

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

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

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

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

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

Kaziranga Wildlife Sanctuary



INDIAN WILD BUFFALO (*Bubalus bubalis*)

Photo: AJAI GHORPADE

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

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

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

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

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

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



Mother and calf

Photo: E. P. Gee

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

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

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

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

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

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

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



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

Photos: E. P. Gee





'Cooling off'

Photo: E. P. Gee

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

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

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

Rhinos in a wallow

SITUATION, TOPOGRAPHY AND AREA

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

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

Photo: E. P. Gee



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

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

OTHER WILDLIFE

Elephant

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

Wild Buffalo

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

Wild Buffalo

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

Photo: E. P. Gee





Hog Deer in a swamp

Photo: E. P. Gee

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

Swamp Deer

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

Sambar

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

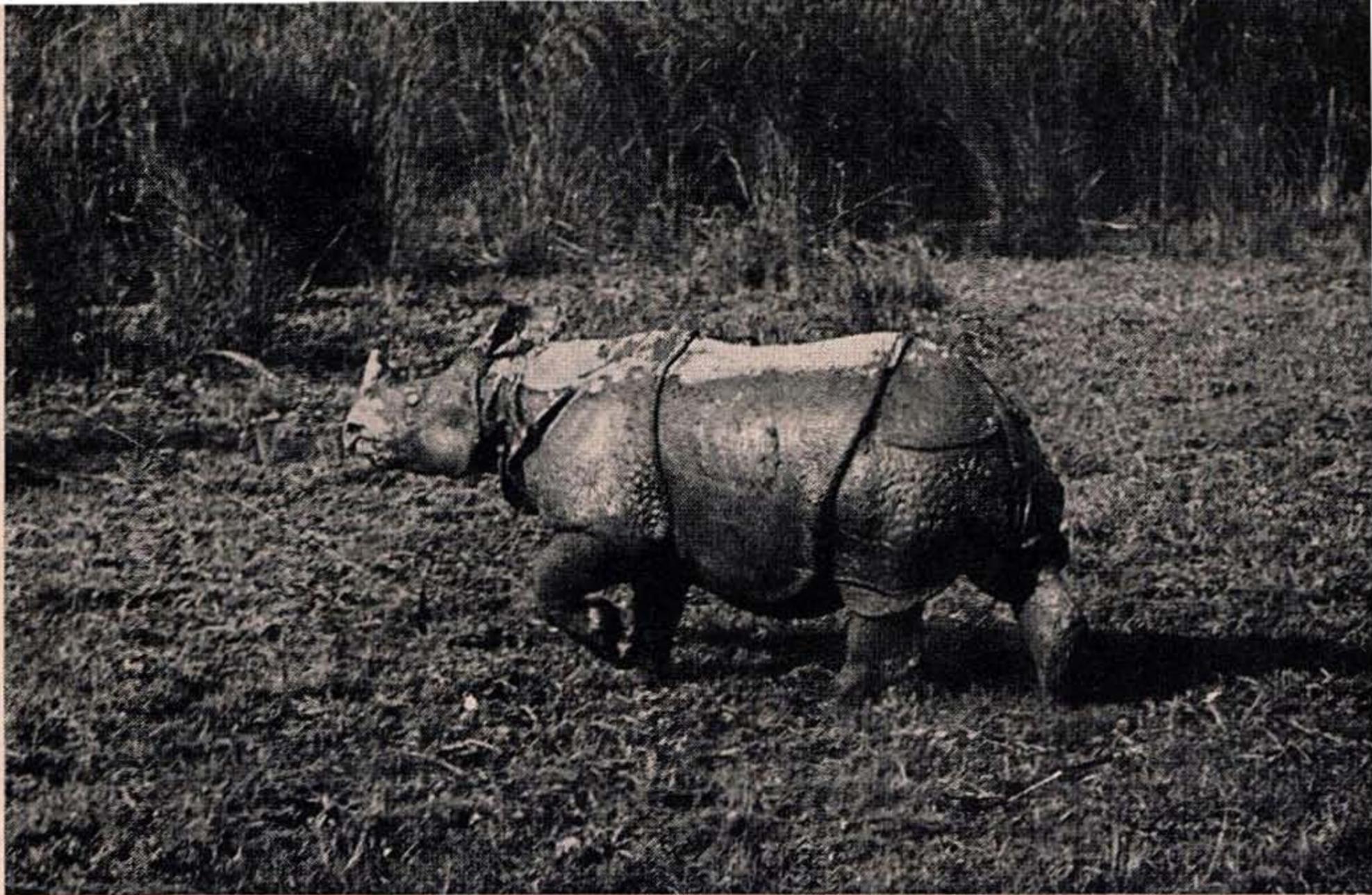
ed compartments. They are usually solitary animals except in the case of small social groups of a hind, a yearling and a fawn.

Hog Deer

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

Tigers

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



Rhino on the move

Photo: E. P. Gee

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

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

FACILITIES

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

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

The Manager
Forest Lodge
Kaziranga, Sibsagar Dist.
Assam

or

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

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