

HORNBILL

JULY-SEPTEMBER 1978



BOMBAY NATURAL HISTORY SOCIETY



*'I think that I shall never see
A poem lovely as a tree...'*

A tree asks for so little.
Yet it gives so much.
Trees are man's oldest friends.
Let's treat them with respect.

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We have complaints that *Hornbill* in its present form is anonymous and if it is to be referred to in scientific journals each issue must have a separate identity. We are therefore numbering the issues and you are holding No. 8, July-September 1978. The Inaugural Issue would therefore be numbered 1, and the six that follow it would bear consecutive numbers according to their date of issue.

Many members drew our attention what is apparently an inadvertent error by the author of 'Himalayan flower meadows' on p. 22 of the January-March 1978 issue of *Hornbill*. The would be assassin of Lord Krishna was not Duryodhana but Kamsa. While still among the flowers on the Himalayan meadows we would apologise to Mr Damania for wrongly giving the photograph credits for his excellent pictures illustrating the article to Mr S. R. Shah.

Our appeal for articles has been effective and for the next few issues we are well set. In this issue Zahida Whitaker writes on the very successful Crocodile Bank that the Whitakers have organized in Madras. Prof. Gupta expresses concern over the status of the only newt occurring in India. John Singh writes on his success with tiger photography.

Greetings to those among our members who are celebrating Diwali, the Festival of Lights.

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EDITED BY

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On cover: *The Chital or Spotted Deer*
Photo: E. Hanumantha Rao
For details see p. 11.

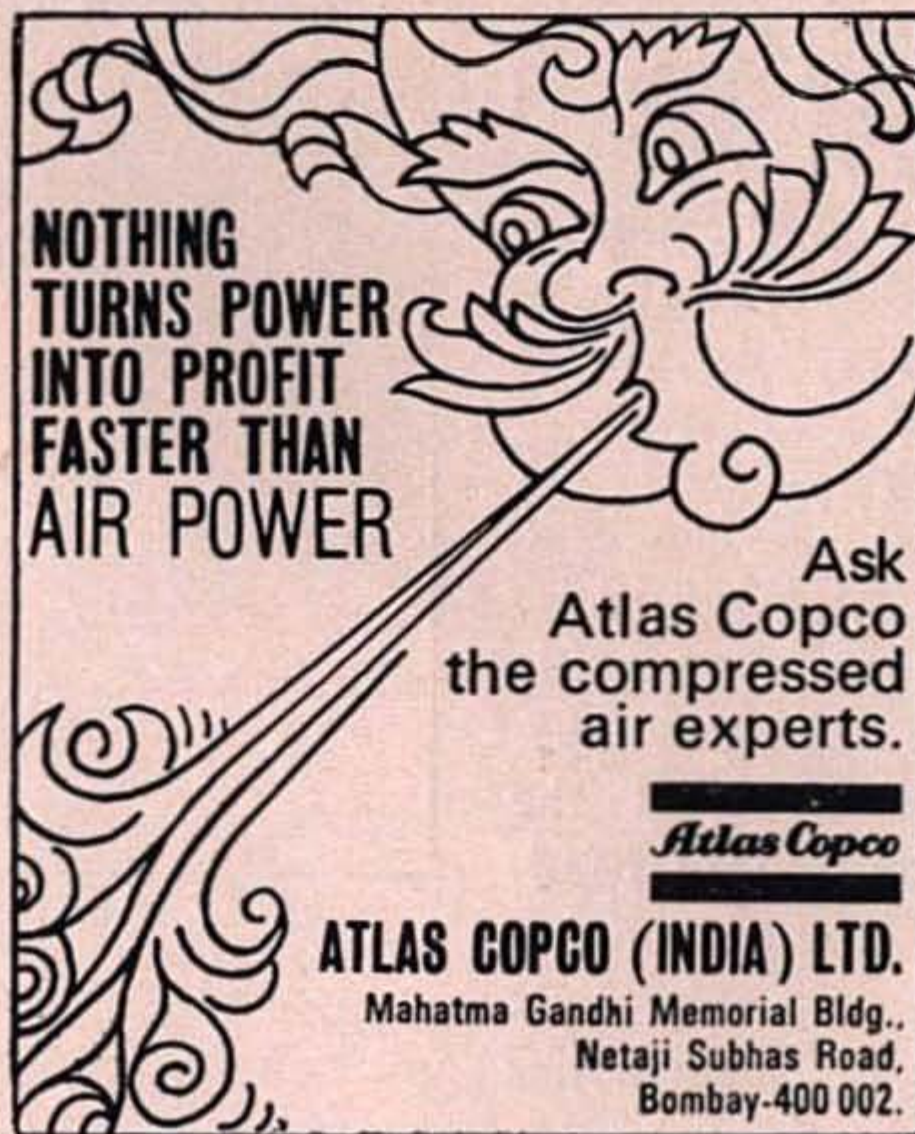
FEEDBACK

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

I have just returned from a very extensive excursion of the Rupshu area of Ladakh. I was therefore startled by Lt. Col. F. F. C. Bulsara's statement that he does not agree with Prakash Gole's assertion that wildlife in Ladakh is facing extinction. Since I spent my time living off the beaten track and was often encamped a few hundred feet below the central ice cap of the Rupshu area, I can assert that action is necessary immediately if

Ladakh is not to lose its wildlife. As my Ladakhi friend and guide wryly commented "Everyone tells us we'll find the Nyan higher up. How much higher can we go? Perhaps they are living with the *deotas*—gods—on the very top of the snows. It is true that small pockets of wild ungulate populations do exist. These require to be immediately identified and strictly conserved.

LAVKUMAR KHACHER



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PRESIDENT'S LETTER

Having said something about the 'Mystery' Birds of India in the last 4 issues of *Hornbill*, readers would probably be interested to know what efforts the Society is making, or perhaps how they themselves could help, in the solution of the mysteries. On 7 April 1977, and again on 19 March 1978, I myself assisted by Shri M. Osman, an experienced sportsman-naturalist of Dehra Dun, his trained springer spaniel 'Ranger' and a young IFS probationer from the L. B. National Academy of Administration on each occasion, spent a day in scouring the slopes and 'khuds' around Banog Peak behind Mussoorie, (c. 2100 m), one of the localities where specimens of the Mountain Quail were actually obtained in the 1870s. On the first occasion the dog flushed a couple of Koklas and a single Cheer pheasant from a steep overgrown ravine, but there was no sign of the Quail. The second attempt, in March 1978, ended more hopefully because I noted a pair of partridge-like birds—definitely not the Peura or Hill Partridge (*Arborophila*)—running one behind the other down a grassy slope about 25 metres away. The leading bird was seen only as a greyish blur, but the second was distinctly cinnamon-brown and in shape and size tantalisingly suggestive of a female Mountain Quail. With a single dog it was unfortunately not possible to flush the birds from the deep ravine into which they disappeared, but

having got what seems a positive lead, we now hope to follow it up with more sportsmen owning suitable gun-dogs next November which, by the way, is also the month in which the bird has been reported to be vocal, and thus may provide an additional clue. Any sportsmen possessing the right kind of dogs and prepared to take part in the search in the Mussoorie area should please communicate with the undersigned as early as possible.

For the Jerdon's Courser, the Society had the same colour plate as printed in the *Hornbill* (Oct.-Decr. 1977) widely circulated and publicised among Forest, Revenue and Police officials, and local village shikaris, in all the areas whence the bird was obtained or reported in the past. This was done over two years ago, but as yet no reports or claims of sightings have materialized. Two recent explorations of some of the earlier recorded localities, one sponsored by the World Wildlife Fund—India, the other by the Bombay Natural History Society jointly with the Smithsonian Institution, Washington, failed to elicit any positive clue. These consisted of ground surveys of likely Courser habitats by field staff of the Society and widespread questioning of local villagers and shikaris in the Godavari Valley around Bhadrachalam and Sironcha, and in the valleys of the Sabari and Sileru rivers. The area that remains to be thoroughly

investigated is the Anantpur neighbourhood in the Penner Valley (Andhra Pradesh) whence there is an ostensibly reliable record from the year 1900. The Society will be glad to supply colour illustrations of Jerdon's Courser to birdwatchers in a position to collect reliable information from the Anantpur, Nellore and Cudappah neighbourhoods, or better still, to carry out a field survey themselves personally.

As regards enigma No. 3, Blewitt's Owl (*Hornbill* Jan.-Mar. 1978), the prescription for would-be helpers is less simple because of the very close superficial resemblance of this owl, both in size and coloration, to our common Spotted Owlet (*Athene brama*). However, any spotted owlet found within dense moist-deciduous forest, with a predilection for sitting on exposed tree tops, should be considered suspect, since the familiar spotted owlet's habitat is more open country around cultivation and villages. If any owl answering the description is seen away from habitation in dense jungle, particularly along the Satpuras, please report it immediately to the Society with full

particulars of locality and habitat. To avoid unnecessary expenditure of time and money in sending a qualified ornithologist to verify or investigate, it is requested that your reasons for regarding the bird sighted as different from the spotted owlet be clearly stated.

No one used to watching waterfowl, especially a discriminating shikari, can fail to recognize a Pink-headed Duck if a clear enough view is obtained. Care must be taken not to confuse it with the Redcrested Pochard, as has often been found to be the case in the past. The coloured illustration in *Hornbill* (Apr.-June 1978), with the two species side by side, clearly shows the difference. The Pinkheaded Duck is more likely to be seen, if at all, in the eastern parts of the subcontinent—Assam, Arunachal Pradesh, Bengal, Bihar, Bangladesh, etc.

To rediscover any (or all) of these 4 birds is a challenge that all serious birdwatchers must accept. We cannot allow them to continue to remain incognito and enigmatic.

SALIM ALI

FOR THE BIRDWATCHER

Two useful publications for birding in Maharashtra and in the Delhi, Agra and Bharatpur areas are

CHECKLIST OF THE BIRDS OF MAHARASHTRA, by Humayun Abdulali. Bombay Natural History Society, 1973.
Price Rs. 2.50; Rs. 2.00 (*members*)

CHECKLIST OF THE BIRDS OF DELHI, AGRA AND BHARATPUR, by Humayun Abdulali and Jamshed D. Panday. Published by Mr Humayun Abdulali, 1978. Price Rs. 3.00.

In addition to listing of the birds found in these areas, their respective status is indicated by appropriate symbols placed against each bird.

Banking on crocodiles

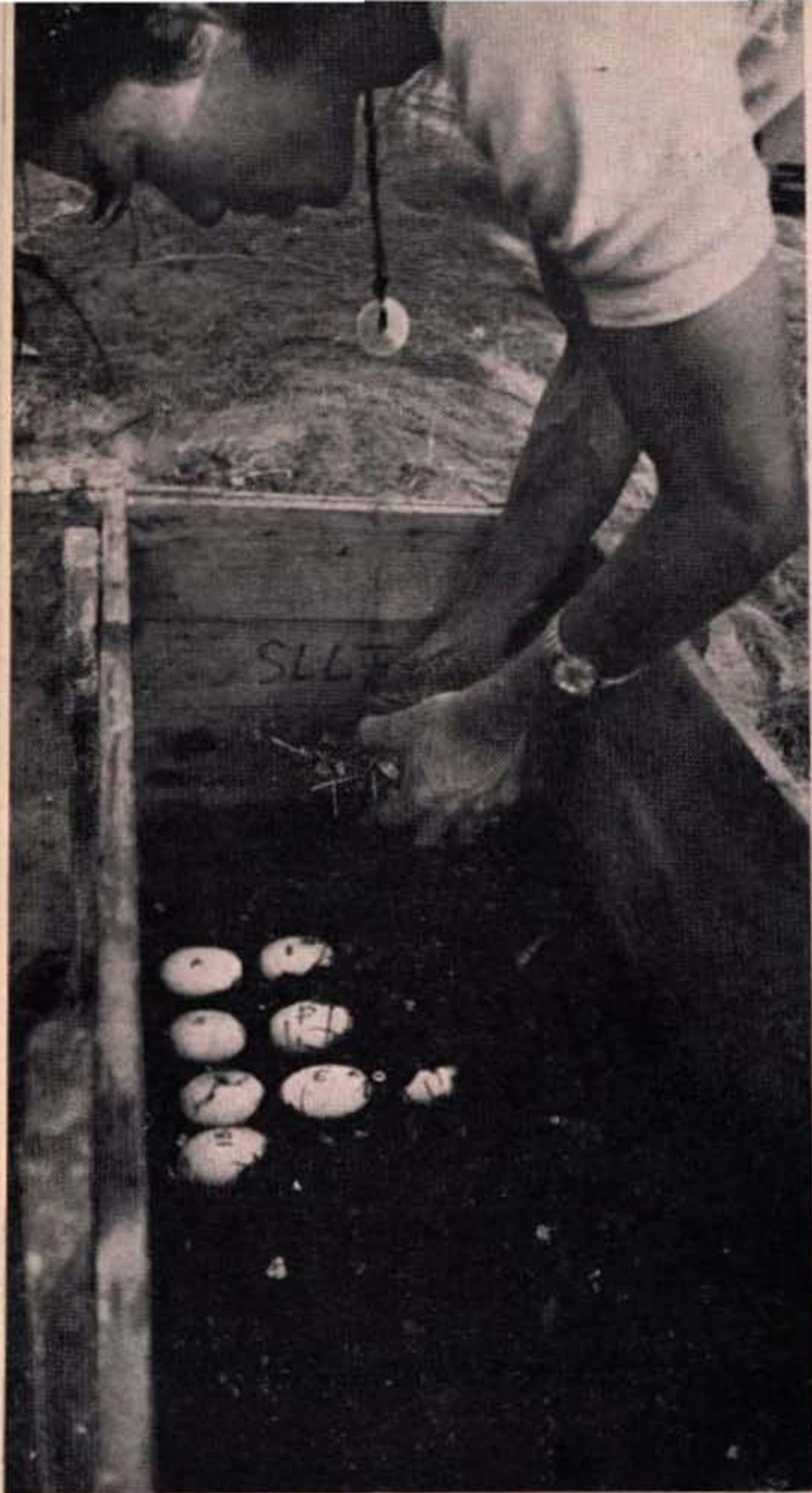
The most exciting periods at the Madras Crocodile Bank is the breeding season of the mugger or marsh crocodile, *Crocodylus palustris*, which lasts from late December to late March. In the large, naturally landscaped breeding enclosure (200 m circumference) which holds 13 adult mugger, we watch the large dominant male, mating with upto five females in one season and asserting his sexual dominance by clapping his jaws together in the water, swimming around the tank energetically in the "tail up" posture, and chasing and biting the

smaller males. We have the unique advantage of having a group of crocodiles that allow close approach and observation, at the same time behaving as they would do in the wild.

One does tend to get 'rather carried away' though and it must be remembered that broody females, guarding and incubating their nests, are not often as unconcerned as they might look. At times like this it is best to make observations from outside the enclosure, or you are liable to find yourself running for your life in front of an irritated, open-

One in the bag — A three year old mugger being moved
Photo: Whitaker





Mugger eggs numbered and ready for hatching

Photo:

Whitaker

mouthed crocodile. At times like this one is agreeably surprised at ones speed and agility, even after a somewhat heavy breakfast.

When the female is ready to lay her eggs, she chooses a shaded area and excavates a hole in the ground, usually $\frac{1}{2}$ m deep. From 6 to 36 eggs may be laid, depending on the size of the female. Nest making and egg laying is accomplished at night but two permanent night watchmen

and several forays by us have failed to produce even a glimpse of a female in the act of laying.

The eggs are protected and nest attended in varying degrees, depending to an extent on the age and nesting experience of that particular female. The oldest female, Alpha, who had bred for 5 consecutive years, is an extremely conscientious mother, as the staff rediscover to their dismay each season; she disapproves of humans—and most other crocodiles entering a wide radius around her nest, and her open mouthed and energetic charges leave no room for dignity.

Since subadult males may prey on the hatchlings and it is difficult to collect these from the pond once they have hatched, we transfer nests into wooden incubation boxes on or around the 50th day after laying. By this time the embryos are well formed and there is little chance of damage to the egg. However, while transferring the eggs to a box, they must be carried and placed in the same position as that in the nest. This is done by marking the top of the egg in the nest with a felt marker, and lifting and placing it gently in the box, the mark upwards. The bottom, sides and top of the box are filled with earth from the nest site mixed with leaves.

Recently, we collected a nest of 30 eggs which was laid under a clump of *Casuarina*. The female made repeated charges and had to be intimidated with a long pole with a shaky and nervous watchman at

the end. As we dug out the eggs, the faint but unmistakable "pipping" sounds were heard—the "umph, umph" of unhatched young ready to break out of their shells and hiss defiantly at the world.

In natural circumstances this pipping sound is the cue for the mother crocodile to scratch the earth off the surface of the nest and gently dig out the young. In species such as the Nile crocodile, and Morelet's crocodile, strong maternal and paternal instincts have been reported at this period, with either parent gently rolling the unhatched egg in its mouth, carrying the emerged hatchling in the gular pouch and releasing it into the water. This year, the pair of mugger at the Madras Snake Park gave us a splendid insight into the way in which wild mugger nests hatch; we watched the female gently puncture an egg in her mouth, carrying hatchlings into the water, and constantly nudging them and picking them up in her mouth to group them together.

While observations of this kind make living at the Crocodile Bank an interesting experience for us, the basis, in the main, of the institution is the breeding and rearing of our crocodilians in order to rehabilitate the depleted wild populations. All three species, the gharial, saltwater crocodile and mugger, have been hunted so severely and methodically in the past that only remnant populations remain. The gharial, until the advent of the FAO/UNDP/

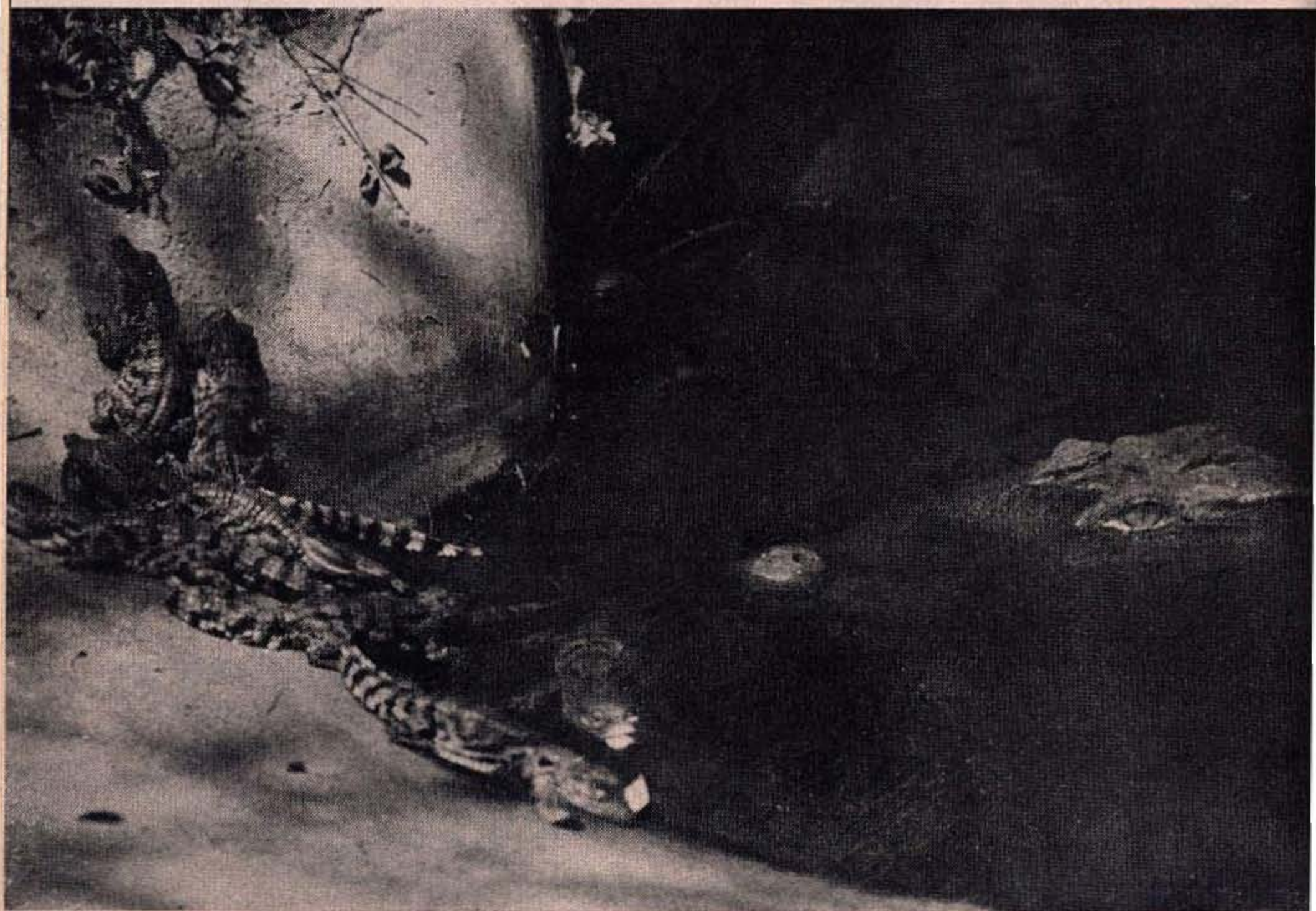
Government of India project in 1974, remained one of the most endangered crocodilians in the world; today, through wild egg collection, rearing and release programmes, there is a good chance that they will be seen in their hundreds again.

The Crocodile Bank was initiated in '74 in Vadanemmeli village on the main Mahabalipuram route outside of Madras, has received support and money from World Wildlife Fund, New York Zoological Society, Madras Snake Park (its parent organization) and the Tourist Dept of Tamil Nadu state. The spacious seaside five acre plot, with its plentiful water supply (to circulate which a windmill has been installed), now holds three large breeding areas, one for each species, and 10 rearing enclosures, for age groups of from one month to three year olds. Much emphasis has been laid on public education and the growing number of visitors (10,000 per month), each paying 50 paise to enter, have made it possible to add signboards, photo displays and mounted exhibits, thus enabling the visitor to get a comprehensive picture of the natural history of crocodiles, and their importance in the wild.

Problems of procuring food for the animals have been minimized through trial and error. A light bulb hung in the hatchling (up to one year) ponds attracts varied and nutritious insect life, and it is gratifying to watch the young after dark, agilely jumping up to catch flutter-



A mugger just crawling out of egg



A male mugger keeps an eye on young ones
Photos: Whitaker

ing moths and termites. After several weeks this diet is bolstered with finely chopped *Tilapia*, a plentiful fish in surrounding fresh and brackish water ponds and lagoons, and frogs, mostly *Rana cyanophylictus*, the collection of which provides a little pocket money for our village children.

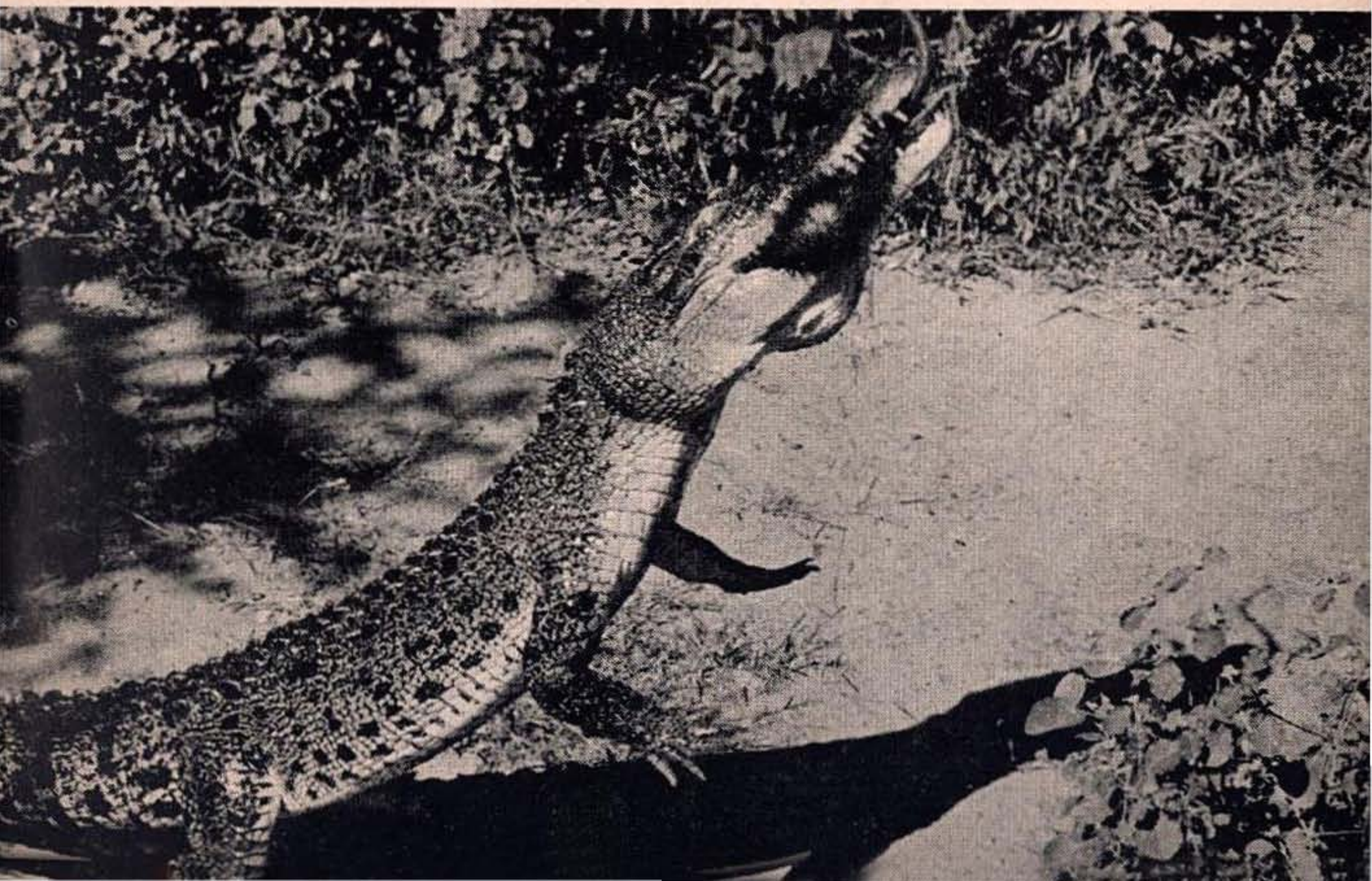
At about 20 weeks, the young take whole fish, frogs, chopped beef, and grow fast. The adult mugger and saltwater crocodiles take large bandicoot rats brought from the city by the Kurvikaran tribals to supplement the fish and frog diet. The gharial of course feed exclusively on fish, preferably a healthy variety.

To maintain healthy and substantial breeding groups, we make ex-

changes with zoos that have non-breeding or excess crocodiles, and a new arrival causes much excitement. At the railway station we meet Mahadev, our long suffering friend who once rashly offered to accompany and look after crocodiles in transit. He mops his head and tells his story: the big scaly head bursting out of the box at Howrah station, the official who refused to book crocodiles into the baggage carriage, and so on.

As our noisy Jonga with the crate tied behind nears our village several people emerge from their huts to help carry the heavy crate and transfer the crocodile to its new home. The box is carried into the enclosure and opened with care; the front and back slats are unscrewed and two people stand ready

A saltwater crocodile jumps to catch a bandicoot rat
Photo: Whitaker



with a net to throw over the head as the animal comes charging out. As soon as the net is thrown, two or three more assistants (depending on the size of the crocodile) must quickly jump on to its back and hold it down while measurements are taken. This is most important, measuring at regular intervals tells us the growth rate of individual animals. But a struggling crocodile can make accuracy impossible and this is where "belly stroking" is very useful. The crocodile is turned over on its back and the chest and belly rubbed vigorously. After a few seconds the body gets limp and remains in a stupour for several minutes or more.

Introducing a newcomer into an established captive group is risky

and can cause serious fighting. Gharial are good natured and a friendly nudge is about as close as they seem to get to combat, and mugger only occasionally fight with any serious intent; but saltwater crocodiles pose a problem and a newly introduced animal has to be carefully watched over for one or two days by a man with a long bombo pole.

With successful breeding being achieved at the Bank for four years, there are already over 200 mugger, and we look forward to the day when we will supply these, and hopefully saltwater crocodiles and gharial, for release and restocking programmes in their natural habitats.

ZAI WHITAKER



Sometimes crocodiles eat human beings

Photo: Mervyn Sequeira



The Chital or Spotted Deer

The photograph of the Chital on the cover is by Mr E. Hanumantha Rao. Mr Rao is a Bangalore based businessman, with wildlife photography as his hobby. His wildlife pictures have received international recognition.

— EDS.

In its beauty and grace the Chital or Spotted Deer has few rivals in the world of deer. Open forests with good grazing and a plentiful supply of water are its preferred habitat. Restricted in distribution to India and Sri Lanka, the Chital shuns only the dry deserts and the dense rain forests, but it is an adaptable animal as witnessed by the success it has had in the forests of the Andamans. Introduced into the Andamans in the first quarter of this century, the Chital has prospered so well that it has become a pest. Students of ecology can point to it as an example of the dangers of introducing species into ecosystems in which they are not a part. In the Andamans the Chital by eating up the seedlings prevents forest regeneration. In Hawaii where it was in-

troduced in 1868 it is now well established.

The hardiness of the Chital, its fertility and the trophy value of the stag's antlers make the animal an ideal species for game ranching. This is an aspect of wildlife management that is worth considering in many of the forests in India, now depopulated of wildlife.

One of the best areas or perhaps the best area for Chital used to be the Mudumalai Wildlife Sanctuary, where in the Masinagudi area congregations of over 500 used to be seen. Now the Chital have disappeared and scrub cattle from the village of Masinagudi have taken over their grazing grounds. Wildlife even in sanctuaries continues to face a losing battle in India.

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NOTES, NEWS & COMMENTS

Smithsonian opportunities in Biological Sciences

The Smithsonian Institution announces its programme of higher education and research training in the Biological Sciences for 1979-1980. Smithsonian Fellowships are awarded to support independent research using Smithsonian Institution collections, facilities, and laboratories and pertaining to the research interests of the Smithsonian research staff. Proposals for research may be offered in fields in which the Institution has research strength, including systematics of fossil and Recent vertebrates, invertebrates and plants; radiation biology; carbon dating; animal behaviour; plant and animal physiology; animal pathology; tropical biology; ecology; and field biology.

Smithsonian Fellowships, supported by a stipend of \$12,000 per annum and research allowances, may be granted to postdoctoral scientists to pursue further training in research. Smithsonian Predoctoral Fellowships, supported by a stipend of \$7,000 per annum and research allowances, may be granted to doctoral candidates to conduct research for their dissertations with the approval of their university departments. Applications are due January 15, 1979.

In selecting individuals for participation in academic programmes, the Smithsonian Institution does not discriminate on grounds of race, creed, colour, sex, age or national

origin of any applicant. For more information and application forms please write: Office of Fellowships and Grants, Smithsonian Institution, Washington, D.C. 20560. Please indicate the particular area in which you propose to conduct research and give the dates of degrees received or expected.

Mukerti Bungalow

The Nilgiris Wildlife Association, Ootacamund, South India, offers facilities for an exciting holiday trek in the precipitous Tahr country of the Nilgiri plateau. The Mukerti 'Game Hut', about 7000 ft above m.s.l., is situated in picturesque surroundings on the plateau about 39 km from Ootacamund. A three-hour climb from the Bungalow provides an excellent opportunity to observe not only the Nilgiri Tahr, but also sambar, barking deer, and an occasional panther or a tiger. Mukerti Lake near by the Bungalow offers good trout fishing too.

The Bungalow has two double bed rooms and is furnished and equipped with crockery, cutlery and cooking utensils. Has sanitation but no electricity. A caretaker-cum-cook is in charge. Provisions, kerosene oil for lamps and blankets have to be carried along with them by prospective occupants. Firewood is available on payment at moderate rates. For reservations apply to:

The Nilgiri Wildlife Association
Next to The District Forest
Office (Nilgiris South)
Ootacamund 643 001.

CORSONAT: The Corbett Society of Naturalists

Information has been received of the formation of yet another Society devoted to the cause of Conservation of Wildlife and plant species. The Corbett Society of Naturalists with its offices at Rani Mill, Delhi Road, Meerut, proposes to undertake such activities as may awaken our people to the task of conservation of the flora and fauna and preservation of the country's heritage for the benefit of posterity.

'Living with Trees'—photographic exhibition

An exhibition of photographs on trees by the noted photographer, Mr. Ashvin Mehta will be held at the Jehangir Art Gallery in Bombay from November 28th to December 4th, 1978.

Dodital, Garhwal Himalayas

A member of the Society, Sqn Ldr P. C. S. Rautela, after reading 'Himalayan flower meadows' (*Hornbill*, Jan.-Mar. 1978) writes: "I have been a regular visitor to Dodital in Uttarkashi Garhwal. Even in 1973 one could come across pairs of monal every few hundred yards on the way to Dodital, besides occasional sights of Musk deer, bharal and even panther. I again visited the area in May 1978 and was terribly disappointed to note appreciable decline in the number of monals. I did not see any other animals at all. Dodital is not only the natural habitat of wild birds and animals but also a centre of adventure for tourists. Lots of

tourists visit the area for quiet poaching as the forest guard is stationed at Aghora, about 20 km away. This was confirmed by the forest people who are allowed the arms for personal protection. To top it all, the forest department is constructing an all weather road to this place. The road construction is already over to about 10 km near the lake. This road will not only affect the wildlife of this area but also finish the adventure. May I therefore request you to kindly advise the Government of Uttar Pradesh to stop the construction of this road to preserve the ecology, wildlife, and the adventure of the area. Why not declare this area as a sanctuary for Monal and Kalij. I am sure that the U.P. Government will be generous to this suggestion as they have dropped plans to construct the road to Nandadevi Sanctuary already."

For its part the Society has conveyed this letter to the Conservator of Forests and Wildlife Preservation Officer, Uttar Pradesh requesting that he persuade the U.P. Government to consider establishing a Sanctuary as suggested by our correspondent, as this would serve to protect whatever that is left of the fauna.

Talks at the Society

14 July 1978. Prof. P. V. Bole spoke on the Valley of Flowers to which the Society had arranged a nature camp during July-August. Slides of a number of flowers found in the Valley were projected, and

the participants in the camp for most of whom the excursion to the Valley was a first experience had a preview of what to look for during their visit and sojourn in the Valley.

17 August 1978. Prof. T. Shivaji Rao, an expert on environmental pollution and a professor at the Andhra University addressed the members of the Society on the dangers inherent to the Taj Mahal and the health hazards threatening Agra, following the siting of the Refinery about 40 km from the Taj at Mathura. To bring home to his audience the type of damage envisaged, slides were shown of ravages done to monuments by pollutants in developed countries. Prof. Rao disagrees with the findings of the Expert Committee appointed by Government and the views held by Government that adequate safeguards can be provided. He suggests shifting of the refinery downwind.

24 August 1978. Mr. Romulus Whitaker, Director, Madras Snake Park and Crocodile Bank, spoke of his visits to the Andamans and the Nicobars. He made the point that authorities should identify problems as well as areas meriting total protection and prevent further deterioration.

30 August 1978. Dr. David Houston from Glasgow University, England, an authority on African vultures spoke on the very specialized role of these birds in the African ecology. They do not feed extensively

on predator kills, but their major source of food issues from animals which die of disease and starvation. Carrion forms a very large food supply and so the vultures are very common. The food potential however varies during the year both in abundance and distribution. In keeping with this fluctuation in the food supply the vultures have evolved a number of adaptations to deal with these exigencies. Breeding, in particular, is very difficult, food availability being so uneven. The vultures breed only if they are in very good condition with large fat reserves.

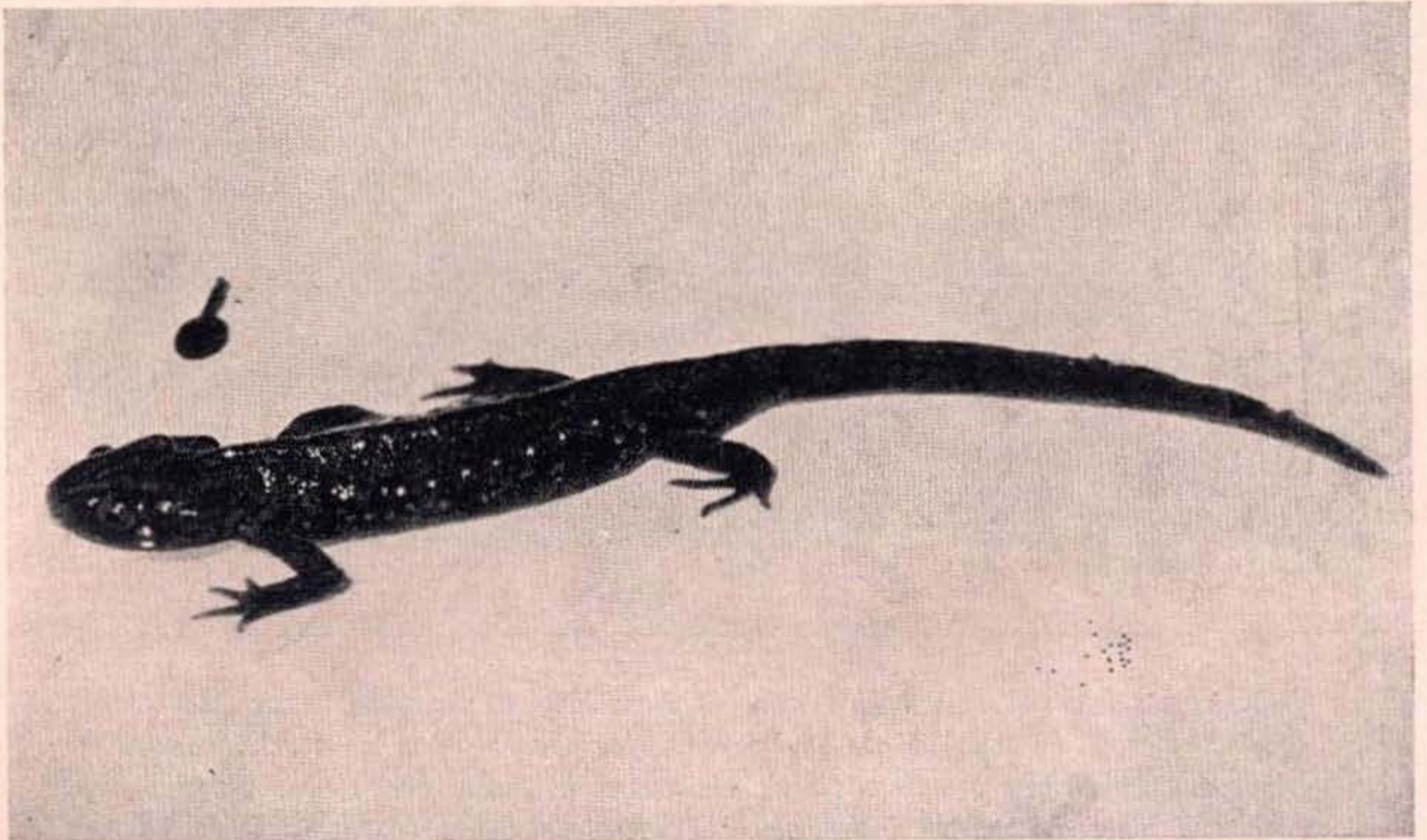
31 August 1978. Under the auspices of the Bombay Natural History Society and the World Wildlife Fund—India, Dr. David Houston spoke at Sydenham's College Hall on the research carried on at the Serengeti Research Station in East Africa. He explained with the aid of colour slides the various aspects of wildlife and its habitat in the Park. The species composition in the Park is controlled by the availability of fodder for the ungulates, its quantity, quality and its protein content. The ungulates restrict themselves specieswise to niches at various levels so that interspecific competition is eliminated. In the final analysis, according to Dr. Houston, it is man, his activities, and their impact on the ecosystem which are responsible for the healthy maintenance of Serengeti and these factors have to be taken into consideration while planning conservation.

The newt is out

Not many may be aware that a species of newt, *Tylotriton verrucosus* Andersen, occurs in India, in the mountains of the Himalayas and also Urkhul mountains of Manipur and other hills of eastern India. Salamanders and newts are the tailed amphibians chiefly known from the Palearctic and Nearctic regions. Within the Oriental Region, of which India is a part, *Tylotriton verrucosus* the only living representative of the genus, was until recently known from the mountains of Yunan, Kakhyen Hills and Sikkim. *Tylotriton* has, however, been found in the fossil state from the Miocene beds of Europe, dating back to some 20 million years ago.

Tylotriton verrucosus appears to survive in a few isolated pockets in the Himalayan foothills in the Darjeeling district and also in the

Urkhul mountains of Manipur. One such pocket was located in 1966 at Jorepokheri, about 28 km from Darjeeling by Prof. B. Dasgupta, Principal, Government College, Darjeeling, who took steps to conserve this species through the district authorities. Collection of specimens was prevented through an order of the Deputy Commissioner and the *chowkidar* of the D.I. Bungalow at Jorepokheri was instructed to see that the general area of its occurrence was not disturbed. It was hoped that these steps will prevent the disturbance of the habitat and that the newt would continue to breed there, though in a limited number. Efforts to locate additional pockets of its occurrence were also made, but without success. The occurrence of this species, the only surviving species of the genus *Tylotriton* in isolated pockets like Darjeeling and



Himalayan Newt

Photo: Durga Das

the Manipur Hills is very interesting zoogeographically and every effort should be made to ensure survival of this 'living fossil', lest it should be lost to science. It also calls for urgent studies on the biology and ecology of the salamander so that they can be bred at various places thus ensuring conservation of the species. However, the story is just the reverse.

Recently I had an occasion to visit Darjeeling and was naturally interested to visit the spot from where this salamander has been reported in the past. Professor Dasgupta and I visited the spot on April 24, 1978, and this revealed an alarming and sorry state of affairs. It was found that human settlements have come up during the past few years around the two natural ponds which constituted the natural breeding grounds for the salamander at Jorepokheri. One of them has even been filled up and now cultivation is going on in and around that pond. We saw cowdung littered all around the second pond as well as ducks swimming in the same. Even the reeds which were said to be there in the ponds have disappeared and the area around the ponds has been much altered. It is feared that these altered environmental conditions will inhibit the breeding of salamanders, if at all some are still surviving, during the

coming rainy months. This calls for urgent steps to ensure the existence of this rare salamander.

These steps taken in the past by the local authorities have not been enough to save the species from becoming extinct due to the interference of man. The order of the Deputy Commissioner issued by his Memo No. 660/DIF/Darjeeling on 5th October 1971 at the instance of Prof. B. Dasgupta, prohibiting collection of specimens and alteration of the natural environment, and instructing the *chowkidar* of the D. I. Bungalow, Jorephokeri to ensure this, has not been effective. I strongly appeal to the local authorities as well as conservationists of India to devise effective measures for the conservation of this salamander before it is too late. Along with conservation, it is necessary that extensive and intensive surveys are made for locating additional pockets of its occurrence and research is undertaken on the ecology and reproductive biology of the species. The Darjeeling Government College, the Bengal Natural History Society and others could do this job effectively. Similarly people at D. M. College, Imphal, Manipur and at the J.N.U. Postgraduate Centre at Imphal are aware of the problem and are taking steps for its conservation.

V. K. GUPTA

One of us has observed this species breeding at Sonada, near Darjeeling (see Society's Journal Vol. 59, p. 666 for description and photographs). We understand the species is still abundant in some areas of eastern India. The species is listed in Schedule I (completely protected species) of the Indian Wildlife Act, 1972. — EDS.

Kaziranga Wildlife Sanctuary



INDIAN WILD BUFFALO (*Bubalus bubalis*)

Photo: AJAI GHORPADE

The Great Indian Onehorned Rhinoceros occurred around Peshawar, now in Pakistan, when Babar the founder of the Moghul Empire invaded India in the early years of the 16th Century. What he noted in his diary is worth repeating:

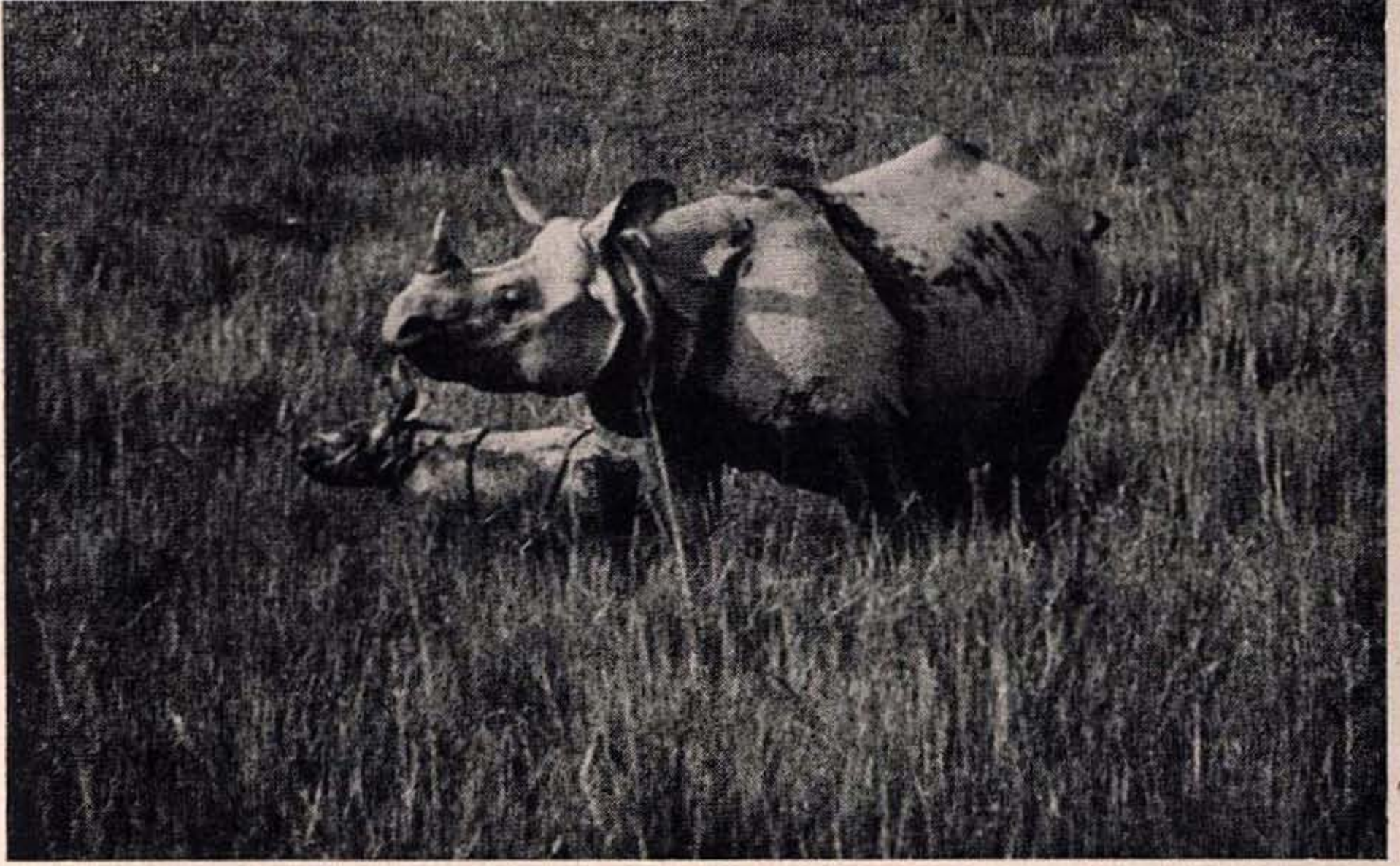
“We continued our march till we came near Bekram (Peshawar) and then halted. Next morning we continued halting in the same station and I went out to hunt the Rhinoceros... When we had gone a short way, a man came after with the notice that a rhinoceros had entered a little wood near Bekram and that they had surrounded the wood and were waiting for us. We immediately proceeded towards the wood at full gallop and cast a ring round it. Instantly on our raising the shout the rhinoceros issued out into the plain. Humayun and those who had come from the same quarter (i.e. from Turkestan) never having seen a rhinoceros before were greatly amused. They followed it for nearly a kos, shot many arrows at it and finally brought it down. The rhinoceros did not make a good set for any person or any horse.”

The rhinoceros is now, four hundred years later, found in India only in West Bengal and Assam, a thousand kilometres east of where Babar hunted it. It is in fact hard to imagine that the rhinoceros, a water loving animal which must have swampy riverain grassland forest to survive and now inhabits areas with over 2000 mm of rainfall could have lived in the Peshawar

war area which has now a rainfall of less than 350 mm.

The rhino lives in forests impossible for transport other than riding elephants. The ground is marshland and riversand and the jungle a dense mass of grass over fifteen feet tall in which even an elephant is lost. It is impossible for man to make his way through it on foot and one has to use the tunnel-like tracks in the grass made by the passage of the rhino and the wild buffalo and it could be suicidal if a rhino or a buffalo is met on the tract as the sides of the track are impenetrable to the puny efforts of man. The rhino moves through the grass with the greatest of ease. Often the only evidence one has of the presence of a rhino nearby is the sound of its passage through the grass, a *churr* sound that resembles the noise produced by running a stick rapidly along a railing. Moving through the tall grass on the elephant one breaks out into an occasional burnt patch where the new growth is still short enough for good visibility or one comes out on to the banks of a jheel, the most likely spots to see a rhino. Often the first clue is the sighting of Cattle Egrets or Jungle Mynas which accompany the rhino to feed on the insects flushed by the rhino's movements, or to pick off the ticks from the body of the animal. The alarm on the birds acts as an early warning radar for the rhino whose senses are poor.

The first sighting of a rhinoceros is always impressive, the massive-



Mother and calf

Photo: E. P. Gee

ness of the animal though expected is still awesome. The heavy folds of the skin give it the appearance of an armoured prehistoric monster. The fourth largest animal in the world after the African and Indian elephants and the African White Rhinoceros, a full-grown bull Indian Rhinoceros may reach a height of over six feet at the shoulder and a weight of c. 2 tons. Yet the rhinoceros is agile and its first reaction on being sighted is to canter to cover the distance it thinks is necessary for safety, turn round and stand watching the intruders. Peering at the intruder would be a better phrase for that is what it does, its demeanour resembling an old gentleman peering at you over his glasses. If approached closer it will either run away or charge, the latter if it is a female with a calf. It is a rare riding elephant which will face

a charging rhino for most riding elephants are female and not armed for conflict. Bull elephants easily fend off an angry rhino with their tusks. The rhino rarely presses home its charge being satisfied with shooing the intruder off the premises but if the charge is pressed home the elephant invariably comes off second best receiving gashes on its legs and abdomen from the long incisor teeth of the rhino. The horn is not used in the attack.

To see the rhinoceros living as it has lived for millions of years one must visit Kaziranga National Park in Assam. One is always fascinated by Kaziranga for it is so different that it gives an added dimension to ones conception of a forest. Man is at a distinct disadvantage and becomes lilliputian in the sea of tall grass nearly thrice his height which covers 67 per cent of the Park.

Interspersed with the grass are numerous jheels and on higher ground and along the banks of the numerous streams occur patches of evergreen forest. But the natural feature which plays a vital part in the life and death of the Park is the mighty Brahmaputra river which forms the northern boundary of the Park. Its floods bring the silt which revitalize the Park but when the floods are high the Park loses heavily through much of its fauna being drowned. The floods also wash out from the Park the pestiferous weed, the Water Hyacinth. An introduced plant, the Water Hyacinth has become a serious menace in the Park choking the numerous jheels with its abundant growth and denying open areas of water so essential for water birds and fish. The transpiration rate of the plant is also so much higher than evaporation from open water that the jheels covered by the hyacinth dry up faster than open water jheels. The Water Hyacinth remains a constant danger to the natural balance prevailing in the Park and a classic example of the dangers of introducing an alien element into a stable balanced environment. Another factor which strongly influences life in the Park is fire. Every year a portion of the Park's grasslands are fired by the Park staff. This is considered essential for the well being of the animals as it assures fresh growth and is only a continuation of the natural turnover that took place before through

natural fires caused by lightning. Without the controlling action of fire, the grassland would become a tangled mass of all grass impassable to any animal except the elephant and the rhino and of little food value to any other animal.

The rhino spends much of its time grazing in the open spaces or wallowing contentedly in the jheels and smaller mud pools. It is not a social animal but in favoured areas a number of them may be seen together. Normally a sedate animal, the rhino indulges in a vigorous and generally riotous behaviour only during the mating season. The courtship involves much chasing of the female and fights between the males when contestants may get severely gashed. Once mating is over life returns to its usual quietness. The gestation period is 14 to 16 months and the calf weighs approximately 60 kg at birth. The most dangerous period in the life of a rhino is when it is a calf. In Kaziranga about six calves are killed by tigers every year in spite of the fact that the mother rhino keeps her calf always under her eyes so to say. Tigers are wily and find little difficulty in circumventing the mother's efforts at protection. Once it has survived this stage the rhino is practically immune against natural enemies and if it escapes being poached lives to attain an age of forty or more years.

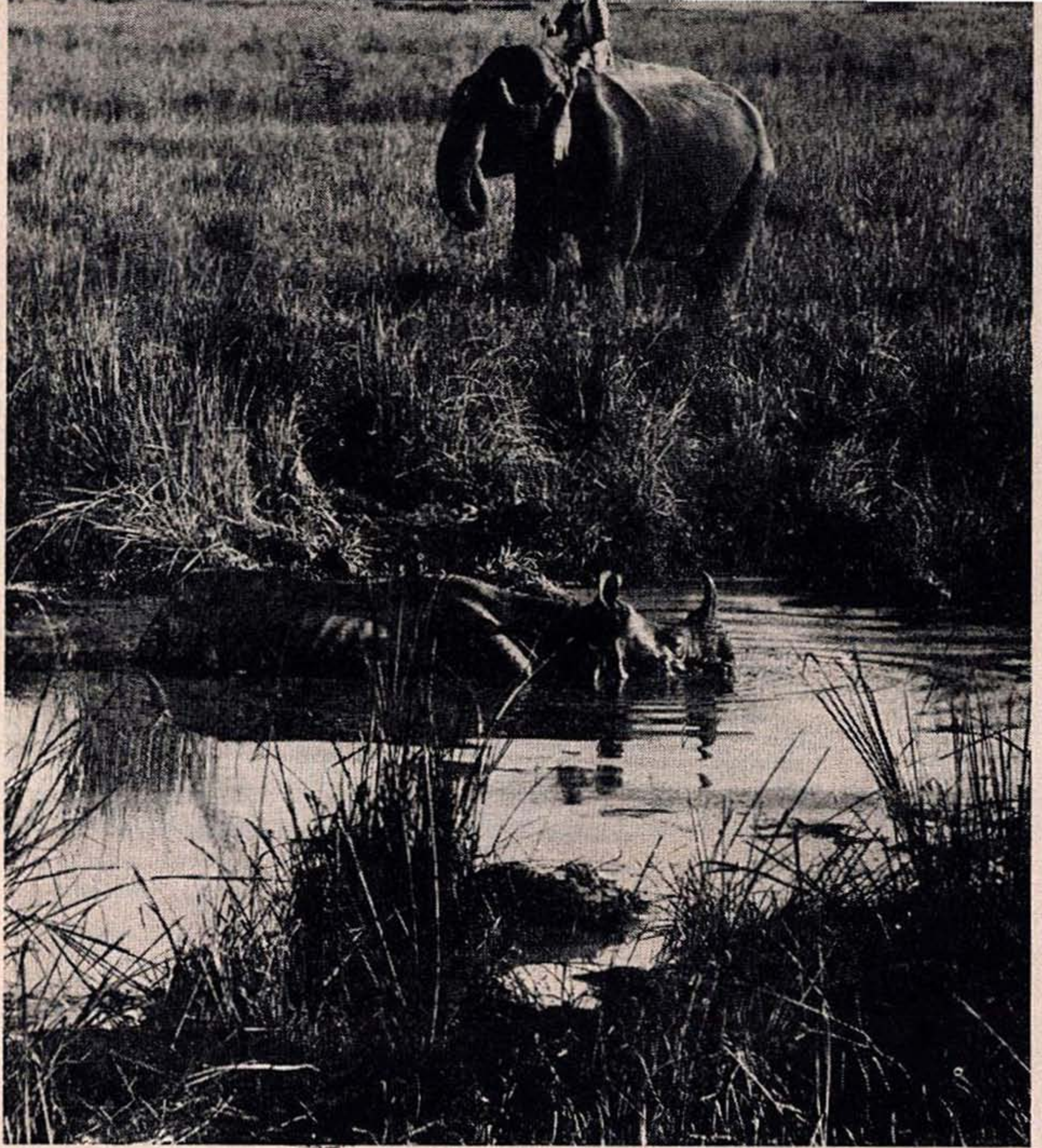
There has been no sustained scientific study on the rhinoceros in India so far but a recent article by Lahan and Sonewal of the Assam



*Above: Emerging from a jheel with a 'bouquet' of hyacinth. Below: 'Checkmate'.
Snows of Arunachal Pradesh in the background.*

Photos: E. P. Gee





'Cooling off'

Photo: E. P. Gee

Forest Department in the *Journal of the Bombay Natural History Society* reporting on a census of the rhinoceros they had undertaken on the animals of the Kaziranga provides some very interesting information. The census showed that there were less than 700 rhinos in Kaziranga in 1972, approximately one rhino for every 141 hectares of

the Park but nearly half the population lived in a 17,000 acre sector of the nearly 94,000 acre Park. The reasons for this concentration are not known. The average death rate based on figures for seven years is 30% per year and the census figures gave a figure of 67 calves below a year in age. There is thus a steady growth in the po-

pulation. It is now necessary to have a thorough study of the ecology of the rhinoceros and its habitat to establish the number that can be sustained by the Park. Already in some areas of the Park rhinos are seen grazing throughout the day a sure sign that the animals are not obtaining sufficient nutrition. It may be necessary to reduce the population by capture and sale to zoos as used to be practised in earlier years. This would also assure that if some epidemic disease were to wipe out the small population in the Kaziranga, a nucleus would be available elsewhere to assure that the rhino, an ancient legacy of India is not lost for ever.

Rhinos in a wallow

SITUATION, TOPOGRAPHY AND AREA

The Kaziranga National Park is situated partly in the civil district of Sibsagar and partly under Nowgong district in the state of Assam ($90^{\circ}5'$ and $93^{\circ}40'$ E., $26^{\circ}30'$ and $26^{\circ}45'$ N.) in the flood plain of the Brahmaputra river at the foot of the Mikir Hills south of National Highway No. 37. The area has been formed by the deep alluvial deposits of the Brahmaputra river and is flat with a east to west slope.

The total area of the Kaziranga is 42,496 hectares or 429.96 sq. km. However there is constant change in the exact area of the Park due

Photo: E. P. Gee



to erosion and formation of new land on the northern boundary of the Park by the Brahmaputra river.

The entire area of the Park is covered by extensive grasslands interspersed with evergreen tree forests and numerous beels. The number of such beels are more towards the western part of the Park. 27.95 per cent of the total area of the Park is covered by tree forests, 66.47 per cent by grasslands and 5.58 per cent by the beels.

OTHER WILDLIFE

Elephant

The elephant population of the Park does not remain static throughout the year. Some of them migrate to the adjoining Mikir

Wild Buffalo

Hills on the southern side of the boundary during the rainy season. But such migration of elephants have been greatly reduced during the recent years due to the opening of the valley lands and the lower hills for cultivation. A gradual decrease of habitat in the hills and widening of the gap between the Park and the nearby hills by human settlement will in time force the elephants of the Park to remain within it to the detriment of both.

Wild Buffalo

In the Park wild buffaloes are found grazing around the beels in the morning and afternoon. During day time they are found lying in the mud wallows. Except in case

Photo: E. P. Gee





Hog Deer in a swamp

Photo: E. P. Gee

of solitary males they are always in herds of varying sizes. The herds generally consist of one dominant adult male, immature males and cows of all ages.

Swamp Deer

Probably the largest number of surviving swamp deer in the eastern zone at present exist only in Kaziranga National Park. During the census in 1972, 516 swamp deer were counted, against 213 in 1966. The swamp deer population inside the Park is always found in herds, grazing or lying down in the open grassland around the beels. The males are congregated in a separate subgroup in the same herd.

Sambar

In Kaziranga the sambar is distributed only in the heavily wood-

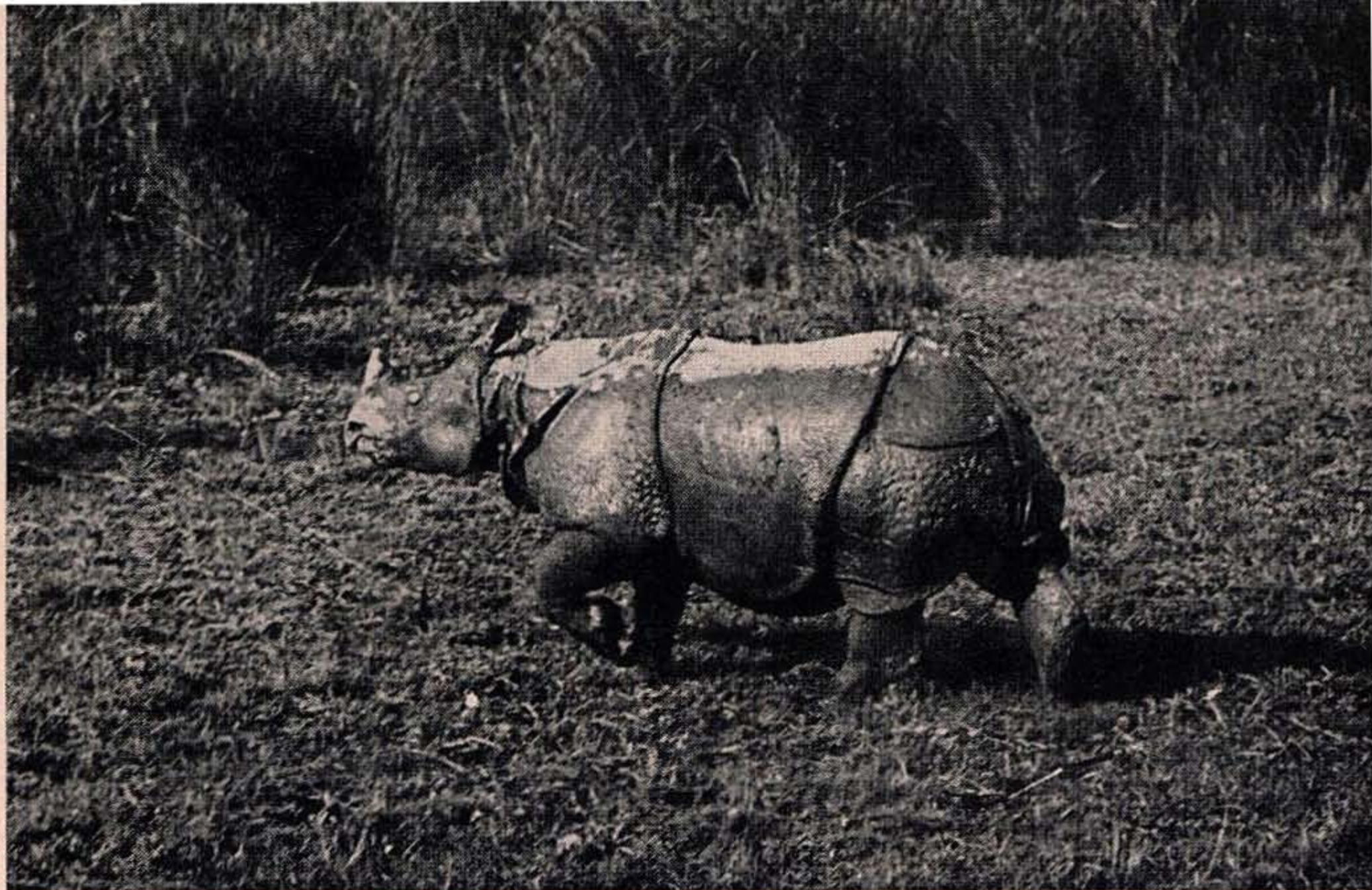
ed compartments. They are usually solitary animals except in the case of small social groups of a hind, a yearling and a fawn.

Hog Deer

Hog deer tops the list in numerical density among all other animals of the Park. Though usually they do not form cohesive herds sometimes groups of hog deer consisting of 50 to 60 individuals and sometimes solitary males or females with a fawn or a yearling are also found. During the 1972 census 4551 hog deer were counted.

Tigers

Seven tigers were sighted by the 1972 census parties. A separate census for counting the tigers in Kaziranga along with the rest of the state and the country was conduct-



Rhino on the move

Photo: E. P. Gee

ed from 22nd April to 28th April 1972 and 'Tiger tracer' method was used. The total number of tigers counted by this method in the Park was 29.

Other animals seen in the Park are the Gaur, Barking Deer, Wild Boar, Leopard, Sloth Bear, Capped Langurs, etc.

FACILITIES

The nearest airport is at Jorhat. Daily air services from Calcutta are available. From Jorhat, Kaziranga is about 96 km drive on the Grand Trunk Highway. Regular bus service operates from Jorhat and also from Gauhati, the latter being about 200 km to the west of the Park. The main tourist complex is situated at Kohora which is roughly

midway along the southern boundary of the Park. A well-furnished luxury tourist lodge with catering facilities is being run by the Indian Tourism Development Corporation. The forest department also has several rest houses within the Park. For reservations write to:

The Manager
Forest Lodge
Kaziranga, Sibsagar Dist.
Assam

or

The Wildlife Warden
Kaziranga National Park
Kaziranga, Sibsagar Dist.
Assam

Riding elephants are also provided for the visitors by the Forest Department.



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BIRDWATCHER

Some stray notes from my Bhutan dairy—1

Having the dubious distinction of being what may be termed as a professional in the line, I am either erratic or a bit too lazy to write down all that I see or hear. During my recent trip to Bhutan (May-June '77) however, I have managed by sheer chance than anything else, to jot down a few lines which, I admit, I could do only because of the fact that firstly, I had to do a daily 8 km uphill walk to reach the study spot with frequent halts for breathers and secondly there being nothing else to do during the long dark evenings but to write. The result is jumbled up bird notes laced with some personal comments of various shades and tones depending on the mood prevailing at that time.

I was a member of Dr Sálím Ali's team during his expedition with Dr Dillon Ripley to Bhutan in October-November 1973. At that time, by chance we had come across several Honeyguides feeding on a rock bee comb at a place called Honey Rock c. 5500 ft in central Bhutan. Honeyguides are considered to be rare in the Himalayas and their biology and ecology have not been studied so far. We had very little information about their behaviour. I was quite thrilled when early last year Dr Sálím Ali asked me whether I would like to go back to Honey Rock to study the honeyguides. I jumped at the offer and a

trip was initiated by the Bombay Natural History Society and financed by the recently instituted Sálím Ali Nature Conservation Fund (SANCF).

In the eastern Himalayas, Bhutan at least, the altitudinal zone ranging from about 1500 ft to 6000 ft is perhaps the best for birdlife, or at least you'd get the impression of abundance in birdlife. Tropical evergreen forests of this region are dense and in some places absolutely impenetrable. The best and worse as it happened in my case, would be April-May-June. Best because it is the breeding season. Whole area would be reverberating with bird songs. Worse because things could be miserable. Rain,, mist, leeches and dum dum flies, among other things take away a considerable amount of pleasure out of it all.

A great deal of my time was spent on studying the honeyguide and therefore a major portion of my notes are about them. However there were occasions when sitting miserably shivering under the overhang of a rock or under a not so protective protection of a giant tree while chilly needle drops of rain lashed all over the place, I forced myself to think and write about the other birds I observed around that area. Here are a few excerpts.

Black Eagle. This graceful aerobat gliding over, under and through

the thickly foliated canopies, is quite adept at performing disappearing tricks. As you follow it through your binoculars over the hillside, it suddenly vanishes among what appears to be a densely packed wall of trees and reappears at a point well away the line of entry, wheeling and manoeuvring as it negotiates the hillside contours. It flies with a leisurely elegance, dipping a wing here and there to examine some interesting aspect of the canopy or circling a promising tree to have a better look at a hidden nest, ignoring with lordly contempt a pair of pesky drongos that pursue it. Sometimes its flight is incredibly slow as the

gaps in the upward sweep of the larger primaries of the great wingspan gently allow the excess air to seep through. The awesome magnificence of flight can only be appreciated when the bird, disdainfully ignoring your presence, wheels across at eye level over the hillside. Its superb control in the air is apparent when the bird transforms itself from a seemingly idle cruise into a tremendous burst of speed as it swoops over the valley side towards an unseen prey or a rival, its wings swept back like a perfectly taut bow.

Black eagle normally is a silent creature. There is hardly any des-



Black Eagle soaring

From INDIAN HILL BIRDS

Courtesy: Oxford University Press



Blyth's Wreathed Hornbills — male and female
Courtesy: Los Angeles Zoo

cription about its call in the ornithological literature. However, sometimes I did hear it calling in Bhutan. Since it was a general breeding season there, it was probably some kind of 'display call'. Initially I was a bit confused as the call sounded rather like that of a Crested Serpent Eagle's, but only a bit softer and abrupt. In the familiar drawn-out whistle of the serpent eagle, the whistles normally vary from five to seven notes. The call I heard in Bhutan was only of three whistles at a time, rather short *whee... whee... whi*. I wasn't sure of the performer until I saw a black eagle soar past calling low over my head. Thereafter I could hear the same call throughout my stay there. But then I did see a crested serpent eagle in Bhutan though not in the same area. I didn't hear it calling but presume its call may not be much different from that of our plains serpent eagle.

A sitting black eagle is as magnificent as a flying one. Occasionally it sits in regal splendour on lofty branch of a dead tree, in full view of all and sundry, attended to, inevitably, by the ever pesky drongos.

Rufousnecked Hornbill. If a pair of noisy drongos are ever seen pestering a large bird in the foliage, it may not always be a black eagle. In Bhutan I have often observed the hapless rufousnecked hornbills flying awkwardly from branch to branch trying, unsuccessfully, to shake off pugnacious drongos. I wonder why the drongos do that.

Is it because the hornbill's black body and gliding flight resemble that of the black eagle or do they, in spite of their comical appearance, pinch occasional fledgelings from small birds' nests? Many species of hornbills take to a mixed diet, especially when they are rearing their young. A lizard, a mouse or an occasional small bird are sometimes included in the diet of a large hornbill like the rufousnecked. But how the gawky clown of the bird world could be looked down as a predator, I could well imagine. Once I followed a male through my binoculars, laboriously working up the branches of trees, hopping with occasional great 'whoosing' wing flaps, craning its long neck in almost impossible angles, its outsized bill probing every crevice and fork of the branches. What was he looking for? These trees did not have fruit at that time.

During the first half of my stay (May) all the rufousnecked hornbills (I saw only this species this time though some other species also occur) were males—singles or sometimes stag parties of 3-5 birds. They were obviously adult males either in search of food for their 'confined' mates/chicks or perhaps unpaired individuals. I was not sure of this for though they appeared to be foraging, I did not notice that characteristic direct flight of a breeding male hornbill intent on reaching his nest hole, his gullet engorged with an assortment of fruit and an occasional lizard/mouse dangling from his bill (incidentally a hornbill's nest

can be spotted by following such flights.—that is, if you can go down a thickly forested hill, cross a slippery boulder strewn mountain stream, climb a steep hill on the other side and *then* find the same hornbill waiting for you catch your breath and follow it over half a dozen hills to reach his nest!). These males went about their business as casually and frivolously as a bunch of truant school boys at a much raided guava tree. It was interesting to note the absence of females or at least I failed to see any in the earlier half of my stay. By mid June an occasional pair (male and female) were seen flying across the hillside. Again, was the female just out after a successful 'confinement'? I could never find out these secrets.

Both Wreathed and Rufousnecked hornbills occur in Bhutan. Both have more or less similar colour pattern and size and can be confused at a casual glance. Both have the same 'flap...glide...flap' flight and utter, sometimes a single guttural 'bark' that resembles the alarm *gruit* of a langur. I was confused so many times that finally I decided to note down pointers to differentiate the two birds in field. The flash of the white wing tips of the rufousnecked is the first pointer in flight. The

wreathed hornbill lacks this. The flash can be detected from great distances even when the bird is a mere speck in the sky line. Wreathed hornbill has an entirely white tail while the rufousnecked has a white tipped graduated black tail. What is the biological significance of the wing/tail colour pattern? Dr. A. C. Kemp, the hornbill expert from the Transvaal Museum, South Africa, sometime ago had drawn my attention to the significance of white tail in certain southeast Asian hornbills. These hornbills have been observed to take off from the mainland and fly in 'follow the leader' formation for some distance straight out over the sea and return to the starting point. Though the significance of this 'migration' has not yet been fully established, it is believed that this behaviour may be an instinctive urge of a long forgotten migratory habit of these hornbills. The flashing white tail could be seen from a distance and perhaps acts as a visual stimulant for the other hornbills to follow. This brings me back once again to my old problem—how did the Narcondam hornbills reach the tiny 8 sq. km island of Narcondam in the Andamans?

SAH

Tiger, tiger, burning bright

Ever since I started my field work at Bandipur, I had the urge to photograph a tiger. In course of time, I realized that to make a good picture of the tiger in Bandipur one should be extremely lucky or hard working! Seldom was luck with me, and so I decided to put up some hard work instead. Here also I had enough obstacles. My study made a heavy demand on almost all my time and energy. Tigers, which are even now rare in the Reserve, visited my study area only occasionally. On occasions I failed to see even their tracks for days together. For instance, when the forests around Bandipur blazed in the summer of 1978, tigers completely disappeared from my study area for a month. Further, tigers at Bandipur have never been baited and habituated to the presence of man. Because of this, when I was on foot and saw the tiger more than three times in broad day light, it silently and abruptly ran to cover.

As days went by, the desire to photograph a tiger grew into an obsession. I began to feel that my study would be incomplete if I left the field without a tiger picture. I began to plan seriously. Basing on my limited findings on the tigers of Bandipur, I had an idea of their favoured routes, hunting grounds and resting places. I made up my mind to wait for the tiger when it returned to one of its favourite haunts. Here again, I was undecided for a considerable period as to

the selection of a suitable tree. In such contexts, the tree should be strong and tall enough to afford security from elephants and must offer a clear view of the terrain around. Finally, I selected a mango tree. This tree was not big but was in an ideal place. Though the threat from the elephant was there, I decided to take a risk in this case. I am not very good at climbing trees, and the tree had a straight, branchless bole for a height of 6 metres. This difficulty, however, was easily overcome by using a strong rope which had been tied to an upper branch.

Whenever the tiger came to Bandipur, it remained in the vicinity of Bandipur for 2 or 3 days. I decided to wait on the tree during one such time. Soon the day came.

On the night of 20th May 1978 repeated sambar alarms in one of the preferred hunting grounds of the tiger indicated that a tiger had probably arrived. Next morning I found the tracks and on 23rd morning by 0700 hrs I was on the tree.

It was a clear sunny day, and I was quite confident of exposing the low speed black and white film even if the tiger came early. A troop of common langur was feeding in the neighbouring trees and I expected them to give the much needed alarm so that I could photograph the tiger when it crossed the small clearance amidst a patch of tall grass. By 0705 hrs, I heard the agit-

What was that?



Photos:

A. J. T. Johnsingh



Moving out

ated alarm bark of the wild dog nearly a kilometre away. Wild dogs make the *ka ka ka kooene... ka ka ka kooene...* call when they encounter animals like the tiger and possibly also the panther. This I have found from indirect experience. Panthers rarely venture into areas frequented by tigers. So, naturally enough, it occurred to me that the alarm bark of the wild dog was for the tiger. At 0745, some movement in the tall grass caught my eye, and I saw a tiger walking silently through the grass towards the clearance. The langur, somehow, failed to see the big cat.

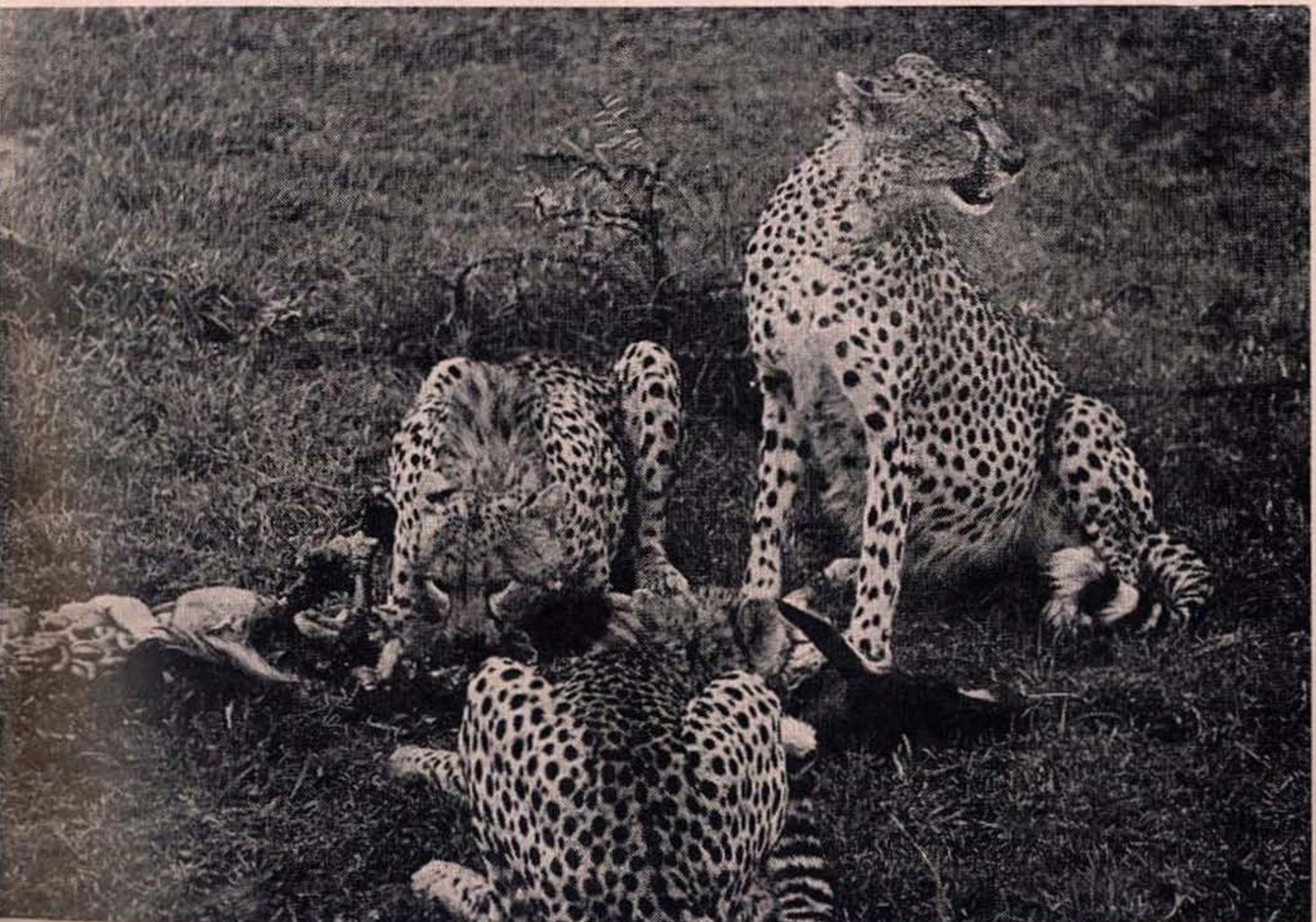
I calculated the speed of the tiger, the distance to be covered to reach the clearance and the approximate time it would take to appear on the

clearance. It took some more time than I had calculated, probably because the cat should have stood on the edge of the clearance for some time. As it strode along with lithe grace before me at a distance of 12-15 metres, it failed to hear the repeated clicking of the camera. Finally, when it was about to enter the bush, using the age old technique of the hunters I made it turn back and look at me, and with a puzzled expression it did so. The next second, frightened by the click of the camera, the tiger slunk off to cover as silently as it came. As soon as this spectacle was over, I felt a wave of relief passing all over me, and I could not help smiling when I remembered the perplexed gaze of the tiger.

A. J. T. JOHNSINGH

Meal time — Cheetahs in Africa

Photo: Rishad Naoroji



Spread of the Collared- or Indian Ring Dove

The spread of the Collared- or Indian Ring Dove *Streptopelia decaocto*, a true native of India, in the European territories of the Soviet Union in the recent decade is the theme of an article by Dr. Svetlana I. Bezkhov in *Aquila* (Annals of the Institute of Ornithology, Hungary, 1976, Volume 83, pp. 173-7). The mode of dispersal is said to be neither continuous nor linear. The birds settle in a place, preferably the bigger towns, and thence spread into smaller towns and villages. The bird's survival during the cold months in Europe is generally attributed to its reliance on man for food during the winter months.

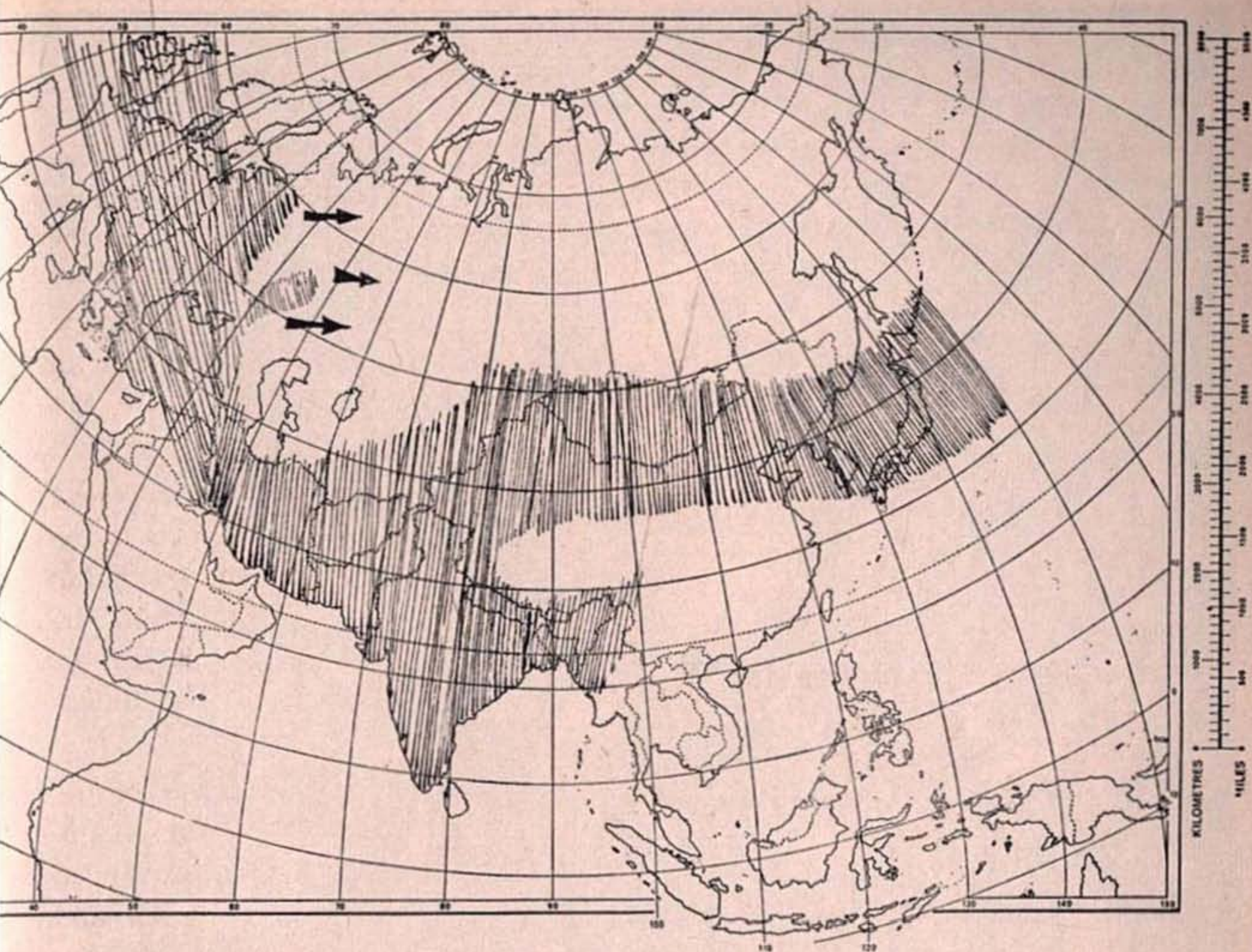
In the Festschrift number of the Society's *Journal* dedicated to Dr. Sálím Ali on his 75th birthday (Volume 71, No. 3: 571-8, 1974; published 1976) Mr. Horace Alexander in an article entitled "What leads to increases in the range of certain birds?" summarizes his views on the spread of this dove thus: "It is clear that *decaocto* has some characteristics of a 'successful' bird of the era in the world's history. It has adapted itself to Man and some of the changes he has made in the environment. It has a broad range of food. In some parts of its range, it breeds at all times of the year. But these things do not explain why it has suddenly colonized more than a thousand miles of fresh territory in the past forty years. If these are old characters, one would have expected the species to have spread over a

large area much longer ago. So, one looks for some dramatic change either in the environment or in the adaptability of the species. Neither of these is obvious; so one is tempted to accept Mayr's proposition of a 'genetic alteration'; but how can that be proved."

These articles make me recollect the interesting correspondence exchanged in 1948 between Dr. Sálím Ali and his *guru* the late Prof. Erwin Stresemann in regard to the conquest of Germany by the Indian Ring Dove.

Chronologizing the spread of the bird in Europe Prof. Stresemann wrote that from its most advanced settlements in Bulgaria, Serbia and Bosnia the Ring Dove began to conquer Hungary about 1930; settled at Budapest in 1936; reared its first brood in Vienna in 1943, and since then reached places in Austria, e.g. Grazitlagenfurt and even Seine river on the border of Bavaria. One was secured in Augsburg in spring 1947. Prof. Stresemann was of the opinion that if the movement towards the west continued, the Ring Dove would become a German citizen within the next few years, if not in 1948 already.

Tracing the pre-1930 history of the bird's spread Prof. Stresemann was of the opinion that it apparently spread to China and Korea on one side, and Persia and Asia Minor on the other. About 1600 A.D. the bird was unknown in the countries bordering the Mediterranean. In the



Spread of the Collared Dove

mid 16th century the bird was regarded as a great treasure; Sultan Suleiman the Magnificent, is said to have sent a pair of these birds as coronation gift to the King of France 1547. However, in response to an attempt made then by Dr. Sálím Ali to verify the authenticity of the coronation gift, a reputed scholar of Lahore Prof. Shafi replied that among the letters of Suleiman the Magnificent, preserved in the *Munshaat al-Salatin* of Feridun Bek, he was unable to trace a letter addressed to the King of France in 1547.

It is not known when the bird settled in Constantinople, the door

for the invasion of the Balkan countries.

The earliest reference to this dove in Persian literature is said to be the term *Warshan* (or *Warashan*) in the works of Abu Mansur between 968-977 A.D. However, the description given therein is said to be vague and is not supported by contemporary drawings or miniatures of the bird.

Regarding the genesis of the bird in the Middle East countries Dr. Sálím Ali suggested that albino Ring Doves and the white colour phase developed therefrom were greatly esteemed in the Moghul times in India by nobles and fanciers, and it



A Collared Dove on nest

Photo: Loke Wan Tho

would not be at all surprising (in fact more than likely) if the white Ring Doves were introduced into Persia and even in Turkestan as presents to the princes and nobles from their confreres in India. Further elucidating the point Dr. Sálim Ali suggested that ample proof is available that large areas of North India were covered with evergreen or moist-deciduous forest even as recently as 400 years ago, which are arid today and covered with stunted acacia trees and the like—the pre-

ferential habitat of the Ring Dove. The bird's spread to these areas has doubtless followed desiccation. As the process of rapid desiccation is still going on, it is natural to suppose the bird's range is still extending. Seemingly the bird's prolific fecundity—it certainly has two broods in succession more or less as a rule, and sometimes even three—must be helpful in the bird's spread.

J. S. SERRAO

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in press

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and Shrubs, 2 ed.**

by

N. L. Bor and M. B. Raizada

**A Synopsis of the Birds of India
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by

S. Dillon Ripley

The Book of Indian Animals, 4 ed.

by

S. H. Prater

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:

Bombay Natural History Society
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Photo: Loke Wan Tho

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