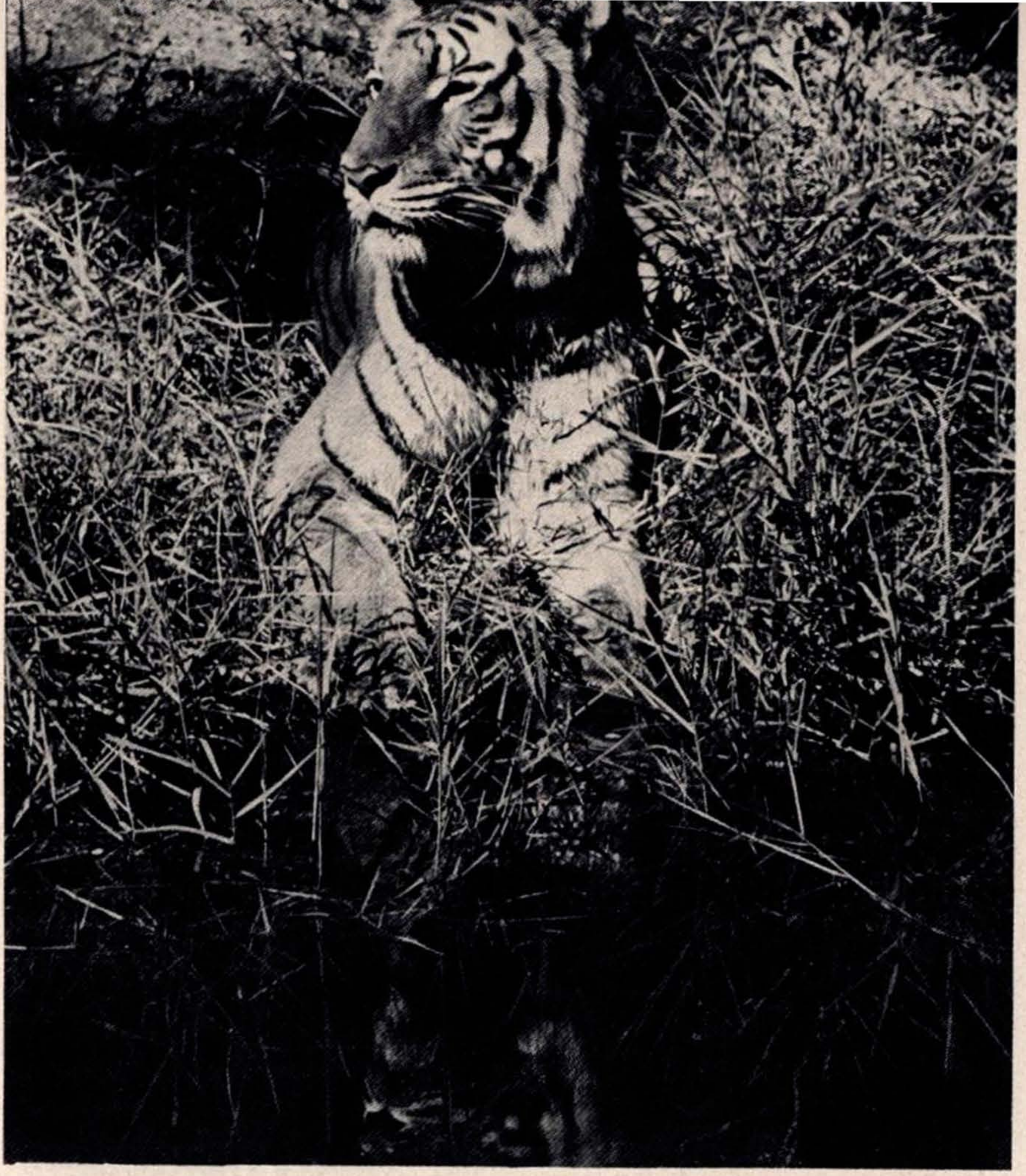
(1) On 16th November last two villagers, Ranga and Subba Setty, went into the jungle in the morning to collect roots. Ranga stood preparing snuff, and Subba Setty was cutting creepers close by, when Ranga saw the tiger coming towards him and fled. The tiger pounced upon Ranga and dragged him into the bushes, where the Police, to whom the matter was reported, found a few bones and the clothes of the deceased two days later.

(2) On 22nd November last, one Kare Gowda took his bullocks to water at a pond in the jungle. His father-in-law soon after saw the bullocks dashing back to the village in alarm and went to look for Kare Gowda, but not finding him at the pond, returned to the village and took out a party to search. Bits of his clothes, blood, the signs of a struggle and the foot-prints of a tiger were found, and three days later the Police came on a few bones further on in the jungle. Tales were told me of the tiger having attacked parties bearing corpses to the burning ground and carrying off the corpse, and the acquisition of such a curious taste, may perhaps be explained by the following passage in a letter from the Amildar:

"It is a custom among the villagers here not to burn or bury the dead bodies of pregnant females, but to expose them in the neighbouring jungles to be eaten by vultures and wild beasts. The body is tied to a tree in a sitting posture and a pot of water is placed close by. Not long ago some cow-herd boys came across the dead body of a woman tied to a tree as described and noticed the foot-prints of a tiger round it, but the body was untouched. The boys cut the rope binding the body, which fell to the ground, and the next day the corpse was found eaten away by the tiger." This I give for what it is worth, but the custom described deserves mentioning.

To return to our nets. When we got out to the enclosure we were told that there were two or more tigers inside and, to cut the story short, two were killed that day, and two, on clearing more jungle, the next. There was one male tiger, 8 feet to 8 feet 5 inches; in fact, as it seemed, a party of brother and sisters. Whether any of these was the veritable man-eater it is impossible to say, but they were certainly caught in the jungle close to which the men were killed, and it is not very likely that there was a fifth.

One of the tigers, I may mention, was wounded and had to be walked up inside the enclosure. On this occasion it was too maimed to charge,

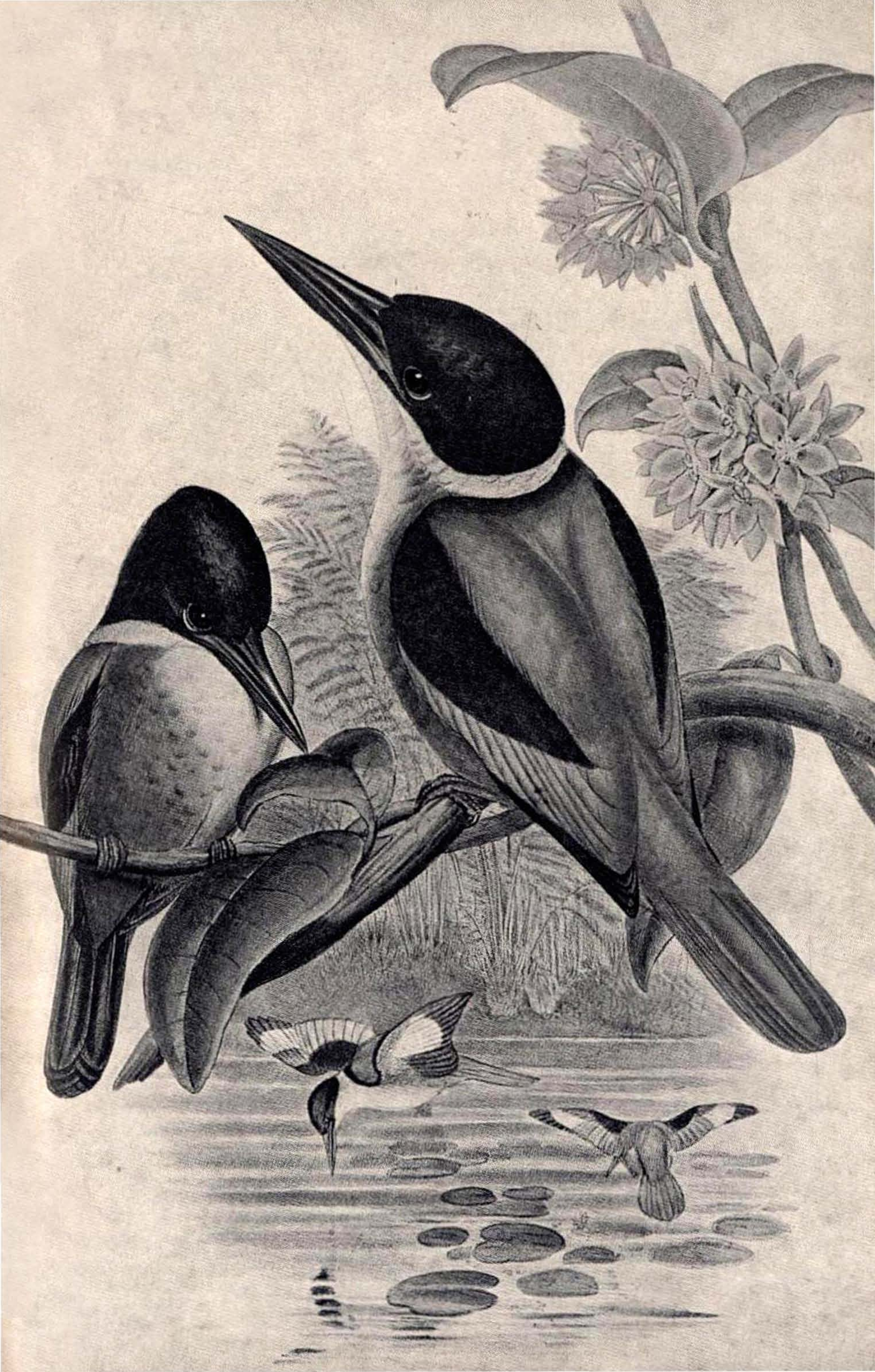


Tiger *Photo :* E. Hanumantha Rao

but there is always the possibility of excitement over a wounded beast which cannot be otherwise finished off. Sanderson describes how the villagers sometimes kill the tiger for themselves with spears, which must be a fine sport to witness, but I fancy this is seldom done now-a-days, when the netting is chiefly carried on by the direction of H. H. the Maharajah on special occasions only, to catch tigers alive for his own magnificent collection at Mysore and to present to the London and other Zoological Gardens, or to provide shooting for his visitors. Any one who has been present, whether the young sportsman who wishes to become familiar with the sight of an angry tiger, or the old shikari who has slain the beast by the usual methods, will equally agree that Tiger netting in Mysore is an interesting experience, and well-worth witnessing.

S. M. FRASER, I.C.S.

Mysore, 18th February, 1902.



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