HORNBILL

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.

Members receive during a year three issues of the *Journal of the Bombay Natural History Society* now in its 76th 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/-.

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Write to :

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

CONTENTS

EDITED BY

J. C. DANIEL
S. A. HUSSAIN
J. S. SERRAO

EDITORIAL

'Will members kindly try and obtain more new members for the Society? If this Society is to continue doing its present work, it is absolutely necessary that some 200 new members must be obtained each year to replace those who retire, resign or whose names have to be removed from the Register in consequence of their not paying the small annual subscription.

'There is no other Society in India which gives such good value to members in return for such a small subscription as Rs. 15 per annum. Each Journal costs about Rs. 3 to produce, and if members obtain 3 or 4 Journals in the year it is obvious there is not much left for the upkeep of the Museum salaries, postage, rent and general expenses...

'There are a large number of Civilians, Officers, Medical men and District Officers all over India and Burma *who have never seen the Journal* to whom it should specially appeal and Members are therefore earnestly requested to try and obtain more new Members.

W. S. MILLARD
Honarary Secretary,
6, APOLLO STREET,
BOMBAY, *November* 1909.'

While researching for material for the proposed Centenary publication A CENTURY OF NATURAL HISTORY, which will be a selection of articles published in the 76 volumes of the Society's *Journal*, one of us came across this appeal made by Mr. W. S. Millard, the then Honorary Secretary of the Society, 71 years ago and was struck by the aptness of the appeal for present day conditions also. The need for an annual 200 new members "to replace those who retire, resign or whose names have to be removed" for non-payment exists even today.

The 200 member jinx has remained with us and we have reproduced this appeal from the past in an effort to break it.

We enclose with this number three application forms with your name entered as Proposer. We seek your assistance. Incidentally, the validity of membership of those enrolled after 1st October is up to December 1981.

EDITORS

ERRATUM

The cover picture of the Lime Butterfly on 1980(1) *issue of* Hornbill *is by Pat Louis and not by Mervyn Sequeira, as stated at p.* 2 *of that issue. The error is regretted.*—EDS.

PRESIDENT'S LETTER

A New Ecological Menace

I have recently been on a tour of three of our beautiful wildlife sanctuaries in the Vidarbha region of Maharashtra, namely Navegaon, Nagzira and Pench, all lying within what may be called the 'command area' of Nagpur airport. It was distressing to notice phenomenal profusion and luxuriance of the pernicious exotic weed *Parthenium* everywhere, especially in and around Nagpur City—the same as we helplessly watch happening around Bombay and elsewhere in India today. This plant has come to be widely known in India as 'Congress Grass' presumably from the resemblance of its densely clustered tiny white flowers in the distance to the sea of white caps at an open air conclave of the Congress party. The pest seems to have somehow insinuated itself into the subcontinent within the last three decades and is spreading and overrunning the countryside like wildfire in a gale. Once it has secured a roothold there seems nothing to hold back its astronomical proliferation and steam roller advance. By a coincidence, just about the time I was in the sanctuaries two scientists of the Nagpur Agricultural College published an article on this new menace in 'The Hitavada', a well-known local daily, as a timely alert to the nation. The portent of this enemy within our gates sounds truly alarming and the unholy alliance of the newcomer with the firmly entrenched lantana and Eupatorium on land and the hyacinth on water, presents a formidable combination. It will require a drastic mobilization of all our resources to combat their growing threat to our native ecology. *Parthenium* is described as a native of the West Indies, Central and North America. The extreme light weight and minuteness of its seeds and the prodigious abundance in which they are perennially produced enable them to be dispersed by wind, water and other agencies quickly over vast areas. The plant grows throughout the year, is tolerant of a wide spectrum of natural conditions, and is highly adaptable edaphically. It flowers in 3 to 3½ months and does so at all times of the year, no season being unfavourable for it. All these attributes enable it to flourish and colonize areas where practically nothing else will grow, and to elbow in and establish itself everywhere, often displacing less aggressive native species in their period of dormancy. In the case of fodder plants for wildlife and cattle this is likely to pose a serious problem since *Parthenium* itself, green or dry, is useless for the purpose. Additionally the weed can apparently be a serious health hazard to

allergic humans (and cattle) causing asthma, eczema and contact dermatitis, which is reported even to have proved fatal in some cases.

Apart from any chemical or mechanical methods that may be found effective for eradicating or controlling *Parthenium*, the greatest need as the authors of the Hitavada article rightly point out, is for creating a public awareness and identification of the weed and for perpetual vigilance and swift action. No quarter should be given to it and stringent measures adopted by every citizen — individually, collectively and corporately — to snuff it out as soon as it is noticed, preferably while it is green and before it has begun to flower and seed. This may not always be feasible since the plant remains insiduous until the white flowers give it away, and because the process of flowering and seeding is so continuous and overlapping. During the removal of the plant, moreover, some of the viable seeds are likely to be shaken off and ready for germination wherever they fall, or get wafted by the wind to infiltrate remote areas. A persistent and long-drawn onslaught such as the Chinese recently mounted against the sparrow in their country when every man, woman and child was conscripted to the task of eradication, would seem the only answer to Congress Grass. Except that we live under democracy!

Salim Ali

A congress of Parthenium *in the Bombay suburbs* *Photo*: S. R. Nayak

SLIPPER ORCHID

The cover page of this issue has the Slipper Orchid. These orchids are not exclusively confined to the tropical regions but extend into cold temperate parts of the world (genus Paphiopedilum *in the Old World where the plants are mostly epiphytes, and in the New World (genus* Cypripedium *where they are terrestrial. The generic name* Paphiopedilum *is based on* paphio, *meaning goddess Venus;* pedium, *slipper. Often Venus is referred to as* Cypris, *and* Crypripedium *also conveys Venus's Slpper.*

The plants are herbaceous and perennial and grow naturally in hill forests and among thickets in narrow fissures in rocks or on trees where rich fibrous loam has accumulated. The plants are either very short-stemmed with a pair of leaves near the ground, or long and leafy.

Slipper Orchids, unlike many other orchids, have no thick fleshy bulbs to supply them with nourishment. Therefore they require a constant supply of water. They are propagated by dividing the plants. The flowers are large and held on erect spikes from the centre of the plant. The usually conspicuous part of the flower is the highly coloured and erect dorsal sepal, its two spreading often elongated petals and a slipper-shaped pouch or lip, which is responsible for the common name 'Slipper Orchid'. The blossoms are much valued for their keeping quality—lasting for 4 to 6 weeks when cut, and on the plants up to 3 months.—EDS.

Return to the Wild

The culminating achievement for any conservation project is the re-introduction of a species in a habitat from which it has been exterminated. Like in other states of India, in Uttar Pradesh also, crocodiles were facing extinction due to indiscriminate hunting and destruction of natural habitat.

Out of the three species of Indian crocodilians, Uttar Pradesh has two (*Crocodylus palustris* and *Gavialis gangeticus*). In order to save these useful reptiles from extinction, the Wildlife Preservation Organization of the U.P. Forest Department started in 1975 the Crocodile Rehabilitation Scheme. Two centres—Kukrail near Lucknow and Katerniaghat Sanctuary in Bahraich district—were established to rear the hatchlings. As up to 95 per cent of the eggs and young ones are destroyed in nature, the main emphasis at present is to collect and incubate the eggs and to rear the young ones up to the size of 1.5 metres because animals of this size are considered to be free from predation.

The eggs of the crocodiles (mainly *G. gangeticus*) are collected from the Chambal river system which still harbours a few isolated populations of gharials. Hatching success of gharial eggs at Kukrail centre is between 50 per cent to 100 per cent in individual nests; the mean, however, approximates 80 to 90 per cent.

All the releases are done only inside the sanctuaries. At present two such sanctuaries exist in Uttar Pradesh. One is the Katerniaghat Sanctuary near the Indo-Nepalese border in Bahraich, and the other is the National Chambal Sanctuary comprising three state territories of Uttar Pradesh, Madhya Pradesh and Rajasthan. Between May 1979 and March 1980, 179 gharials were released in eight batches.

Presently (July 1980) more than 350 gharials of different age groups are awaiting release. Their release will be done after the monsoons so that the animals can get enough time to acclimitize to the natural habitat.

Presently the aim of re-introduction of the gharials is to restore the natural population.

SUSHANT CHOWDHERY
ASAD RAFI RAHMANI

Above: *Release of Gharial in the Chambal river*

Below: *Going home Photos*: Sushant Chowdhery

NOTES, NEWS AND COMMENTS

Smithsonian opportunities in Biological Sciences

The Smithsonian Institution announces its programme of higher education and research training in the Biological Sciences for 1981-1982. 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 solar radiation research, photobiology, tropical biology, ecology, systematics, natural history, evolutionary biology, animal behaviour and pathology, palaeobiology, and marine biology.

Smithsonian Fellowships may be granted to post-doctoral and predoctoral scientists to pursue further training in research. Applications are due by January 15, 1981. Stipends supporting these awards are: a minimum of $14,000 plus allowances for post-doctoral fellows, and a minimum of $8,000 plus allowances for pre-doctoral fellows.

Awards are based on merit. Smithsonian fellowships are open to all qualified individuals without reference to race, colour, religion, sex, national origin or age of any applicant. For more information and application forms please write:

OFFICE OF FELLOWSHIPS AND GRANTS (DESK E)
3300 L'ENFANT PLAZA
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.

Freshwater pond life-cum-aquarium project

A workshop session on pond life and aquarium was conducted by the Nature Education unit of the Society on 27th and 28th September, 1979 for two different batches of Biology teachers from schools in and around Bombay. In all 45 teachers from 38 schools participated.

The introductory talk was given by the Nature Education Organiser. The workshop session on life in freshwater ponds was conducted by Mr. P. Kannan, assisted by Mr. S. R. Sane. Physical factors and animal cycles as well as seasonal changes on life in freshwater ponds and streams were described. This was followed by a presentation on aquatic invertebrates collected from the Bombay area with slides of daphnia, cyclops, paramecium, spirogyra, etc. A brief talk on food chain and energy pyramid, was given by Mr. N. C. Chaturvedi of the Society.

Mr. S. R. Sane gave a practical demonstration on setting up a fresh water aquarium; the type of sand to be used, quality of water and plants and other material. This was followed by a question and answer session and a general discussion on using the aquarium as a classroom tool for studying various natural phenomena such as respiration, phototropism, etc. Mr. Sane also explained the breeding habits of some common freshwater fishes.

Tree planting

13th August 1980 was celebrated as the *Vanmahotsava* day—the annual tree planting celebrations—when community planting of tree saplings was done all over the State.

At Santa Cruz (West), Greater Bombay, members of this Society, the Friends of the Trees, and the residents participated.

Dr. Richard St. Barbe Baker, the Man of the Trees, who was then in Bombay, assisted by children, planted a *Putranjiva* sapling in the Christian Cemetry at Santa Cruz.

A count of Flying Fox roosts

The Survival Service Commission of the International Union for Conservation of Nature and Natural Resources examines the status of the several groups of animals endangered and likely to be endangered. One group which surfaced during the last meeting at Kilaguni in Tsavo National Park, Kenya, was the Bat group. The 'Batmen' are on the trail of the species so useful to man as natural controls of insects but which pesticides may claim as their second stage victims. The Batmen's deliberations started us on an enquiry into the number of known roosts of the cantankerous pest of the fruit farmer, the large fruit bat of India, the Flying Fox. We would like our members to write and tell us if there is a roost of Flying Foxes in their city, town or village or in their vicinity. Charles McCann, the former Jt. Curator of the Society writing in the *Journal* ('Notes on the Flying Fox', Vol. 37: 143-9; 1934) states:

"...Flying-Foxes, as is well known, will always return to the same roost for years, and it takes much to drive them away once they have established themselves in a particular locality.

"It is rather curious that these bats establish their colonies in the

Flying Fox during the day *Photo*: S. R. Nayak

vicinity of villages, if not in their very midst. In all my experiences, I do not ever remember coming across colonies in the jungles. They appear to be animals truly commensal with man. Generally, the tree which forms the roost is very thinly clothed with or devoid of leaves. This may possibly be due to one of two reasons, or both, the young shoots are broken off by the bats in their movements, or to the effect of urine falling on the tender tissues of the plant.

"To follow the activities of a colony would perhaps be the best way of describing their habits. Towards the evening the whole colony is astir, much screeching and cantankerousness is evinced by every member as it gives itself a general 'clean up' before setting out. By nature, Flying-Foxes appear to be quarrelsome, and there is much ado about nothing. As the light begins to fade these nocturnal spirits move off by ones and two and in small parties till finally there is not a bat left at the roost. They do not all go in the same direction, but a few follow in the 'wake' of each other. Their first objective is the feeding grounds, these will depend on the fruit or flowers available at the time. *En route* they will have a drink at any tank or stream they may happen to fly over..."

We would also like to know, if possible, the species of tree used as a roost. May we seek your co-operation? Letters should be addressed to

THE EDITORS
Hornbill

A Flying Fox roost on Eucalyptus, an introduced tree *Photo*: S. R. Nayak

CONSERVATION ACTION

Conservation code for India

The Prime Minister, Mrs. Indira Gandhi, while launching the Conservation Strategy of the International Union for Conservation of Nature and Natural Resources made certain specific suggestions for Conservation, which we quote below:

"1. Officers with the right attitude should be posted in reserved forests and sanctuary areas; if possible, a special corps of such officers could be identified for duties relating to wild life and forest and environment conservation.

"2. Forest development corporations or similar agencies should be asked to take up plantations on steep hill sides, catchment areas and clear-felled forest areas so that productive forestry and protective forestry go hand in hand.

"3. A massive programme of social forestry should be taken up both under the Food for Work Programme and under other specific schemes. The waste lands in villages, all community lands, field bunds, canal bunds etc., could be clothed with fast growing species under this useful scheme.

"4. In areas where tribals depend heavily on forests for their livelihood, they should be involved in replanting the species that they are already exploiting. A scheme of forest farming should be undertaken. Particular attention must be paid to the re-planting or fresh planting of fruit trees.

"5. The existing regulations and security arrangements in sanctuaries should be tightened. Poaching should be dealt with very severely.

"6. Intelligence machinery to detect smuggling of valuable species like red sanders and sandalwood, or of animal furs and skins must be strengthened and personal interest must be shown by top people in administration to see that such activities are ruthlessly suppressed.

"7. The system of contracting away forest areas should be replaced or modified to see that every tree felled should be replaced by the planting of at least another one if not more .

"8. Tree plantation programmes should be undertaken by schools and other institutions. Some countries have initiated a programme of a tree for every child.

"9. Serious attempts must be made to change the orientation of all persons working in the forest services and forest administration with a system of rewards and incentives for those who do to better in preserving or extending the forest areas or the wild life areas."

—*Sciencetech Bulletin, April 1980*

Present status of the Asian Two-horned Rhinoceros in the Socialist Republic of the Union of Burma

A friend who visited Shwe-u-daung Game Sanctuary, East Katha Sector, Burma (for description see JBNHS 52: 275-8) informed me that wildlife inside the sanctuary has been depleted to a dangerous level by organized gangs of poachers. He could not penetrate into the interior. He doubts whether there are now any rhinos inside the sanctuary.

Oliver Milton and R. Estes in their 1963 wildlife survey did not penetrate into the interior also. They estimated that there might be three animals. With the elimination of this small group, there are now according to definite information received by me only three small groups: Tumanthi Game Sanctuary, 25° 15′-25° 30′N., 95°05′-95°25′E., altitude 152-1168 m, 4 animals; Lasai Tract, 26°N., 96°E., altitude 1164 m, maximum 7 animals, minimum 6.

U Tun Yin

Elephant poaching and punishment in Burma

Kyemon, a state-owned Burmese language daily reported on 22nd June 1980 that a gang of 9 elephant poachers were convicted, the leader to five years' imprisonment and the remaining 8 of the gang each to three years' imprisonment on 17 June 1980 by the Nattalin Township Peoples' Court, Tharrawaddy district. The wild elephants were shot on the Pegu Yoma. Elephant tusks valued at Kyats 20,000/- were seized from the Bogyoke Market, Rangoon. The poachers were convicted under section 6(1) of the Public Properties Protection Act.

U Tun Yin

Aide-memoire. Subscription to the Society falls due on 1st January each year.

The mystery of the Salara Pigeon

I only hope that I did not fire the last shot at them. That was in 1952 close to our village in Ludhiana district in Punjab. There they were unmistakably evident from the way they flew and descended on the trees. They must be literally in a flight of hundreds, flying swiftly at an altitude that the Blue Rock pigeons rarely climb to. We always associated them with aerial aerobatics. They came in large numbers over a cluster of trees, descended almost vertically in swift swoops and settled on acacia trees. You could hardly see the leaves and the branches.

My father, who had just let me handle the gun, asked me to fire and with a pot shot aimed at the tree dropped half a dozen of them. Even at that time my father, a veteran shikari, had noticed two remarkable features. First, they were fewer in number and were in flights of a few hundreds compared with swarms of literally thousands and lakhs of them that used to come to the Punjab countryside in winter. My father remembered having seen "clouds of them" that literally darkened the sky. They would, he used to narrate to us children with wonder in our eyes, come and settle on a tree in such large numbers that often a branch or two would break under their weight and the tree would swing. I know now that most shikar stories are hyperbolic.

Secondly, as my father reminisced wistfully they were seen from the beginning of the forties in smaller flights as also at longer intervals. Previously, he recalled, you just had to step out of the village on a sunny day in December, put *masala* in the pan and bring back half a dozen of these *salara* pigeons even before butter had melted on the flame!

That was the last that I ever saw of salaras in Punjab in 1952. But my curiosity has grown ever since, whetted by conflicting tales about shikaris having shot them "just about a few days back". Some even summoned me from my home to show me a flight of salaras "just settled on a peepul tree". Most of these stories have proved to be hoaxes, sadly though.

I discussed this with Dr Sálim Ali and he urged me to do a piece on the mystery of the Salara Pigeon as he guided me to pursue a trail of many relevant questions. Which species of the pigeon family (Columbidae) were they? What was their habitat during their winter abode in Punjab? Why have they ceased to visit the areas they used to come to scarcely 30 years back in such large numbers?

Firstly, what did they look like? I have tried to piece together information on this as the last bird I shot in 1952 is quite faint in my pictorial recollection. I distinctly remember, however, that it was a pigeon which had a strong resemblance to a dove. Unlike the Blue Rock Pigeon it did not have a purple sheen on its neck and upper breast. In fact, most observers agreed that the one way it could be distinguished from the common Blue Rock Pigeon was by its duller coloration.

My trail led me to interviews with yet another veteran shikari. He was very firm that Salara was no more to be seen in the countryside. He could not recall having shot a Salara later than 1956. The most distinctive mark of a Salara pigeon, he asserted firmly was the white patch on its rump. It was from this shikari that I learnt something about the kind of habitat these Salaras used to frequent. They were, he recollected, to be more frequently seen in wild areas bordering the banks of rivers. Their favourite haunt was miles and miles of mustard plantations. The trees they generally settled on were *Ber* (*Zizyphus jujuba*) and *Kikar*. They would come closer to human habitation about midday. Their flights were more like the locust swarms, which also appeared about midday, and their descent on the trees was sudden, swift and vertical. Almost all the veteran shikaris relate stories of trees breaking under their weight!

One of the persons I interviewed told me that the Salara pigeons were even a pest to the crop. They were ground feeders. It was only from one of these persons that I heard stories of farmers chasing them away with flames.

The Punjab countryside has changed radically with its intensive cultivation and emphasis on wheat and paddy compared with large scale cultivation of pulses and mustard that used to be the most pre-eminent feature of vast stretches of unirrigated areas. It is positively this change in habitat which has driven away large Imperial Sandgrouse (*Pterocles orientalis*) popularly called *Kashmira* in Punjab. Perhaps the Salara pigeon also has forsaken Punjab because of radical changes in our cropping pattern. I cannot, however, imagine that as a species it has become extinct.

In any case why is this bird called Salara? My late father would have helped me in my quest. I faintly remember that he sometimes used to describe it as the Russian Pigeon. In HANDBOOK OF THE BIRDS OF INDIA AND PAKISTAN (Volume 3) *Salara*, as a local name, does not figure in the description of any of the pigeon family (Columbidae). I even scanned some of the old gazetteers of some districts in Punjab without any significant result. The HANDBOOK definitely mentions Ludhiana, my district, as a winter migration area of the Eastern Stock Pigeon. Stuart Baker in FAUNA OF BRITISH

INDIA (Volume 5) also does not list Salara as a vernacular name for any of the species of the family of pigeons and doves.

It was in the BIRDS OF HEATH AND WOODLAND volume of THE ORBIS ENCYCLOPEDIA OF BIRDS OF BRITAIN AND EUROPE edited by John Wooder that I found a plate on page 24 depicting doves and pigeons in flight. It was this plate that I showed to a number of veteran shikaris and a large majority of them settled for the Eastern Stock Pigeon (*Columba eversmanni*) being the Salara. The white rump seemed to provide them with the most important clue to identification of Salara pigeon. "That is it!", most of them exclaimed with a sense of joy like an astronomer on discovering a new planet! There were yet one or two who thought that perhaps it was the Wood pigeon (*Columba palumbus*).

The reports of sighting of Salara pigeon were checked by me. In one case the man was cocksure for he said that he had seen a swarm of Salaras and that it reminded him of the arrival of these birds in the thirties. I did see this swarm. They were all Blue Rock pigeons having multiplied enormously, particularly in the vicinity of a rash of grain godowns and warehouses that have appeared all over the Punjab landscape. And yet in another case they turned out to be a large swarm of Ring Doves *(Streptopelia decaocto)*.

Recently, while going through some of the papers left by my late father, I came across a copy of his shooting licence issued on 23rd April, 1940. With the shooting licence is a long extract from the Punjab Wild Birds and Wild Animals Protection Act, 1933. This Act defines the open and close seasons for shooting of birds and animals. Schedule II to the Act gives a list of wild birds and the open season for shooting them. I discovered that under Serial No. 5 it gives the following information:

(i) Scientific name: Columbidae

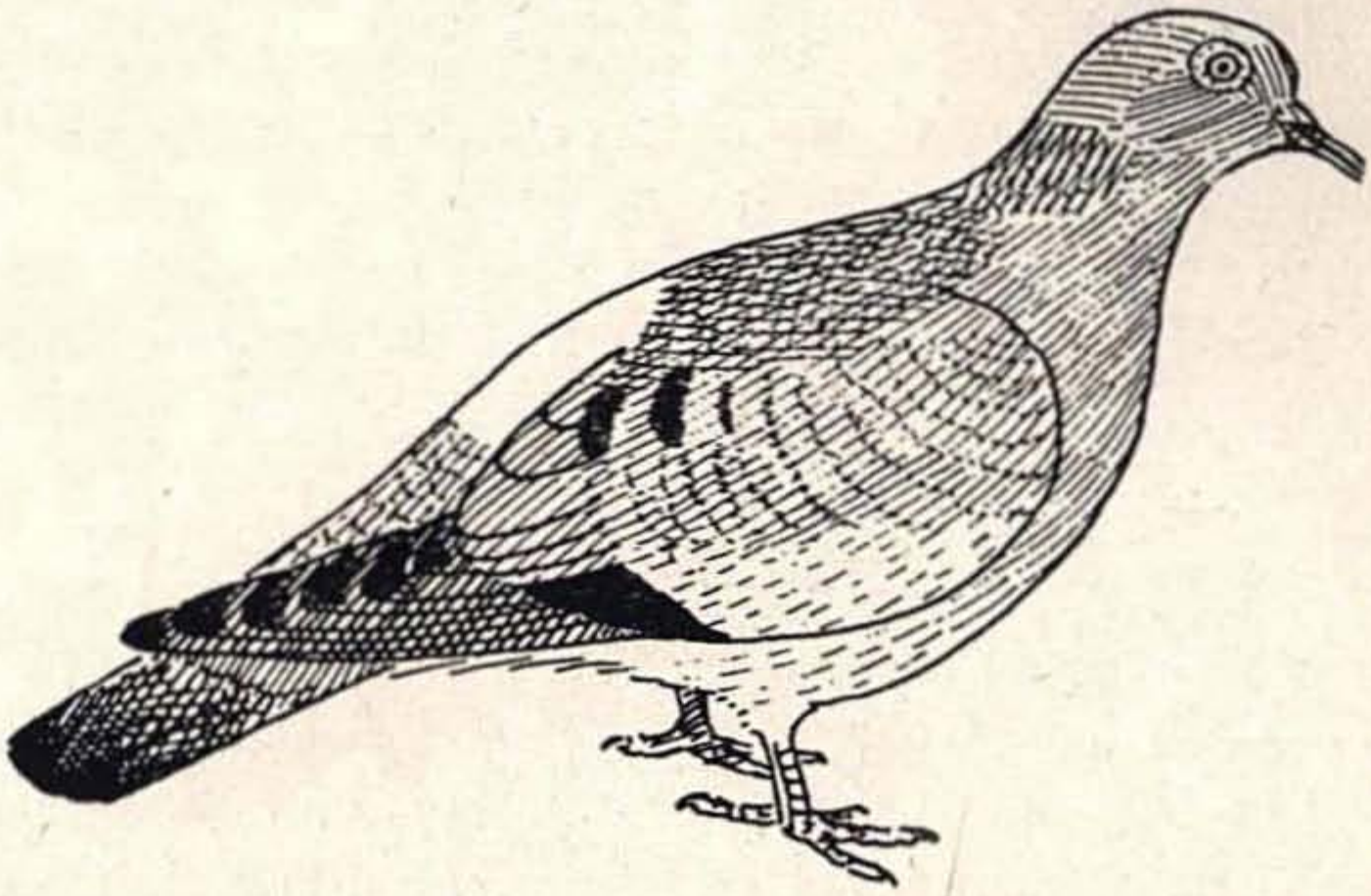
(ii) English name: Eastern Stock Pigeon or Dove

(iii) Vernacular name: Salara Kabutar, Kamar Kular

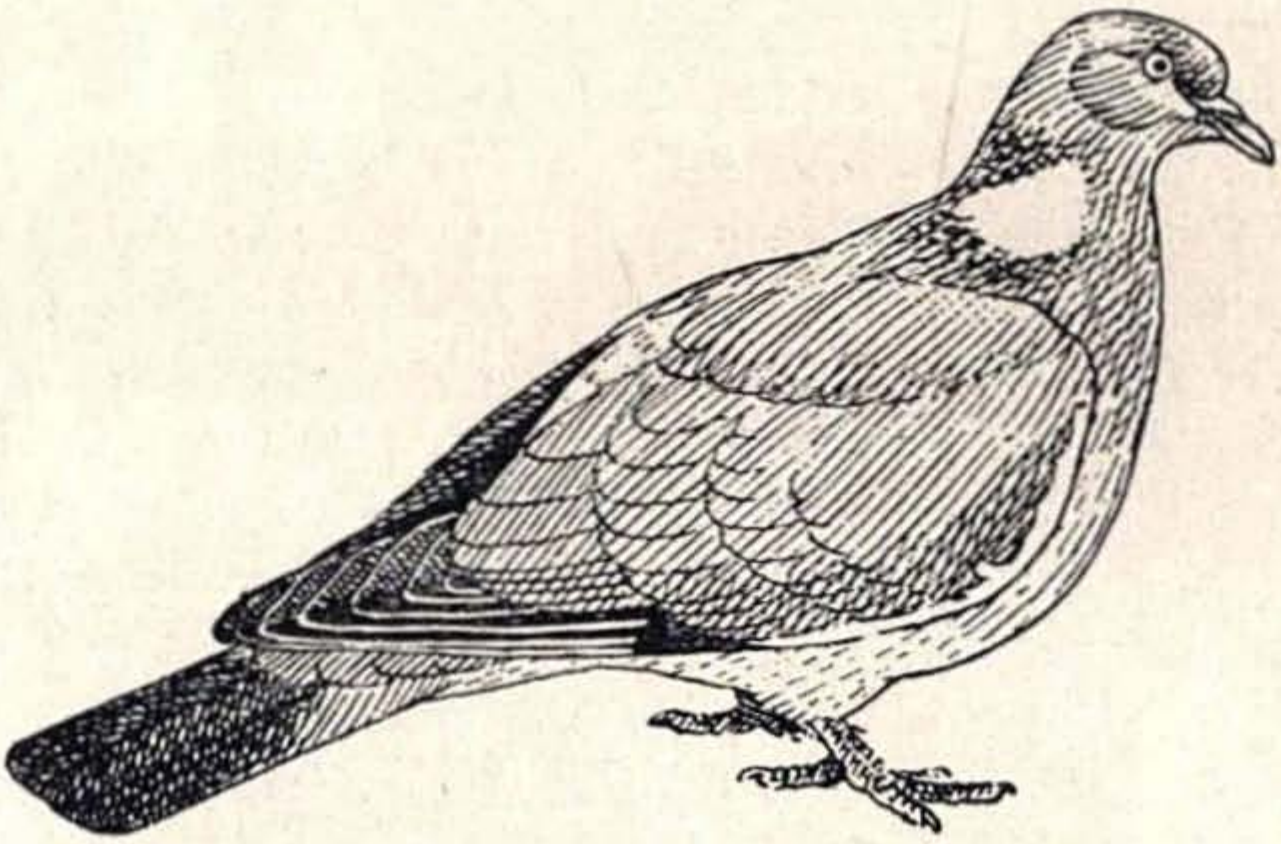
(iv) Period: 15th September to 15th March.

This more or less confirmed my belief that observations and its classification under the Punjab Wild Birds and Wild Animals Act, 1933 seem to agree. In the same column on the licence book the Eastern Wood Pigeon (*Columba palumbus*) has been described in vernacular names as *Dhond*.

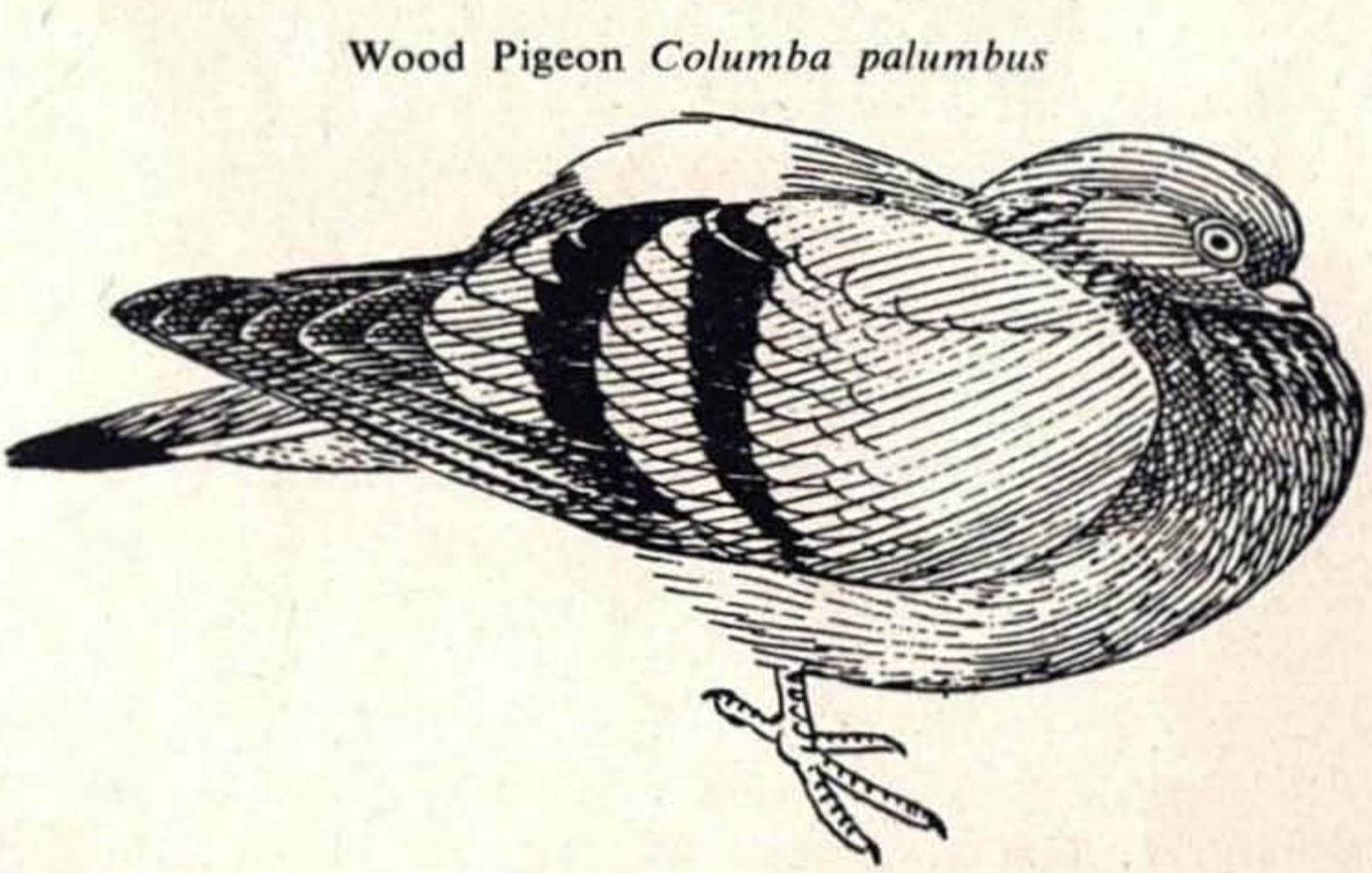
I do not think that this is as yet the last word on the Salara. Many stories of their sighting particularly along the border areas close to the river Ravi are still circulating. I



Stock Dove *Columba eversmanni*



Wood Pigeon *Columba palumbus*



Rock Pigeon *Columba livia*

have asked many of the shikaris in the area to shoot at least one bird and preserve it for proper identification. In any case an age has gone since the thirties. Punjab has, in the meantime, become richer. The Salara seems to have found the traditional Punjabi landscape to be no more hospitable and we are doubtlessly the poorer for it.

MAN MOHAN SINGH IAS

The white rump by which the majority of consulted shikaris identified the Eastern Stock Pigeon (Columba eversmanni) *in the picture as the* salara *is indeed a leading diagnostic clue since in the Wood Pigeon* (C. palumbus) *the rump is dark ashy grey. Secondly, although the local name* salara *does not figure in any recent standard bird book, it is significant that in Schedule II of the Punjab Wild Birds and Wild Animals Protection Act of* 1933, *referred to by Shri Man Mohan Singh, the vernacular names given for the Eastern Stock Pigeon are* Salara kabutar *and* kamar kular. *The latter name actually appears in Jerdon's* BIRDS OF INDIA (1864) *for the Eastern Stock Pigeon though* salara *is not mentioned there. However, ground for uncertainty still persists. Some time ago one of our members, S. M. Osman, an experienced and knowledgeable shikari of Dehra Dun, complained that the Eastern Wood Pigeon* (C. palumbus casiotis) *which used to flock in the Doon Valley 'in thousands' during the winter months' in former years 'has now completely deserted the area. He shot a stray example in January* 1971 *and the skin was confirmed at the Bombay Natural History Society as the Wood Pigeon. Are we then to believe that* both *these pigeons which formerly visited—one Punjab the other Kumaon—in such prodigious numbers have ceased to come altogether? What has become of their spectacular swarms? Why have both of them 'defected', and where else have they found alternative wintering grounds? Who will solve this mystery?*—EDS.

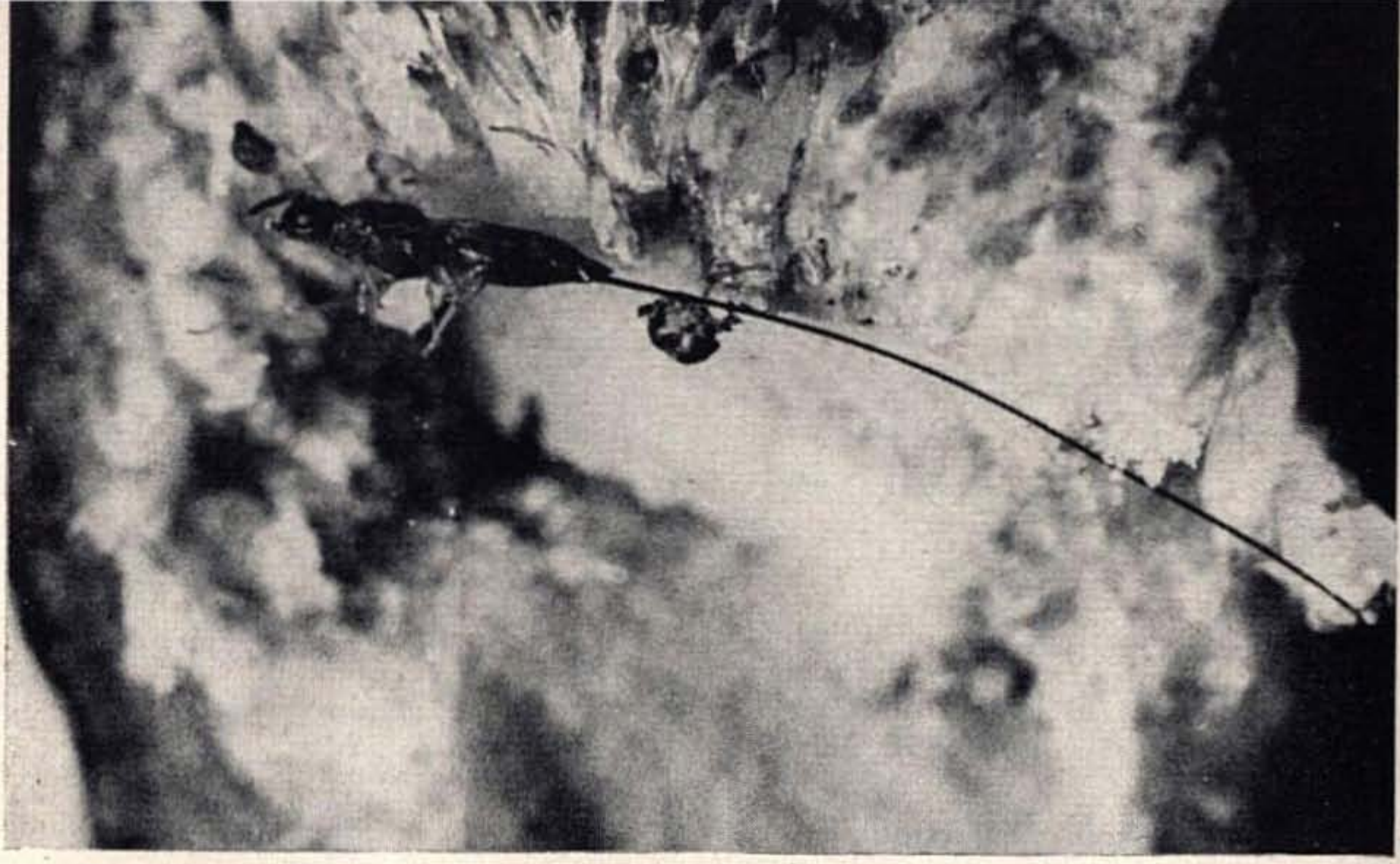
Fig Wasps

In India we seldom take a walk without seeing at least one tree belonging to the fig family. The ficus or fig family comprises of about 600 species in tropical and semi-tropical countries, and they grow in abundance all over India, from the Himalayan foothills to the very south.

Even the crowded lanes of Bombay, where we struggle to maintain a little greenery have their fair share of these often very large and spectacular trees. Of these, the most commonly seen are *Ficus bengalensis* or banyan, *Ficus religiosa* or peepal, and *Ficus glomerata* or guler.

Since man has already reached the moon and has conquered many diseases, and technology has developed to a point where computers can calculate the most complicated formulae, it seems strange that most of us are not even aware of the existence of a group of insects called fig wasps, *Blastophaga*, which are present and responsible for the fertilization or caprification of fig flowers in warmer countries. What is even more astounding is the fact that there are many species of fig wasps, some inhabiting the figs of certain trees alone, and others cohabiting with other species in perfect harmony. Thus we see that it is not a simple affair, but a complex and intricate phenomenon of symbiosis, which literally means a mutually beneficial partnership between organisms of different kinds. So advanced is this symbiosis that both the fig wasps and fig trees have adapted to each others needs. In this way the fig wasp carries out its own life cycle and development processes exclusively within the protection of the syconial cavity. It should be mentioned here that the fig flowers are contained within the fruit, so that in effect flower and fruit are one.

The wasps themselves appear in an amazing variety of shapes and colours, some almost irridescent green while others were a bright reddish brown. They have pollen pockets on their legs known as Corbiculae that serve to carry pollen grains, and on all the female wasps examined there was an egg laying organ or ovipositor present. The males were more difficult to observe since in every specimen of fig examined the number of wasps present was large (in one fig there were 81 wasps) and of these many were in the early stages of development. In fact in the case of the 'guler' tree where there were several species intermingled, any intensive study was impossible without the help of highly powered equipment. There are still many factors that are unknown regarding these tiny insects, for instance, why should a certain species of wasp choose to breed in the figs of one type of tree? This could be one of the many factors: colour of the fruit, and the



A female Blastophaga *wasp laying eggs in a* guler (Ficus glomerata) *fig. Note the long ovipositor.*
Photo: Phillippa Mukherjee

smell or the sap or or nectar could contribute, as could the arrangement of the ostiolar slits, but in this simple study we have proved that we have no answer to any of these questions. It has also been noted that at the end of the wasp's life cycle numerous red and black ants were present all over the fruit and trunk of the fig trees. Now whether this is (as is one theory) an arrangement whereby the ants clear up all the remnant of the dead wasps both inside and outside the figs, or whether it is any other factor we could not again prove.

DINESH MEHTA
JWALANT MEHTA
MAMAN DAFTARI
NITIN KAMAT
SHANKAR SEN

The authors are ninth standard students of Arya Vidya Mandir School, Santa Cruz (West). The project was started in their 'socially useful and productive work' periods, and has been most successful, in that all the students have worked with very enormous enthusiasm for the project, to the extent that they have opted to continue the work on fig wasps and are keeping watch on the development of the figs and insects over a longer term in the hope that they can come up with some information about the insect's life cycle that has never been observed before. We also hope that interested people in the Bombay Natural History Society might start other similar projects with the boys and girls of other schools, so that an awareness and interest is instilled in them at an early age.

—MRS. PHILLIPPA MUKHERJEE

BIRDWATCHER

The Holarctic Avian Speciation Project

Ornithologists, whether resident or not in the Indian subcontinent, may be interested to learn that preparations for an Holarctic atlas are now in progress. The intention is to map the 1900 odd 'conventional' bird species which are members of the Holarctic avifauna and regularly breed—or are presumed to do so—within that avifaunal area upon the same lines as was done for the African birds by Hall, Moreau, Snow and others.

The Himalayan area together with the Fort Hertz (Putao)/Adung Valley district of Northern Burma and Baluchistan with the generally arid hill country of Pakistan west of the Indus valley north to Peshawar and Chitral is included for all areas above 2000 m altitude in the Himalayas and above 500 m at the very lowest in the hills west of the Indus.

We estimate that the work of preparing the atlas will take ten years, all going well, from start to completion of the final maps ready for the printer. It is envisaged that the work will be an international effort involving authors for the different bird groups in several different countries and the collectors of the 'raw' data in many countries. An honorary committee has been set up to guide and advise the Organizer/Editor and the enterprise will be 'formally' launched at an "informal discussion group" being convened by the Organizer/Editor at the XVIII International Ornithological Congress in Moscow 1982 upon the invitation of the IOC's Scientific Programme Committee.

Regarding authors, we envisage them plotting the data upon the working-sheet maps, posting after checking to the final maps and then writing a commentary for each map with accompanying selected references pertinent to the species or species-group shown. It must be emphasised that authors are not expected to be left to gather in the 'raw' data themselves for their bird groups, with certain exceptions. This data-gathering is to be a separate operation altogether with authors getting all this delivered to them. A bird group for an author can be very flexible and mean anything from a whole Order down to just one genus in sore need of up to date revision along modern lines—the laughing thrushes *Garrulax* is an example.

For the data-gathering operation we have divided up the entire Holarctic into just over 300 areas grouped into 11 regions; the Holarctic portions of the Ali-Ripley

HANDBOOK area and extreme north Burma is comprised of 11 areas stradling three regions. Each area has been assigned a code number —thus 7.17 is Baluchistan and Pakistan hill country over 500 m altitude north to Peshawar; Nepal east of the Arun Kosi river over 2000 m is 11.06, whilst Gilgit, Baltistan and Ladakh are grouped together for biogeographical reasons as one area which is 9.12.

We would like Society members and *Journal* and *Hornbill* readers to write in to tell us that they are interested in the Holarctic project and support it and that they either (1) cannot volunteer to author a bird group or organize data collection for any of these areas; (2) would like to author a bird group —which one? (3) would like to organize data collection (from field, field records, museum specimens and the literature) for an area—which one?—and note that Mr. S. C. Madge is taking on the Area Data Collection Organizership for 7.17 which is Baluchistan etc. north to Peshawar; (4) would like further information/details. We need as much interest in, support for and active participation in, this Holarctic project as possible. Every letter received will be personally answered by

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NORTH YORKSHIRE HG1 4QF
ENGLAND.

Assistance to birdwatchers

Members of the Society interested in birding within a radius of 35 km of Ahmedabad City, Gujarat, are offered all possible help by the

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BACK TO THE WALL: Saga of Wildlife in Bihar—India, by S. P. Shahi (1977) are available for sale with the author. Each copy of the book is priced Rs. 120/-, packing and postage extra. Contact

S. P. SHAHI
P. O. HEHAL
RANCHI 834 005
BIHAR

The endangered Wild Buffalo

In NE. India, domestic buffaloes are classified into two breeds: 'kachhar' and 'bangar'. 'Bangar' is the breed one usually sees as a draught or milch animal. Smaller than the 'kachhar' type, they have short, curved, rounded horns, and a relatively mild temper.

The 'kachhar' type, on the other hand, is practically semi-wild. These animals have, beside an aggressive temper, the physical characteristics of the wild animals: huge bulk and sweeping, tapering horns. As with the *mithun*, frequently it is only the evening ration of salt which maintains the tenuous link between these animals and their owners.

These were common once in the swampy, grassy tracts fringing wild buffalo habitat in the districts of Mymensingh and Sylhet, now in Bangladesh, and in similar terrain in Assam. They intermingled freely with the fully wild animals and it was difficult, if not sometimes impossible, to tell them apart by just looking at them. In fact, a true 'kachhar' calf was often sired by a wild bull. Till the other day—perhaps even now, I have no recent information—owners of 'kachhar' herds did not keep breeding bulls, as such bulls would be killed by wild ones. Gee in his THE WILD LIFE OF INDIA (1964) gives the photograph of one such killer wild bull. Again, 'kachhar' cows were often enticed away by the wild bulls. In Mymensingh there was a special term to describe small wild herds consisting of a wild bull, and several feral cows. In the sixties a small herd of four or five 'wild' buffalo, the only one in the whole area, was wiped out by a shikar party in the Raimona forests of Kochugaon Division in Assam, now a part of Manas Tiger Reserve. One of the cows shot, reportedly, still had a bell tied to its neck.

Indeed, wherever civilization encroaches on wild buffalo habitat, certain amount of interbreeding between the wild strain and the evolved one is inevitable. Eventually comes a stage when the wild strain, instead of improving the domestic stock, gets swamped in them. With the exception of Manas, this appears to be the common story of the wild buffalo all over India.

It is believed by many that the Kaziranga buffalo represent more the 'kachhar' than the pure wild strain. The mixture of the two strains has been so intimate here that all distinctions between the two have been lost. Horns of wild buffalo recovered in North Bengal in recent years show clear marks of the same process. Photographs of wild buffalo from Madhya Pradesh do not suggest a pure wild strain either.

Some time ago, I was informed by Rajkumar Prakritish Barua (Lalji) of Gouripur, Assam, that the finest 'kachhar' breed animals were to be found on the fringes of

A Wild Buffalo bull from Manas Sanctuary *Photo*: E. P. Gee

A semi-kachhar type buffalo in Nagaland *Photo*: S. K. Acharyya

Manas. One wonders if this is still true; and there is reason enough to wonder.

As has been said already, the 'kachhar' breed of buffalo is typical of the wild grassy tracts bordering natural wild buffalo habitat. Perhaps in a way they can be called the link stage between the true wild strain and the domestic variety. However, the last 25 years have seen a virtual disappearance of the grass-land habitat in Assam outside sanctuaries. Consequently the breed is fast vanishing. Besides, instead of mixing with the wild strain, they are now getting crossed with 'bangar' types brought in large numbers by professional graziers, and rapidly infiltrating into areas which were once too wild for any but this very special 'kachhar' breed.

Next to cats, the buffalo is probably the one animal which turns feral most easily. And so, the Indian water buffalo is the largest wild animal in Australia and certain parts of South America. Blanford suspected the wild buffalo of Burma and Malayan peninsula to be "decended from herds escaped from captivity". Sterndale thought the same of the buffalo in North Ceylon.

It is proposed, therefore, that an introduction programme be launched with the 'kachhar' breed in suitable areas. There is some urgency in the matter, as the breed presently is in very real danger of disappearing altogether or degenerating completely.

As the first step of the proposed programme a technical report is needed on a comparative study of the morphology, including weight, of wild buffalo from Manas, Kaziranga, and a few other places, and 'kachhar' animals from the same areas, especially Manas.

The photograph illustrating this note, taken recently in Nagaland, show a 'kachhar' type animal. The wild strain is still discernible in its features, though the process of degeneration is well advanced. Much finer specimens should be available from the north bank of Assam. A project of buffalo introduction with these animals would cost a fraction of what an elaborate programme of temporary immobilization, translocation, and rehabilitation of wild animals would involve. The results of a 'kachhar'-type based project and one using 'wild' animals only are unlikely to be significantly different.

I am aware that the suggestion may cause some purist eyebrows to go up. For them it is submitted that what is good enough for Kaziranga should be good enough for selected areas in North Bengal, the Sunderbans, Champaran in North Bihar, and Uttar Pradesh *where no indigenous wild strain survives*. In fact a Manas 'kachhar' may very well prove to be a specimen superior to an average Kaziranga animal or anything that Madhya Pradesh can produce; but, first let us see.

D. K. LAHIRI CHOUDHURY

Butterflies of Bombay – 3

The butterflies of the Family PIERIDAE are popularly known as Whites and Yellows owing to the fact that white and yellow colours are common in these insects. Most members of the family show some difference between the sexes, and the females are darker and often exhibit additional markings. In their habits, however, the males differ in being sun-loving and gregarious, and are often found in clusters on damp patches, riversides and on banks of ponds and puddles. The females, prefer shady spots and tend to be solitary.

16. THE PSYCHE. *Leptosia nina* (Fabricius). A common tiny butterfly, with a black apex and large black spots to the upper forewing. On wing from July to October. A weak flier, keeping to the ground, rarely exceeding two to three feet, amidst undergrowth and scrub, and shady portions of the forest. Larval food plants are Sacred Barna *Crataeva religiosa* and Caper *Capparis heyaneana.*

17. COMMON JEZEBEL. *Delias eucharis* (Drury). Common wherever trees exist, even in the midst of the city. Flies from August to October, usually high among the foliage, with a low and investigating flight. These are females searching for a food plant to deposit their eggs. Males visit flowers and are sometimes found drinking from wet patches. Larval food plants are mostly the tree parasites, *Dendrophthoe falcata* and *D. elastica.*

18. COMMON GULL. *Cepora nerissa* (Fabricius). This butterfly is a bold, fast and strong flier, and is met all round the year, except in very cold seasons. Habitually keeps to scrub country. Larval food, various Capers.

19. THE PIONEER. *Anaphasis aurota* (Fabricius). Occurs in open country in dry areas. It is a strong flier and is on the wing from July to September. Often basks in the sun. Both sexes freely visit flowers; the males are especially attracted to damp places. Larval food, various Capers and *Cadaba indica.*

20. STRIPED ALBATROSS. *Appias libythea* (Fabricius). Found in open areas and often away from cover. They are on the wing from July to September and their flight is strong and purposeful. The larval food plants are the Sacred Barna and various Capers.

21. WHITE ORANGE TIP. *Ixias marianne* (Cramer). Both the sexes are white, with the apical half of the forewing black enclosing a large orange patch, and with a black terminal border on the hindwing. The female, however, differs in the

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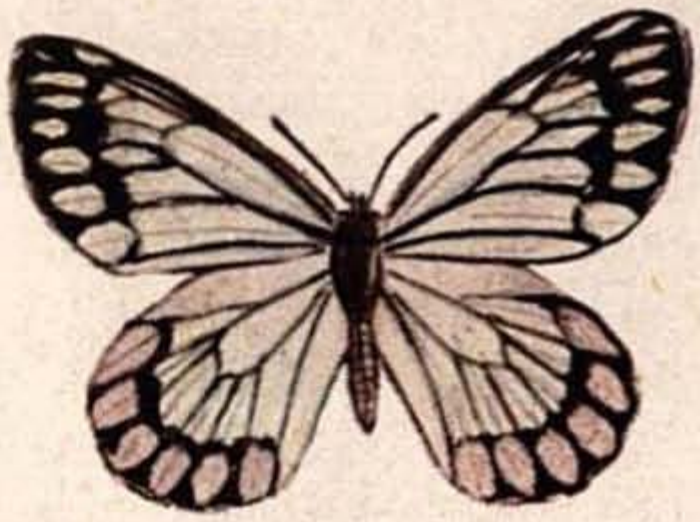

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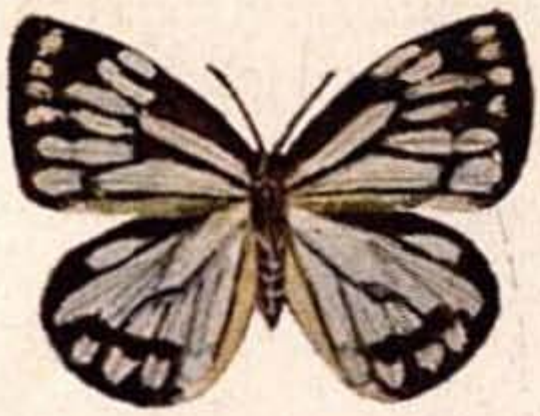

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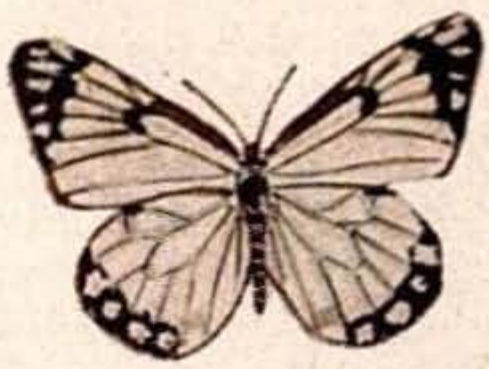

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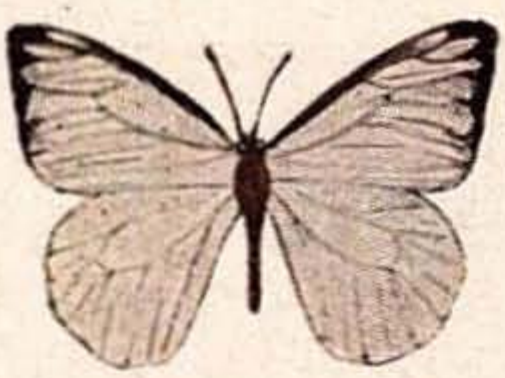

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Sathish S.M.

orange patch being narrower and containing four black spots. Its rapid flight gives an impression that the butterfly is always in a hurry. They are mostly on the wing from June to October, and keep a foot or so above ground, occasionally breaking their run to alight on flowers to feed. A sun-loving butterfly, found in open and scrub country. Larval food, various capers.

22. YELLOW ORANGE TIP. *Ixias pyrene* (Linn.). The male yellow above, and for the rest patterned similar to the male of the White Orange Tip. The females, however, are either white or yellow—the white females lacking the orange patch. This insect is not as rapid as the White Orange Tip. but proceeds with the similar strong and hurried flight. It is on the wing from August to October. The larval food plant consists of various capers.

23. SMALL SALMON ARAB. *Colotis calais* (Cramer). Always keep close to the ground, these butterflies have a weak, direct flight. They seldom settle on flowers. Fond of sunning and are often to be found resting on a leaf with their salmon-pink wings partially open. At sundown or in inclement weather they roost under leaves, or in a thicket or grass with wings closed over the back. Mainly on the wing between August and October. Larval food consists of various species of *Salvadora.*

NARESH CHATURVEDI
S. M. SATHEESAN
(*To be continued*)

I pray, Sir, tell me,—is it possible
That love should of a sudden take such hold?

—*The Taming of the Shrew*

BOMBAY NATURAL HISTORY SOCIETY

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