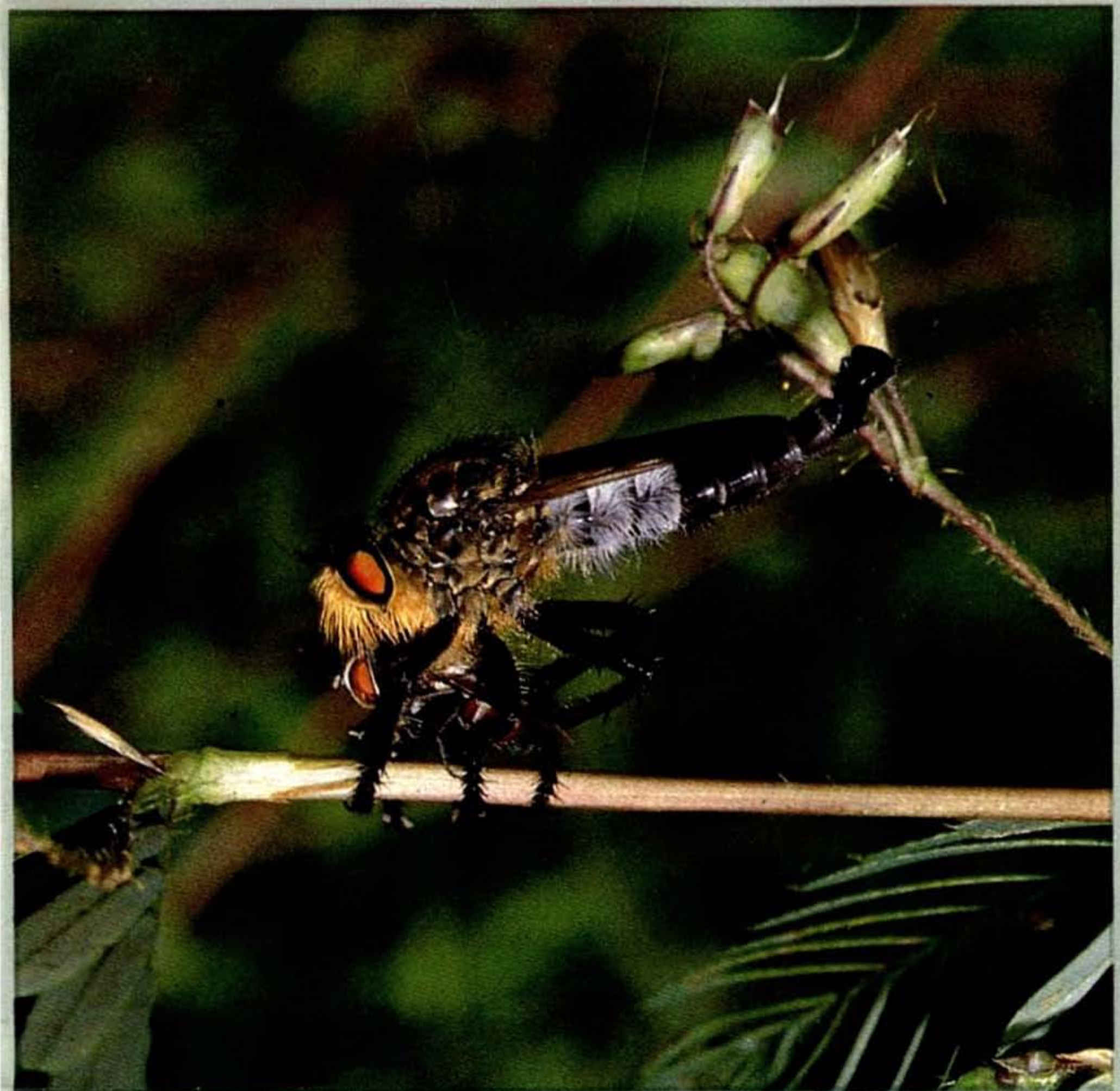


HORNBILL

1984 (1)



BOMBAY NATURAL HISTORY SOCIETY



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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The Secretary, Dept of Science & Technology, Govt. of India

Members receive during a year three issues of the *Journal of the Bombay Natural History Society* now in its 79th volume, and four issues of *Hornbill*, the Society's popular publication.

Journal Editors

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

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

Annual and other membership subscriptions

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

Write to:

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

EDITED BY

J. C. DANIEL
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EDITORIAL

In the Centenary issue of *Hornbill* 1983(3 & 4) we covered most of the persons and organisations that helped to make the Society what it is today, but there was one unfortunate and glaring omission. There was no mention of Dr A.N.D. Nanavati, the present Honorary Secretary, who has done and continues to do yeomen but silent service for the Society. The first scientist to be appointed as Honorary Secretary, his understanding of the need of scientific projects has been the mainstay in the organisation and maintenance of the Society's field projects. We know that our writing about him would embrace this shy

and unassuming person but amends had to be made.

The Centenary year rolls on and in this issue we have described the various activities that have happened so far. The Encyclopedia of Indian Natural History is in the press and we are trying our best to release it before the Centenary year ends in August 1984. We hope to take possession of the land that has been so generously donated to the Society by the Government of Maharashtra before the monsoon breaks in June. In the next issue of *Hornbill* we will write on the plans that have been prepared for using the land for the Society's activities.



Recently Published

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FEEDBACK

'Bird-catching Frog'

In regard to N.S. Tyabji's note on the above subject in *Hornbill* 1982 (3) page 23 instances of birds in the diet of a Bull frog are many.

In the countryside, the bull frog happens to be an inveterate enemy of domestic poultry chicks, and many just hatched chicks following their mother fall prey to the frog.

A field experience shared by some of us birdwatchers relates to a full-grown, injured Roseringed Parakeet. To avoid our approach the bird fluttered from one bush to another, and in so doing flopped itself into the trickle of a stream bed. Immediately it was set upon by a largish bull frog, which gripping the bird in its jaws proceeded to swallow it, when the bird was saved.

NARESH CHATURVEDI

Cane Turtle

I refer to "Rediscovery of a rare turtle from Kerala Forest" (*Hornbill* Oct./Dec. 1982).

I had presented to the Society one specimen of this terrapin some time around 1964/65 which was identified as *Geomyda tricarinata*. Even today there is one complete dried specimen of this species with the Society which was later (in 1980/81) identified by Mr. Kannan as *Geomyda sylvatica* now *Hoseomys sylvatica*. I had been getting live

specimens of *H. sylvatica* from 1964 the time I started collecting *Testudo travancorica* for Dr. Auffenberg. I was getting atleast 5 or 6 of these every year till 1977 when most tortoises and turtles were included in Sch. I of the Wild Life Act, 1972. Though I used to export *H. sylvatica* at a high price, as *G. tricarinata* I had never succeeded in keeping them alive for more than few weeks. If I remember correctly, Romulus Whitaker had visited my collections on a number of occasions and seen this species with me as well as *K. kachuga*.

A specimen collected by Mr. Kannan in Sept. 1982 is still living with me as it has been kept in a dry terrarium. In areas where I used to obtain this turtle, it is called Red Headed Tortoise, a literal translation from Malayalam. The adult male of this species has a bright red head showing the distinction of the sexes, apart from the convexity of the plastron in the male by which the tortoises in general are sexed. It is also interesting that in the same note on page 26 it is mentioned that "In captivity they feed on Bananas, Jack fruits and Pine apples" while in *Hamadryad* 8 No. 1 Jan. 1983 "Stop Press" column page 13 it is given "Miss Vijaya, Crocodile Bank Research Officer has found that the Cane Turtle feeds on invertebrates such as millipedes, molluscs, and

beetles. Henderson (1912) thought it was a vegetarian but this unique little chelonian turns out to be omnivorous". My observation is that in captivity this species has so far eaten only fruits.

Bombay

S. R. SANE

Irritant plants

I was exceedingly interested in the article on "Irritant stinging plants found in India" in your 1983 (1) issue. In the plains level forests of Upper Assam bordering the Naga Hills there was a vile stinging plant which, from your picture, must be a *Laportea* sp. Its effects were well known to all who entered our forests, but were quite different from those described in your article. Initial contact with the plant caused no discomfort whatever, and it was only about six hours later that the most intense itching started at the site of contact. This lasted for about a week, but there was never any trace of erythema, nor were there systemic (generalised) effects at any stage. I never heard of any variation from this pattern. The mystery was all the greater because the leaves were shining and glabrous, apparently carrying no hairs. I never examined them with a lens, and I can only suppose that they must have had minute glands which deposited a toxin on the surface of the skin.

Further East, in North Borneo (now Sabah), my medical assistants told me of a tree which "dripped

poison", and that if a human took shelter under it from the rain he was likely to lose his skin and die. Eventually a man with this story was brought into one of my hospitals. He was suffering from a severe dermatitis covering almost the entire body surface, and was so severely ill that I did not expect him to live. (He survived in the end.) Later I was brought a piece of wood from the tree that was reputed to cause the trouble. Unwisely and only half believing I rubbed a chip on my arm — and suffered a massive lesion which took weeks to heal. I learnt my lesson the hard way! It was only then that I realised that the itchy lesions around the tops of my turned down socks were due to scuffing up the leaves, presumably from the same or a related tree, when walking in the forest. I would dearly like to know the family and name of the tree, and the toxins involved.

Dorset, U.K.

T. NORMAN

Acknowledgement

The Society thanks Ft Lt Dhun Mehta (Retd) for his valuable donation of *National Geographic Magazine* for the years 1976, 1977 and 1978 to the Society's Library.

CENTENARY CELEBRATIONS PROGRAMME

Centenary Seminar

A seminar on 'Conservation in developing countries — Problems and prospects' was organised from 6th to 10th December 1983 as a part of the Centenary Celebrations of the Society. Delegates from more than a dozen countries participated, and 88 papers were presented in twelve technical sessions of the seminar. In addition, talks, slide and film shows were arranged. This, however, turned out to be a little more than what one could absorb, mainly due to the diversity of topics and the frequency at which one was bombarded.

The choice of the Indian Institute of Technology (IIT), Powai, was laudable as it assured complete participation by the delegates housed in the hostels and guest-houses within the campus. The hospitality offered by the staff and students of the IIT was largely responsible for making the whole exercise quite enjoyable for everyone.

The inauguration of the seminar was held in the large Convocation Hall, attended by delegates and guests invited from all over the country. In a well-balanced inaugural speech Shri Digvijaysinh, Deputy Minister of Environment, Government of India, discussed the accomplishments and problems of the conservation movement in India, and opined that a voluntary

organisation, such as the Bombay Natural History Society, had a crucial role to play towards enhancing public awareness in this field. In drawing attention to the several steps necessary for conservation, he committed himself to appropriate action by Government. Dr S. Dillon Ripley, Secretary of the Smithsonian Institution delivered the Key-note address. He spoke authoritatively on the conservation policy in India, and achievements and role of the Society more as an insider and a member of the BNHS family. Dr Salim Ali summed up the inauguration speeches in his inimitable style with a few words of greetings to all the distinguished guests present. After a vote of thanks by Mr J. C. Daniel, the audio visual on the BNHS was shown.

The first technical session covered the topic 'Conservation in national parks and sanctuaries', with Mr S. P. Shahi, Retired Chief Conservator of Forests, Bihar, in the chair. Mr Samar Singh, Joint Secretary and Director (Wildlife), Government of India, presented the theme paper on India's National Action Plan. This was followed by papers by Prof. G. A. Petrides of Michigan State University on Sanctuary management; Drs Steven Berwick and

Marianne Berwick on Gir Forest ecology, and Nora Berwick and Mr Sanat Chavan on marine ecology. Prof. Steven Green and Dr. A.J.T. Johnsingh talked on the specific problems of parks and sanctuaries in India.

The Taj Group of Hotels hosted a dinner in the banquet hall of the Taj Mahal Hotel in the evening to the delegates. The special attraction was a 'jelly hornbill' especially made for the occasion.

The schedule for the next four days was more or less the same. The busy day started with tea at 6.30 a.m. Some delegates went for jogging or birdwatching in the beautiful IIT campus, before breakfast and start of the sessions at 8.30 a.m. in the lecture theatre of the main building of the IIT, a five to ten minutes' walk from the hostels. The lunch in the foyer of the Convocation Hall, prepared and served by the IIT Ladies' Hostel was a welcome break and the foyer formed a discussion venue for the delegates. The relaxed talks, slide and film shows every evening were equally, if not more, attractive than the technical sessions.

On the 7th December morning the second and third session on Ecological Diversity of the Flora and Fauna respectively were held. Shri Samar Singh chaired the former in which Dr Meher Homji of the Institute Francais, Pondicherry, delivered the theme paper on vegetation types of India, while three other

delegates read their papers on forest ecology. After the coffee break Prof. Petrides took the chair for the fauna part and Prof. Madhav Gadgil of the Indian Institute of Science, Bangalore, read the theme paper. Drs Neil Armanhout, David Roubik and Richard Thorington Jr, presented papers on fish, bees and giant squirrels respectively. Dr Brian Groombridge spoke about rain forests of SW. India and their herpetofauna while Mr K.S.R. Krishna Raju gave a status report on the Eastern Ghats.

After lunch the fourth session on the Regional Survey and General Problems of Status and Conservation of Wildlife and Wildlife Habitats was held under the chairmanship of Mr Zafar Futehally when Dr John Sale, FAO Advisor to the Institute of Wildlife Management, Government of India, presented the theme paper and Survey reports and problems of conservation in India, Pakistan, Bangladesh, Sri Lanka and Thailand were discussed by Drs A. J. Gaston (Canada), R. Rudran (USA), T.W. Hoffmann (Sri Lanka), G. Pillai, H. Sehgal, V.S. Vijayan and Kamal Naidu (India) and W.V. Brockelman (Thailand). Papers by the Whitakers and Dr Reza Khan (Bangladesh) were read by their students.

In the evening Mr S.P. Shahi gave a beautiful slide presentation on a wildlife overview of India. Later Prof. R. Altevogt of W. Germany

held a rapt audience with his wonderful sense of humour mixed with his captivating talk about Fiddler Crabs, showing several slides and a film on their extraordinary courtship displays.

The 8th December morning was devoted to visits to Borivli National Park and to the Bombay Natural History Society.

The fifth technical session afternoon was on Conservation Education and was chaired by Mrs Phillipa Mukherjee, and the theme paper was read by Mr Man Mohan Singh, Joint Secretary and Financial Advisor in the Government of India's Ministry of Education and Culture. NCERT Director, Mr P. L. Malhotra, Dr John Falk of Smithsonian, Mrs D. Variava, Mrs S. R. Grubh and Mr C. Wakankar presented papers on nature education.

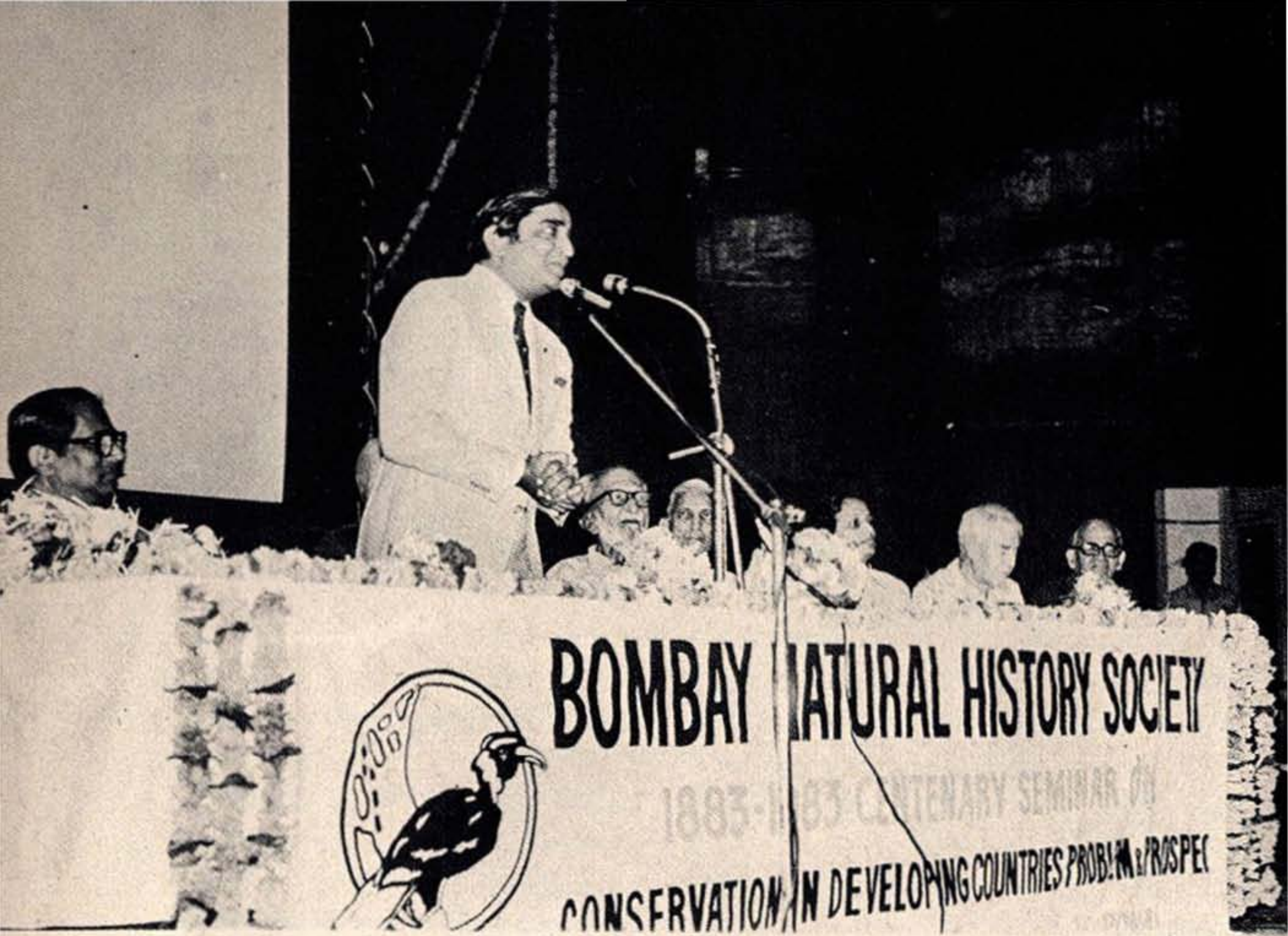
The next three sessions on that afternoon and the next day morning were devoted to case studies on Status and Conservation of Wildlife and their habitats. These were chaired by Dr H. R. Bustard, Dr R. Rudran and Dr T.J. Roberts. There were twenty papers presented in these sessions which included papers on highly endangered species of India by Mr S. A. Hussain, Drs A. R. Rahmani and Dr S. A. Yahya (India), Clifford Rice, J. Seidensticker, Melvin Sunquist, Paul Joslin (USA), N. Prasad, Ishwar Prakash (India), John Frazier, Gene Montgomery (USA), Prof. Altevogt (W. Germany) Drs

D. N. Mathew, Robert Grubh, Rauf Ali, B. M. Parashanya, H. D. Wesley (India) and of course Dr T. A. Davis who gave an extremely delightful report on Megapodes of Indonesia and Australia.

On 8th December evening Mr Angus F. Hutton from Australia presented a slide show on the butterflies of Papua New Guinea. His talk was followed by a BBC film on Dr Salim Ali and the Bombay Natural History Society.

There were two technical sessions on 9th afternoon. The first under the chairmanship of Mr J.C. Daniel, was on Captive Breeding in which Dr Bustard presented the theme paper on the Indian crocodiles. Dr Edward Moll spoke of freshwater turtles while Messrs. Shekhar Dattatri and Sudhakar Kar read their papers on python and saltwater crocodile respectively. Mr Angus Hutton spoke on butterfly farming, and Dr C. V. Kulkarni on Mahseer fish. There were a couple of papers by American scientists on captive breeding of animals including the Asian elephants. Dr Shirley Rushman of the ICF read her paper on captive breeding of cranes, and presented an egg-box to the Society on behalf of the International Crane Foundation.

The tenth technical session on Wildlife Trade began with Dr John Sale in the chair. Mr P. Kannan presented the theme paper. Dr M.J. B. Green (USA), Mr S. R. Sane (India) read papers and reports on wildlife trade which is largely



Above. Seminar Inaugural address by the Hon'ble Deputy Minister for Environment, Govt of India. Below. S. Dillon Ripley giving the Keynote address



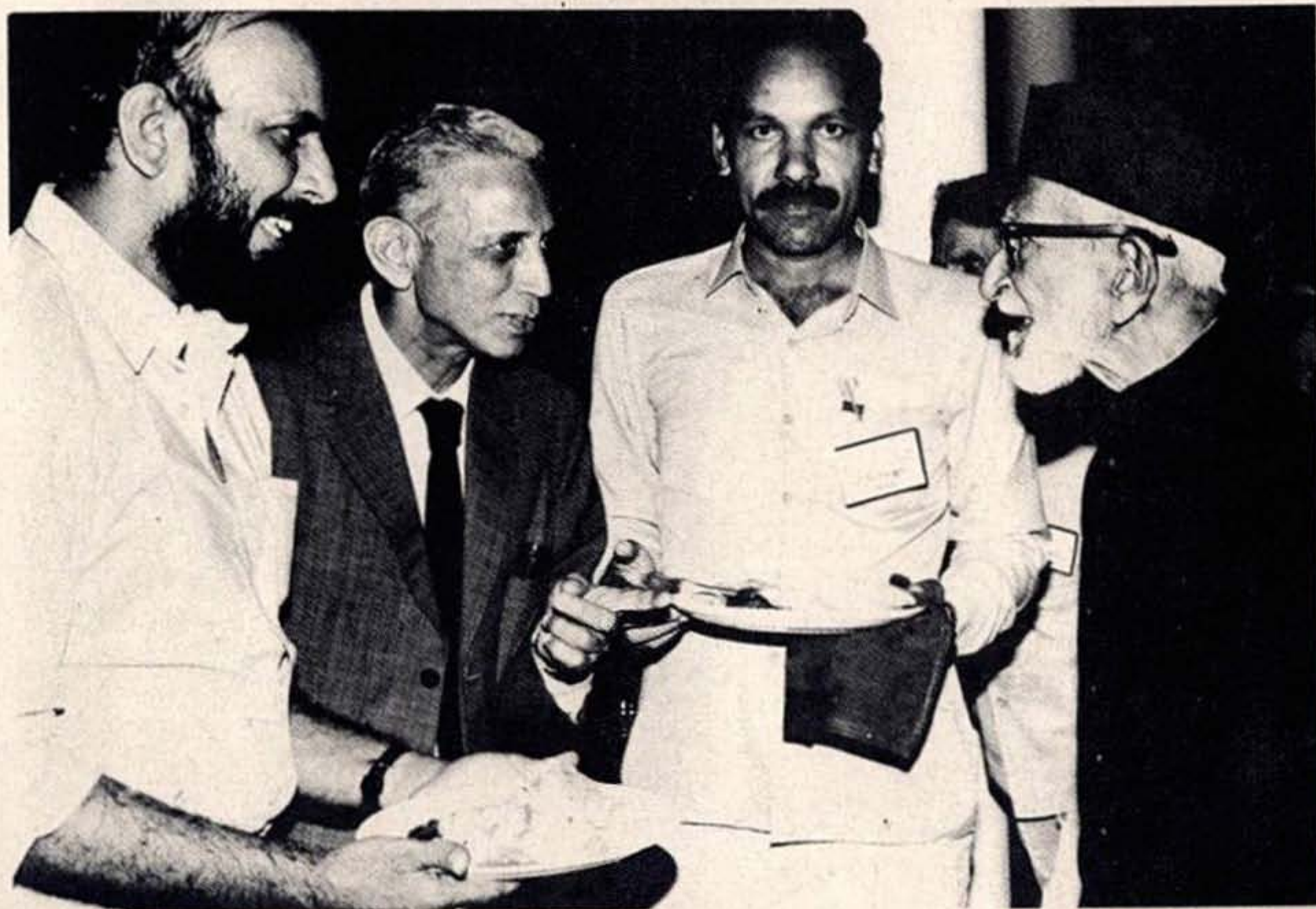


Above. A set of Peters's CHECKLIST OF THE BIRDS OF THE WORLD being presented to the Society by the Science Attache, U.S. Embassy on behalf of the Fish & Wildlife Service, U.S.A. Below. Delegates at the Seminar Inauguration





Above. Dr Salim Ali and Mr Rex Pimento with the Taj's "Jelly Hornbill". Below. Dr Salim Ali, and anticlockwise: Mr S.A. Hussain, Dr A.N.D. Nanavati, and Dr A.R. Rahmani at the Taj Dinner



responsible for indiscriminate poaching of wildlife.

There were three slide shows in the evening. Mr Basavappanavar, Director, Bandipur Tiger Reserve, gave a slide presentation on Bandipur. Dr S. Lahiri Choudhury, of the Asian Elephant Specialist Group, Survival Service Commission/IUCN showed several slides and a short film on elephants, their ecology, habitat, management and capture. Major General Gaur and Brig. Dar of the Indian Army showed some beautiful slides of nature and wildlife in Ladakh.

On the last day (10th December) the technical sessions were on the Conservation of Flora and habitat Resources utilization and Regeneration, which had Prof. P. V. Bole as chairman. Drs K. A. Shankaranarayan, A. N. Lahiri, Ulhas Karanth, S. N. Hegde, S. M. Almeida (India) and Henry Howe (USA) read papers on subjects as diverse as Orchids of Arunachal Pradesh, Desert Afforestation and Utilization of Organic waste for fish culture.

The next session was on Development, Conservation and Ecological Planning with Mr P. Khanna of the IIT as chairman. Messrs H. K. Divekar, B. Vijayraghavan, M. A. Rashid, E.R.C. Davidar, Ashok Kumar, Pieter, and Trevor Price presented papers on impact of hydro-electric projects, development projects and their effect on wildlife etc.

After lunch the last but important session for the discussion and adoption of Resolutions was held with Prof Madhav Gadgil in the chair. There was lively discussion in this session following which the major resolutions were adopted and Dr Salim Ali was requested to prepare the final draft.

At the closing function Dr Salim Ali and Prof. Boonsong Lekagul of Thailand were given a standing ovation in recognition of their contribution to Conservation in Asia.

The seminar concluded with a tea party hosted by Mr H. K. Divekar and a programme of Indian classical dances.

GOUTAM NARAYAN

CENTENARY SEMINAR ON "CONSERVATION IN DEVELOPING COUNTRIES — PROBLEMS AND PROSPECTS" 6-10 DECEMBER 1983

RESOLUTIONS

We, the delegates to the Centenary Seminar of the Bombay Natural History Society on Conservation in Developing Countries — Problems and Prospects

AWARE of the critical juncture in time at which we stand today and considering the problems that face the plant and animal life of the Indian subcontinent which require concerted and purposeful action by governmental authorities and indeed concerned citizens everywhere

OFFER the following *resolutions* for consideration and urgent action by governmental authorities

(1) NATIONAL WILDLIFE ACTION PLAN:

NOTING the continuing and constructive interest of the Government of India in Wildlife Conservation

CONGRATULATE the Government of India for framing a wildlife action plan within the terms suggested by the International Union for Conservation of Nature and Natural Resources' Conservation strategy for sustained development and

URGE that immediate steps be taken to: (a) constitute a system of nature reserves so as to bring fuller representation of the entire range of the country's biological communities within the purview of India's conservation effort, (b) establish without delay the Biosphere reserves of Nilgiri, Namdapha and Nandadevi for which the project documents have been approved by the Department of Environment, Government of India.

(2) ENDANGERED HABITATS

(a) *Andaman and Nicobar Islands*

CONSIDERING the enormous and unique biological potential of the Islands and

NOTING that the area is being haphazardly developed for human needs

URGES that their management be immediately vested in a special conservation authority and the remaining undisturbed Island ecosystems named inviolate biosphere reserves

(b) Ashambu Hills Complex

APPRECIATING the high range of endemism in this extensive and easily protected tract holding very diverse habitats, including extensive areas of *Cullenia* and *Palaquium* rain forests, the home of the endangered lion-tailed macaque (*Macaca silenus*)

RECOMMENDS that the whole complex be named a biosphere reserve immediately

(c) Deccan Thorn Forests

AWARE that one of the most threatened biological communities is the thorn forest of the Deccan plateau, which once covered an extensive tract and was the home of the now extinct Indian cheetah and presently harbours such endangered species as the wolf, blackbuck, florican and bustard

URGES the rehabilitation of this ecosystem in a special nature reserve to be selected and sited in an appropriate area still holding remnants of the habitat

(3) INTERNATIONAL CO-OPERATION FOR CONSERVATION

RECOGNISING that the Jaldapara Wildlife Sanctuary Buxa Tiger Reserve and adjacent Sub-Himalayan Forests in Bhutan and Assam form a contiguous compact unit essential to be so maintained for the conservation of the Sub-Himalayan ecosystem

APPEALS to the Government of India to conclude an agreement with the Government of Bhutan for assuring the permanent continuity of these forests

(4) WETLAND CONSERVATION

NOTING that wetlands and freshwater and marine fauna and flora do not receive adequate attention and NOTING that chemical pollution through industrial effluents remains a major threat to these ecosystems

REQUESTS that high priority be given to the identification and listing of all significant wetland, riverine and coastal habitats and to the setting up of wetland nature reserves. And

URGES the Central and State Governments to assure the proper implementation of the existing anti-water pollution laws.

(5) SMALL RESERVES

AWARE that several areas exist in the country which though small in

area are biologically of high significance from the special flora or fauna that they hold such as orchids, sacred groves, heronries, turtle breeding grounds,

SUGGESTS that these be identified, listed, and brought to the attention of the concerned authorities for full protection

(6) CONSERVATION OF HILL SLOPES

APPRECIATING the damage that over use in a non-sustainable manner of the tree cover of hill slopes by local populations and urban industrial sectors has led to destructive landslides even in formerly stable areas like the Western Ghats,

RECOMMENDS that as an immediate first step a complete halt be made to clear felling and high intensity selection felling on slopes exceeding 30° in geologically and hydrologically sensitive areas.

Further RECOMMENDS that to prevent indiscriminate felling of forests in the hill states of northwest India, forest lands be brought under a single centralized control and management in these States.

(7) WILDLIFE ADMINISTRATION

RECOGNISING that administration of sanctuaries, national parks, tiger reserves and biosphere reserves will not reach peak efficiency unless managed by committed, conservation oriented, trained, wildlife managers,

RECOMMENDS that the decision to form a separate wildlife wing be immediately implemented in all states of the Union and professionally trained wildlife managers be employed and given special incentive and assured prospects of a good career.

(8) WILDLIFE RESEARCH

NOTING that management of nature reserves requires a much strengthened base of scientific information,

RECOMMENDS that every encouragement be given to ecological field research and assurance of constructive co-operation between field researchers and nature reserve managements.

(9) WILDLIFE TRADE

RECOGNISING the enormous damage that is being done to the wildlife wealth of the country by unregulated internal trade,

URGES that internal trade in articles banned for export be totally

halted and trade in wildlife produce be nationalised, except trade in agricultural pests such as parakeets and mynas, and special attention paid to regulating the fur trade in the State of Jammu and Kashmir.

(10) CROP-PROTECTION GUNS

NOTING the misuse that Crop-protection guns are put to and which causes serious problems in wildlife reserves

URGES that licences issued for these weapons for use in the vicinity of national parks and sanctuaries be withdrawn immediately.

(11) HUMAN ECOLOGY AND WILDLIFE CONSERVATION

(a) *Energy Fuel*

APPRECIATING the fact that it is *impossible* to save our forest habitats without arranging alternate fuel resources for rural populations,

URGES that the *highest priority* be given to programmes of afforestation of barren and wastelands.

(b) *Local support*

RECOGNISING that enthusiastic co-operation of local populations is a vital key to successful conservation as has been so well demonstrated by the Bishnoi community of Rajasthan and Gujarat, who this gathering felicitates

RECOMMENDS that special employment generating programmes of rural development including fuel and fodder production for the local population form an integral part of management of all reserves

(c) *Environmental Education*

RECOGNISING the need for inculcating a new conservation ethic in our population, as our rich tradition of veneration for nature is being rapidly eroded,

RECOMMENDS that environmental education should form an integral part of our educational curricula at all levels, special attention being paid in rural areas and through the medium of Indian languages

(d) *Human Population Control*

RECOGNISING the fact that increasing human population is the root cause of environmental degradation,

RECOMMENDS that benign population control methods should be recognised as an urgent conservation need.

(12) NON-GOVERNMENTAL ORGANISATIONS

APPRECIATING that the Non-Governmental Organisations of which Bombay Natural History Society is an outstanding example, have

played and will continue to play a major role in our conservation efforts,

RECOMMENDS that all attempts be made to involve them in every possible way in conservation programmes. A comprehensive directory of Non-Governmental Organisations should be prepared to facilitate such involvement

(13) FELICITATION

RECOGNISING the dedicated service of many members of the Forest Departments of Indian States in the conservation of India's Wildlife heritage in spite of the many constraints within which they operate

RECORDS its deep appreciation of their efforts to conserve this national heritage



Delegates at one of the Seminar sessions

PHOTOGRAPHIC EXHIBITION

As a part of the Centenary Programme, a Nature Photograph exhibition/competition was arranged in December 1983. There were three sections for participants: Monochrome prints, Colour transparencies, and Colour prints. Each participant was allowed to submit 5 entries in each section. 1082 entries were received: 363 Monochrome, 160 Colour prints and 559 Transparencies. The entries were judged by the well-known wildlife photographers:

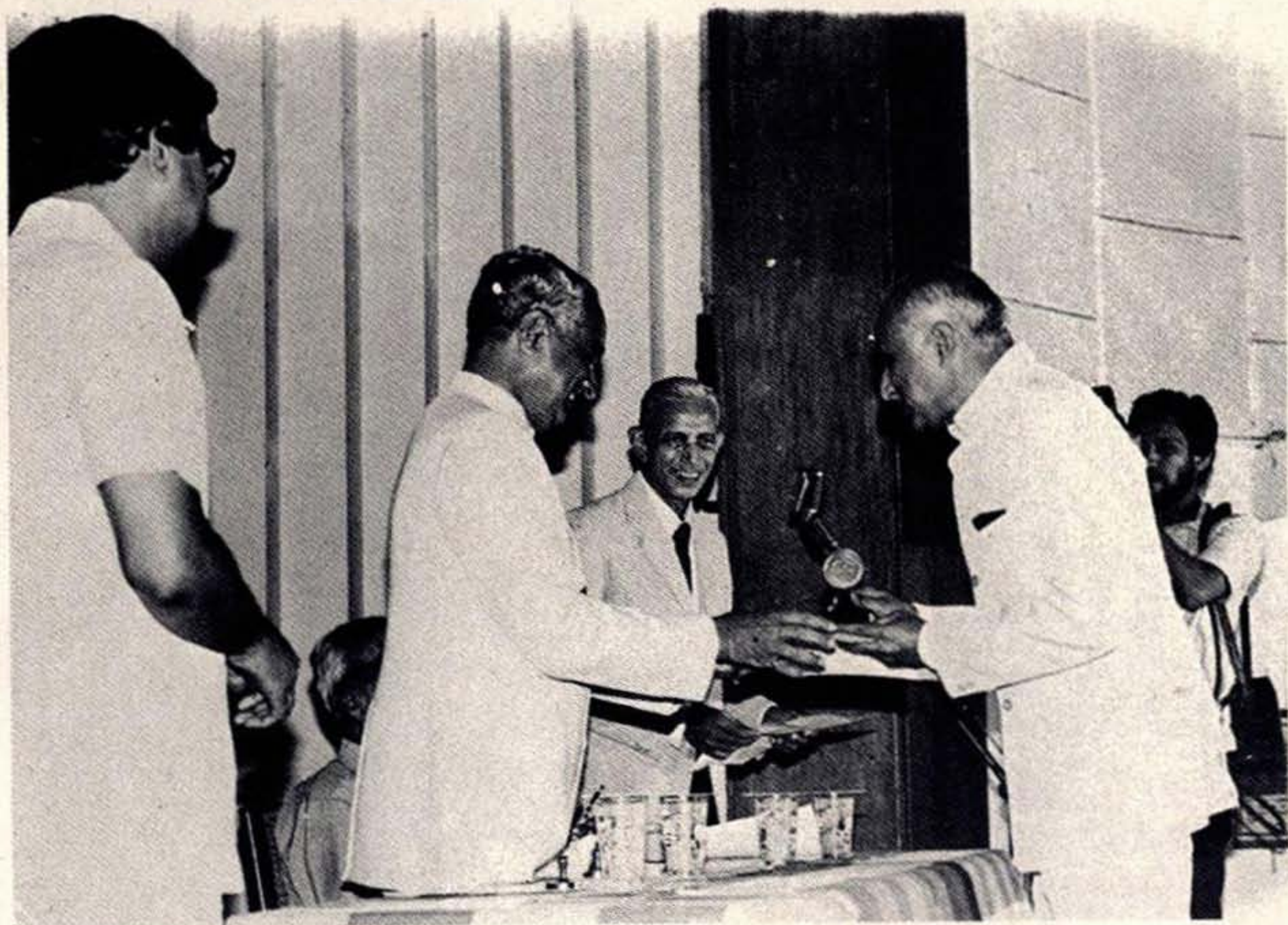
Mr M. Krishnan
Mr O. C. Edwards
Mr E. Hanumantha Rao

Grand Prizes

The Centenary Grand Prize of Rs 5000/- and a Gold plated Centenary Medal with a Certificate was awarded to Mr M. K. Ghorpade for his photograph *Tusker in the Rain*

The Loke Wan Tho Prize of Rs. 5000/- and a Gold plated Centenary Medal with a certificate was awarded to Mr Shivraj Kumar Khachar for his photograph *The Lesser Florican*.

The other prizes were distributed as follows:



Mr Shivraj Kumar Kacher receiving the Loke Wan Tho prize for the best bird photograph

Monochrome Prints

First Prize Rs 2000/- and a Gold plated Centenary Medal and a Certificate to Mr T. N. A. Perumal for his picture of *Mottled Wood Owl*

Second Prize Rs 1000/- and a Silver Centenary Medal and a Certificate to Mr M. S. Hebbar for his picture *Egret pair breeding*

Third Prize Rs 500/- and a Bronze Centenary Medal and a Certificate to Mr H. N. Allama Prabhu for his picture *Egret in flight*

Colour Prints

First Prize Rs 2000/- and a Gold plated Centenary Medal and a Certificate to Mr M. Janardhanan for *Yellow-wattled Lapwing at nest*

The Centenary Grand Prize winning photograph: 'Tusker in the rain' by M. Y. Ghorpade





Air Chief Marshall, Idris Latif, Governor of Maharashtra, being shown around by Dr. Salim Ali and Mr Naresh Chaturvedi

Second Prize Rs 1000/- a Silver Centenary Medal and a Certificate to Mr M. R. Laxmipathy for *Spoon-bill pair*

Third Prize Rs 500/- a Bronze Centenary Medal and a Certificate to Mr S. Thippeswamy for *Cattle Egret with two eggs*

Colour Transparencies

First Prize Rs 2000/- a Gold plated Centenary Medal and a Certificate to Mr M. Janardhanan for *Redvented Bulbul feeding young*

Second prize Rs 1000/- and a Silver Centenary Medal and a Certificate to Mr G. C. Patel for *Iora at nest*

Third Prize Rs 500/- a Bronze Centenary Medal and a Certificate to Mr T. S. Lal for *What a feast*

Besides these prizes certificates of merits were given in each section.

Mr Ghorpade donated his Rs. 5000/- cash Prize as well as an additional Rs. 5000/- towards instituting a corpus for prizes for photographic exhibitions by the Society.

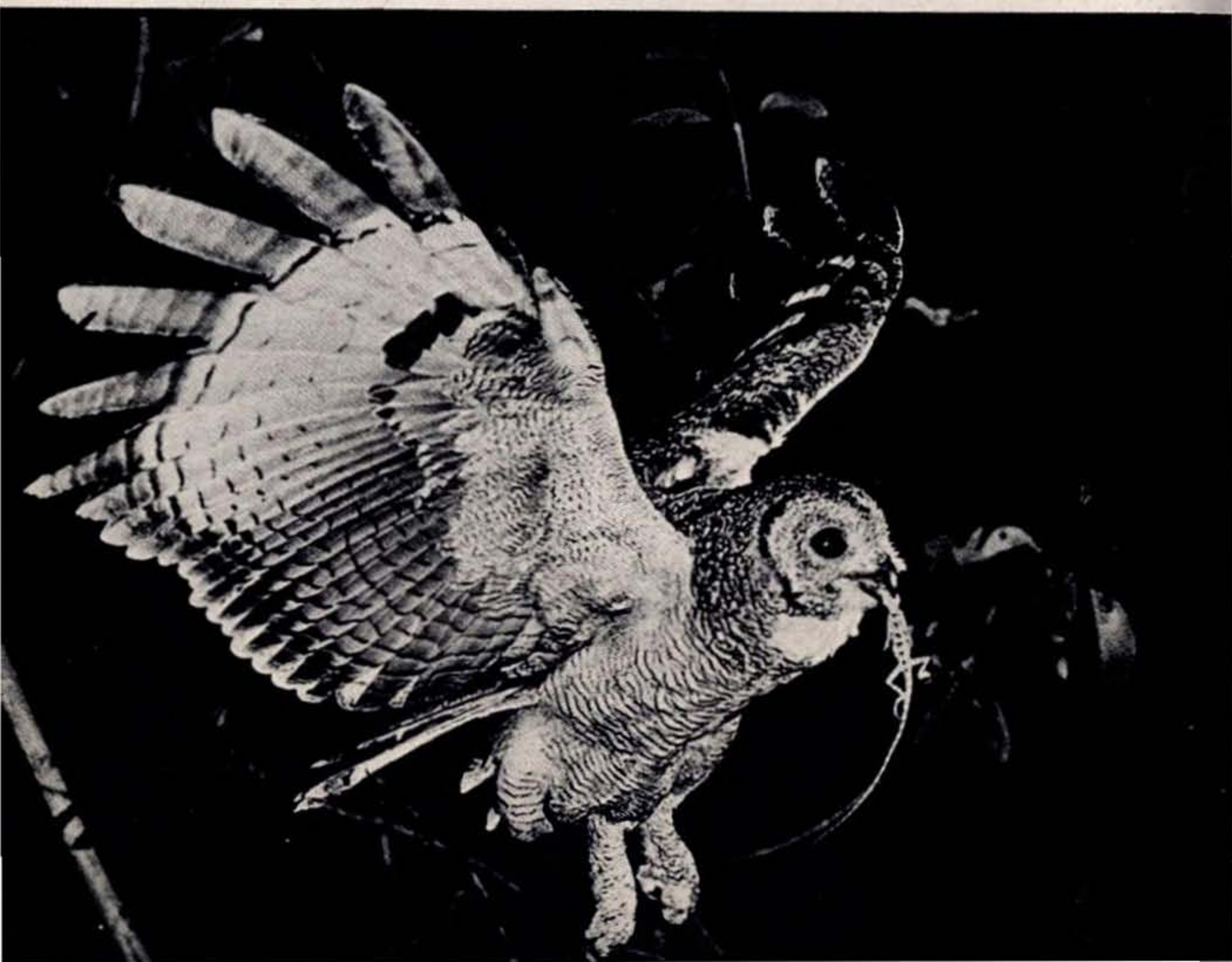
The Exhibition was held at the Jehangir Art Gallery, Bombay from 20th December to 26th December 1983, and was inaugurated by H.E. Air Chief Marshal I.H. Latif, the Governor of Maharashtra on 20th December. During the seven days of the exhibition, the photographs were on view and more than 10,000 persons visited the exhibition.

The Exhibition was sponsored by Grindlays Bank.

NARESH CHATURVEDI



Above. *The Loke Wan Tho* prize winning photograph: 'The Lesser Florican at nest' by Shivraj Kumar Kacher. Below. 'Mottled Wood Owl' by T.N.A. Perumal. First prize winner for monochrome





Above. Monochrome print of 'Redvented Bulbul feeding young'. First prize winning colour transparency by Mr M. Janardhanan. Below. 'Egret pair breeding' — Second prize winning monochrome by Mr M.S. Hebbar



Release of Centenary Publication

PUBLICATIONS AND EXHIBITIONS

THE BOOK OF INDIAN REPTILES

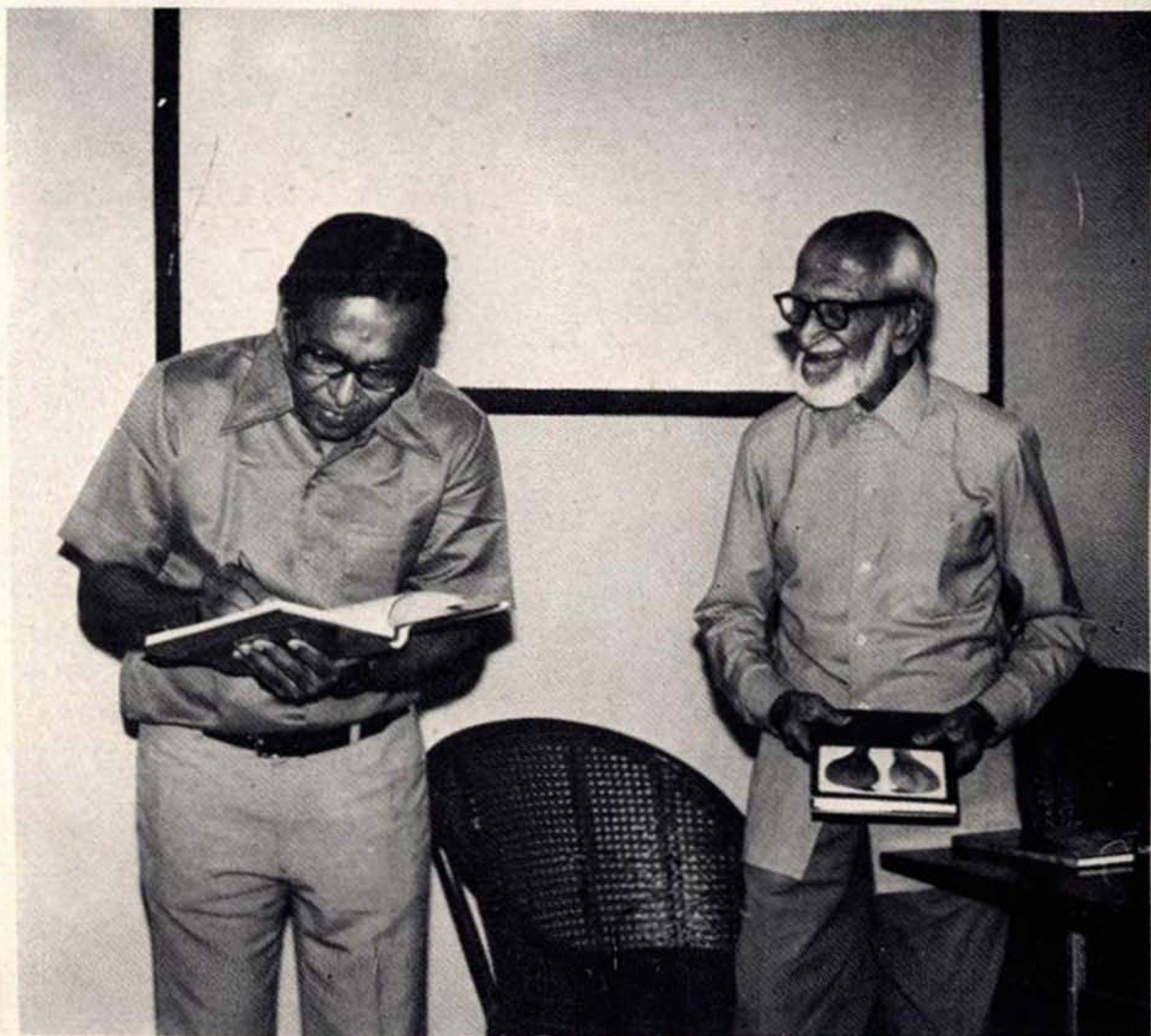
The long-awaited THE BOOK OF INDIAN REPTILES by J.C. Daniel, one of the Centenary publications of the Society, was released by Dr Salim Ali on 4th January as a part of the Centenary programme.

The publication meets a long felt need for a book on the natural history of reptiles occurring in the Indian subcontinent and is mainly aimed at popularizing the study of

reptiles and conservation of this much maligned group. There are 76 colour illustrations and 24 monochrome and line drawings of the reptiles that are commonly met with. In all 140 species are described in simple, technical-jargon-free language. This book will be a useful guide to the layman and the specialist.

It is priced at Rs 75/- (Rs. 60/- for members) per copy.

A. N. D. NANAVATI
Honorary Secretary



Dr Salim Ali releasing THE BOOK OF INDIAN REPTILES, by J. C. Daniel. The author autographing a copy

BIRDS IN WATER COLOURS

While the Society's Exhibition on Nature Photography was being held at the other end of the Prince of Wales Museum at the Jehangir Art Gallery, one more exhibition of bird paintings in water colours by Mrs Pratibha Pande was inaugurated by Dr Salim Ali at Hornbill House.

Ten delightful paintings of birds were displayed at the Society's auditorium. Two among these were presented by the artist to Dr Salim Ali during the inauguration of the Society's Centenary Celebrations held at the Indian Institute of Technology, Powai.

Mrs Pande has exhibited her paintings at Bharatpur, Delhi and on an earlier occasion in Bombay. She has been sketching and painting from her childhood days. Now a housewife, birds inspire her the most.

EDUCATIONAL REPTILE (SNAKES) EXHIBITION

Yet another exhibition of snakes and other reptiles was organized by Mr H. K. Divekar, Honorary Treasurer of the Society and by Mr P.B. Shekar, the Society's Chief Technical Assistant. It proved as successful as the similar exhibition earlier held during the winter of 1980-81. The current exhibition had, in addition to its educative function of dispelling myths and fallacies about snakes, the major objective of convincing the layman of the need to conserve nature in all its diversity.

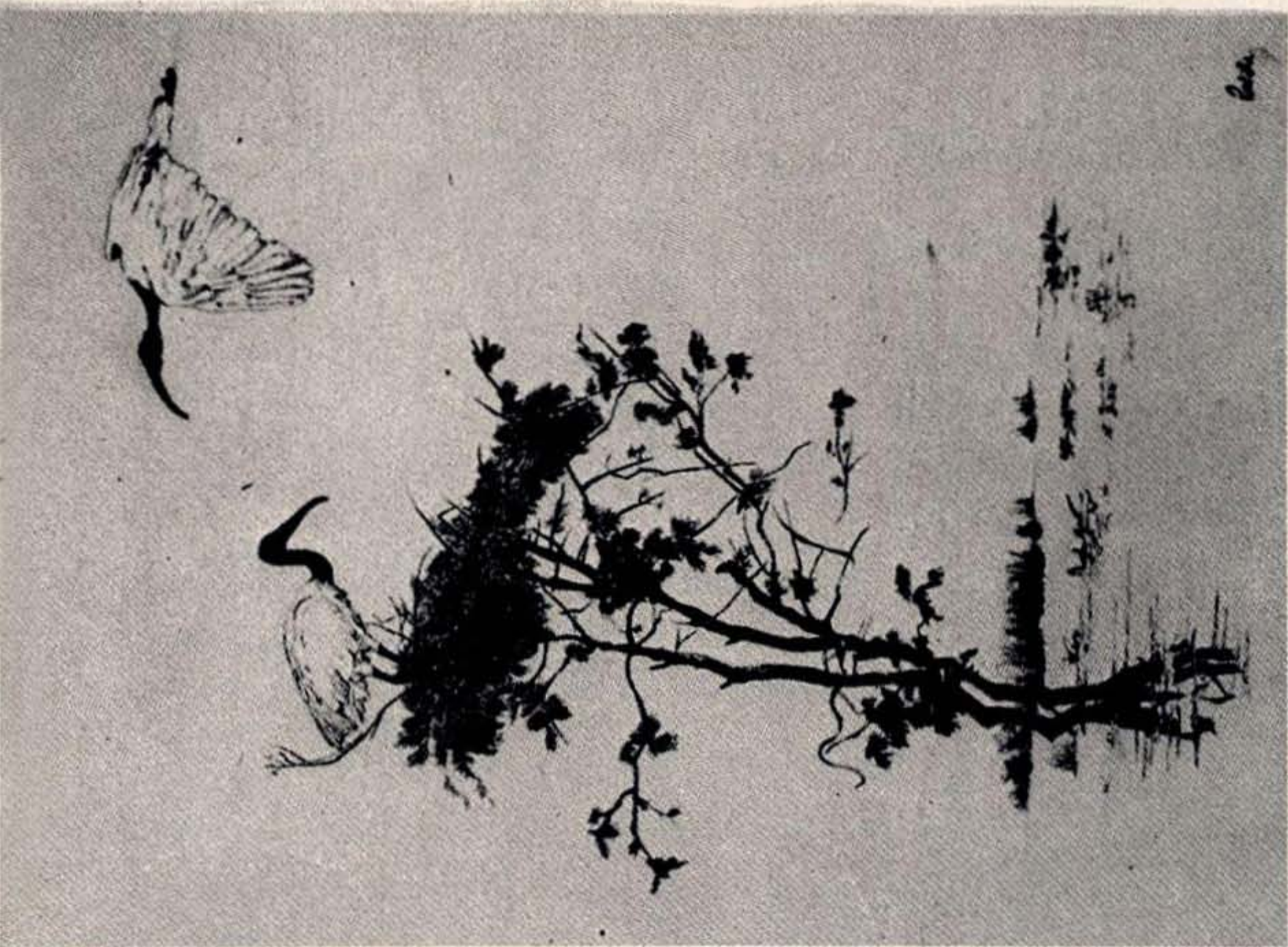
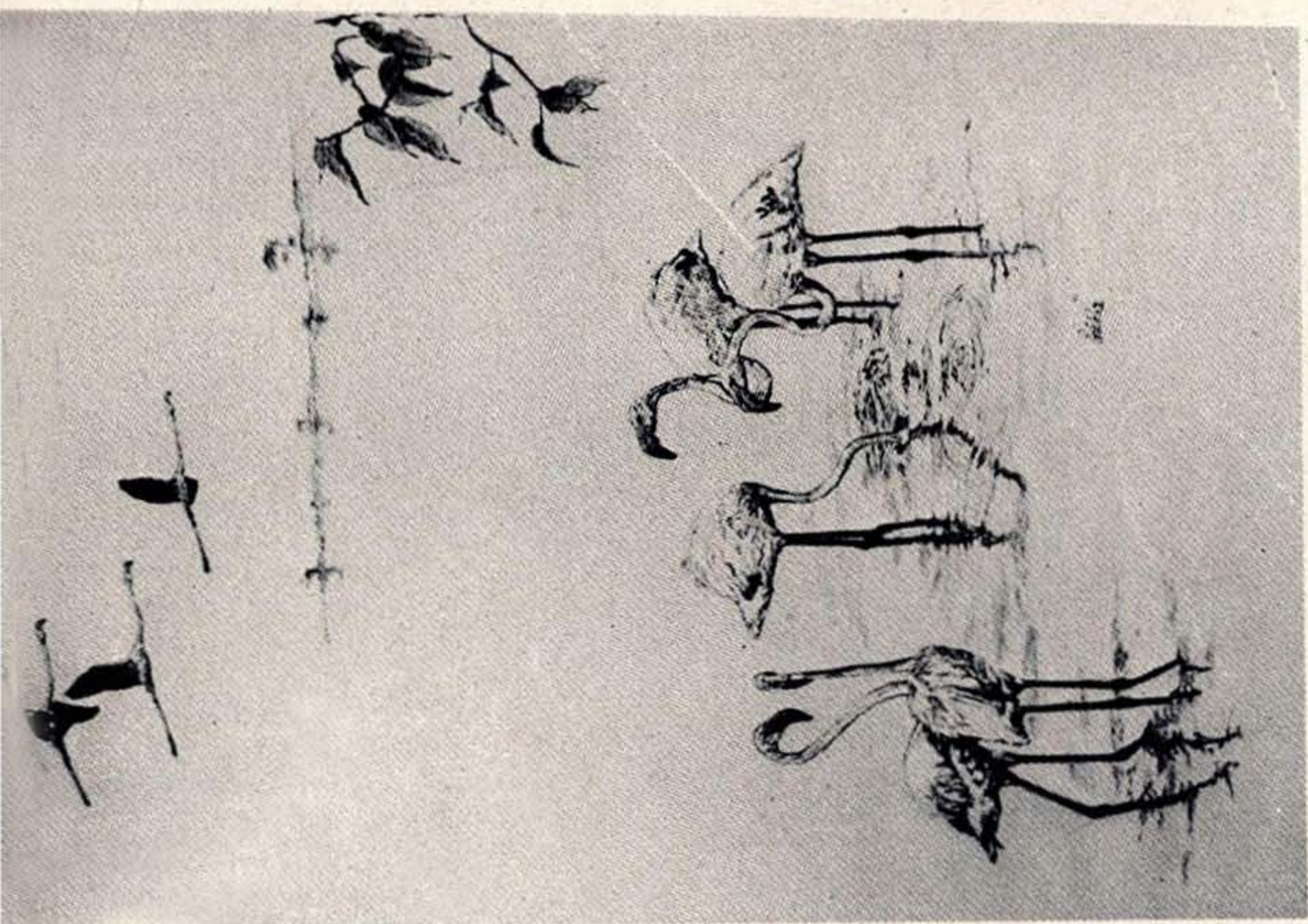
A demonstration lecture was held every half an hour when the audience could handle snakes. The response during the 35 days of the exhibition was overwhelming and over 206,000 people visited it, including 20,000 students.

I.D. KEHIMKAR



Dr Salim Ali releasing the King Cobra in its pen at the Society's Snake Exhibition

Photo: G.C. Patel



Rescue of a Wild Elephant

It was a hot summer evening. Sitting at the forest lodge at Begur near Kabini Reservoir, I was discussing with visiting friends of the wildlife action group from Bangalore and taking stock of the accidents and incidents that took place during that unfortunate day of elephant ride, Mr. Prabakar, Range Forest Officer, Begur brought the shocking news that a wild cow-elephant was bogged down in the mud on the Kabini river bed about 200 metres upstream of the once world famous Khedda site. The news created a commotion as it was too late to go to the rescue of the animal.

The next morning we saw a ghastly sight. The animal was almost completely sunk excepting the rib case and the face. The elephant was completely exhausted and was hardly making movements of the body. Some of the tribal people were standing and watching the helpless animal as silent spectators, not daring to go near the elephant. The head of the community informed us that the animal was heard screaming desperately in its bid to extricate itself since early morning of the previous day. The elephant had been bogged in and struggling to come out for more than 28 hours now.

According to eye witnesses the more the animal heaved to come out the deeper it went into the silt-pit in the river bed. We offered a bucket full of water to the elephant to drink

but it could not drink as it could not lift its face off the mud.

While I was working out a strategy to extricate the unfortunate animal, one of the members of the Wildlife Action Group suggested summoning a slurry plant from Bangalore to remove the mud around the elephant, so that it could walk over easily. Another member who was an engineer suggested getting a pump set from Mysore to pump up water into the pit, so that the water would convert the mud into liquid and help in the release of the animal on account of bouyancy and it could naturally swim across. Another suggested lifting the animal out with the help of a crane.

Getting a slurry plant or a pump set or a crane from distant places like Bangalore or Mysore was rather time consuming. The animal had been without food and water for more than 28 hours and was exhausted from its constant struggle. Any delay would make it too late for us to save the animal. I sent for the Range Forest Officer, Kakanakote, to bring the departmental elephants and ropes. Though the animal was totally incapacitated tribal people who had assembled were not prepared to approach the elephant. Naturally, they were also afraid of getting trapped in the mud. We started them off to scooping out the mud surrounding the elephant.



Rescue of wild elephant from mud-trap

Photo: H. Bassapanavar

Meanwhile Range Officer, from Kakanakote, arrived with his contingent of 4 working elephants including Dhrona and some ropes. The Tribals who had till now kept at a safe distance from the wild elephant slowly made friends with the animal which allowed them to touch its trunk, head and body while inserting the rope under its neck. One of the Mahouts went to the extent of sitting on its back while tying the rope and the elephant was successfully and safely extricated from the trap.

As a result of its total exhaustion its limbs crumbled as the animal tried to stand up. However with the assistance of the tame elephants it was helped to stand up and gradually pushed upto the river bank. When it was about to be set free the Ranger and his staff appealed to me

to chain it permanently for our departmental use. The mahouts too, who had come with their elephants pleaded for its retention with the department.

Since we had rescued the wild elephant in distress I ordered it to be released into the wilderness, with instructions to the Range Forest Officer, Kakanakote to keep track and constant vigil over the elephant for the next 3 to 4 days. After two days the message came that the cow elephant had rejoined its year old calf and the herd consisting of 18 elephants.

I was happy that we were able to rescue the wild cow-elephant from the clutches of the death trap and rehabilitate it into its own domain.

H. BASAPPANAVAR

BNHS CENTENARY PUBLICATIONS

The following Centenary Publications are available at the Society:

A PICTORIAL GUIDE TO THE BIRDS OF THE INDIAN SUBCONTINENT,
by Salim Ali & S. Dillon Ripley. *Price* Rs. 120/- per copy
(*Members*, Rs. 90/-)

THE BOOK OF INDIAN REPTILES, by J. C. Daniel. *Price* Rs. 75/-
(*Members*, Rs. 60/-)

A CENTURY OF NATURAL HISTORY, Ed. J. C. Daniel. *Price* 125/-
(*Members*, Rs. 95/-)

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BIRDWATCHER

Parasitic birds

Building a secure nest, remote and inaccessible, in which to lay eggs, incubating and hatching them and devoting great care for the helpless young ones until they are strong enough to fly and hunt, involve hard work and perseverance on the part of parent birds of most species. However, some 80 odd species of birds seem neither to have the ability nor the skill to build their own nests, to hatch the eggs or rear their young. They circumvent these problems by laying egg(s) in the active nests of other species. All parental duties are left for the host birds.

This behaviour known as 'brood parasitism', while providing an unfair advantage to the parasitic birds has led to the deterioration of the self preserving defense mechanism of the host birds regardless of their size or intelligence. Perennial ejection and destruction of the host birds' eggs and young ones by the offspring of the intruders have become the order of the day.

Brood parasites fall into two categories. Non-obligate and obligate. *Non-obligate parasites* know how to build nests, incubate the eggs and rear their offspring but occasionally they tend to lay eggs in the nests of other species. American Blackbilled and Yellowbilled cuckoos and some members of the Duck family belong to this category. *Obligate parasites*, on the other

hand, do not build nests, incubate the eggs or raise their young but lay eggs, always, in the nests of other species. The Indian Koel, the European Cuckoo, the African Honey-Guides and the North American Cowbirds are few of the obligate parasites.

Non-Obligate Parasites

Nearly twentyone species in the Duck family are non-obligate parasites. They are known to make flimsy and untidy nests. Their attachment to their nests, eggs and fledgings is very unstable and they forsake them at the slightest of disturbance.

The non-obligate parasites can be either nest parasites or egg parasites. The *nest parasites*, although capable of building their own nests, show an overwhelming tendency to use the nests of other birds obtained either through the ousting of the real owner or through an occupation of nests that are abandoned. The new tenants repair or remodel the nests and use them for reinforcing the base of their own nests. the Bay-winged Cowbird (*Agelaiodes badius*) of Argentina and, occasionally, the Hawks and the Owls are among birds known to exhibit this tendency. The *egg parasites* are not successful in making their nests but lay their eggs, in most instances, in the nests of other birds of the

same family. The Screaming Cowbird (*Molothrus rufoaxillaris*) of South America, an egg parasite, holds on to its eggs until her cousin the Baywinged Cowbird completes its nest. The Screaming Cowbird, after having waited patiently, lays her egg in the completed nest to be hatched and reared by her cousin. The Shiny Cowbird (*Molothrus bonariensis*) found in Chile, Argentina and Panama has yet to attain perfection as an egg parasite as it continues to lay its eggs in the nests of undesirable hosts wasting too many eggs. It is in these non-obligate parasites that we discover the transitory stages of parasitic development leading to the final stage of parasitism the obligate brood parasitism.

OBLIGATE BROOD PARASITES

The largest number of obligate parasitic birds are in the Cuckoo family where 47 species are fully parasitic. Most of them inhabit the continents of Europe, Africa and Australasia.

Koel versus Crow

Four species of parasitic cuckoos are found in India. They are the Koel (*Eudynamis scolopacea*), the Indian Cuckoo (*Cuculus micropterus*), the Plaintive Cuckoo (*Cacomantis merulinus*) and the Hawk-Cuckoo (*Hierococcyx varius*). The famed songster Koel does not build a nest. Instead it lays eggs in the nests of House Crow (*Corvus splendens*) and the Jungle Crow (*Corvus macrorhynchos*). The

crows incubate and hatch the eggs and bring up the young koel. Despite the fact that ornithological studies have proven the crow to be a highly intelligent bird, it is surprising how it has allowed this outrageous act of the koel to continue, apparently unnoticed, to date.

The female koel trespasses into the nest of the crow when she is away and lays a single speckled greenish grey egg almost the same colour and texture of that of the crow but slightly smaller in size. The egg mimicry makes it impossible for the crow to distinguish between its own eggs and that of the koel. The koel parasitism, somehow, seems not to have had much detrimental effect on the crow population as the crow continues to be regarded as a pest in India, even today.

The cousins of the koel—the Crested and the Hawk Cuckoos of India victimise smaller birds like the Common Babbler (*Turdoides caudatus*) and the Jungle Babbler (*Turdoides striatus*) and lay their eggs in the babbler's nest. The dark blue egg of the parasite although a replica of the babbler product in colour, is slightly bigger in size. The babblers do not seem to recognise the difference. Fledged and outgrown, the 'pseudo offspring' appears to be an object of great pride and joy for the deceived babbler foster parents.

Aggression and Survival

The Cuckoos of Europe, all of them

obligate parasites, are highly migratory and leave for tropical Africa in the early winter. Two species of them specifically breed in Europe. They are the common Cuckoo (*Cuculus canorus*), and the Great Spotted Cuckoo (*Clamator glandarius*). The Great Spotted Cuckoo chooses the Magpie of the Crow family as its host while the Common Cuckoo selects the nests of smaller passerine birds like the sparrows, the redstarts and the meadow pipits. The female may lay 15 to 25 eggs in a season. It has been observed that the female cuckoo keeps one of the eggs of the host in her beak while laying her own single egg and that it flies away with the stolen egg for a free meal!

The Common Cuckoo's egg hatches in 12 to 13 days, sooner than do the eggs of the hosts. Subsequent to the hatching of the cuckoo's egg, some dramatic events occur in the hosts nests. Born blind and unable to stand on its own feet, the cuckoo offspring, instinctively, pushes out of the nest and destroys the legitimate eggs of the foster parents, one by one, using its back and unfeathered wings. It appears that nature has given a 'triggering mechanism' to the cuckoo fledging by way of a 'back itch' that it begins to satisfy the urge by rubbing or pushing objects against its back whether they are actual eggs, fledglings or even experimental objects placed in the nest such as small stones or the like. The ultimate result of this selfish but survival act

of the new born cuckoo is that it gets all the food that the foster parents bring without any competition. The cuckoo fledging grows at a rapid rate and is, in certain instances, several times bigger than the foster parents themselves and these parents have been observed perching on the back of the young to feed it !

Killer Nestmates

Of the many parasitic birds in the world today, none is comparable to the vicious Honey-Guide (Indicatoridae) of Africa. There are 14 species of them in that family and all are fully parasitic. The name 'Honey-Guide' refers to their habit of directing men and animals towards the nests of honey bees. The parasitic young ones are born in the nests of hole-nesting birds like the barbets, the woodpecker and the bee-eater. At birth, the young parasite comes equipped with sharp pointed hooks in the upper and lower tips, of its bill. With these fine points the young Honey-Guide nips and hooks the offspring of the host and kills the nest mates. This way, the parasite ensures that there is no one left in the nest to challenge for the nourishment brought by the foster parents. Once this function of elimination is accomplished, the hooks shed off. Should two Honey-Guide young ones be concurrently hatched by the same host parents in the same nest, the blind young Honey-Guides will engage themselves in combats, inflicting

wounds with their deadly hooks, ultimately killing each other.

WHEN, HOW, AND WHY DID THE PARASITIC HABIT ORIGINATE?

The origin and the evolutionary processes associated with the parasitic habits of birds have been mostly a matter of speculation. Some of these birds have been around for millions of years. The fossil remains of cuckoos which lived about 36,000,000 years ago have been discovered in the Oligocene sediments of Central France. Whether these birds were partially or fully parasitic from its beginnings continues to baffle scientists.

The majority of birds in the world today manifest, during the breeding season, certain definite cyclical instincts in a sequential order. These instincts deal with their territory, courtship (monogamous), nest building, egg laying including the incubation and the rearing of the young. These are the original traits among birds. It is reasoned that any aberrant behaviour such as the propagation of one's offspring at the expense of other species could only have developed at a later stage.

Adaptations

During the course of evolution some vital adaptations must have enhanced the parasitic habits of birds. Among many criteria that had to be met, the selection of an appropriate host species for the acceptance of the eggs, perhaps, was the foremost. Synchronization of the egg laying time of the parasite with that of the

host must have become the next priority. Thirdly, the assurance of the acceptance of the parasite's eggs by the hosts became all important. This problem must have been overcome by the ability acquired by the parasitic birds to mimic the eggs of the hosts in size and colour.

Since most parasitic birds choose smaller birds as their potential hosts, the parasites are also now adapted to lay smaller eggs in relation to their physical size. To ensure the hatching of at least some of its eggs, the parasitic bird lays a large number of eggs, one in each nest of the host bird and never all in any one nest. There have been other adaptations as well. These qualities mainly dealing with matters of deception and survival may not have been achieved overnight but through a continued 'trial and error method' in which the process of Natural Selection must have favoured many of the beneficial traits. The Indian Koel and the Cuckoos of Europe all may have reached this stage through various transitions, attaining the parasitic habits in their fullest forms.

How the original koel happened to pick up Crow as the potential host remains a mystery. It is even a bigger mystery as to how the offsprings of the koel from one generation to another seem to select the crow's nest in which to lay their eggs. It is possible that during the period the young koel is reared in the crow's nest the message to lay, at maturity, its own eggs in the nest of the same

host species, becomes indelibly imprinted as an integral part of the parasitic koel's behaviour. This tells us nothing about the motivating force which may have led the koel from building its own nests, caring for its eggs and progeny to a seeming ignorance of all these techniques. We have no leads.

Scientists believe that the nest building and the egg laying cyclical instincts, for some unknown climatic or natural reasons, may have become twisted around in these species in the past resulting in the egg laying time arriving before the nest building time, leaving no choice for the female bird but to lay her eggs in any nest which, when found advantageous, continued unabated.

Others propound the theory that the parasitic habits among birds originated due to a biological phenomenon known as 'Ovarian Stimuli'. This theory holds that the female bird must have begun to lay her eggs in an alien nest stimulated by the sight of other eggs similar to her own in colour and size and carried on the practice.

Whatever the reason for its origin, outwardly, it appears that "Nature" has been cruel to the host birds. On the other hand, is brood parasitism Nature's device to control the population of certain bird species?

RAMACHANDRAN NAMBIAR



Common Cuckoo parasitising Plumbeous Redstart

Photo: Loke Wan Tho

Bangladesh: A general survey

Continued from p. 8 of Hornbill 1983(2) — EDS

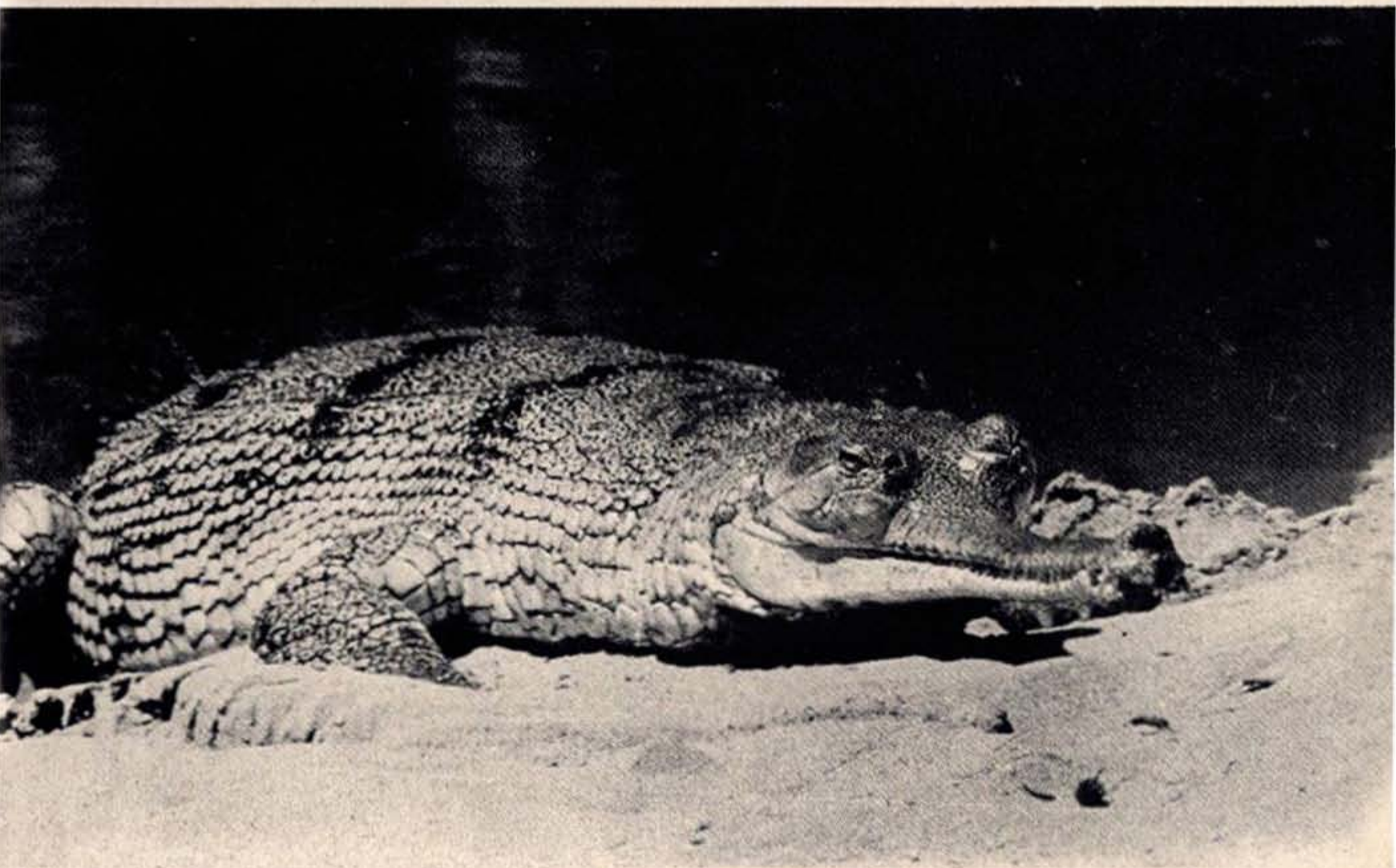
CROCODILIANS

Gharial. J C Daniel and myself reported that *Gavialis* is extinct in Bangladesh (Whitaker and Daniel, 1979). Since then, thanks to the efforts of Dr. Reza Khan and the staff of the "Dainik Barta" (Daily News) of Rajshahi, we now know of several breeding pairs of gharial in the Padma and Jamuna rivers.

On May Day 1982, Reza Khan and I were trudging across a dry riverbed, 5 kilometres of white silt-sand shimmering in the early white sun, to Char Diar Khidipur. A few hundred metres from the Indian border a 20 m high bank provides

nesting sites for two female gharial. The nests are right at the ferry landing so there is disturbance all day. Near by is an encampment of the Bangladesh Rifles (BDR) who have taken an interest in protecting these nest sites. As no shooting is permitted near the border area, we saw plenty of brahminy ducks and other water birds. Gangetic dolphin abound and we saw numerous turtles: Ganges softshells, *Hardella* and *Kachuga*.

The single male gharial (*Khumiz*) was a fine 5 m long animal which steadily cruised its half kilometre



A basking Gharial

Photo: Crocodile Bank, Madras

core territory near the two nest sites. One female (*bhaishal*) was about 4 m and the other was 3.5 m. The nest of the larger one was 10 m above the water line and contained 41 eggs which were laid between 7 to 10 April. The smaller female approached within 6 m of us as we stood at one likely spot and we surmise that we were close to the nest. We watched the male for several hours! It surfaced for 2-3 minutes at intervals of 8-30 minutes with an average of about 15 minutes. In the early morning and evening all three basked with head and neck held up out of the water, the summertime basking posture seen in the gharial at the Crocodile Bank. When the male surfaced the sound of his exhalation was audible over 100 m away. The well developed ghara seems to block the air so that the animal must force it out. The quick breathing cycle of the Gangetic dolphin causes an abrupt "shhhhh", giving it a local name "susu", the gharial's breath is a long drawn out deeper hiss reminiscent of the whirring of a big movie camera.

There are 5 or 6 captive gharial in Bangladesh and perhaps 10 adults in the wild. In 1982, in addition to the BDR protection, Mr. Noor Muhammed Sarker, Conservator of Forest (Wildlife) deputed the guards to watch the gharial nest sites for the duration of the incubation period. A plan for crocodile protection is being drawn up with the help of the Zoology Department of Dacca University.

Mugger. There are two male and one female adult *C. palustris* at the Mirpur Zoo, Dacca. The nest site is unsuitable and the female has laid eggs without any hatching success for several years. Plans for improvement are underway. Again with Reza's help, one morning found us wading the slimy bottomed crocodile pool with Mr. K.A. Fattah, Zoo Curator. We roped the three mugger with a bit of trouble and much amusement for the Sunday morning visitors. The males were 2.58 and 2.34 m and the female was 2.41 m. The smaller male was obviously harassed and chewed up by the larger one.

I tried to explain to reptile keeper Abdur Rob that the single rope technique is not safe for catching salties. In a few minutes though we were in the *C. porosus* pen and the noosed salty was heading unchecked straight at me, I couldn't run, or jump—the pond bottom was too slippery—so I just spread my legs, did a quick step over the noose rope as it swung past and cursed bad technique. Reza was next in line and his little daughter Munia laughed appreciatively as he did his survival dance when the frightened croc coursed through the water on a tightening noose. The 2½ m male salty was eventually captured measured and sexed.

But the last wild mugger in Bangladesh are the 5 or 6 residents of the tank at the holy shrine of Khan Jahan Ali near Bagerhat in Khulna District. Muslim pilgrims

are more than gently induced by the numerous fakirs to buy a chicken for 15 taka or a small goat for 100 taka to be fed to the crocs. When I visited the shrine in April, Forest Ranger Imar Ali was along and bought a goat in regard for his father-in-law, gravely ill in Khulna. A bearded fakir called "uh, uh, uh, uh, for nearly half an hour before a 1½ m mugger turned up. Then suddenly a stupendous rain and wind storm swept down over the lake. We waited under the tin roofed shed and when the hail began it was deafening. In ten minutes the late afternoon sun was shining again through the clear air. The fakir took up his place once more at the bottom of the steps and started calling again, now and then giving the goat a squeeze to make it bleat an invitation to the truant mugger. He called "Come Dhalapar" (White-side) "Come Khalapar" (Black-side), the same names given to the Khan Jahan Ali's original pair, over 400 years ago according to O'Malley's excellent description of the scene in his 1914 District Gazetteer report. A big mugger about 3½ m long finally came up, and when he was close enough the goat was hallaled and thrown in front of him. One of the fakirs had to wade in and throw the goat closer before the mugger grabbed it and submerged. This wader, an older man, showed us his white-scarred leg where a mugger once grabbed him 'by mistake' while he was feeding it a chicken. Though there is no big pile of hefty mugger

such as those of Mango Pir near Karachi, Bagerhat is very picturesque and importantly, these muggers are wild.

Saltwater crocodiles. The word Sunderbans has long evoked visions of the vast dark mangrove forests and all the mysteries of such a rich, dynamic habitat. During April 1982 I spent two weeks on a launch, the 10 metre 'Baha Sundri' with 6 crew and Forest Department staff, cruising the waterways of the four forest ranges of the Bangladesh Sunderabans. Most nights we slept aboard the launch, generally tied up at a Forest Station in a small creek safe from the sudden electric storms that were a regular evening event in this pre-monsoon period. Two weeks is not long to begin to know a 3,800 sq. km mangrove forest. I had done some fascinating gazetteer reading at Dacca University, plus a WWF wildlife management report, Forest Working Plan, FAO reports and the classic paper on the Sunderbans tiger by Heinrich. But the most important education was paddling dinghies into some of the innermost reaches of the 1300 sq. km of waterways; slogging through thigh deep black mud up onto firm ground; sitting quietly next to the river with a fishing line between thumb and fore finger, listening to and watching life patterns in the forest; and talking to the bawalis (woodmen), fishermen and honey collectors who visit every part of this unique jungle.

On a smaller creek (Khal) called Sapla Khal, Tofaizal Ali a Forest

Dept. boatman took us warily through the forest at twilight. Avoiding the many sharp pneumatophores (air roots) was difficult in the dusky light of the forest floor but we eventually reached our goal, a stand of dense tiger fern (*Acrostichum aereum*). The guard had his rifle cocked for a possible tiger and we walked cautiously forward with sticks toward a large mound of fern leaves, the nest of *C. porosus*. But the nest was unguarded; a bit early for nesting and the eggs were yet to be laid. I took a few pictures and measurements and opened the top of the metre high mound. Suddenly a big monitor—*V. bengalensis* — burst out of the nest among us, toppling us comically backwards. He made a fast getaway. To digress from reptiles for a moment, we watched the otter men using their tame otters to herd fish into their nets. The high shark population inhibits fishermen from getting into the water to drive fish. Prawns are abundant here; and in spite of the somewhat sedentary existence boat travel provides, we were able to put away large quantities of these curried delicacies with our noon heap of rice.

Every forest has its special aura; there's nothing like being in an elephant area for keeping you on your toes. In most forests of the Indian subcontinent you don't think much about tiger and leopard any more though one might watch out for the odd bad tempered elephant or sloth bear. But here in the

Bangladesh Sunderbans that special predator feeling is strong and pervasive, and you are always aware that there might be a tiger in that clump of bushes... and one that is not averse to eating the occasional man. Tigers are a part of everyday conversation here. Occasionally a man eater or cattle killer will make repeated visits to villages across the forest boundary (outside the Reserve Forest), and is then generally killed by Forest Dept. The fame of the Sunderban man eaters was already secure 300 years ago when the French explorer Bernier gave his account of the precautions that had to be taken while travelling through the Sunderbans. It was some comfort to have armed guards while thrashing around in thick bush looking for croc nests, but I'd give the benefit of the doubt to a determined tiger against one of the old bolt action. 303's.

Last November a medium magnitude cyclone pushed a tidal bore up into the Sunderbans covering all the land waist deep. For me the significance was that the last season's crocodile nests were washed away. But the reality of what a cyclone in the Sunderbans is like was at least partially conveyed by the forest people we talked to. The deep silence before the onslaught; the battering wind rising to impossible fury stripping the leaves from trees; boats tossed and broken like peanut shells; the endless hours clinging to a stout tree, snakes sharing the roost. And the tiger, deer, wild

boar also up there in the branches escaping the super tides.

We visited 8 salty nest sites and found at least one fresh mound. Wild pig nests resemble salty nests and both seemed to like the stands of tiger fern. One scarred collector showed us where, years ago, a female saltwater crocodile leaped from the shallow wallow next to her nest and grabbed him by the leg. The reason, he had caught one of her newly hatched young whose distress cry triggered her attack. The man threw down the hatchling and was pulled from the crocodile's mouth by his friends.

The bright eyeshine of a crocodile was too infrequent on our night trips through the quiet channels and most of the crocodiles we spotted were wary and didn't allow a close approach. They had obviously been heavily hammered during the days of legal hunting. In these thousands of sq. kms of good habitat though they could make a dramatic comeback with the help of a carefully managed rehabilitation programme.

Man-eating by crocs has been rare in the Sunderbans, perhaps for the simple reason that women and children—main victims elsewhere—rarely enter the forest. We passed giant crocodile tracks on the mud banks but winter is the basking period. One of the tracks had an 84 cm belly width and the hind foot length was 38 cm: probably an 18

footer (5.5 m). On Jhapsi Khal off the Bhadra Gang we finally saw one of the big ones which swam lazily ahead of our launch for a full five minutes before submerging with a powerful push of the massive tail; leaving swirls and whirlpools on the muddy surface. Going west toward the Indian border the tall sundri trees (*Heritiera minor*) became scarce and the jungle was shorter and sometimes sparse, apparently due to the higher salinity. Tampering with the waterways upriver such as the Farakka barrage may have profound negative effects on the delta ecosystem. The crocodile habitat is still spectacular though, and it is pleasing to know that gazetted or proposed sanctuaries contain the best croc concentrations.

Snakebite

It is noteworthy to mention that Bangladesh, with 5 species of snakes potentially dangerous to man (cobra, banded krait, common krait, king cobra and Russel's viper) has no antivenom serum. Doctors I talked to spoke of helplessly watching patients go through the classic symptoms of neurotoxic paralysis and die. A number of people rendered valuable help and company on this journey around Bangladesh including the Lockwood family, the Reza Khan family and the Bangladesh Forest Department; to these people I am grateful for a successful trip.

R. WHITAKER

Butterflies of Bombay-12

Continuing the series from p. 31 of *Hornbill* 1983(1) we describe 14 species of Skippers in this issue.

98. BLACK ANGLE *Tapena thwaitesi* Moore. A rare butterfly; food plants *Dalbergia* and *Derris* spp.

99. INDIAN PALM BOB *Suastus gremius* (Fab.). Common, sun-loving; visits flowers; sits on damp patches and on bird droppings on leaves. Flight swift; on the wing from August to September. Breeds on palms.

100. GIANT RED-EYE *Gangara thyrsis* (Fab.). Largest Skipper; pest on palms; crepuscular, active at dawn and dusk. Visits flowers at dusk (attracted by lotus flowers). Larvae feed on *Cocos nucifera*, *Calamus* sp., *Caryota urens*, etc.

101. COMMON GRASS DART *Taractrocera maevius* (Fab.). Common, found at all seasons, usually in short grasses. Larvae found on the underside of grass blades.

102. TAMIL GRASS DART *Taractrocera ceramas* (Hewitson). Not rare but locally abundant; flies among grasses avoiding bright sun.

103. COMMON DART *Potanthus pseudomaesa* Moore. Rare. Larvae feed on grasses. Found in the plains.

104. HIMALAYAN DART *Potanthus dara* Kellar. Active between September and early November.

105. DARK PALM DART *Telicota*

ancilla bambusae Moore. Common. Feeds on dwarf species of bamboos. Found in wet regions of hills and jungles; powerful flier; settles on leaves and flowers.

106. PALE PALM DART *Telicota colon colon* Linn. Earlier known as a separate species, it is now considered as a form of 105. Rare on sugar cane; seen in open country.

107. BLANK SWIFT *Caltoris kumara* Moore. Hill form. Larvae feed on bamboo; on wing in September to October. Active in the mornings and in the later afternoons. Prefers shade to sunshine.

108. SMALL BRANDED SWIFT *Pelopidas mathias* (Fabricius). Commonly called 'Paddy Skipper'; patronizes gardens and grasslands, visiting flowers especially of *Cordia*. Seen from late in the rainy season to early winter. Fond of sunshine, but also active in the mornings and evenings, flying low. Often seen basking in the sun. Larvae are a pest on paddy, feeding inside rolled paddy leaves; also *lalang* and other grasses.

109. RICE SWIFT *Borbo cinnara* Wallace. Seen in the plains; common on grass and paddy especially. Fond of sunshine, flies low, sits on ground to bask in the sun; active in the morning and evening visiting flowers.

110. BEVAN'S SWIFT *Borbo bevani* Moore. Found both in the plains and in the hills. Fond of sun-



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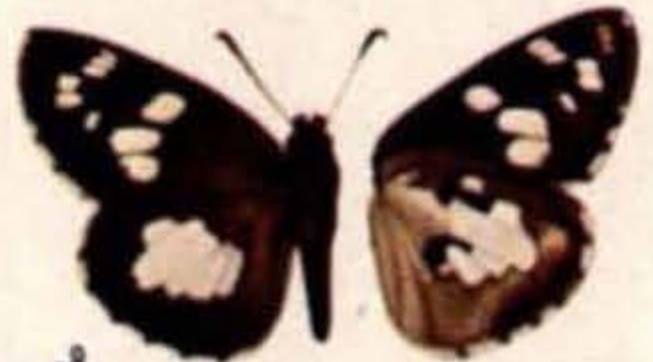
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S.M. Sathish

shine, prefers to fly in the mornings and late afternoons; settles on ground while basking in the sunshine. Visits flowers.

111. GRASS DEMON *Udaspes folus* (Cramer). Not rare. Common in open regions of hilly jungles and plains throughout the year; visits flowers, shade-loving, basks on

leaves. Flies low in the shade of bushes; settles on stones in the region of water; also on freshly dropped cowdung. Occasional pest of ginger, turmeric and *Kaempferia rotunda*, all Zingiberaceae plants.

NARESH CHATURVEDI
S. M. SATHEESAN

The cover picture of this issue shows a Robber Fly, photographed by Mr N. D. Mulla.

Robber or Assassin flies are predatory and live on other insects such as grasshoppers, dragonflies, beetles, cicadas, wasps, etc. These tigers of the insect world lie in wait for their prey crouching motionless with their long legs drawn up on the ground, on a grass stem, or leaf, ready to pounce on an unsuspecting prey. The prey insect is killed with the dagger-like mouth part and probably by the injection of a poison. The killed prey is sucked dry. Mating is an hazardous process for the male as he is likely to be killed and eaten. The males of many species present a small insect to the female as a present to keep her engaged while he is mating. Some even dupe the female by handing over an empty package of silk and mating with her while she examines the present. —EDS

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.

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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.

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