

# HORNBILL



BOMBAY NATURAL HISTORY SOCIETY





M. B. Raizada

SILKY-LEAVED PASSION-FLOWER  
*Passiflora holosericea* Linn.

From some beautiful Indian Climbers and Shrubs (in press)



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.

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Members receive during a year three issues of the *Journal of the Bombay Natural History Society* now in its 75th volume, and four issues of *Hornbill*, the Society's popular publication.

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J. C. Daniel, P. V. Bole and A. N. D. Nanavati.

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December will extend to the 31st December of the year following the election.

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On Cover: *Indian Bull Frog*  
Photo: S. P. Shahi



# EDITORIAL

## A lost cause?

The events that have taken place in the past few months show that the nation is setting a rather dangerous trend in solving nature conservation problems. More and more industrial, hydroelectric and other 'development' projects are being located at ecologically sensitive spots. Prime forests of the Himalayan foothills and the Western Ghats are being hacked down, and while urban areas are choked out by pollution, the disturbing aspect is the narrow view of government authorities who push these projects through without considering the problems that the projects create. There is a stone wall of adamancy against which the protests of the conservationists are unable to make any dent.

The case of the Silent Valley is an instance of official callousness—a clear case of a non-essential project being pushed through to satisfy vested interests, political and otherwise. Backed by perhaps the best natural resources in the country, the State of Kerala has a number of hydroelectric schemes in operation that not only satisfy the local

demands but enable the government to sell power to neighbouring States. An additional 25 hydroelectric schemes have been proposed which includes the Silent Valley—perhaps the last virgin rain forest in the south. The appeals by conservationists to spare Silent Valley were fobbed off with a rather weak statutory guarantee which for all practical purposes, will not safeguard the ecosystem of the valley from the overall impact of the project. To a recent appeal by several members of Parliament, the Prime Minister is reported to have replied that if power generation is essential for man's survival he would not hesitate to destroy a piece of forest! According to another news report the workers of Kerala Electricity Board have threatened to agitate for the implementation of the project. In these bizzare turn of events one wonders whether there is any substance in the rumour that goes the rounds that a certain construction company has a vested interest in the Silent Valley project. We can only urge the Government to keep 24 out of the 25 projects and leave the Silent Valley alone.

*Should this happen to the Silent Valley?*

*Photo: R. Whitaker*





# FEEDBACK

## Two birds of India and Sri Lanka

I was interested to read the item about the Threetoed Kingfisher at p. 8 (*Hornbill*, April-June 1978)—in Sri Lanka we do not use the word 'Forest'.

Some years ago I observed several of these birds, including a courting pair. This is what I reported to the Ceylon Bird Club at the time:

**"Dela—27.iii.1976:** Pair of Threetoed Kingfishers at Rajanadola. First the female alone was seen for over half an hour from close quarters—not shy, silent. Nearby call indicates arrival of male who approached female in stages and offered her a small dead fish—obviously nuptial display. Female took fish, male flew off to return after about 5 minutes for mating. Female sat on dead bamboo branch, male hovered over her like a feeding humming bird, feet lightly touching her back, wings whirring, altogether about 30 seconds. Male returned after about 10 minutes with a beetle or grasshopper which female accepted only reluctantly. He then sat on a branch above for some time and then flew off. Throughout the observation which lasted nearly an hour the female was curiously inactive, except for a short period of bathing in a dark overhung pool of the river. Female looked puffed up and round, male sleek and long. Female does not have the pointed and slightly upturned tail, but a shorter squarish tail. Her breast is paler yellow, in the centre creamish, whereas the male's is deep golden

yellow throughout. The top of the head (cap) in both birds is rufous-pink. Beak and feet bright coral-red. A small section of the upper back, right across, is sapphire-blue, the lower back amethyst, and the rump pink. The wings are dark purple with some black on the upper edges. About half a mile away another pair of Threetoed Kingfishers have their territory and yet a third in Ratnapura town with a nest deep inside a well. Nests invariably seem to be in hidden and dark spots.

"Henry describes the Threetoed Kingfisher as a dry zone bird. The three pairs known to me are found in the wettest part of Sri Lanka."

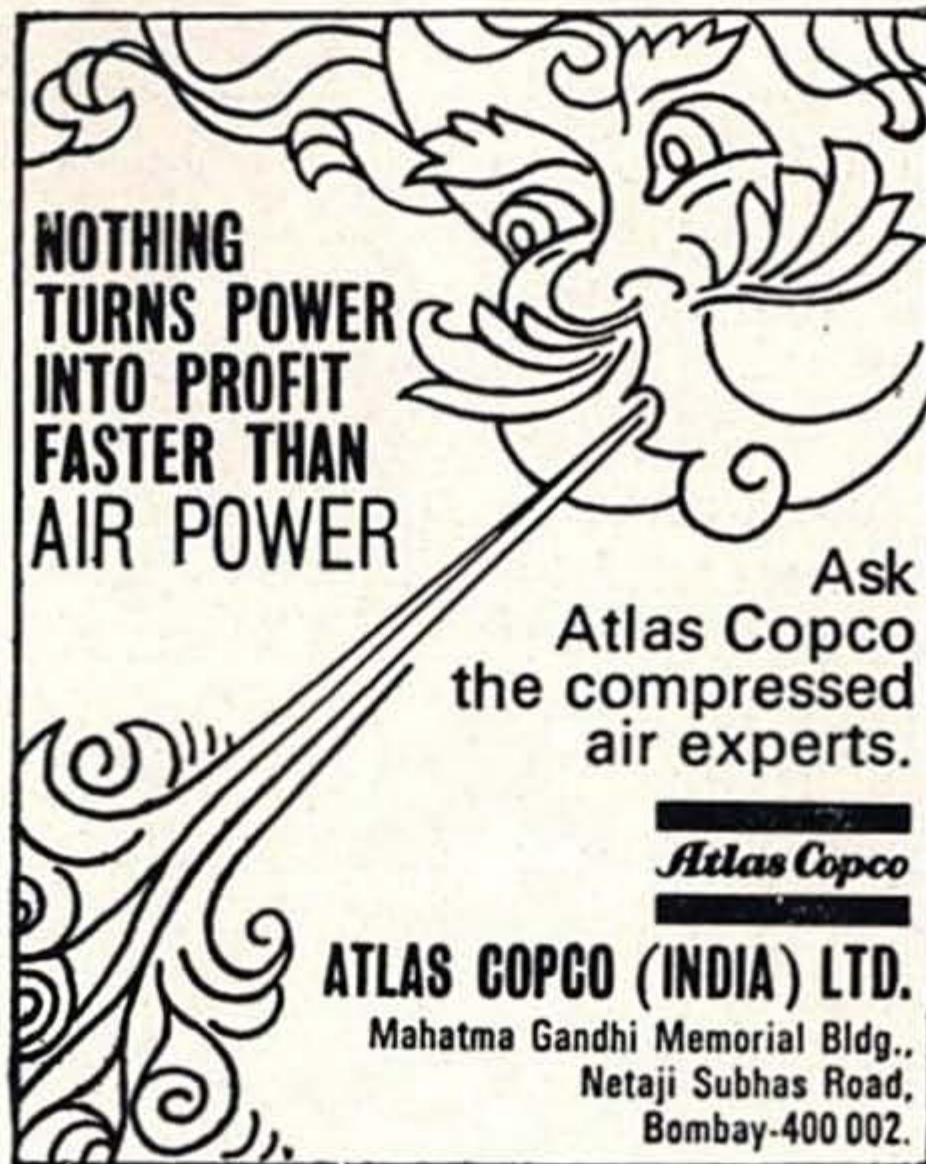
I am writing this because your article says 'nothing much is known about the courtship displays' of these birds.

I also refer to the note on Flamingoes in the Rann of Kutch, at p. 39 (*Hornbill*, Jan.-Mar. 1978). I was a little surprised to find no reference to the fact that large numbers of Lesser Flamingo, presumably from the Rann of Kutch, annually visit Sri Lanka. I have seen flocks of between 3000 and 5000 birds in Jaffna lagoon, Chundikulam, Kokkilai and in the south. Small flocks of any several hundred to a thousand birds are regularly seen in the salterns and lagoons around Hambantota and Yala National Park.

T. W. HOFFMANN

*Colombo,  
Sri Lanka*





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# PRESIDENT'S LETTER

## NAMDAPHA WILDLIFE SANCTUARY—AN APPEAL FOR ITS PRESERVATION

As authors of the HANDBOOK OF THE BIRDS OF INDIA AND PAKISTAN, published by the Oxford University Press, as well as numerous other works on the fauna and the ecology of the Subcontinent, it has been the good fortune of the authors to travel and conduct field study over the Country and its neighbours for many years.

One of our most pleasant surprises of recent times was a visit organized this past cold weather through the courtesy of the Ministry and the officials of the Union Government, as well as the welcome cooperation of local officials in Arunachal Pradesh to the Namdapha Wildlife Sanctuary in Tirap district in that State.

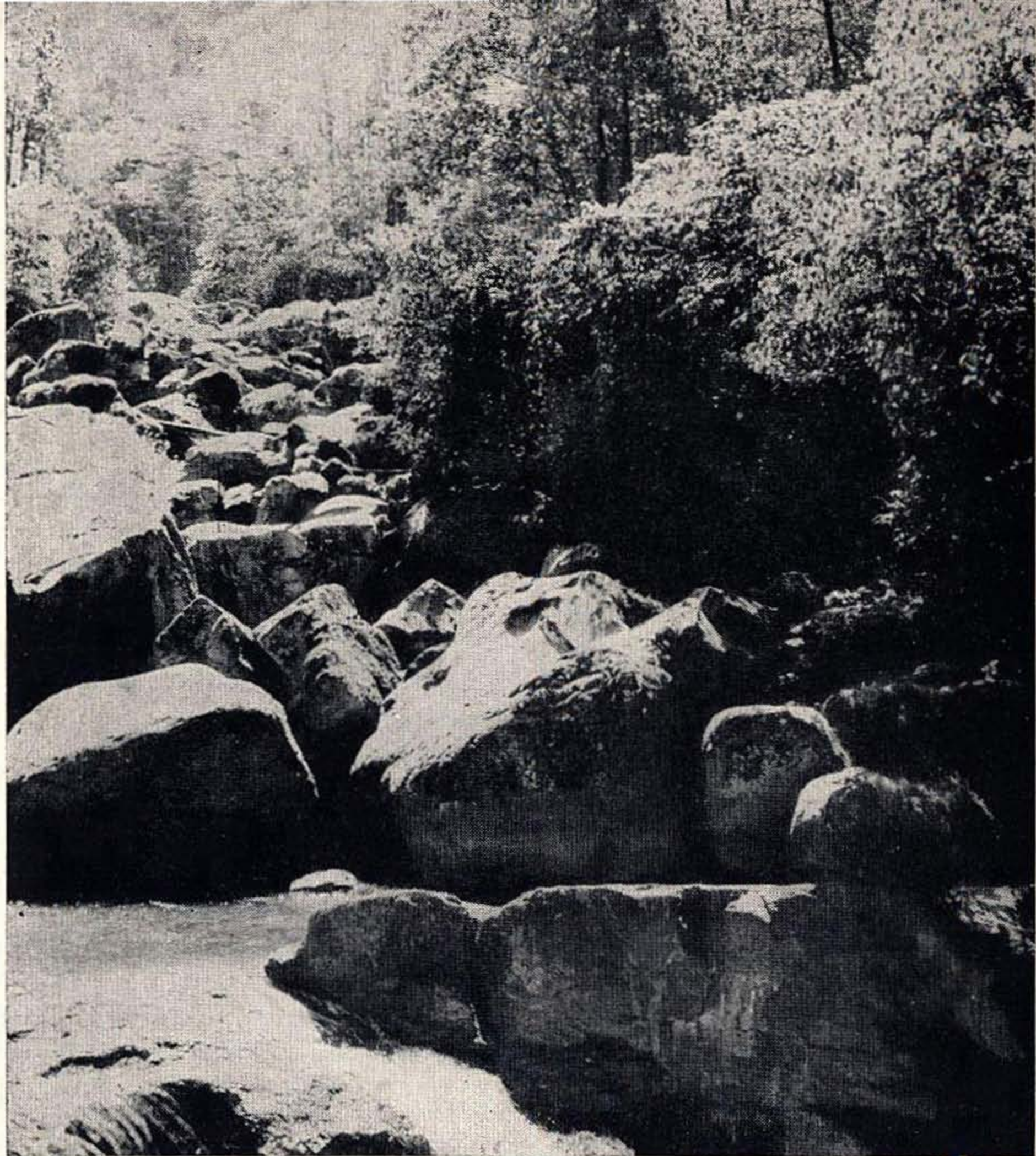
Here along the valley of the Noa Dihing river, which flows west into Assam, we found superb stands of untouched evergreen forest well meriting their designation as a gazetted reserve under the international biosphere programme. It was most heartening to find this forest, on steep slopes, relatively inaccessible and not earmarked for settlement. This is an area which should pre-eminently be left alone, for future study as an index of a vanishing environment. In the years to come when regrets may be expressed at the destruction of habitat undertaken by the present generation, a few sample examples of the complexities of the inter-relationships of flora and fauna known to science,

still preserved, may prove themselves to be priceless data banks. By preserving such samples we may be able to guarantee our very future in an otherwise ravaged land.

To our consternation there appears to be an approved Hydel Project scheduled for the very heart of this Namdapha Reserve. Of uncertain use, but bearing all the marks of 'Progress for the Future', and similar ringing phrases of the architects of development, we can only guess that the importation of thousands of labourers into this jungle, the creation of roads suitable for lorries and heavy equipment transportation, the years of enforced settlement and forest consumption involved in the creation of a dam and hydroelectric supply of uncertain value in a remote environment for permanent utility, is impractical.

How can biologists dare to assert that anything designed on the drawing boards of engineers for future development and the amelioration of the lives of millions yet unborn is 'impractical'? Simply because the facts of environmental planning as distinct from development speak for themselves. This segment of the biotope of eastern India remains uniquely unspoiled. The environmental impact implications of all development projects today must be factored in by sophisticated planners and politicians alike. To fail to do so places in jeopardy the credi-





*Namdapha Sanctuary—The proposed dam site*  
*Photo: D. S. Variava*

bility of governments. Biologists are in a unique position today to render assistance to their governments on the merits and demerits of long-term planning.

May we suggest that the authorities concerned with planning and

those concerned with the environment which affects us all, consult together on the facts relating to the preservation of the Namdapha Sanctuary in Arunachal Pradesh for the benefit of all Indian citizens?

S. DILLON RIPLEY  
*Smithsonian Institution*  
*Washington, D.C.*

SALIM ALI  
*Bombay Natural History Society*  
*Bombay*



# NOTES, NEWS AND COMMENTS

## Workshop on Wildlife Techniques

In recent years there has been a gratifying increase in wildlife studies in India. However, the quality of such studies, if one were to judge by the standard of some of the papers presented at symposia, apparently suffers owing to lack of knowledge of methodology.

Several people, both Indian and foreign, have made excellent studies on individual species of wildlife in south and southeast Asia. It is now felt that this expertise could well be utilized to train intending researchers, Forest officials and others involved in wildlife management. The Bombay Natural History Society in collaboration with the Kerala Forest Research Institute has drawn up a tentative plan to hold a Workshop on Wildlife Study Techniques at the Kerala Forest Research Institute campus in Peechi, Trichur, Kerala, in late 1980. The Workshop would be aimed at training selected Forest officials concerned with wildlife and university teachers starting or intending to start departments of Wildlife Ecology. It is also intended to bring out later a book on FIELD TECHNIQUES FOR ASIAN ECOSYSTEM. The basis for the book could be contributions from the researchers invited to lecture.

## A sanctuary for Cheer Pheasant

A course in the 'Techniques for Censusing Pheasants' sponsored jointly by the World Pheasant As-

sociation and the Wildlife Wing of the Himachal Pradesh Forest Department, was held during the second half of April this year in the Simla Water Catchment Area and the Chail Reserve. The course was managed by the Deputy Conservator of Forests, Wildlife Division, Himachal Forest Department under the technical direction of Dr. A. J. Gaston of the Canadian Wildlife Service.



*Cheer Pheasant*

The week-long survey revealed that 170-250 pairs of Koklas pheasants as well as good populations of goral, barking deer and several leopards occur in the Simla Water Catchment area. At the Chail Reserve a minimum of 18 pairs of Cheer pheasants were located. Reporting on the results of the survey Dr. Gaston has recommended that Chail Reserve should be declared as a sanctuary for the endangered Cheer pheasants. The Society has written to the concerned authorities to act upon this recommendation and declare the entire Chail area as a wildlife reserve.



### 'Crop protection'—A novel method

One of the factors that contributed to the rapid decline of our wildlife has been the ambiguous 'crop protection' guns in the periphery of forests, doing far more damage in the forest than providing protection outside it. A method devised by the Kerala Government to do away with this anomaly seems to be worth following elsewhere in the country.

Large tracts of forests on the slopes of the lower hills of the Western Ghats are cleared and brought under tapioca plantation. The local tribals are given the lease of cultivating tapioca with a condition that a minimum number of saplings of teak are planted along with tapioca and looked after. When teak saplings grow to a certain height, the area is taken over by the Forest Department. Now such large and easily available stock of food resource would hardly be passed over by an enterprising sounder of wild pig, and ungulates that occasionally nibble at tender shoots. To protect the crops from nocturnal marauders the tribals are supplied with nylon strings and large fire crackers instead of guns. Nylon strings act as trip-wires to strategically placed crackers that go off the moment an animal tries to enter the plantation. The resulting bangs not only scare away the animals but also keep the planter out of his bed and on his feet!

### Herbarium specimens repository

Many universities/colleges, botany departments get plant collections made by their staff and students during field tours. Specimens collected on such tours are not always preserved permanently owing to lack of herbarium and curatorial facilities in many educational institutions. Many a times valuable collections have been either lost or damaged.

The Botanical Survey of India would welcome such collections as gifts and assure that the collections are properly maintained in their Central and Regional herbaria. The gifts will be suitably acknowledged. The specimens may be sent to

The Deputy Director  
Central National Herbarium  
P.O. Botanic Garden  
Howrah 711 103

or any regional centre of the Botanical Survey of India.

### ERRATUM

The cover picture of the January-March 1979 issue of *Hornbill* was wrongly credited to Mr. T. N. A. Perumal. The photograph was taken by Mr. T. S. Lal to whom we owe an apology.—EDS.



## Status survey of Wild Buffalo

Wild Buffalo, like all other large mammals, require large tracts of forests besides plenty of marshland to wallow in. Both forests and marshlands are fast disappearing and the buffalo populations have found themselves precariously marooned in small herds or driven into the safety of man-made sanctuaries. Kaziranga in Assam is perhaps the best known place for these bovines. Herds in Bastar region of Madhya Pradesh, which had so far escaped persecution, seem to find their strongholds being eroded by cultivators or by ambitious development projects.

Recently a status survey of the Wild Buffalo was sponsored by Sálím Ali Nature Conservation Fund. A survey party led by Mr. H. K. Divekar, a member of the

Society's Executive Committee, and consisting of Dr. Robert Grubh, Mr. P. B. Shekar from the Bombay Natural History Society and Mr. K. Mohapatra of Orissa Forest Department, conducted a week long survey of the forests along the northern bank of the Indravati river in Maharashtra. The Bhamragarh and Tadgaon ranges of Chandrapur Forest Division in Maharashtra lie in the periphery of buffalo country across the Indravati in Orissa. The results of the survey will be reported in a future issue of *Hornbill*.

## A Hornbill to Hornbill House

In early February this year a Pied Hornbill came hopping along the gnarled and dusty branches of Bombay's trees, trailing a rather intrigued but vociferous flock of crows in his wake. Well groomed in black-

*..Buffalo habitat in peninsular India*

*Photo: H. K. Divekar*







*The hornbill visitor to Hornbill House*

*Photo: S. A. Hussain*

and-white plumage and an imposing bill shining in dappled sunlight, he settled himself warily on a broken branch of a jak that almost juts into the Society's Bird Room and peered, rather forlornly, at his look-alikes—a pair of stuffed Pied Hornbills.

Hornbills, especially the large ones like the Pied, normally keep to the safety of the deep woods, and seldom venture into the social life of a big city like Bombay where the smaller and more enterprising grey are sometimes seen. The presence of the Pied Hornbill was first reported by Mr. Mervyn Sequeira, a member of the Society, who spotted it in July last year in the neighbourhood of his house in Central Bombay. It remained there till about September and then disappeared. In late December a member from Andheri, Bombay's northern suburb, reported having seen a 'large

black bird with an enormous bill floating around in his garden'. Nothing much was heard till he appeared at Hornbill House. He stayed with us for about a fortnight and finally took off to perhaps greener pastures. He was apparently being fed by residents in the neighbourhood, but it was evident that he was quite capable of looking after himself as evinced by the fact that he once landed on the window of the Curator's cabin with a large *Calotes* lizard held firmly in his beak.

The bird was obviously an escapee, perhaps from the City's zoo, but the fact that he managed to find a living in this city of Bombay is, by all accounts, creditable indeed!

#### **Ph.D. Degree awarded in Ornithology**

'Synecological study of nectar feeding birds and bird-flowers in the Nilgiris' was the title of a disserta-



tion submitted to the Bombay University for Doctoral Degree in Field Ornithology by Miss Priyadarshini Davidar, under the guidance of Dr. Sálím Ali and funded by the Society's Sálím Ali-Loke Wan Tho Ornithological Research Fund. Certain species of plants in the tropical and subtropical regions of the world are adapted exclusively for pollination by birds. Study of bird-flower systems has shed light on the complex pollination process, and more recently has provided emperical data on the energy budget of nectar feeding birds. Miss Davidar carried out her field studies in the Nilgiri hills of south India. We hope to publish a general account of her studies in a later issue.

### **Kalakkad Sanctuary**

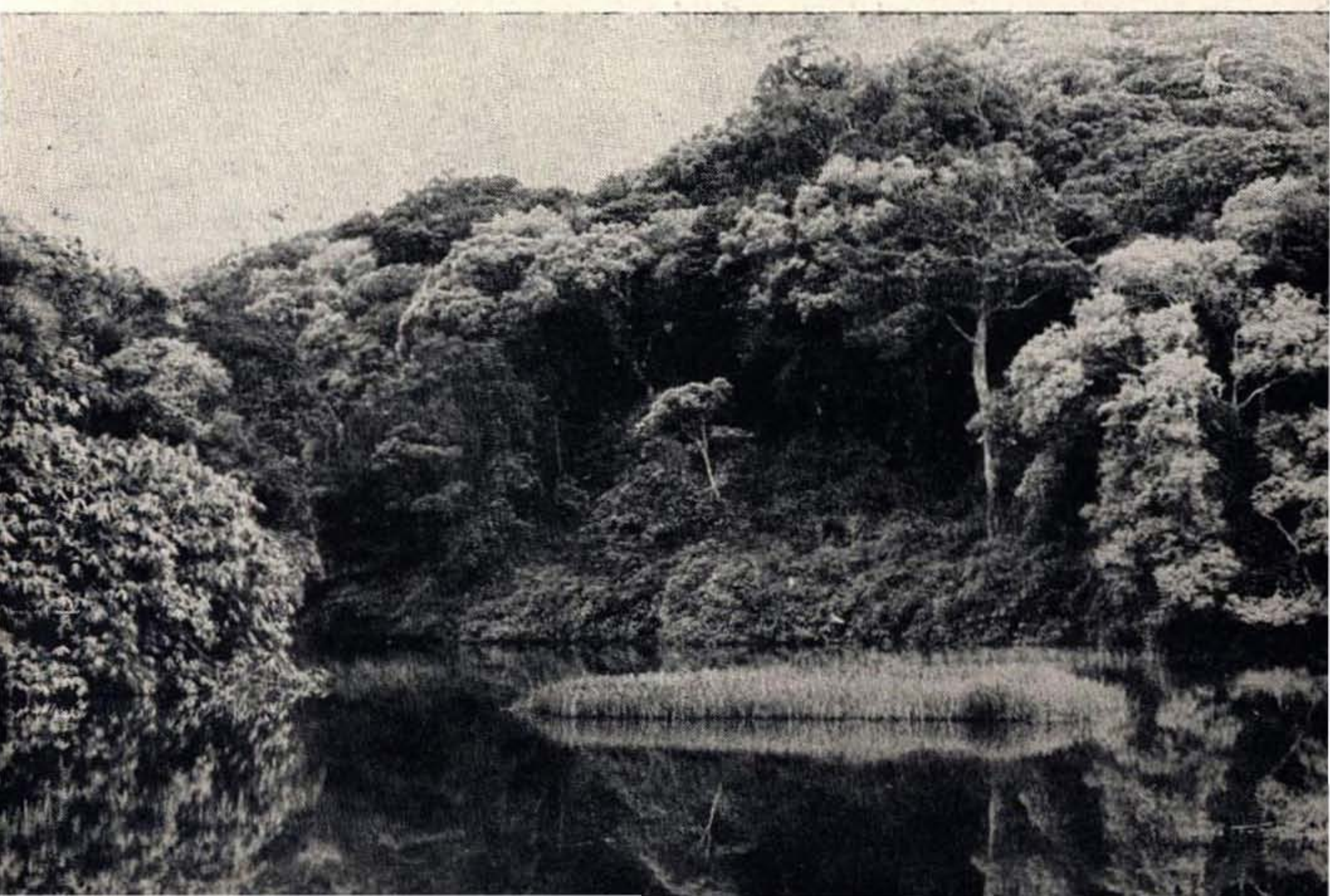
In an article entitled 'Rare and threatened flowering plants of South

*Netterikal Lake at Kalakkad*

India' now under publication in the *Journal of the Bombay Natural History Society*, Vol. 75, No. 3, A. N. Henry, K. Vivekananthan and N. C. Nair of the Botanical Survey of India, list 224 species of plants presumably in danger of extinction in south India. This list includes twenty species which are endemic and exclusive to the Kalakkad-Mundanthorai-Agastyarmalai complex of forests in Tirunelveli district.

The attention of responsible government authorities and conservationists has been drawn to this fact in view of the hydroelectric dam project within the Kalakkad Sanctuary which has been in consideration for some time. It would be most unfortunate if the Silent Valley story is repeated in the pristine wilderness of the Kalakkad Sanctuary.

*Photo: R. Whitaker*





## Chipko Andolan

Mr. Sunderlal Bahuguna, the well-known *Sarvodaya* (Gandhian) worker and organiser of the *Chipko Andolan* ('hug the trees' to prevent their cutting) movement delivered a talk at Hornbill House on 7 June 1979.

The movement started in March 1973 when the villagers were alarmed by the floods and landslides since 1970, caused by the indiscriminate destruction of the forests in the Himalayan foothills. A batch of forest contractors had arrived with their labour in the tiny hamlet of Gopeshwar in Chameli-Garhwal to cut ash trees for a sports goods manufacturing unit. The contractors were politely asked by the villagers to refrain from cutting the trees. As friendly persuasion failed, the villagers embraced the trees earmarked for cutting, as a non-violent method of resistance, prepared to face the axeman's blows while felling the trees. Thus started, the movement rapidly gained momentum, and spread to other parts of the Himalayan foothills.

In the accompanying picture Mr. Bahuguna demonstrates to a group of North Bombay residents, who were agitated over the cutting of roadside avenue trees by the Municipal Corporation, the *Chipko* 'hug' to save trees from the axe.

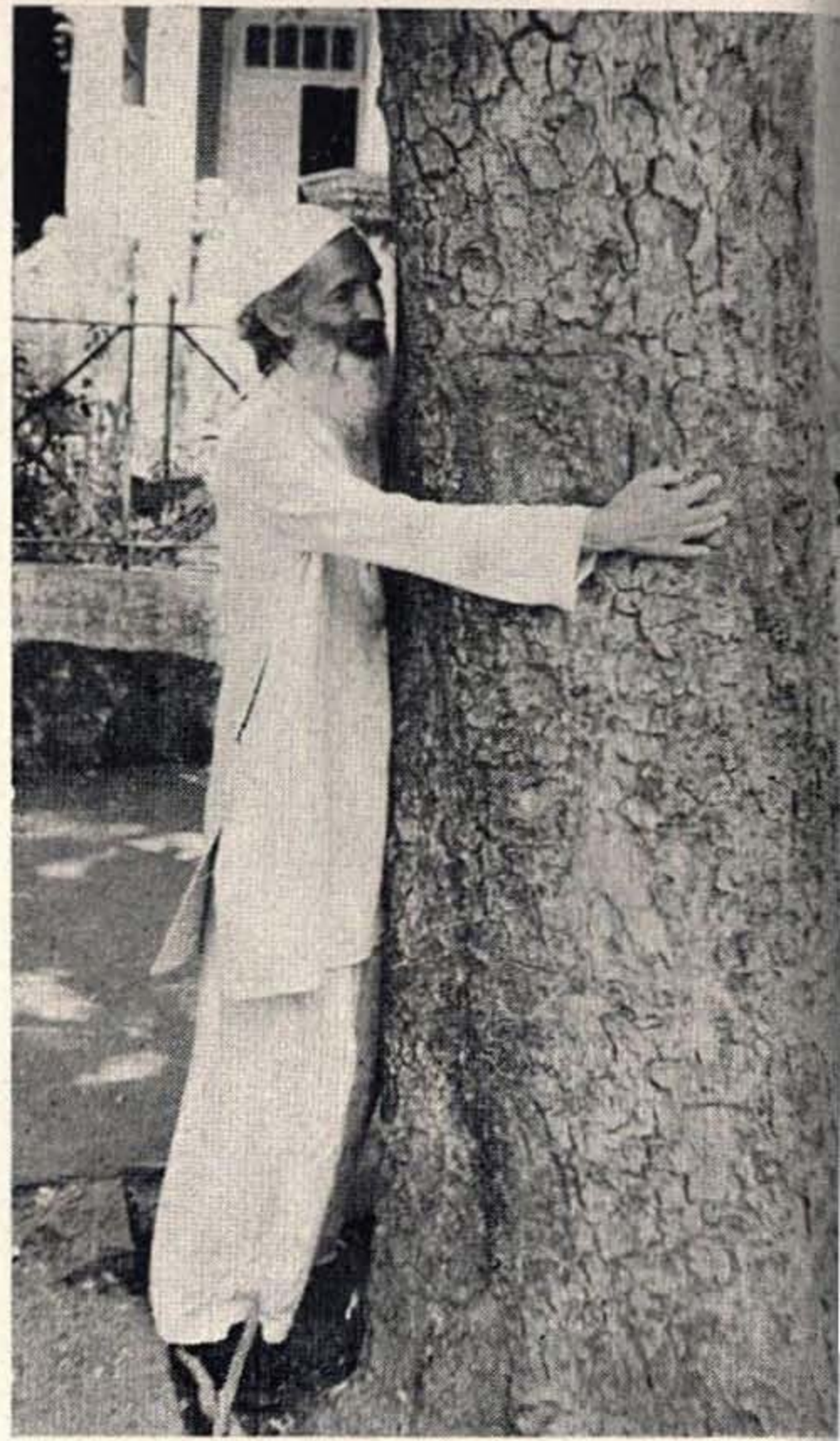


Photo: A. S. Kothari

BIRDS OF NEPAL, by Robert L. Fleming, Sr, Robert L. Fleming, Jr, and Lain Singh Bangdel. The second edition of this valuable book is now on sale. Priced at Rs. 125/-, it is available to members at the Society at concessional rate. Postage and packing extra.



## Selfish herds of the Spotted Deer

Chital or Spotted Deer, the *kanchanamriga* of RAMAYANA, is perhaps the most beautiful of all deer; beautiful enough to have tempted Sita to order Rama away in its pursuit. Its striking beauty also implies that it is not an animal which relies on camouflage to escape predators. The large herds of chital on the open grassy meadows are a sight to draw the attention of any predator. And attention of the predators they do draw, for chital are the major prey species of tiger, panther and wild dog all over India.

It is fascinating to watch the reaction of a herd of chital to any signs of danger. The first reaction is an alert posture with the neck outstretched, ears pricked and muzzle pointing towards the suspected

source of danger. At the next level of intensity of alarm, they lift their tails revealing a conspicuous white patch on the rump. This raising of tail immediately alerts other chital who in turn respond by alert posture and tail raising. If chital continue to suspect danger, but are not sure of it, they may advance to investigate it, giving further alarm signals by stamping their forefeet or by a *kuk* call.

If, however, chital become aware of predators such as a pack of wild dog definitely out on a hunt, their tail raising does not lead on to alarm calls or stamping. Instead, they respond by the scattered herd forming a tight bunch. The tight bunch then slowly begins to move away from the wild dogs.



*Chital stag in rut guarding the doe*

*Photo: H. C. Sharatchandra*





*A chital herd in line*

*Photo: N. Sundarraj*

At first sight this seems most surprising. The deer do not bolt on sighting predators trying to put distance between themselves and the predator. Rather, they run towards other chital. When the bunch begins to form, it is evident that every deer is trying to push its way to the centre of the herd. This is a purely selfish drive and the biggest males invariably manage to push themselves to the very centre, generally leaving the females and males in poorer physical condition on the periphery. The deer are evidently interested not so much in putting some physical distance between themselves and the predators, as in putting as many deer as possible between themselves and the periphery. The deer are in fact seeking shelter amongst other deer.

This makes a great deal of sense, for when the hunt is finally on, it is the peripheral or stray animals which are most likely to fall prey, with the central animals running much smaller risks. We thus have a situation where by herding the chital may not reduce total losses due to predation at all. However, any animal which strays or which remains peripheral is penalised. Thus it is in the interest of every individual to remain with the herd, and to get to the centre of the herd by quickly rushing to the bunch that is being formed in response to the predators. As mentioned above, there is no chivalry whatever in a herd of chital, the bigger males forcing their way to the centre. Such a herd is therefore a purely *selfish* herd.



*Sparring Chital Stags*



*Photos : N. Sundarraaj*



*Suckling Chital Fawn*



This is a point worth stressing. The survival of chital as a *group* may not in any way be enhanced by their social habit. It is however imperative for an individual to remain with the group to maximize its own *individual* survival. Sociality in chital is thus a product of natural selection acting to maximize the survival of an individual, even when it may not bring any benefit to the group as a whole. As a matter of fact, it has become more and more clear in recent years that much of social behaviour has thus evolved to maximize survival and reproduction at the level of an individual and not that of a group or species.

The greater ability of the chital stags to push their way to the centre of the herd gives them an advantage in avoiding predation. This ought to be reflected in lower predatory mortality amongst the males. That in fact this is so has been confirmed by A. J. T. Johnsingh who has carried out an extensive study of wild dog predation on chital of Bandipur. As a corollary of this, we would expect chital stags to be less concerned with becoming quickly alerted to predation, for even if they become alerted a little late, they can get to the centre of the herd by brute force. On the other hand, a female who becomes alerted of predation late is more likely to have to remain peripheral and thereby to run a greater risk of falling prey. We can therefore predict that in a chital herd, does would be much more on the alert than stags. In fact, Sharatchandra

and I have prepared a detailed time budget of chital at Bandipur and have confirmed that this is so.

As they graze, this aggregation of chital is likely to intensify their competition for good grass or browse. Scarcer the grazing, more intense should this competition be. Such competition would have a disruptive effect on chital herds. There would thus be two opposing forces: chital would come together to avoid predation, but disperse to find better grazing. The disruptive tendencies would be less in times of food abundance; at such times we expect them to form bigger herds. This is indeed so, the largest aggregations of chital often including hundreds of deer occur during the monsoon. These break up into small groups of 5 or 10 in the dry season when food becomes scarcer and competition for it more intense.

Similar selfish herds are to be found in many other species of open country herbivores unable to defend themselves against their predators. Flocks of sheep and goat, herds of llamas, gazelles and antelopes all arise in this fashion. Perhaps so do some human aggregations. There is a Tamil story of a clever person who offered full protection to his companions when travelling through a forest infested with man-eating tigers. He advised that he would lie on the ground as soon as they saw a tiger, and all that the others had to do to be safe was to lie on top of him!

MADHAV GADGIL



# BIRDWATCHER

## Birding in Kaziranga

Amongst my memories of Indian Wildlife, a visit to Kaziranga in March 1978 stands out. The ornithological spectacle from the verandah of the Arimora Rest House was enthralling. In the pink first light of day flocks of egrets congregated at the shallow end of the jheel. They began to leave as wave after wave of Spotbilled Pelicans coursed in until hundreds were perched in the nearby trees. Then Adjutant Storks flew out of the elephant grass, where they had apparently roosted for the night, and flew the 500 metres or so to the edge of the jheel. The pelicans left without coming to the water and other birds were active including an incomparable cock Pied Harrier. As the sun rose higher, the 50-60 storks waded into the water and started fishing. As one caught a fish (as large as its bill) it would be attacked by several others. They were not distracted by a passing herd of wild water buffalo and were still feeding and squabbling when the time came to leave, 1½ hours after dawn.

J. HORNBUCKLE

## Nesting of the Tree Swift

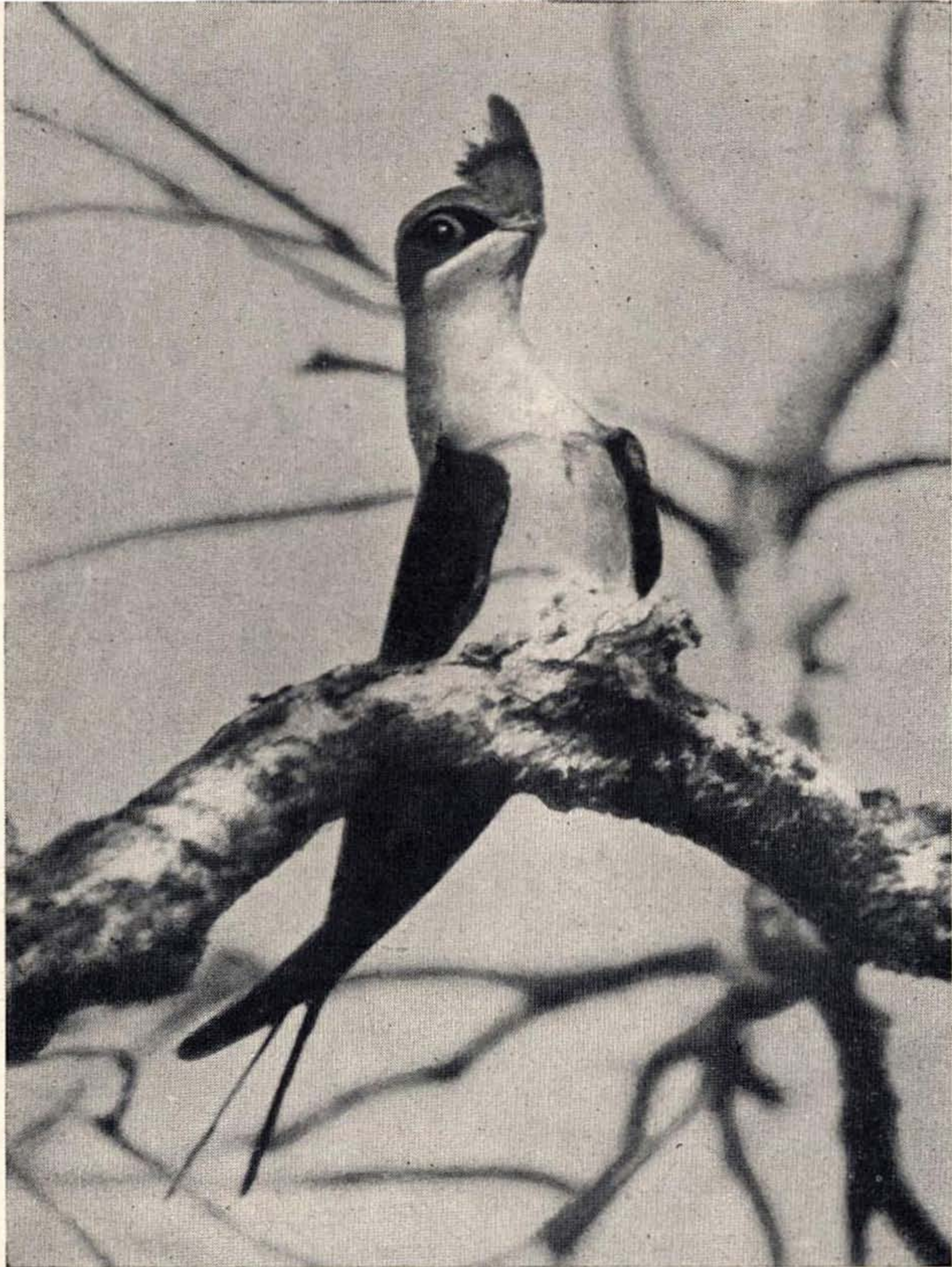
The rolling slopes of the historic fort Sinhagad near Poona bear a fairly dense deciduous forest, inhabited by a good variety of birds. About 150 species have been recorded in this area. Late winter days are the best for birdwatching in Sinhagad Valley.

On one cool morning in March we spotted a Crested Tree Swift (*Hemiprocne longipennis*) perched on a leafless tree half way down the slope of a hill. The bird is rather uncommon at Sinhagad, so we decided to try for a closer look at it. We approached to within 30 feet, and were delighted to find the female sitting on the nest. The nest was made in the shape of a half bowl (about 5 cm across and 2 cm deep) attached laterally to a slender branch, which was 10 feet above the slope covered with *Lantana* undergrowth. It was composed of bark flakes and feathers and merged perfectly with the brown bark. On closer approach the bird flew away revealing the empty nest. Finding of this interesting nest resulted in frequent visits to Sinhagad. A single egg, pale grey, speckled with dark brown fully occupied the tiny nest on 3rd March. It was apparently glued to the bottom of the nest and hence was retained firmly in spite of strong winds.

Both the birds were very bold during incubation and allowed approach even up to 15 feet. The female incubated more often and was bolder than the male.

The chick hatched around 10th of April. The parents sat over the chick for about 2 weeks until it was big enough to remain in the tiny nest. The chick was greyish brown and was heavily speckled all over and thus merged with the nest and the branch. It would sit hunched, except during feeding. After the





*Crested Tree Swift at Sinhagad ravine*

*Photo: Shrikant Ingalhalikar*

hatching of the chick, the parents were much more wary.

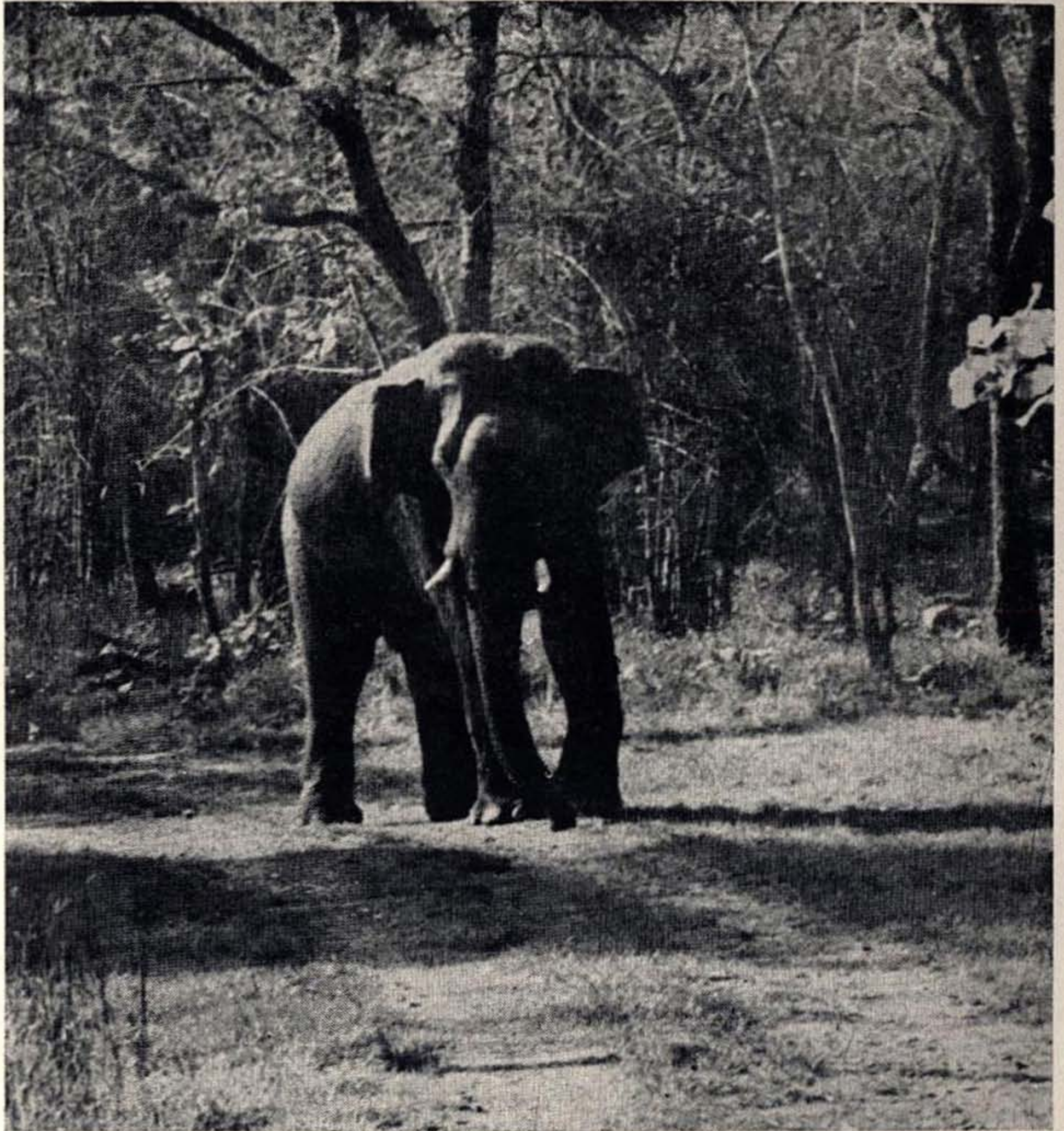
The chick left the nest after 3 to 4 weeks but often returned to the nest after a few glides to be fed by

the parents. The birds abandoned the nest after 5 to 6 weeks and the juvenile became independent.

SHRIKANT INGALHALIKAR  
SHIREESH DHARAP



# Jawahar National Park



*Tusker in Bandipur*

*Photo: E. P. Gee*



The continuing loss of habitat and the demands being made on the available natural resources make the position of wildlife and wilderness areas in India a cause for international concern. Fragmentation of extensive forest areas through encroachment for cultivation, construction of hydroelectric dams and rehabilitation of human populations affects the future of natural forest ecosystems and their plant and animal components. These non-renewable natural resources have been lost over a large portion of the country and the loss of stability which these ecosystems gave to the land has necessitated costly rehabilitation of degraded lands.

It is now essential to identify and protect such contiguous areas as may presently occur if we are to preserve the nation's forest wealth and wildlife. One such area in south India has been studied by biologists of the Indian Institute of Science. The complex of wildlife sanctuaries has been named as the Jawahar National Park. They report that

'The proposed Jawahar National Park embracing an area of 2000 sq. km will comprise of the Bandipur and Nagarhole national parks (Karnataka) and Mudumalai (Tamilnadu) and Wynaad (Kerala) wildlife sanctuaries. It is one of the most extensive contiguous forested areas in peninsular India, and probably harbours the largest population of the elephant in India. The undulating terrain lies at the trijunction of

the Western Ghats, the Nilgiri hills and the Deccan plateau. Its natural vegetation is primarily of the moist-deciduous and dry-deciduous types, with patches of evergreen forest and scrub. This has been replaced in many parts by degraded scrub forest and by plantations and cultivation. The mammalian fauna include the Indian elephant, gaur, sambar, chital, wild boar, mouse deer, blacknaped hare, sloth bear, dhole, grey or hanuman langur and giant squirrel, occurring in good numbers, at least locally. Rarer species include the four-horned antelope, barking deer, panther, tiger, jackal and the striped hyena. In addition, the Nilgiri tahr, Nilgiri langur and liontailed macaque occurred in areas very close to this sanctuary complex until very recently. If the Brahmagiri sanctuary of Coorg were to be included within the Jawahar National Park, these species could be reintroduced there. Blackbuck could thrive in Masinagudi area of Mudumalai. With these introductions, this sanctuary complex could harbour all the major South Indian mammals. It has a good population of peafowl locally, and crocodiles exist on Kuruwa islands close to the sanctuary, and in the River Nuggu.'

Some notes on the fauna may be of interest:

The major animal of interest in the area is the **Elephant** for which



*A sambar stag looks out*



*Photos: M. Krishnan*



*Gaur in deciduous forest*



the proposed National Park area is the best habitat. The data collected indicates the number of elephants in the area is about 1500.

**Gaur.** The gaur ranges from scrub forest to semi-evergreen forest but seems to prefer undulating hilly terrain with moist-deciduous vegetation and moderate undergrowth.

**Sambar.** The population in the sanctuary complex is subject to predation by most of the larger carnivores and poaching also takes a heavy toll. They are distributed over the entire area.

**Chital or Spotted Deer.** Very large congregations of this species occur in the Masinagudi area of Mudumalai, Bandipur park headquarters area and Nagarhole core area.

**Wild boar.** Together with chital, wild pig forms the most plentiful prey animal. It is extremely adaptive and occurs in every type of terrain.

**Barking Deer.** This beautiful, elusive animal is possibly far more numerous than is apparent from sightings and track data since it frequents thick undergrowth, is solitary and is extremely wary.

**Mouse Deer.** Like the barking deer the Indian chevrotain or mouse deer also occurs over the entire tract in considerable numbers.

**Tiger.** Based on track evidence, tiger seems to occur widely in the sanctuary complex with no specific preference for particular habitat type. Bandipur National Park being a project tiger area, is primarily conceived as a tiger reserve and the official estimate of the tigers within the reserve is about 19 animals.

**Leopard or Panther.** Occurs not very rarely over most of the survey area but seems to occur most commonly in the overgrazed degraded forests. Most of the cattle lost to carnivores could be attributed to it.

**Sloth Bear.** Sloth bears are widely distributed over most of the area especially in the more open drier forests.

**Dhole or Wild Dog.** Over most of the sanctuary complex wild dog appears to be plentiful which may perhaps be an exaggerated impression due to their high mobility.

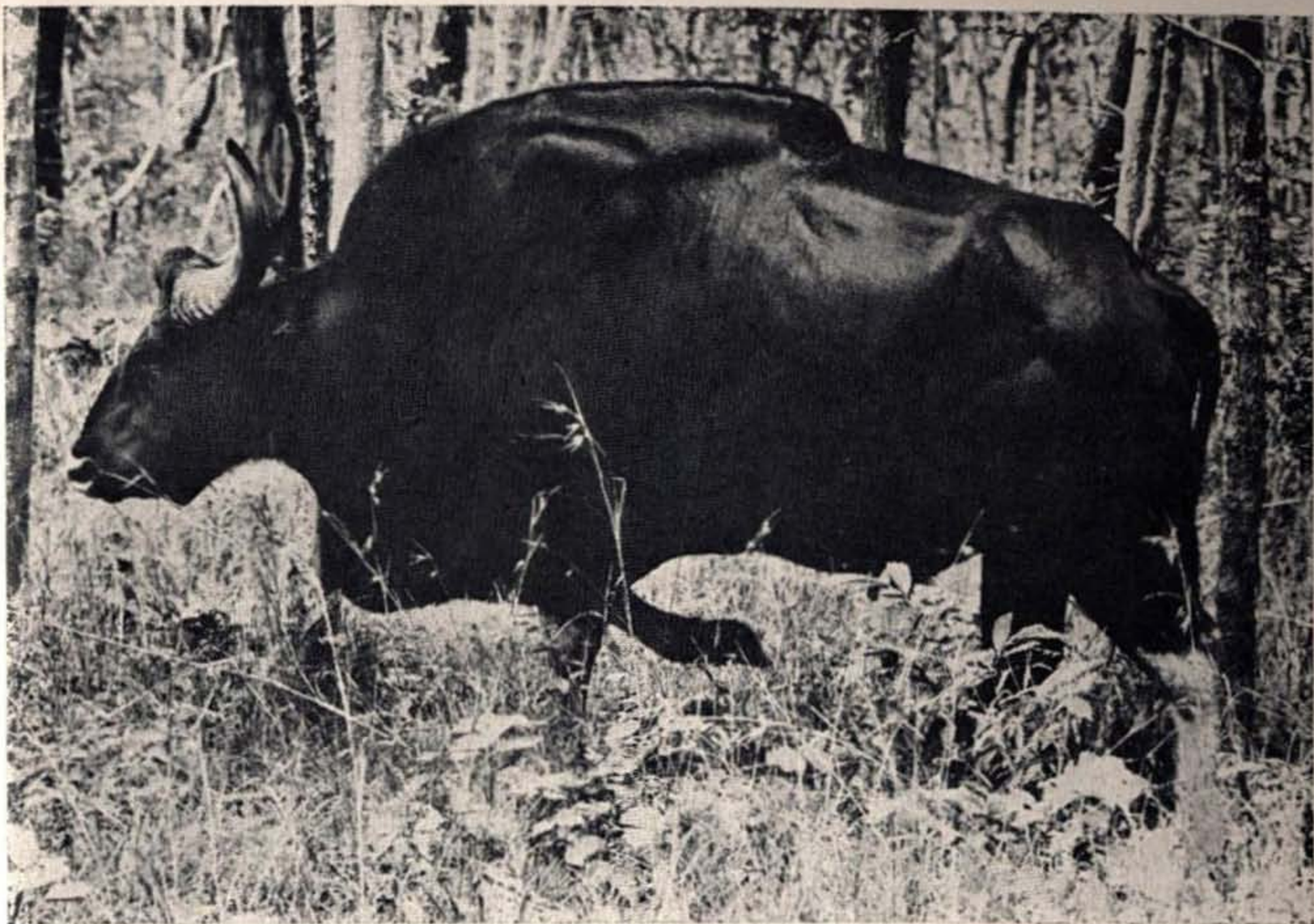
**Hanuman Langur** occurs in fairly tall, canopied but rather open forest in most of the tract but the distribution is highly sporadic.

**Giant Squirrel** occurs throughout moist-deciduous and semi-evergreen habitat in the area but in more open forest it is very rare or absent.

Bird life is abundant in species and numbers.

The Jawahar National Park is a new concept as it includes areas currently three different states and calls for a high degree of collabora-





*A magnificent gaur bull*  
*Photos: M. Krishnan*  
*Mouse Deer in natural habitat*





tion between the states of Karnataka, Kerala and Tamil Nadu. The best solution perhaps would be to consider the complex of sanctuaries as a national wealth and have its management handled by a *National Trust*.

The suggested organisation for such a Trust for the Jawahar National Park would be

*National Trustees:* Minister in the Central Govt. acting as Chairman, Indian Board for Wildlife.

Chief Ministers of Karnataka, Kerala and Tamil Nadu.

The National Trustees while being kept informed of the progress etc. of the Trust will be called upon to intervene only if there is a major difference of opinion over policy or other matters which the Executive Trustees are unable to resolve.

*Executive Trustees:* Forest Ministers of Karnataka, Kerala and Tamilnadu.

#### *Board of Management*

- (a) Jt. Secretary & Director (Wildlife), Govt. of India
- (b) Chief Conservators of Forest (Development), Kerala, Karnataka and Tamil Nadu
- (c) Chief Wildlife Wardens, Kerala, Karnataka and Tamil Nadu
- (d) Director, Tiger Project
- (e) A representative of the Indian Institute of Science
- (f) A representative of Bombay Natural History Society
- (g) A representative of World Wildlife Fund
- (h) A representative of Kerala Forest Research Institute

- (i) Director, Jawahar National Park—Member Secretary.

#### *Administration*

##### *Director*

(General administration, Policy execution)

##### *Research Biologist*

Functions with an overall view of wildlife ecology, identifies problems and arranges their investigation, will be assisted by Research officers, including Veterinarians.

##### *Chief Wildlife Warden*

Responsible for wildlife management, security and administration will be assisted by *Wildlife Rangers*, and *Wildlife Guards*. The Guards to be recruited from *local tribals* for the wildlife wing and from exmilitary and paramilitary sources for the security wing.

##### *Chief Forester*

Will be responsible for the forestry practices required for maintaining habitat in prime condition.

Will be assisted by Forest Rangers and foresters.

A Public Relations Officer will assist the Director in publicity, communication with the adjoining rural population and in handling tourists and tourist facilities.

The board of management will meet every fourth month by rotation in the three states and will be chaired for its deliberations by the State's Forest Minister.

J. C. DANIEL.

The data on animals for this note have been extracted from the article, the Jawahar National Park by S. C. Nair & others published in vol. 74 (5) of the Society's *Journal*.



## The frog he'wd a wooving go

The photograph of the Indian Bullfrog on the cover of this issue was taken by S. P. Shahi. Mr. Shahi who retired as Chief Conservator of Forests, Bihar has used the time available to him in his retirement to become one of the foremost nature photographers of the country.

—Eds.



every suggestion with a simple *vis inertiae*, and an unwavering perversity and "contrariness", which must triumph in the end.'

The frog is loud not only in his call but in his dress also. As EHA says, he 'comes out to greet the monsoon all of one uniform gamboge yellow, and riots in the day time'.

A riot it is, and the normally circumspect frog which lurks among the weeds at the edge of a pool, throws all caution to the winds with the first heavy showers of the monsoon. The males in their bright yellow livery congregate in rain water pools and ditches. Their call, a deep toned *oong awang* can be heard throughout the night, and each new shower is greeted with a fresh uproar. Amidst this cacophony they alertly await the arrival of the sober coloured females which are fought over, the nearest male usually succeeds in holding on to the female and fending off competitors by kicking strongly with the hind-legs. The mating season ends as abruptly as it started and the frogs regain their senses and go into hiding and silence returns for another year to the breeding pool.

Every year as the monsoon breaks two species of amphibians become extremely vocal, the Bullfrog which is on the cover of this issue and the Common Toad. The difference between the two according to EHA in THE TRIBES ON MY FRONTIER 'is precisely the difference which there was in Mark Twain's jumping frog before and after the shot was administered to it. Touch a frog ever so tenderly with the point of a stick from behind, and it goes off as if it were sitting on gunpowder, and your stick were a lighted fuse. The stolid toad, on the other hand, meets every hint and





## The Andaman Islands : October 1978

The Andaman and Nicobar islands are a submarine range of mountains rising out of the sea a hundred miles due south of Cape Negrais in Burma, and 80 miles north of Achin Head in Sumatra. The Andaman group of islands occupy a distance of 160 miles lengthwise and are nowhere wider than 30 miles. The principal islands consisting of North, Middle, South and Rutland islands are only separated by narrow straits. Over 200 smaller islands surround the main Andaman group. Due to their isolation the islands have until very recently preserved some of the richest rain forest in the world, with a variety of flora hardly matched anywhere else in an area of similar extent.

The recent influx of settlers which the Administration are powerless to control has led to the clear felling of large areas, and this combined with the forestry plans of the newly formed Forest Development Corporation of the Andamans is leading to the major destruction of the ecology of the area.

Recently drawn up forestry plans cover a much more extensive harvesting programme and include clearance of virgin rain forest to make way for plantations of commercially viable woods in the North and the Little Andamans. Some ten years ago 25,000 acres of virgin forest was destroyed for teak plantations which have proved a failure. These large areas of useless and stunted teak can clearly be seen as

you sail up the eastern shores of the Middle Andamans. Afforestation of these useless teak areas would be more beneficial rather than destroying the rich rain forest.

In the Middle Andamans Birla's Jayshree Mills are unable to get enough timber at present to feed their existing plywood factory. Despite this they have been permitted to install new units to triple their production.

All the flat lands of the South and Middle Andamans have been cleared for agriculture and areas in the interior of the North Andaman Island are being cleared for new settlers. Clear felling of the forest was to be seen wherever we went with the exception of the small islands and the Jarawa Reserve on the western side. Patches of jungle are being clear felled all along roads even on hilly slopes on the road between Bakutala and Maya Bandar in the Middle Andamans, causing erosion.

The inevitable rise of the existing population and the steady inflow of new settlers at the rate of about a thousand a month will in a few years make standing room only on the islands. It is felt that unless the influx of people from the mainland is controlled there will be serious repercussions and among the first to go will be the tribal people who are the original inhabitants of the islands.

Mr. Ajit Bannerjee, Conservator of Forests (retired) who was until





Photos: R. Whitaker



*The haul of the Andamanese in these two photographs is of the Andaman Wild Boar and Water Monitor both completely protected. Their capture is punishable by six months imprisonment!*



last year, Coordinator for the survey of forest resources in the Eastern Zone for the Government of India, writes: "the soil is such in the Andaman Islands that the removal of forest will right away affect the top soil and erosion will start and accelerate at a phenomenal rate." Mr Bannerjee states that this is caused by the islands having a very thin topsoil which gets washed away by the heavy rainfall which the Andamans are noted for. In addition the rocks that form different strata are, more often than not, very prone to erosion, and once the topsoil is removed the parent rock itself will undergo erosion resulting in the loss of fertility. The note goes on to say: "even in the flat areas where agriculture is being practical it has been found that after the removal of the forest canopy production per hectare of agricultural crop is gradually going down notwithstanding the addition of farm manure."

Mr Bannerjee recommends that excepting areas where the slope is less than 5% the forest canopy should not be removed in the Andamans, and the exploitation of the forest should either be by strip planting or natural regeneration.

The Wildlife Staff consists of a Conservator, designated Ex-Officio Wildlife Warden. There is no wildlife wing or staff under him and the Conservator has no car or boat, so he cannot move around. The Forest Department does not have the man-

power to stop the killing and trapping of Andaman wild pig and turtle by settlers who compete with the tribals whose delicately balanced diet is dependent on these resources. It was reported that the endangered Andaman Teal are hunted in remote parts of the islands. The Andaman Teal were reported by Mr Jerry Vaughan of the Police Department to be found at Colinpur, Tusnabad, Dennis Point and Reef Island, which contains a lake of sweet water and which has been declared a sanctuary. The only zoo specimen died in March.

We visited Port Blair meat market and were shocked to see a chital stag in a butcher's shop awaiting slaughter. In the market we learned that turtles are sold in Gandhinagar and Abradin markets in October.

We visited an interesting exhibition of tribal craft, books and photographs of the Jarawa and Onges tribal people, organised by the Department of Anthropology in Port Blair. The life style of the friendly Onges of the Little Andamans is changing resulting in a rapid decline of their health and a downward trend in their numbers. This is due to misplaced interference by the Administration. The wild Jarawa tribes of the Middle Andamans and Sentinel Island still resist contact and are therefore surviving. It is felt that the Middle Andaman group of Jarawa is doomed if the project



for making a highway through their territory is implemented. The Administration have very wisely decided to shelve this proposal.

Proposals and recommendations to Government from the Jt. Secretary and Director of Wildlife, Government of India, include the creation of a National Park to protect the Jarawa Reserve for all time, the creation of a Biosphere Reserve in the North Andamans and a Marine Park. It is also recommended that all the smaller uninhabited islands be created sanctuaries. These sanctuaries to be in addition to North Sentinel, Narcondam and Reef Island which are already notified.

There is an urgent need for a Task Force for the islands to advise on land use and a plan for a complete ecological survey of the resources. The programme to include agreement on forest boundaries and controls on encroachment

and to halt the flood of incoming settlers. The present status of endangered species, such as the Megapode, the Andaman Teal, which are unique to the islands, and others such as the Saltwater Crocodile, are unknown, and surveys are required. The Task Force to be effective, apart from soil conservation and forestry experts, should include marine biologists and Andaman tribal and fauna and flora specialists. Such a Task Force would also benefit from the advice of residents who are not specialists but who have become seriously concerned about the future of the islands. It is very much hoped that Government will take all necessary steps to conserve these valuable islands more effectively for the benefit of the inhabitants, the nation and all mankind, before it becomes too late.

ANNE WRIGHT

## **An Appeal**

**We would like our members to be  
"Collectors" of  
members for the Society  
We need your assistance**



## White Gaur of Manjampatti

On 4th July 1978 Tom Lutz and I saw a 'white' gaur 300 m from the saddle between the big peaks NNE. of Kukal cave north of Kukal village, the Palni Hills, Tamil Nadu. The gaur was a medium-sized female in a herd of 17. The herd was first sighted at 5.30 p.m. on 3rd July, 400 m below where the herd was at 8.30 a.m. on 4th July. At this time the 'white' gaur was not seen, and was only noted when we had progressed to within 100 m of the herd. After obtaining this

photograph, I unfortunately had a coughing fit, and spooked the herd. 15 minutes later they were 500 metres down the valley heading up it and grazing. At this time there were 23 gaur in the herd. We got within 30 metres of the gaur but were unable to get any more photographs owing to the long grass, before we were detected and the gaur went into the Manjampatti valley below. The weather conditions were very overcast.

ROMULUS WHITAKER



*White Gaur of Manjampatti*  
Photo: R. Whitaker



## Hands off

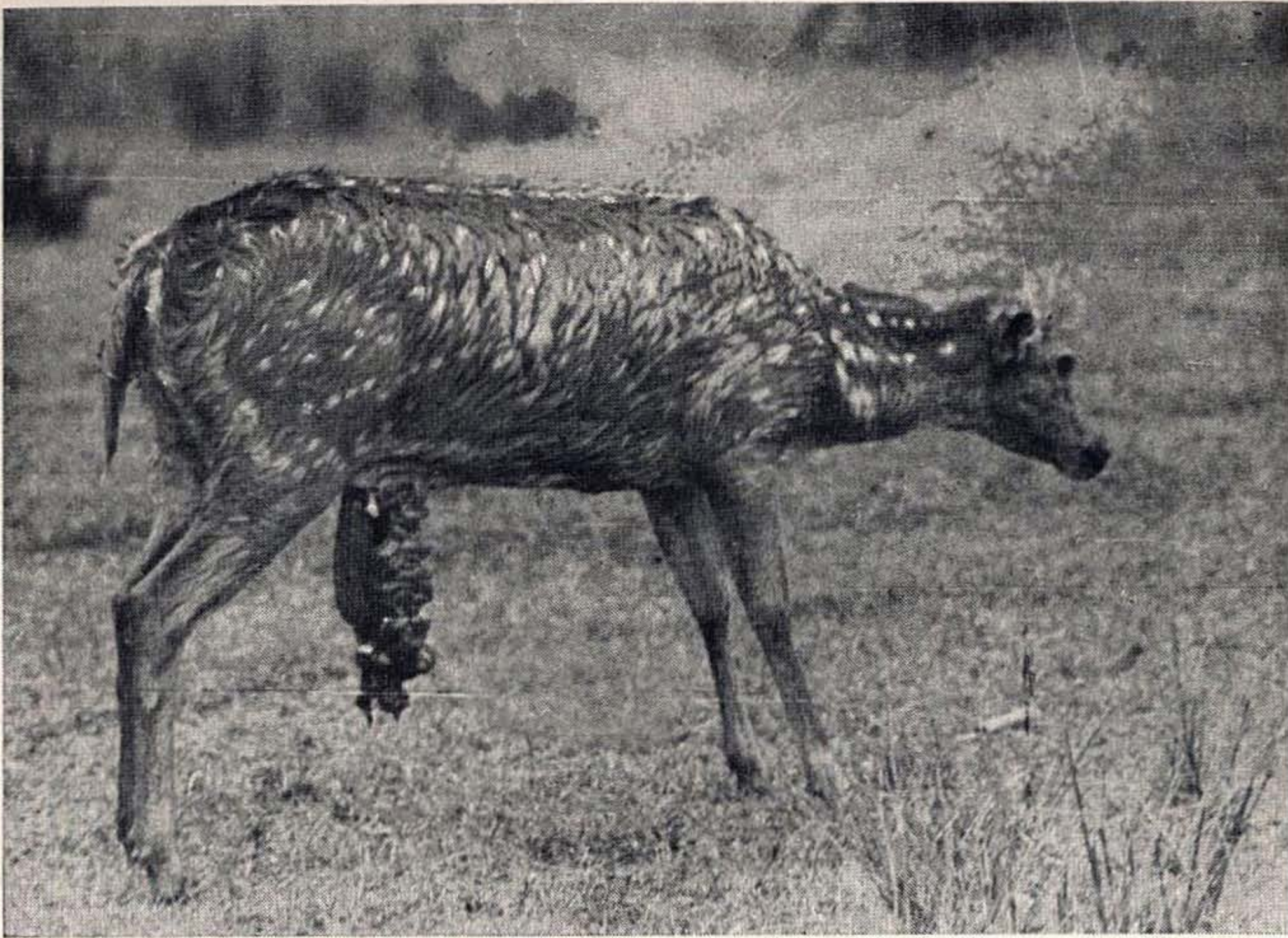
It is a virtue of man to extend a helping hand to a fellow man in distress. This altruism is sometimes expressed in wrong contexts. Natural history notes are replete with records of sportsmen and naturalists 'saving' prey animals from the clutches of predators. Very few, like the famous Corbett, realize that by trying to 'save' a prey (for example a hare) from a predator (e.g. a Crested Hawk-Eagle) they unknowingly commit two mistakes. For instance Corbett found that the chital fawn he 'saved' from an eagle died in spite of his best efforts to save its life and when he heard the same eagle killing another fawn he realized that he was solely responsible for the death of a second fawn.

Whosoever sees this picture will certainly sympathize with this chital doe, who stood with her entrails protruding out. Who was responsible for her pathetic appearance? The wild dogs which attacked the deer or the people who chased the dogs with the intention of saving the doe from the jaws of death? When this doe was attacked by wild dogs in the vicinity of Bandipur a batch of tourists loitering nearby ran to the rescue of the doe. When the dogs were chased away it was found that the doe was seriously injured and even the best veterinarian on earth would have found it difficult to nurse

her back to health. Nevertheless the deer served the purpose of its birth—to become the food of a predator—in this instance, Man. Soon a pious man from Bandipur intoned the specific *mantras* and cut the throat of the deer and every one had his share of venison that day!

Contrary to popular belief wild dogs, in the absence of human intervention, kill fast and efficiently and their way of killing deer by evisceration or pulling out the intestine is an equally effective way of despatching the prey like strangulation by the panther and the tiger. Why should we protect the large predators of our jungles? George Schaller perhaps gives the best answer. He says, predators weed out the sick and old of the prey animals and keep the herds healthy and alert. The beauty, fleetness, grace and vital tension of such prey species as antelopes and deer are the evolutionary products of a constant predator pressure that has eliminated the sickly and slow. Further they add excitement and authenticity to the natural scene. All those who visit wildlife sanctuaries are mostly anxious to see a predator like the tiger. They prefer to see a pack of wild dogs trotting across the road rather than a herd of chital peacefully feeding near the road. Predators are the symbol of wilderness.





*Chital doe with entrails protruding out*  
Photo : A. J. T. Johnsingh

Incidents like the one described above show how much more we are to be informed on such matters. The outcome of such an incident is that the robbed wild dogs will kill another deer. Some may ask the question what is wrong in appropriating the kill of a predator? They may even support the question by saying that predators can always make another kill when one kill was stolen. Predators do not find it that easy to kill a prey. Precise, planning,

careful search, patient stalk and superb agility are needed to bring down a prey. Moreover predators and prey species mostly maintain a tenuous balance in nature and when we remove kills we will be forcing the predators to kill more unnecessarily and in the long run it can adversely affect the number of prey species and ultimately the population of both.

A. J. T. JOHNSINGH





*M. B. Raizada*

ROSE OF SHARON  
*Hibiscus syriacus* Linn.

From some beautiful Indian Climbers and Shrubs (in press)



## **BOMBAY NATURAL HISTORY SOCIETY**

The Bombay Natural History Society is one of the oldest scientific societies in India and has been publishing a journal since 1886, which is recognised throughout the world as an authoritative source of information on the fauna and flora of this subcontinent.

### **Our members enjoy:**

1. A four-monthly natural history journal acknowledged to be the finest of its kind in Asia.
2. A forum for discussing and pursuing all aspects of Nature Conservation and the Environment.
3. A library with many rare books on shikar and natural history unavailable elsewhere, which may also be borrowed by outstation members.
4. One of the finest research collections in India on Mammals, Birds, Reptiles, Butterflies and other forms of animal life. These are available to members for study on the Society's premises.
5. Up-to-date information and advice on birdwatching, wildlife photography and fishing; natural history field trips and information on possible areas for field trips.

In short, the Society offers a range of activities and interests for the scientist, the amateur naturalist, the sportsman, and the lover of nature. Even if you are none of these the Society deserves your support because it is struggling to preserve our natural heritage and to safeguard it for our children.

*Please write for a membership form and also introduce your friends to:*

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