

# Hornbill



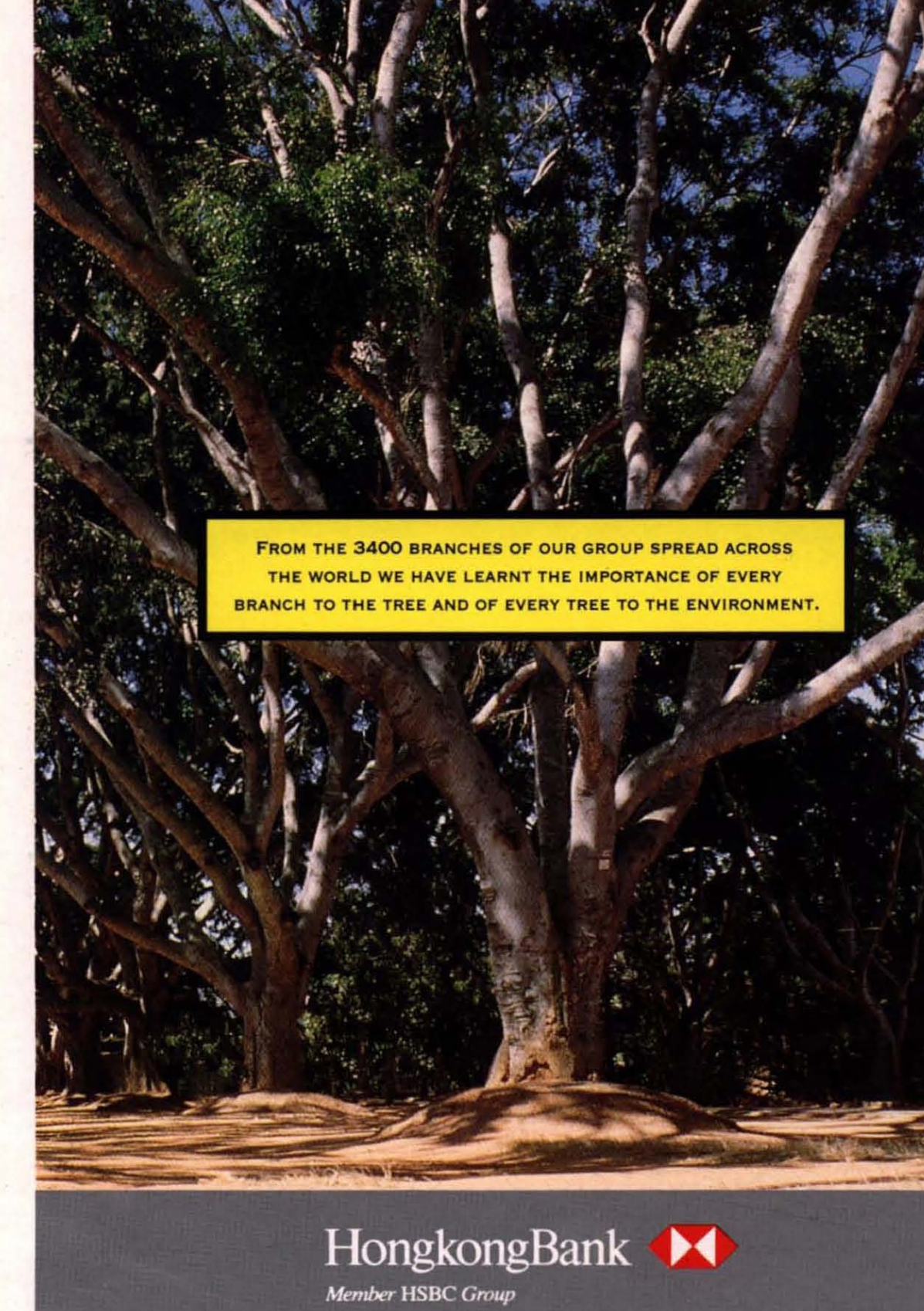
1997 No. 1

*about nature and us*




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THE WORLD WE HAVE LEARNT THE IMPORTANCE OF EVERY  
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# HORNBILL

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Borivli National Park is a metropolitan field laboratory. You may even find here a leopard with a postal address and pin code number!

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The Nautilus is a true architect - it constructs a spiral shell in proportion to the Fibonacci series with mathematical precision.



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This feature is the first of two parts covering a trek by a noted butterfly expert to the Baspa Valley in the Himalaya.



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# Viewpoint

**India** has a vast network of National Parks and Sanctuaries built around endangered species and sometimes around endangered ecosystems. Compared to other countries all of them are small in area and most do not figure in the tourist circuit, both foreign and Indian. The concentration of tourist traffic is by design or otherwise restricted to those holding 'glamour' animals like the tiger, rhinoceros, elephant, and lion. This concentration on a few protected areas helps neither the sanctuaries nor the tourist industry. The problems are easily identified; overuse of a few PAs, lack of infrastructure, conflict between management and industry, administrative hassles such as permits, passes etc.

The majority of the Indian sanctuaries are open for viewing only for a limited period of time, usually less than six months and the peak viewing period may be about sixty days. The sanctuaries cannot withstand the heavy demand on their resources made during this limited period.

The most sensible answer to this problem is to examine the tourist potential of all the protected areas and grade them according to not only the availability of 'glamour' species, but also other natural

resources which require to be highlighted. We have more than 500 potential emissaries of our biodiversity, let us try and spread tourist pressure more evenly among them.

A cause for serious concern is the lack of infrastructure, and these include roads, accommodation, food and other basic amenities. The majority of the protected areas are situated in inaccessible areas and the journey to and from them could be an ordeal.

There is need for a radical change in management concepts of facilities at sanctuaries if they are to attract visitors irrespective of the animals and other resources they offer for viewing. The Tourism Department has to raise a special cadre of local people well trained in housekeeping to manage the forest lodges. The forest department should limit itself to looking after the forest and the wildlife for which their staff are trained. Better still, except at the managerial level, staff should be recruited locally and rigorously trained as it is likely that the use of the lodges will be largely seasonal. The need of the hour is an in-depth survey of tourist potential of all protected areas and then a study of the possibilities of meeting infrastructure requirements.

J. C. DANIEL





# BOMBAY'S *Other* JUNGLE

SUNJOY MONGA

**Within** half an hour of leaving my home in suburban Bombay, I am amidst grey hornbills and junglefowl, langurs and swallowtail butterflies. Pug marks on the loose, sandy soil, alongside an ant-lion's funnel, indicate a leopard's recent movement. And in less than an hour, thanks to warning calls of uneasy birds and langurs, I get a fleeting glimpse of the ghost-like predator fading into the bush. Its movement has been described as 'the flowing past of a



The karvi blooms in a profusion of colour, once every seven years

phantom'. Over the next hour, I am lost in a forest of trees and blowing grass; I hear no machinery, just creaking bamboo, rustling foliage, whooping monkeys and avian melody. And then resounds the shriek of an electric train hurtling in the distance, beyond the hills, joining the sounds of the jungle.

I am in a forest we affectionately call BNP - Borivli National Park - Bombay's field laboratory, its great tutor of natural history. After nearly three decades of roaming here, I am convinced that were it not for this

SUNJOY MONGA/PORPOISE PHOTOSTOCK

SUNJOY MONGA/PORPOISE PHOTOSTOCK



104 sq. km park, there never would have been so many nature enthusiasts in Bombay. At least my love and concern for the natural world would never have been so intense. And I soon began to appreciate this forest's economic and recreational importance. The two lakes within the National Park used to provide upto 10% of Bombay's water supply, and that's a lot of water.

Here it was that I got a first-hand view of what environment, conservation and catchment areas were all about. How well I remember the view from that black, volcanic lava flow over the Buddhist caves of Kanheri. What incredible contrast there is between yesterday and today. Where the almost village-like north Bombay was, stand countless matchbox-kind apartments and gas-belching industries. As soon as the jungle ends begin the shanties, slums and quarries where thrive over half a million people whose numbers are only rising, and which is proving to be the park's *bete noire*. Removing illegal encroachments from within the National Park has become a routine feature in recent times, forest officers sometimes spend more time in courts than in the forest. Yet, inside the park, it is still a vulnerable, wild country.

In a city that is primarily a business centre, bustling and chaotic, most of its once legendary seaside charm now lost, the National Park is the ultimate respite. Well over two million visitors make it possibly Asia's most visited National Park.

Surrounded by Bombay's suburban townships on the west



KRUPAKAR-SENANI/PORPOISE PHOTOSTOCK

Winged denizen — the male Mahratta or yellowfronted pied woodpecker

and east, most of the terrain is hilly and clothed in teak-dominated, tropical dry-deciduous forest. Bamboo is fairly common, intermittently losing out to the equally widespread mass-flowering *karvi*. Some valleys host patches of semi-evergreen, and northwards, along Bassein creek which bifurcates the park into two unequal parts, is a bit of mangrove. Up on rocky hilltops are cactus-sprinkled dry and rocky haunts, parched and golden in the dry season, lush and green in the rains.

Located in the northern fringes of the biologically rich Indo-Malayan zoogeographical realm, the biodiversity count here is quite

impressive. Just under a thousand species of flowering plants have been recorded. The rest of the inventory reads over 150 species of butterflies, 269 birds, nearly three dozen each of mammals and reptiles, and an indeterminate six-legged, biting, bombarding army of ants, bees, cicadas, mosquitoes, wasps and countless others, the ultimate test of your endurance!

Your joy of nature reaches a peak during the monsoon, when almost a hundred inches of rain pours in a hundred days. The hills enveloped in mist, a lush green carpet arises, strewn with beautiful flowers like hill turmeric, glory lilies and passion flowers. Now also emerge



frogs and toads, vibrant and broadcasting their presence with a deafening chorus of croaks. Now emerge multitudes of insects as I go berserk with the camera, recording nature's inimitable cloak and dagger strategies, or may be the mating of baronets, or perhaps dragonflies in tandem, or just a beetle munching a petal.

Birds, however, are the star attraction here. My total tally to date is 269 species. At the beginning of the rains, with insects in abundance, many forest birds are well into nesting, either sitting on eggs or feeding their young. A sizeable number begin nesting with the onset of the rains, and most

breeding is over by mid-August. But the monsoon with its dense foliage hides most feathered folk and it is the dry season that is prime birding time. Between December and March is the finest period, for now, when there are more leaves on the jungle floor than up in the canopy, sightings are easy. My finest bird-watch here was in mid January, 1984, when my friend Joslin and I counted 123 species within seven hours. For a Bombay jungle, that was a lot.

During summer, the ground-birds and nearly all cavity nesters breed. While grey junglefowl and red spurfowl lay eggs in scrapes amidst dry leaf litter, half a dozen

types of woodpeckers excavate for residence. The rufous woodpecker makes a nesting cavity in the ball-shaped *papier mache* nests of *Crematogaster* ants. There are also grey hornbills, of which I once saw twenty-three flying over us, into Pongam valley, in the southern edge of BNP. I often walk down this birding' slope to reach Vihar, one of the two lakes inside the National Park, and home to yet another multitude of birds, both residents and migrants. Here I see larks, pipits, wagtails, and an assortment of raptors. Occasionally, a shaheen falcon flies to, or away from, its feeding site on the rock above Kanheri.



The relentless march of encroaching slums must be halted





SUNJOY MONICA/PORPOISE PHOTOSTOCK

Can you spot spiderman rock climbing in BNP?

As an apology of a winter fades into the heat of summer, the forest gets drier. You can now catch sight of a barking deer sprinting away, a sambar glaring out at you, and small herds of *chital* playing hide and seek in the woods. A troop of macaques feeds as if there wasn't another day, while the booming call of a langur resounds in a valley. On several occasions, the grating calls of langurs have helped me to catch a glimpse of the park's much-in-the-news and variously branded arch-predator — the panther or leopard.

Regarded by many a naturalist-shikari as the most adaptable and elusive of India's large cats, the leopard, in a place like Borivli, surrounded by a sea of humanity,

has raised many questions. For over a decade now, wild leopards have been increasingly sighted in the peripheral areas, around sprawling shantytowns that have mushroomed nearly all along the park's boundary. It has sent shock waves — a dozen people have lost their lives, killed by leopards within Bombay's municipal limits!

Now what happens, and how does this occur? Perhaps it is something like this. Some of BNP's spotted felines get attracted to the encircling shantytowns by domestic dogs, goats, poultry and pigs. Thanks to such easy prey, some predators set up dominion in scrub and forest in the vicinity, and

occasionally come into accidental conflict with people. A few of the kills have been inside the park, in tribal settlements of which there are several. As of today, there are over 2000 people, tribals, residing within BNP, including several hundred in the vicinity of Mafco.

Some years ago, when a leopard mauled a person on the eastern edge of the park, the animal was cornered and stoned to death. People living in hutments on the park periphery (though many are encroachers) say they have nothing personal against the leopards, nonetheless, "If any incident of mauling re-occurs, we will most certainly retaliate and get rid of the animals. Our lives are definitely

more precious to us than your forest and leopards." With more and more people around, it is a dead serious matter. Aggravated by supposedly concerned individuals who, on one hand, want the last of India's wilds free of human interference and, on quite another platform, raise a cry of human concern. The true meaning of tribals and original inhabitants appears to have been lost in the murky world of local politics and nepotism, making it even more difficult for the already troubled forest official. A plethora of departments, from the electricity to the water works, have their own further interests in this forest.

The human - wildlife issue here, like in Protected Areas elsewhere in the country, has also partly lost its rational direction thanks to our craze for numbers. But are there really as many leopards in BNP as we are given to believe? Could it not be that the frequent sightings on the periphery, and the regular instances of human-leopard conflict give an impression of a larger population. Over the past decade and a half, the forest department has released captive-bred ungulates with a view to replenishing the stock. This may have augmented certain ungulate numbers to a slight extent, but really, all this calls for a very detailed, comprehensive project for this National Park.

It is a complex issue, for which more answers lie on the park's outskirts than in the verdant interiors, answers such as cleanliness and a resulting fall in scavenging animals. Interestingly, examination of leopard scats over



the past few years has revealed a rising percentage of wild prey kills. A healthy sign, no doubt.

Many authorities today believe that conflict between man and animal can only be reduced, not completely eliminated. There's no doubt about this harsh reality, and we have to cope with this in the best manner possible. Construction of a six metre high stone wall cum chain link fence along a part of BNP's boundary has commenced, but it has already been broken by intruders. Merely having a wall and then ignoring effective patrolling can serve no purpose.

Degradation of the Park area due to encroachment will mean an all time loss of the only recreation cum-education centre of its kind within Bombay.

For nearly half a decade now, much of the southern and central parts of the park have been closed to the public, thanks to an impromptu, ill-considered decision taken by a former Minister of State for Environment.

The question of people posing a problem for the wilderness is a management issue and cannot be solved simply by closure to people, but indeed can be mitigated with effective participation of concerned NGOs and others. People, especially birdwatchers and other nature enthusiasts, actually serve as a deterrent to antisocial elements, poachers and illicit distillers. Interference by such people has risen in the past few years, the illegal woodcutters and distillers encouraged by an almost complete absence of visitors who would serve as indirect but efficient control, in the almost near-absence of

departmental patrolling squads. I am not trying to sound critical of anybody, but merely suggesting that authorities consider the following recommendations:

☐ An increased budget. The imperative need of the hour is an increase in staff, especially protection staff, without which this forest will go to the dogs, literally.

☐ Increase the entry fees for individuals and automobiles to Rs 5/- and Rs 50/- respectively. Try and retain much of this revenue for upkeep.

☐ Open the forest to nature groups (up to a maximum of twenty participants in a group). The involvement of members of the BNHS and other such like-minded organisations can be an asset. And most certainly, birdwatchers and other nature enthusiasts should be more appropriate than the antisocial elements seen moving about with impunity in various areas.

☐ **Regard people visiting this forest as an asset, not a problem. Most people do what they do because they do not know, have not been informed, how they should be treating the wilderness.**

☐ Get more organised on the public relations and information front. Distribute illustrated brochures at nominal cost. Develop an educational package that aims to forcefully tell the visitor what is this wilderness, its value for providing water, why is this forest to be



SUNJOY MONGAPORPOISE PHOTOSTOCK

Caught!... the hapless victim of our planning

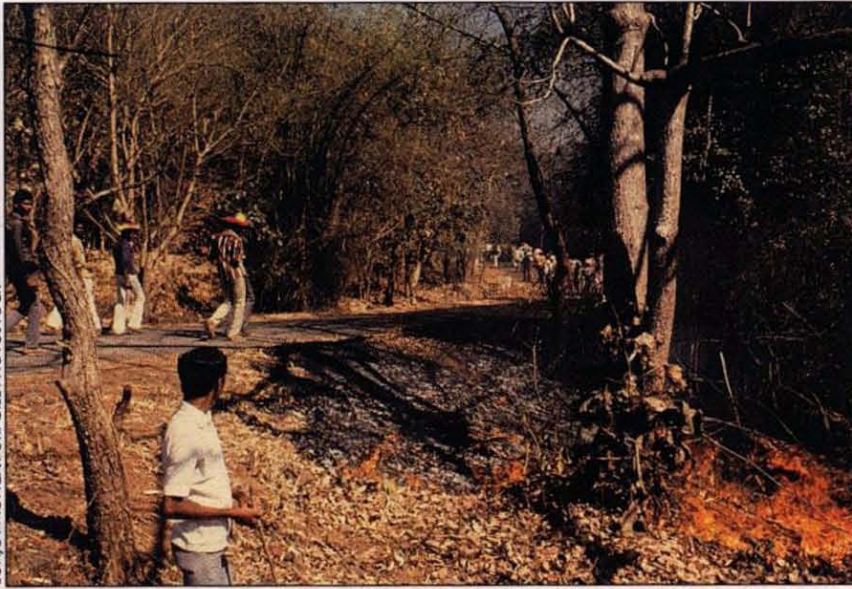
preserved and how it must be treated. Deal with issues of littering, and smoking in the forest. Involve members of the BNHS, and others, in popular programmes at the relatively underutilised Information Centre of the BNP.

☐ Get the Government to expedite release of funds for the wall along the Park boundary. This has to go along with effective patrolling. Look to the corporate sector for generating funds for educational and management activities inside the BNP (eg: Industry can sponsor well-designed dust-bins inside the recreational zones, or provide drinking water, halts, to name just some.

☐ A 100 m. tract along some



SUNJOY MONGA/PORPOISE PHOTOSTOCK



Wanton destruction — a forest fire in BNP on Mahashivaratri day

SUNJOY MONGA/PORPOISE PHOTOSTOCK



An outdoor laboratory for laymen and nature lovers

stretches of the Park boundary could meet some of the fuelwood needs of the locals. This would reduce interference inside the forest, and establish a bond with affected people.

☐ Initiate animal counts, how many can this forest support; plan release of herbivores accordingly.

## WHAT COULD THE BNHS AND EACH ONE OF US DO?

☐ The newly created Conservation Education Centre of the BNHS should serve as an introduction to BNP. The CEC should explain to visitors how the forest functions and maintains the

life-support systems of our planet.

☐ We should initiate an integrated socioeconomic and biodiversity project involving interaction with the tribals and others to reduce conflict, enumerate the carrying-capacity of this forest — a precise count of dominant wildlife species here.

☐ All visitors to the CEC must take an oath to preserve the wilderness, not to throw litter or light fires in any wilderness area they visit, and convey their concerns to the media.

☐ We should coordinate more strongly with the Forest and Wildlife officials in maintaining the ambience of the city-forest.

☐ BNHS data and its members should be made available to the forest department. The audience that can be reached by this awareness programme is awesome. We must critically assess what is the extent of encroachment in the park. We should initiate collaboration with the forest department and other agencies to commence a detailed project on this city forest. Once the critical periphery areas have been examined, a concerted effort will be required to put action into words.

Before it is too late, Bombay should stop looking at this forest as a mere picnic spot. The Borivli National park is the greatest living example that indicates how development and the natural world can co-exist. Well, almost!☐

*Sunjoy Monga, a well known naturalist photographer, has a long association with BNHS and is presently on the Executive Committee.*



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## 25. The Mathematical Prodigy

Beefsea

# SEASHORE LORE

*You can work it out by Fractions or by simple Rule of Three,  
But the way of Tweedledum is not the way of Tweedledee.  
You can twist it, you can turn it, you can plait it till you drop  
But the way of Pilly-Winky's not the way of Winkle-Pop!*

**Servants of the Queen**  
— Rudyard Kipling

**Like** oil and water, biology and mathematics normally do not mix. But there are some animals which have mastered geometry; one such is the pearly, or chambered, nautilus. Found in the open seas of the western Pacific Ocean from the Philippines to Fiji, they live near the bottom at depths down to 600 metres. Millions of years ago, they were numerous; nearly 3500 different kinds have been dug up as fossils — some with shells as large as 4.5 metres across. Today, only six species occur. They can be termed “living fossils” — representatives of an order which goes back to the beginning of animal life on earth.

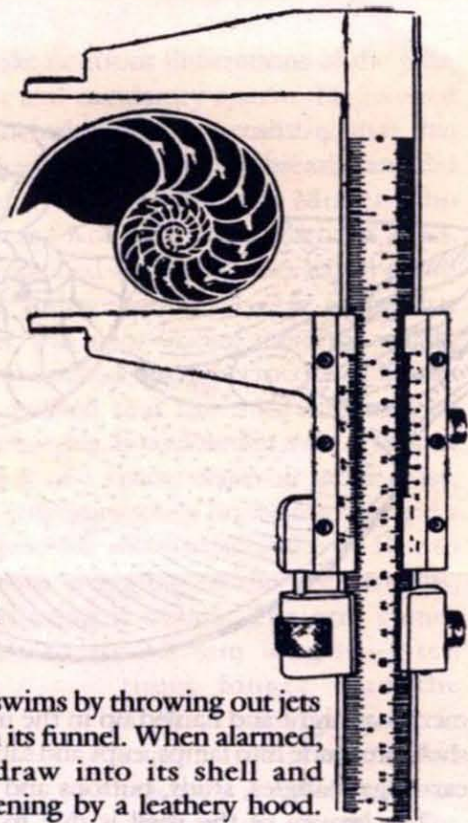
Cousins of squids, cuttlefish and octopuses, pearly nautilus differ in having four gills (instead of two in the others) and in lacking an ink-sac (the organ which produces “ink” used as a smoke screen). The animal lives inside a limy white shell with reddish brown flame stripes. The inner side of the shell has a beautiful pearly sheen, being lined with mother of pearl. The shell is peculiar in having many chambers (25 to 38), separated by partitions, each with a small hole communicating with the next chamber. The animal lives only in the last (and largest) chamber, the rest being filled with gas. The newly born nautilus, half the size of a pea, already has four chambers. A new chamber is made every 2-3 weeks. The animal can rise and sink in the water by increasing or reducing the amount of gas in the

chambers. It swims by throwing out jets of water from its funnel. When alarmed, it can withdraw into its shell and cover the opening by a leathery hood. The shells are often found on the Andaman and Lakshadweep coast after a storm.

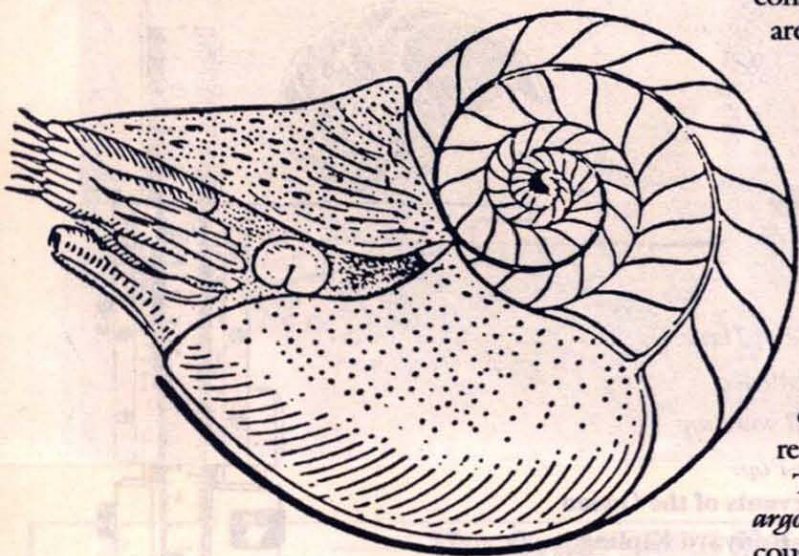
As with its cousins, the pearly nautilus also has arms, but these do not have suckers, and they are numerous. A female may have as many as 94 arms, while the male may have 60. The arms are in two groups, and the outer group always has 38.

Octopuses, squids and cuttlefish have the best eyes among backboneless animals, rivalling those in birds and mammals, but the eyes in a pearly nautilus are primitive. The eye has no lens and the light passes through a tiny opening of the eye. The eyes thus function on the principle of a pin-hole camera. Other primitive characters are an absence of salivary glands and pigment cells in the skin. So a pearly nautilus cannot change its colours in the remarkable manner that octopuses and cuttlefish do. It lays eggs singly (not in clusters); they are quite large — about 45 mm long.

In New Britain and the southern Philippines, pearly nautilus are caught in basket traps. Small, soft skinned fish are tied with fibres to the inside of the basket and serve as bait. The traps are lowered by ropes made of rattan (cane) down to 55-130

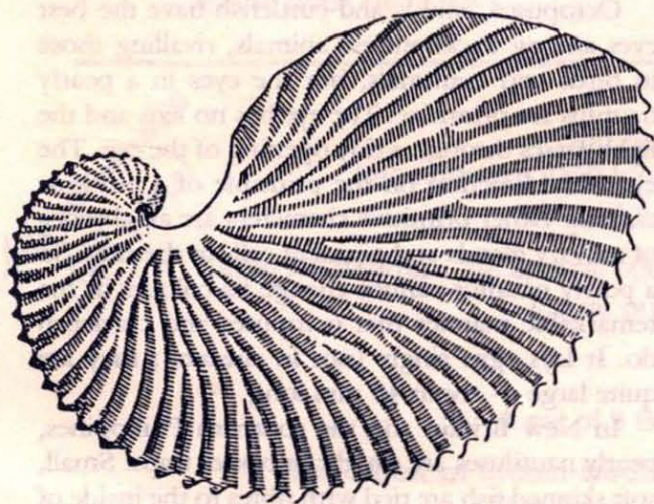






metres at night and hauled up in the morning. The shells are made into lamps, cups and saucers, spoons, ear-rings, bangles, studs, buttons and fish lures.

The beauty of the shell is due to a geometric design based on what are known to mathematicians as the golden rectangle and the equiangular or logarithmic spiral. A golden rectangle has a proportion which is aesthetically more pleasing than a narrower or broader one. If you measure the proportions of these golden rectangles, you will find them as 89, 55, 34, 21, 13, 8 ... etc. This series is



Shell of the paper nautilus

known as a Fibonacci series, and each pair of two consecutive numbers (55 and 34, 34 and 21, etc.) are called Fibonacci numbers.

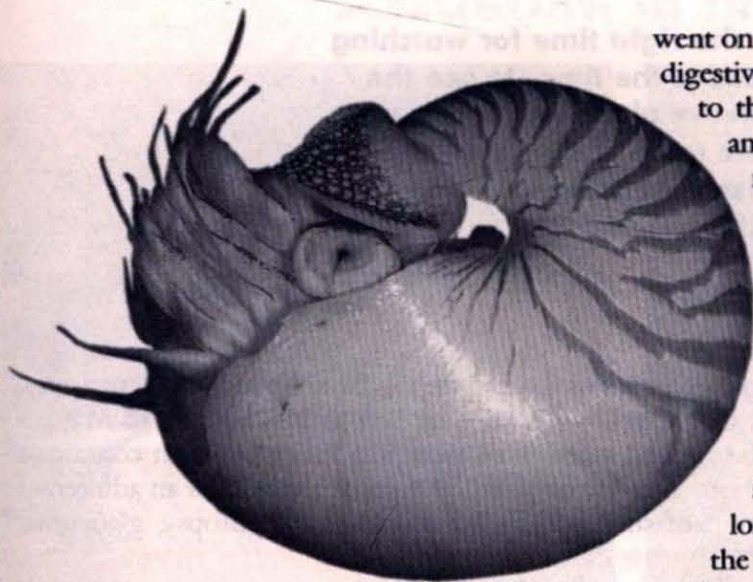
By drawing arcs of circles joining the diagonally opposite corners of each square of a golden rectangle, we get a logarithmic spiral. However different two segments of the curve may be in size, they are not different in shape. A mathematician, Jakob Bernoulli, was so enthralled by the sensuous beauty of the logarithmic curve that he had it engraved on his tombstone! A pearly nautilus shell follows the shape of a logarithmic spiral; it can grow outward indefinitely, but its shape always remains unchanged.

The paper nautilus, or argonaut (*Argonauta argo*), is not related to the pearly nautilus, but is a cousin of the octopuses. The name is derived from Greek mythology in which heroic sailors sailed with Jason in the ship 'Argo' in search of the golden fleece. Its other name comes from the fragile, papery, pearly white, fluted shell; between the two flaps of which the female lives. The female grows to about 30 cm and is found in all the warm seas of the world near the sea surface, but also occasionally down to 900 metres. Of the eight arms with suckers, two have their tips expanded into broad oval flaps, which secrete the shell. These two arms sweep back along each side of the shell and hold it to her body. The two halves of the shell are joined at one margin to form a keel, decorated by a double row of brown knobs. If removed from the shell, the animal cannot make another one and dies.

Paper nautilus swim by shooting jets of water out of the funnel, but occasionally ride piggyback on jellyfish. Six species occur in the world.

The search for the male argonaut is a fascinating tale. Till the 19th century, nobody had seen one. In 1827, Delle Chiaje found a small worm-like body stuck to a female argonaut, and thought it to be a parasitic worm. Later, Georges Cuvier examined one, about 12 cm long, and noticed that it had 104 suckers, so he named it "Hectocotylus" (the arm of a hundred suckers). Albert Kolliker, in 1845-46, noted that the suckers on the "parasitic worm" resembled those of female argonauts, that the "worm" contained, inside a cavity, sperms





Live nautilus snapped under water

went on to make fictitious illustrations of the gills, digestive tract and circulatory system. He jumped to this conclusion without realising that this animal had no heart, did not breathe and did not eat. It was Heinrich Muller who corrected Kolliker's error when, in 1853, he examined some tiny males hardly 6 mm long and without shells. He found that there was a sac among the arms which, when opened, had a hectocotylus inside. He realised that the third left arm, or hectocotylus, is enclosed in a sac. The arm consists of a sperm reservoir at the base, 50 to 100 tiny suckers on the middle, and a long thread-like male organ at the tip. Due to the vigorous wriggling of the hectocotylus, the sac enclosing it bursts. The arm comes out, unwinds to its 12 mm length — ten

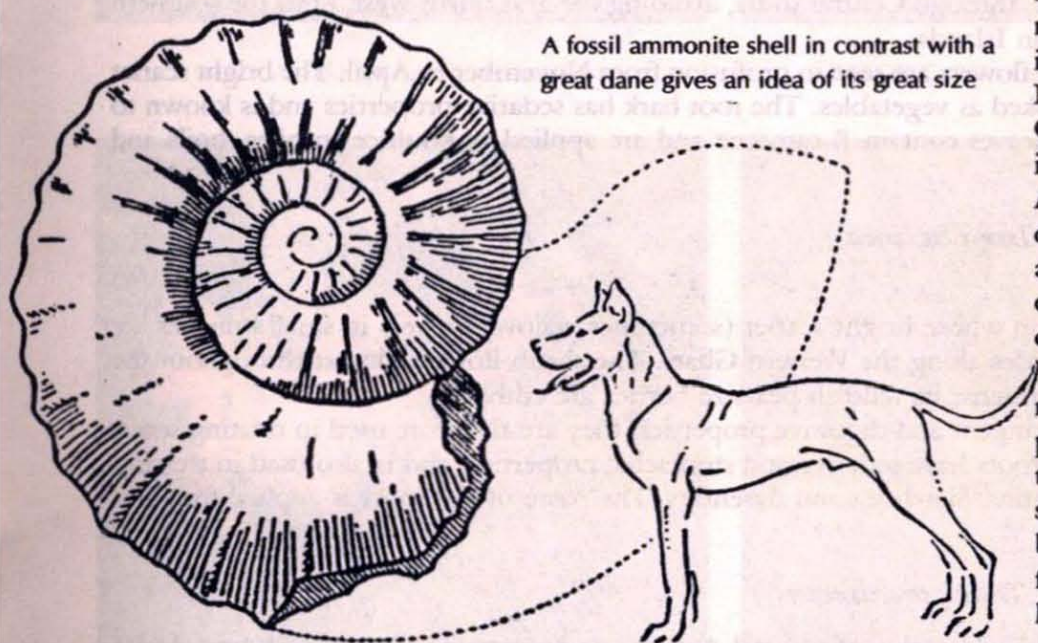
times longer than the male argonaut itself. It swims in the sea till it reaches a female, and fixes itself to her mantle cavity. No wonder that Delle Chiaje and Cuvier thought it to be a parasitic worm. And Kolliker was so embarrassed that he bought all copies of his earlier, erroneous publication and destroyed them!

Now we know that the male paper nautilus is a puny dwarf, one-twentieth the size of the female. The size difference is like that between a pea and a football, or a mouse and a lion.

The paper nautilus's shell is actually an egg-nest. The tiny (0.8 mm) eggs are laid in bunches attached to a thin stalk. The stalks, in turn, are stuck to the knobbed keel of the shell.

Dolphin fish (not dolphins, which are mammals), sailfish and broadbilled swordfish prey on argonauts. □

A fossil ammonite shell in contrast with a great dane gives an idea of its great size



characteristic of octopuses, and also that it had pigment cells of the type found in octopuses. He also found that when it was separated from the female argonaut, it lived for several hours, wriggling about in the water.

Surely this was the male argonaut! In his eagerness to publish, he "invented" evidence. He



# Indian Wildflowers

Text and Photographs: Isaac Kehimkar

Summer may not seem to be the right time for watching wild flowers, but this is indeed is the time to see the hardy perennials in their summer glory. And there are some seasonals too, that come up to occupy the empty niches left by the drying monsoon seasonals, harvested fields and dried pond beds.

## 1 MEXICAN POPPY *Argemone mexicana* Hindi: Satyanasi

Throughout India, this prickly exotic flower, with its sharp spines is common along the roadsides, harvested fields and degraded open areas. Bright yellow flowers are seen from January to May.

The dried and powdered plant can be applied as green manure in alkaline soil as it contains a good amount of nitrogen, calcium, phosphorous and potassium. The seeds are used as an adulterant for rapeseed and mustard oil. Consumption of such adulterated oil can cause dropsy, glaucoma, diarrhoea and dysentery.

## 2 CEYLON CAPER *Capparis zeylanica* Hindi: Ardanda

A rambling shrub 2-10 m in height armed with 3-6 mm long recurved thorns occurring from the south of the Himalayas, through Central India, avoiding the arid north-west, upto the southern peninsula and the Andaman Islands.

Showy pinkish-white flowers are seen in profusion from November to April. The bright scarlet berries are pickled and cooked as vegetables. The root bark has sedative properties and is known to be effective for fever, the leaves contain  $\beta$ -carotene and are applied as poultice to piles, boils and swellings.

## 3 JUNGLE FLAME *Ixora coccinea* Hindi: Rookmini

A medium sized shrub whose bright scarlet (sometimes yellow) flowers in small bunches are conspicuous on the roadsides along the Western Ghats. The shrub flowers almost throughout the year and is cultivated in gardens; its reddish pea-size berries are edible.

The flowers have astringent and digestive properties, they are therefore used in treating sores, dysentery and ulcers. The roots have sedative and stomachic properties, and is also used in treating hiccups, fever, loss of appetite, diarrhoea and dysentery. The paste of the roots is applied for sores and headache.

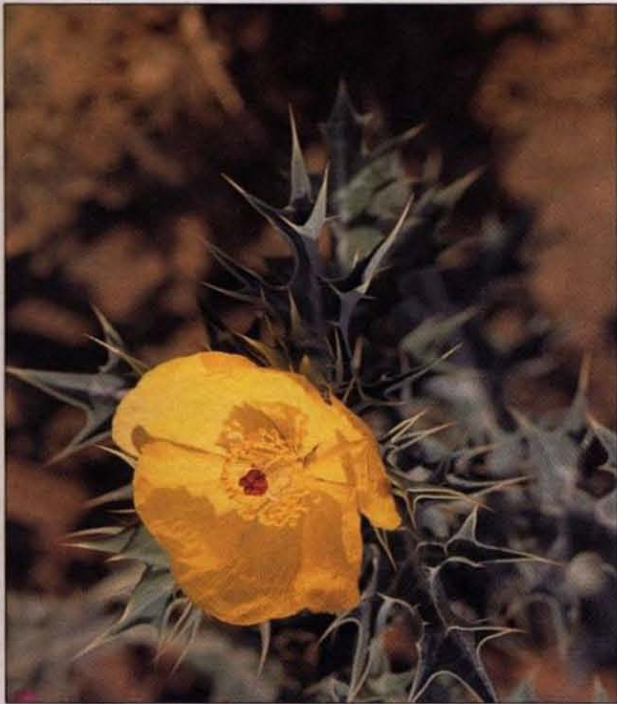
## 4 COATBUTTONS *Tridax procumbens*

This hardy, perennial herb, native of Central America and naturalised in tropical Asia, Africa and Australia is a common plant often seen along roadsides and railway lines. Gregarious, it prefers drier habitat and sunny situations. Its pale yellow flowers are seen mainly during the post-monsoon period till the next monsoon, but at places it flowers throughout the year, and is an all-time favourite of the bees and butterflies.

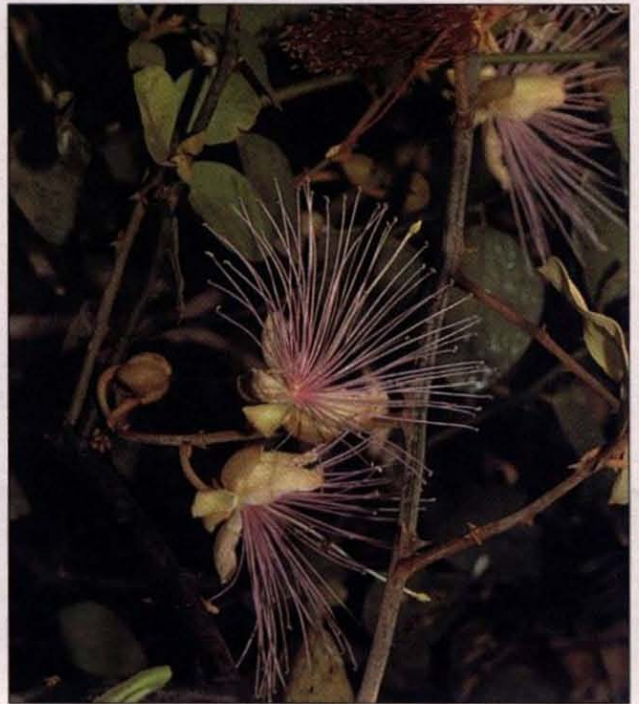
The leaves are cooked and eaten as vegetables, they are also known to be used in the treatment for restoring hair, dysentery and diarrhoea. The leaf juice possesses antiseptic, antiparasitical properties and is known to check hemorrhage from cuts and bruises.



## Seasons in the Sun



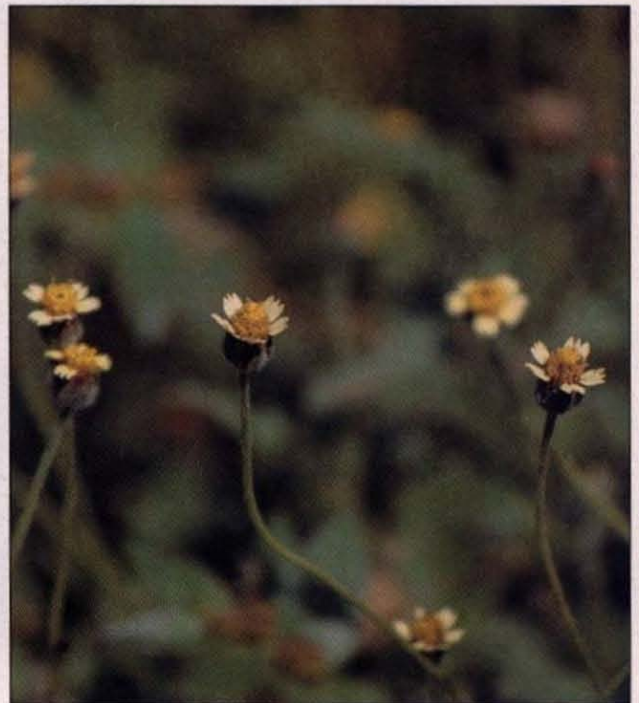
MEXICAN POPPY *Argemone mexicana*



CEYLON CAPER *Capparis zeylanica*



JUNGLE FLAME *Ixora coccinea*



COATBUTTONS *Tridax procumbens*



**SPOTTED DEER OR CHITAL**



Photo: R. DEV/WWF-I





E. HANUMANTHA RAO/PORPOISE PHOTO STOCK

## □ People's Protection of the Peafowl in India

It is not easy to write of the habits of the Peafowl in general terms, for there are two distinct birds under this name which, though outwardly the same, vary in character almost as greatly as it is possible for them to do so.

Over a great part of Hindoo India peafowl are considered sacred birds and strictly preserved by the natives, who bitterly resent any interference with them, so that these birds have been the cause of frequent trouble between "Tommy Atkins" on the shoot and the natives of the villages near where they pursue their sport. Even where the natives do not consider the bird to be actually sacred, there are many parts of India where the bird is venerated to a certain extent, or they are considered lucky and never persecuted. In such places there cannot well be any more confiding bird than the peafowl, and he haunts the immediate vicinity of villages, feeding openly in the cultivation in the early mornings and evenings, scarcely moving off the roads when disturbed by

passers-by, and leading his wives and their families into groves and orchards, or into the low scrub jungle, so often found all round Indian villages, where they maybe sought, found, and watched by whosoever will.

But take the peafowl in his haunts in those parts of India where man, instead of protecting him, takes every opportunity of slaughtering him either for the sake of his flesh, or, to a less extent, for his beautiful feathers, and it will indeed be hard to find a bird more wary or clever in avoiding observation and pursuit.

On the banks of the hill streams which run north from the North Cachar Hills into the Brahmapootra River the bird was by no means rare. On these rivers the usual mode of travel was upon two dug-outs fastened together with a platform of plaited split bamboo, upon which was erected a semi-circular grass hut about 3' high, running some 10' or so along the platform. The current of the little river



was the only means of propulsion down stream, though one man squatted in the bows and another in the stern to guide the craft down the rapids and in amongst the rocks. In appearance there was little to distinguish this floating hut from a couple of logs

piled up with drift and rubbish, and, as long as the men sat immovable, most wild animals and birds allowed a very close approach before taking to flight. Extract from : *Gamebirds of India*, E.C. Stuart Baker, *JBNHS*, Vol. 24 No. 1, pp 18-19. □

## □ Tusker in trouble

**P**oachers threaten the survival of bull elephants in Simlipal, needed for the breeding of the species and transfer of typical genetic traits

Authorities at the Simlipal Tiger Reserve in Orissa have recently formed 19 camps to monitor the movement of bull elephants and nab poachers who continue to threaten the gene pool of tuskers, an already endangered lot. This measure was taken in view of the fact that poachers in the reserve have been extremely organised and have to be tackled effectively.

Efforts have been on in India as well as in other countries in Asia and Africa in order to increase tusker populations. Hence, the poaching of bull elephants in Simlipal — required for the breeding of tuskers and transferring of typical genetic qualities — is a matter of global concern.

The three major genetic qualities associated with tuskers that scientists are concerned about are their weight, long shapely tusks and their colour. Unless these genetic traits are transferred, future populations could suffer from diminution, the shortening of tusks and the fading of colour. The present-day tuskers are smaller in size compared to mammoths, the earliest pachyderms which became



Simlipal Reserve may yet save this endangered species

extinct nearly 450,000 years ago. Simlipal is an ideal breeding ground for these 'moody' creatures. Its mountainous terrain, rivers, water pools, lush forests, plentiful rainfall and the easy availability of food have suited the tuskers very well. □

Courtesy: *Down to Earth*

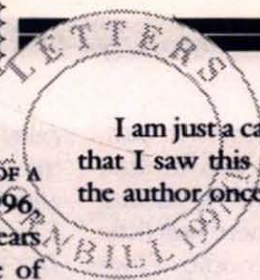
## ACKNOWLEDGEMENTS

*We are grateful to*

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DIVALIBA CHARITABLE TRUST AND  
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### □ A Hunt for Cheetahs

Reading Mr. J.C. Daniel's review of *THE END OF A TRAIL* by Divyabhanusinh Chavda (*Hornbill* 1996, No. 3) sent me down memory lane. Some thirty years back, as Superintendent of Fisheries in charge of Kolhapur, Satara and Sangli districts, my office-cum-residence at Kolhapur was a quaint old stone building in the Circuit House compound just opposite the tomb of an erstwhile Maharaja's favourite horse.

I was mystified at seeing several sturdy stone slabs, some 150 by 80 cm, embedded in the stone walls at regular distances and supported on thick legs. While they served beautifully as dining table, writing desk and for keeping weighing balance and microscopes, I did not have the slightest idea why they were there, especially as there was a stout iron ring above each slab.

It was only after a few weeks that I learnt that I was staying in the "cheetakhana" (hunting leopard's house) of the Maharaja's cheetahs.

Cheetahs, or hunting leopards, though abundant in Africa, are now extinct in India. Leaner than leopards, with a small head and slender legs, cheetahs have single dark spots instead of the leopard's rosettes.

Where we now have sugarcane fields, earlier there was grassland, with herds of deer, blackbuck, wild boar and small game. Whenever a shikar was planned, the cheetah had a mask placed over its eyes, it then became as docile as a pet dog. On a leash, each cheetah was taken in a bullock cart, and when the game was sighted, the mask was taken off and it was released.

A few hundred bounds and it ran down its prey, strangling it. It would then wait patiently for its masters to come, who slit the dead prey's throat and filled a ladle with its blood, as a reward for the cheetah, who would lap it up. It would then be masked and led back to its bullock cart.

Alas! Gone are the days of the Maharajas and their cheetahs.

— B. F. Chhapgar, Mumbai.



### □ More on Ceropegias

This is just to heartily congratulate you for bringing out a superb number of *Hornbill* (1996, No. 1). Particularly the article by Dr. S. R. Yadav on Fly Trap Flowers is excellent. The high quality of photographs, and overall beauty of the article are doubtless invaluable.

I am just a casual reader of *Hornbill* but I feel happy that I saw this issue congratulating both BNHS and the author once again.

— V. N. Naik, Aurangabad.



### □ Now a Sea-Cow Repellent!

I read with interest the feature "Mermaids with Moustaches" in the *Hornbill*, 1996 No. 3.

I give below some relevant information on sea-cows which will be intriguing to *Hornbill* readers.

Sea-cows, at least in South Africa, seem to be terrified of lions.

A sugarcane farmer at Mtubatuba was troubled by herds of sea-cows raiding the sugarcane in the vicinity of the sea. He knew that sea-cows panicked when they smelt lions nearby.

The farmer asked a German scientist to produce, artificially, a substance that smelt of lions. Sea-cows in the Berlin Zoo were used to try out its efficiency. They were first given a whiff of antropine - a human sweat concentrate. The sea-cows smelt it with curiosity but did not react. But when the lion smell concentrate was offered, they first looked around astonished, and then fled wildly.

The farmer used this near his fields and reported that not a single sea-cow has shown up since.

— Vidya Ullal, Mangalore.

Ed: The above facts are extracted from "*Sea Frontiers*" 8 (2): 108.



### □ Oddest Ancient Oaf Alive

In his article on horseshoe crabs (Oddest Ancient Oaf Alive; *Hornbill* 1996 No. 4, 1996), Beefsea mentions two species from India, viz. *Carcinoscopius rotundicauda* and *Tachypleus gigas*. However, I have heard that there is a third species in western Bay of Bengal. Is this true?

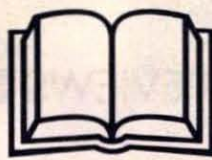
— Sarita J. Solanki, Ajmer.

Beefsea replies: A few specimens of the horseshoe crab *Tachypleus tridentatus* were collected by Anil Chatterji and C. Behera from Hukitola village in Orissa around 1993-94. However, Chatterji feels that the occurrence of this species could be an accidental migration rather than a regular phenomenon for spawning purpose.

This horseshoe crab normally occurs in Indonesia extending eastward to Japan.







**THE LEGEND OF THE MANEATER** by Arjan Singh. Ravi Dayal Publisher, Delhi, 1993, xvi + 169 pp. Rs. 180/-

Arjan Singh has so far written five books, all on the tiger and of life at his farm *Tiger Haven* on the borders of Dudhwa National Park in Uttar Pradesh.

This book is a biographical account of his childhood days in the Balrampur Estate in Gonda Dist. of U.P. which his father managed while the Raja was a minor. The Balrampur days he remembers with nostalgia and describes the people and the lifestyle of a well to do family of a scion of one of the lesser kingdoms of the Punjab. He describes his growth from an airgun wielding cruel boy who, after an unremarkable school and college career and an unpleasant stint in the army during World War II, ended up as a farmer on the Nepal border, as far away as he could get from the so-called civilisation which has made fatal inroads into the wilderness which he loves.

I cannot resist mentioning two anecdotes from this period. One is about Dunbar Brander, the noted author of *WILD ANIMALS IN CENTRAL INDIA*, a harsh eccentric who, if he had not covered sufficient distance in his morning tour to justify his travelling allowance, drove his car round and round the rest house till he was satisfied that he had done the required mileage. His staff called him Danda Mar Bandar (stick-wielding monkey) which perhaps explained their relationship. The second story is about his uncle Dalip Singh, a High Court Judge noted for his acerbic manner and sardonic wit. Once during a bench sitting he periodically murmured "Rubbish" as a counsel argued his case. Finally after an eloquent silence he addressed the court and with thinly veiled sarcasm said, "perhaps the Hon'ble Appellate Lawyer would care to make a statement," to which the lawyer replied "My Lord, what is there for me to say, for nothing but 'rubbish' comes out of your mouth."

The chapters which follow cover his transformation from hunter-sportsman to a committed conservationist of the tiger. He comes down heavily on sport hunting which had been one of the nemeses of the tiger from the havoc that hunters did amongst the tiger population. The thesis which he expounds in his chapter on maneaters, that during the second and third decades of this century, the tigers along the Indo-Nepal Border were found far from human habitation and the Churia range with its endemic malaria and excellent forests was the holding ground of the tiger and replenished tigers shot in the adjoining Indian territory in U.P. The second world war and the massive reclamation within India and Nepal saw the tiger had lost its habitat and was in conflict with man. However, his thesis that the man-eating tiger must not be treated as an aberrant to be eliminated speedily but rehabilitated as a victim of human delinquency is not an acceptable argument. He believes that the decade between 1968 to 1978 was the watershed years for the tigers in the Kheri Dist of U.P. Over 200 people were killed by tigers. This was also the period when Arjan Singh and the forest department started working at cross purposes and a running feud started which Arjan Singh, one notes with regret, feels will end only in defeat for himself. It seems to have started with the setting up of the Dudhwa National Park adjacent to his farm at the instance of Mrs Indira Gandhi in 1977. Mrs Gandhi's personal recommendation and appreciation of Arjan Singh to the then Chief Minister of U.P. did not sit well with those in authority.

It was also the period when Arjan Singh unwisely experimented with the release of a captive bred tigress, Tara, into the wild. This was an event which was to haunt his future relationship with the forest department, as they were convinced that Tara was one of the maneaters shot during the period. However, based on his intimate knowledge of the terrain, the species and of Tara in particular, one tends to believe Arjan Singh when he says that his tigress





disappeared fourteen years after release. It was an unwise and uncalled for experiment. The fight to save the tiger even now has not yet reached the level of captive bred animals being reintroduced in the wild. The final chapters cover the cause and death of some of the maneaters in the area.

This is the story of a doughty and uncompromising conservationist and one can only stand beside him with bowed head as he recites the requiem for the tiger and its environment:

*"As I gaze into the crystal bowl, I see green mountain sides, refulgent in the freshness of their replanted slopes. I see river valleys, the lush forests of catchment areas, and the limpid waters as they commence their unending journey to the meeting with the oceans. But no dolphins frolic in the great waterways, and no marsh crocodiles and gharials bask on the sandbanks. No longer are the tall riverine grasses and tamarisk beaten and agitated when they*

*resound to the thunder of a thousand hoofbeats of the galloping swamp deer as they churn the shallow waters into a rainbow mist in the chill winter dawn. Nor do the marshes echo to the shrill screams of the hinds, orchestrated with the deep booming bass of the big antlered stags in homage, as the mighty predator passes. I do not hear the ethereal resonance of the tiger's call as it re-echoes in the forest canopy, or the sawing grunts of the leopard as he returns to his daytime lair. The stentorian bugling of the barasingha, the piping hunting whistle of the wild dog pack, and the eerie midnight chorus of the jackals are mute, and the chattering bark of the fox no longer consoles the small hours when witches and poltergeists are about. The staccato alarm bark of the muntjac or the metallic trumpet of the sambhar will never shatter the silence of the night, for the King is dead. We are monarchs of all we survey."*

J.C. DANIEL

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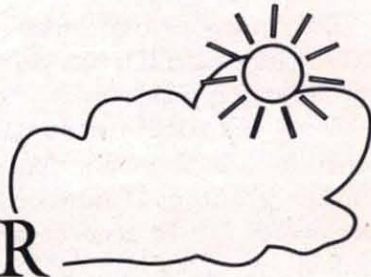
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# Happenings in the Indian wilds

Text: Isaac Kehimkar & Sunjoy Monga  
Photographs: Isaac Kehimkar

SUMMER 

**Over** the Indian subcontinent this period is best known as summer — the ultimate test for much of Indian biodiversity. Since the Indian region is a medley of habitats, a generic account is taken here, chiefly pertaining to the most dominant habitat types (mixed dry-deciduous forest, secondary growth, and the typical Indian country scape, open scrub and cultivation dotted

with mango, peepul, banyan and tamarind). We have referred to the Himalayan region wherever applicable.

**MAMMALS:** The story of the Indian summer revolves around water, or rather, its scarcity. Water is the magnet for all life, and over most parts of the country, be it in desert, grassland or forest, much mammal activity orbits around water.





The diminutive male fanthroated lizard displaying in the sun

There is now much movement to and from water-holes. Watch for predator movements. Sambar, barasingha, black-buck have finished their mating rituals — their spectacular ruts — but the chowsingha or four-horned antelope breeds now. Over much of Central India, sambar stags cast antlers during early summer, as does the barking deer. Chital rut spreads over this period, varying over its wide range.

Breeding season of Indian elephant and sloth bear; gaur descend to the plains forest to be near the shrinking water holes.

Most Himalayan mammals give birth now, when food is abundant. Many species move to higher grazing grounds; several mountain herbivores can be seen in large herds. Cubs of Indian fox, jackal, dhole, hyena, tiger and lion can be sighted.

**BIRDS:** The greater majority of winter visitors to peninsular India have already departed for their summer breeding haunts. Over fifty percent of India's resident birds breed during this period. Peak nesting commences all over the country's forests, scrublands and grasslands. End-March to early-May is when song-birds are most vocal, establishing territories and courting; singing magpie-robins, whitebreasted king-

fishers, highly vocal barbets and red-wattled lapwings are a notable feature over the peninsular Indian landscape, even in towns and cities. Cavity-nesters such as hornbills, woodpeckers, barbets, most kingfishers and bee-eaters are well into breeding; many of these can be seen with their young. Intense bird activity along the Himalaya, where over three-fourths of the species breed during these weeks.

Larks, pipits, nightjars, lapwings, sandgrouse breeding on grasslands, open-lands; watch out for

their display and territorial disagreements; with a bit of patience you can even catch them mating; till about end-April/mid-May chances of sighting certain waders having already acquired breeding plumage, but not yet departed for their summer grounds. During the last few weeks (end-May to mid-June) eggs of most woodland birds shall hatch. And by then the baya weaver would have already acquired breeding plumage to herald the impending monsoon, the most spectacular change of seasons.

**REPTILES:** This is when the almost invisible, drab, male forest calotes begins to darken along its flanks. From its head, vermilion red spreads over its back. Then every tree-trunk is guarded by a displaying male doing his characteristic push-ups. Its commoner cousin, the garden lizard (*Calotes*) too is in breeding finery. The diminutive male fan-throated lizard will be out in the sun displaying, while in the hot humid forests along the western Ghats, the *Draco* or flying lizard flits amongst tree-trunks, chasing away rivals. Common skinks and leaf-diving forest skinks too acquire bright orange and black throats. In broad daylight, the otherwise nocturnal geckos are out chasing each other, their tails wagging.



**INSECTS & OTHER INVERTEBRATES:** With summer heat the crescendo of singing cicadas strikes a high note. Though peak summer is not the time of intense insect activity, some, like nymphs of the red cotton bugs make themselves very conspicuous on the forest floor by their sheer numbers. In fact, for the greater majority of the creepy-crawly fraternity, the scorching heat is a lull period, but not without its delightful moments.

Observe a water-spot in forest, even a mere trickle, and you will be rewarded with sightings of glorious butterflies, moths, bees and wasps; spot-swordtails and blue-bottles could be seen mudpuddling on wet patches among a crowd of Common Emigrants and Line Blues, while distasteful Tawny Costers and Plain Tigers may be encountered on slow sailing flight to advertise their warning colours; an occasional day-flying moth, with its bright yellow and blue stripes, flutters past. The sun-worshipping Blue and Yellow Pansies could be seen during the hottest hours. Several grasshoppers and mantids occur in their dry-season forms now, to merge in the dry, golden-brown herbage. Spotting these is an exciting experience. Funnel spiders are in their element, their webs glistening amongst the leaf-litter on the jungle floor.

**PLANTS:** In the heat, plants have to face this decisive trial of life standing where they are. And in a typical, dry-deciduous Indian jungle, this struggle against water scarcity is most perceptible. Now there are more leaves on the jungle floor than up in the canopy. This is an amazing adaptation of forest trees. You will now make an awful lot of noise treading on the leaf-littered jungle floor, but this is somewhat offset by excellent visibility, often several hundred



The day-flying Blue Tiger moth flutters around with its bright yellow and blue stripes

metres through the forest, affording good sightings of birds and animals.

Sal Trees from Central Indian plains to northward get flushed with bright green new foliage. Up in the Himalaya, melting snow clears the ground for cheerful primulas all along the way, where rhododendron never fail to impress with the dash of their colours.

This is also the time to see some of India's famed trees in bloom, lending a riot of colour to the otherwise dull-browns. The flame of the forest blooms early, chiefly during February - March, but occasional late-flowering in some areas possible; April - May witnesses peak flowering of Indian laburnum, a most cheery shade of lemon-yellow; some other flowering trees now are *karanj* and yellow silk cotton; by mid-April the exotic gulmohur sets its crown ablaze with fiery flowers. On the ground bloom such herbaceous flora as the mexican poppy, turnsole, globe thistle, coatbuttons and yellow-berried nightshade; on ponds, the exotic water hyacinth is in full summer display, as are ipomeas and water lilies. Yes, there's plenty of life now, despite the intense heat, the merciless sun beating down upon a parched landscape, just waiting for the magic of the monsoon. □





# BANDHAVGARH — wilderness and history

Text: Sunjoy Monga

Photos: Hashim Tyabji

**F**OR the second time in just under three hours, the langur's alarm calls resound in the swaying canopy of *sal* forest. The stage is set for yet another drama in Bandhavgarh's wilds. For a while there is a pause in the *chital*'s cries, an obvious reaction to the predator moving slightly away. But soon comes the loud honk of a *sambar* as it bolts over the dry leaf and twig-littered jungle floor.

All eyes in the crawling jeep are on the alert, probing the dappled, golden world of scrub and grass. So preoccupied are we looking to the sides that save for a split-second, fleeting glimpse, we all but fail to notice the great striped beast leap the jungle track. In one lissome leap the tiger dissolves into the golden bamboo curtain. *Langurs* call for several minutes more as do the deer. On four human faces in the jeep, there is, well, predictable exhilaration of a kind only tigers can induce.

That is the fourth tiger sighting in three days, and the second that morning. Besides, we've had close encounters with *agaur* herd, their enormous heads wondrously back-lit in the morning sun.

A friendly jackal pair ambling by a dusty path, a vigilant mongoose dashing past, an unusually defiant male *nilgai*, these were just some of the wilderness scenes of the past few hours. Of birds there was an absolute profusion. Its just that one cannot walk in much of tiger country that is Bandhavgarh, nestling among Central India's Vindhya mountains. This is one of the few wilderness spots with fine infrastructure for tourism.

The best time, I feel, for a jungle ride is those few magical hours of the morning, from dawn to 10 am. An evening visit, between 4 pm and till just after sundown too is a rewarding exercise, but the morning is more appealing, with life so fresh from slumber. The yawns, the stretching



exercises, the preening of feathers, the bird song in the magical morning. And when, amidst such haunts, the rutting calls of *chital* deer resounds in the enchanting forest, mere words cannot do proper justice.

The period beginning with the onset of summer, sometime around end-February, marks the start of Bandhavgarh's finest moments, lasting several weeks between now and end-May. As winter dissolves into early summer, taking with it the misty haze and its many whims, the forest begins to open up as the mercury rises, there often being more leaves on the jungle floor than up in the trees. It can get awfully hot now within a few hours of dawn, temperature often above 35°C at the end of your morning round, and even higher mid-April onwards. But if you can tolerate the heat, rest assured of a great experience.

In 12th Century B.C, the Baghel kings, direct ancestors of the present royal family of Rewa, gained control, and this region continued to be their capital, save for a short period. The saint-poet Kabir, patronised by one of the kings, stayed here. And the great musician Tansen, was originally the court musician of Maharaja Ramachandra of Bandhavgarh, who had gifted him to Akbar.

After the Baghel dynasty shifted its centre to Rewa, 110 km to the north, it is believed, the place went wild and it became a desolate domain of ruins, completely overrun by the jungle. Of course, wildlife proliferated. Little wonder that these forests were to become one of the most famous royal hunting preserves, where, it is said, each Maharaja set out to hunt the auspicious 109



The gaur or Indian bison is a typical inhabitant of Bandhavgarh

tigers (one for every bead in the Hindu rosary). Finally, in 1968, it was declared a National Park, then just over 100 sq km in area. Over the years several adjoining areas were added and today Bandhavgarh extends over 450 sq km of hilly forest, with open grassy patches, and an impressive plateau rising almost a thousand metres up. Any way you look at it, Bandhavgarh is magic. Wildlife in the morning, history and art after lunch. Into the wilds again until around sundown. And when you have the magnificence of Khajuraho just a few hours away, wow, what an experience this circuit is!

**WEATHER:** WINTER (mid-Nov to mid-Feb): Temperature 5°C and 20°C; during mid-Dec to end-Jan, almost freezing at night or very early mornings. Woollens essential. Good cap and ear-protection.

**SUMMER:** (March to end-May): Nights pleasant, but day temperature can soar to 40°C, and even higher, can be roasting! Comfortable cottons, with cotton cap/hat advised.

**MONSOON:** (July to early-Oct): Closed. Average annual rainfall 120 cm .

**ANIMALS:** *Chital*, *sambar*, barking deer,





Venturing out from the forest to the grassy meadows — the pride of Bandhavgarh

wild boar, *gaur*, leopard, tiger, jackal, porcupine, common Indian mongoose, sloth bear, *chinkara*, *nilgai*, *langur*, Indian wild dog.

**BIRDS:** On a good day, especially during winter, you could come across between 60 and a hundred species of birds. Species of woodpeckers, drongos, flycatchers, warblers, babblers form the bulk, also pied hornbill and quite a few raptors (birds of prey such as eagles and hawks); early mornings, on the jungle roads, good sightings of red junglefowl, spurfowl, partridge and peafowl.

**HOW TO REACH:** It is not very easy getting to Bandhavgarh, the closest main railway stations are Satna (115 km) and Jabalpur (190 km). Fortunately, both railheads are well connected by express, and other, trains to Mumbai, Calcutta and Delhi. Buses and private

taxies available for the drive to Bandhavgarh (3 hrs from Satna, 4 hrs from Jabalpur). Nearest railway station to Bandhavgarh is Umaria (35 km) but not all trains halt here.

Nearest airport Khajuraho (approx. 200 km), a five hour drive from Bandhavgarh.

**ACCOMMODATION:** Bandhavgarh has a well-developed tourism infrastructure. Good range of accommodation, from the very basic to deluxe. Forest Department has its guest houses, and stay can be organised by prior booking. Contact: ● The Director, Bandhavgarh National Park, P.O. Umaria, Dist. Shahdol, M.P. 484 661.

● Madhya Pradesh State Tourism Dev. Corpn. (MPTDC) for White Tiger Lodge, Bandhavgarh Jungle camp. ● Indian Adventures Group: Tiger Trails Resort, (Tel: 640 6399/8742). ■



# An expedition to Sangla in Kunawar

M.A. Wynter-Blyth

(From *JBNS*, Vol. 47, No. 4)

**F**amed for his authoritative text on Indian butterflies which was published by the *BNHS*, Wynter-Blyth describes here the sheer delight and the travails of a trek to the Baspa Valley in northwest Himalaya. The descriptions of his journey are sure to inspire the reader to venture forth in search of this little known kingdom of the gods... the second part of this feature will follow in the next issue.

**E**ver since my first view of the Himalayan snows twelve years ago I had planned to make a trip into the inner hills. In particular I wanted to visit the Baspa Valley as it is well off the beaten track and I knew it was good butterfly country. Although I had made a number of shorter trips in the Simla Hills it was not until May 1947 that I eventually had an opportunity to carry out my ambition.

Except that the Baspa River joined the Sutlej somewhere near Chini I had only the vaguest idea of the valley's whereabouts, nor could I obtain the information I wanted in Simla. No maps were available, apart from a route map

DEVRAJ AGARWAL/PORPOISE PHOTOSTOCK







The Indian Fritillary can be spotted during the warm day time in the Baspa Valley

showing distances only (and these were inaccurate off the main Tibet road). I knew of no one who had been there and neither the P.W.D. nor the Forest Office could help me. Apparently nobody had visited the Baspa Valley for years.

Consequently I made all arrangements for a trip to Chini hoping to pick up information en route which would enable me to reach my first objective.

This was a popular trip in days gone by and one that was fraught with considerable danger to both man and horse, though a more foolhardy means of transport over this road is difficult to imagine. Still, we were a hardier breed in those days, or can it have been that it was bad to walk?

My expedition was as small as it possibly could be. There was myself, Sheba (my labrador and a very important person), two amiable mules and a pony, one muleteer and his chokra, and a servant.

#### *To Nachar by the Upper Link Road*

On May 21st I set out from Wildflower Hall for Narkanda by bus. I have driven across the Andes in a lorry... a journey that involved a climb of four thousand feet to a sixteen thousand foot pass, a drop of twelve thousand feet and a final climb of two thousand five hundred feet, all in the space of sixty miles on a road of the most terrifying nature, but for sheer terror that journey was as nothing compared with the trip to Narkanda in a ramshackle bus driven by a maniac driver.

Still we got there. All was ready when I arrived and we completed the ten miles to Bagi through the lovely Bagi forests long before nightfall.

These forests, which are mainly composed of spruce (*Picea morinda*) and Narkanda pine (*Abies pindrow*) with a liberal admixture of oaks, planes, horse-chestnuts and walnut trees, are a fine place





The guinea pig-like Himalayan pikas have their homes among the scattered stones and rocks

for butterflies (especially *Lethe*) and birds. I am afraid my comments on the bird life of the country I passed through on this trip are almost negligible. This does not mean that I was disinterested but is due to the fact I am unable to concentrate successfully on two branches of natural history at the same time.

There is a second route to Bagi over the top of Mount Hatu (10,450') which is even more attractive than the lower road through the forest and, if somewhat more exhausting, is about one mile shorter. The summit gives a fine view over the country to be passed through during the next few days and is also the home of many kinds of butterfly... in particular the very local Comma (*Vanessa egea*), the beautiful Blue Peacock (*Papilio arcturus*), the Common Yellow Swallowtail (*P. machaon*), the common Blue Apollo (*Parnassius hardwickei*) and other species that haunt hilltops.

To my mind Bagi in its quiet unobtrusive way is one of the most beautiful places in these hills. Here are no broad vistas or stupendous views of snowy peaks but pleasing forest glades and wooded hillsides. The village and the bungalow are set in a clearing and all around are trees. The bungalow is small and clean and in front is a lawn kept close cropped by the tiny hill cattle.

Good food too is provided here (and also at Narkanda), but from now on the traveller must rely almost entirely on provisions carried with him. In some places it is possible to buy eggs, fruit (if it is the season), potatoes, chickens and atta but such supplies are chancy and uncertain.

The stage from Bagi to Sungri though long is not tiring. There are no steep hills and the way, lying as it does between 8,500' and 9,600', is cool. After the first four miles, at which point



the road to Jubbal turns off on to the fine ridge known as Ganasi Dhar (a good place for the beautiful little Blue Sapphire butterfly,

*Heliphorus oda*, in early June), most of the ways gives extensive views over the valleys of the Tons river and its tributaries.

Sungri is situated on the southern slopes of Maralkanda (12,250'), a fine hill, and itself an outlier of that magnificent mountain Hansbeshan. I had made the ascent of Maralkanda in the past. It is an easy though long climb and is well worth doing if only for the magnificent view from the top. My main memory of that ascent is that our guide (a hillman who climbed so rapidly that we felt that the laws of gravity must have been relaxed in his case) armed with a very nasty looking axe, went well ahead of us through the forest and every now and then signed to us to stop as he went ahead to prospect round some blind corner. Though the hill folk think little of leopards they have a very healthy respect for the Himalayan black bear which is common round here.

The route goes straight up the forested spur by the side of Sungri and at about 10,500' turns left along a ridge and thence up to the grassy summit of the mountain. No trees grow above about 11,000'. The summit is peopled with Himalayan pikas (*Lagomys roylei*), guinea pig-like little creatures that have their homes among the scattered stones and rocks. It was amusing to see them poking out their heads to look at us and scuttling about when they thought they were not observed. I remember, too, that there were many red-billed choughs living among the crags below the summit, and at 12,000' I saw a Small Grass Yellow (*Eurema brigitta*). This is, of course, a common plains butterfly and its discovery at this altitude must give it a climatic range greater than that of any other Indian species except the Painted Lady (*Vanessa cardui*), which may be found everywhere up to 15,000' (and probably much higher). Lower down I caught a female of the Large Green Underwing (*Polyommatus galathea*)

**Here are no broad vistas or stupendous views of snowy peaks but pleasing forest glades and wooded hillsides.**

is a fairly steep descent through forest for five or six miles followed by a very gentle climb for the remaining five along the sunny side of the long ridge running from Maralkanda to the Sutlej.

The last six miles like through pleasant fields of wheat, potatoes and poppies, and the roadside is made beautiful by masses of white roses and a purple broom-like plant (*Indigofera gerardiana?*).

Bahli, with its attractive whitewashed bungalow, lies on the top of the ridge with the land sloping down very steeply both to the north and the south. On the other two sides is forest of blue pine. Visibility was very poor and there was no view except of the dim outline of the large rounded peak of Shikar over the valley to the north and a glimpse of the Sutlej distant a mile or two down to the left.

Night fell and the singularly attractive night noises of the middle Himalayas began to make themselves heard... the *pink-pink* of the Himalayan scops owl (exactly the sound of a smith beating iron on his anvil), the moan of the flying squirrel, the sneezing bark of the hill fox and the innumerable other sounds most of whose owners I have never been able to trace.

But if the noises of the night are attractive it is of the day sounds that I have the most pleasant memories... the shrill wail of the Himalayan Barbet from a treetop, the curious calls of the various cuckoos, the grating and ubiquitous cry of the nutcracker, the melodious songs of the rockthrushes, the tuneless whistle of the *kastura* and the ever present background of twitterings and tiny noises of titmice, tree creepers and other such small fry.

The stage from Bahli to Takech is another easy one... 11 miles and all downhill. The first five miles are through the forest along the northern side of the ridge that was traversed the day before. □

(To be continued)

the nearest point to Simla at which this lovely little butterfly has been found.

It is an easy, pleasing walk to Bahli. First there



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