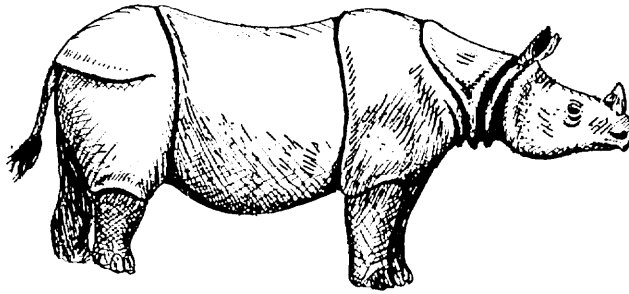
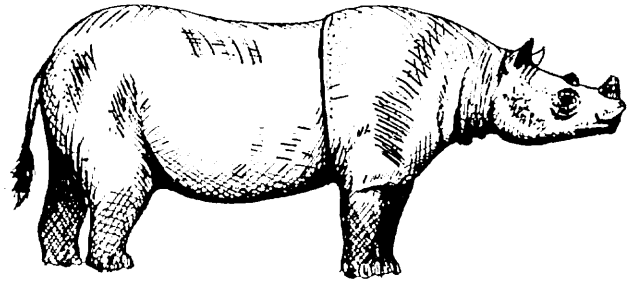


Vanishing Species

The Javan one-horned rhinoceros (*Rhinoceros sondaicus*)



The Sumatran two-horned rhinoceros (*Diceroceros sumatrensis*)

THE RHINOS OF SOUTHEAST ASIA

Introduction

Living today in many parts of Southeast Asia are small numbers of two species of rhinoceros, the Sumatran two-horned rhinoceros (*Diceroceros sumatrensis*) and the Javan one-horned rhinoceros (*Rhinoceros sondaicus*). These two species are part of the very small family of rhinoceroses which includes only five living species. Other than the two species of Southeast Asia, two live in Africa and one in India.

Rhinos are very ancient creatures. They appeared on earth many millions of years ago and developed as part of a great horde of animals called the odd-toed ungulates. Though this group of mammals flourished in the past, covering the earth with a great variety of animals including many types of rhinoceroses, it has today almost disappeared. For reasons that are very poorly understood, these odd-toed ungulates could not meet the requirements of a changing environment and only the families of rhinoceroses, horses, and tapirs have survived. By comparison, the even-toed ungulates, which followed a distinct but very similar path of evolution, are today represented by all oxen, goats, sheep, pigs, deer, antelope, camels, hippopotami and many other less commonly known groups.

Since primitive times the ancestors of the horses have radically changed, developing long slender legs and hooves. It is not, in fact, until very recent times that the true horses appeared. The rhinos, however, have remained in a relatively primitive form, surviving by some unknown combination of characteristics cons of change in their environment, changes which have long since destroyed most of their near relatives, until very recently the rhinos have met a change which they will very likely not survive: the advent of "civilized" man.

Some General Characteristics of Living Rhinos

Rhinos are generally known by their large and bulky size, their horns and their heavy, often folded skin.

Rhinos rival the hippopotami as the second largest living land mammals. The elephants are, of course, the largest. The height at the shoulder of adult rhinos varies from about 1.3 meters for the smallest species to 2.0 meters for the largest species.

The horn of the rhino is unique among animals. It is not connected to the bone but is rather a compacted mass of hair-like fibers growing from the skin. The bone below the

horn is, however, enlarged to give support. The horn grows throughout life and is replaced if lost. In some species the horns are equally developed in both male and female while in others the horn is often or invariably undeveloped in the female. In the African species the horn is used for defence while in the Asian species this function seems to be carried out, at least partially, by pointed lower tusks.

The skin of the rhino is thick and tough with a texture varying greatly from one species to another. Hair is usually very sparse, but again this depends on the species. The skin is folded to various degrees and in some species, particularly the Indian Rhino, is so pronounced that the animals appear to be covered with large, heavy plates of armour.

The teeth also vary among species. The cheek-teeth vary somewhat as some rhinos graze while others browse. In adult African species the front teeth are completely absent while in the Asian species they are developed to varying degrees. The presence of pointed lower tusks in the Asian species has already been noted.

The large bulky appearance of the rhinos would give one the impression that rhinos are clumsy animals but this is most certainly not true. Rhinos can run with speed and agility though they lack the endurance of their relatives the horses. They can move over rocky and steep terrain with an ease that astounds many observers. In dense vegetation they move with relative ease by burrowing underneath the vegetation rather than charging over it like elephants. Using such a burrowing technique they make many well-worn tunnels through the vegetation around their most frequented areas. When following these tunnels they move concealed from sight and with very little noise.

Rhinos are basically nocturnal animals avoiding exercise during the heat of the day. While it is hot they usually remain in the shade or in mud wallows. Because of this habit of wallowing the color of rhinos seems to change from one location to another. The change is merely a change in the color of the mud.

Rhinos usually travel alone except in cases of a mating couple or a cow and calf. The calf is slow in maturing and travels with its mother for many years, even longer than may obviously seem necessary.

One of the most controversial subjects concerning the rhino is in relation to their temperament. Some species, particularly those in Africa, are said to be very dangerous, charging unpredictably and with little provocation. They are known to have attacked automobiles and in some cases to have overturned them. It is generally agreed, however, that rhinos are very timid creatures. Their attacks, in fact, are sometimes explained as being motivated by extreme fright. There appear to be great differences between species and even within species

and in single individuals under different circumstances and during different seasons.

Rhinos are usually credited with only very low intelligence, most articles on the subject using the word "stupid". There are again probably differences between the species. Persons who have spooed rhinos in Southeast Asia have testified that these animals are extremely clever and wily and often make some quite complex manoeuvres to avoid their pursuers.

The five species of living rhinos are thus quite different animals, even though they have similar external appearances. Each species probably represents a very long and separate path of evolution, diverging from a common ancestor very near the time when the family of rhinos first appeared on the earth.

Characteristics of Southeast Asian Rhinos

Before beginning any description of the Javan one-horned rhino or the Sumatran two-horned rhino, it should be emphasized how little is actually known about either of these animals. A combination of factors, including their rarity, makes them very difficult to observe. They are also long-lived and slow in maturing, so that observations must be made over many years. No long-term detailed studies have been made to date.

Both the Javan one-horned rhino and the Sumatran two-horned rhino are generally forest dwelling animals. The Sumatran rhino seems to be well adapted to any wet habitat. It can thrive and is usually found in the steepest and most impenetrable mountain forests. The Javan rhino seems rather less adapted to steep terrain and lives mostly in low swampy areas or in more gradually sloped wet mountain forests. It is probable that both species were once common in lowland wet areas, but that they have been exterminated from these areas by man. The apparent greater ability of the Sumatran rhino to adapt to areas inaccessible to man is possibly one reason for the greater number of this species alive today.



▲ A Sumatran two-horned rhino at a salt lick in Malaya, Photo: O. Milton

The Southeast Asian species are both small among rhinos. The Sumatran species is the smallest living rhino, being only about 1.3 meters high at the shoulder. The Javan rhino measures about 1.7 meters at the shoulder. In general appearance the Javan rhino has more folded skin than the Sumatran rhino. Only the fold behind the shoulder on the Sumatran rhino extends across the back. The Javan rhino is characterized by the folds on the rump and by the saddle-shaped piece of skin covering the back of the neck. The skin is coarse in both species and is marked by a cracked mosaic pattern in the Javan rhino. The horns are usually small in both species. The posterior horn of the Sumatran rhino is often so poorly developed as to be invisible in the field. The number of horns on an animal cannot, therefore, be used as a characteristic for identification. In the female Javan rhino the single horn is always poorly developed or totally absent. Neither species seems to use its horns as the principal instrument of defense, relying more on the pointed lower tusks, which are said to be capable of inflicting very severe gashes. Like all rhinos, the Southeast Asian species have acute senses of smell and hearing but very poor vision.

The food of both species is probably very similar, consisting principally of small twigs. These twigs are often obtained by felling small saplings, sometimes by a most peculiar technique of twisting the trunk. The Sumatran rhino is also known to eat fruits and, as it does not digest the seeds, the animal is probably significant in seed dispersal. The young saplings of fruit trees are often found growing from piles of rhino dung.

Both species are very timid and solitary creatures, being found together only when mating and in cases of a mother and calf. (A case Javan rhinos travelling in a small group has, however, been reported from Vietnam.) The renowned bad temper and ferocity of the African species seems to be totally lacking in both the Javan and Sumatran rhinos. There are stories of Sumatran rhinos charging humans, but this has been attributed by most experienced observers to extreme fright. The animal, having poor vision, may flee directly toward the man from whom it is trying to escape.

Like all rhinos, both the Javan and Sumatran species are principally nocturnal animals. They move about only when it is cool, spending the hot part of the day resting in the shade or in mud wallows. Wallowing seems to be absolutely necessary to both species and is probably the reason for their always living in wet areas. Wallowing seems to serve the functions of cooling the animal, keeping the skin wet, and protecting the skin against the many parasites that attack the animal.



▲ Javan one-horned rhinos wallowing in the Ujung Kulon Reserve on Java, Photo: A. Hoogerwerf

Both Sumatran and Javan rhinos appear to move over fairly large areas during their daily travels. They move in search of food and between their favorite wallowing places and salt licks. In some cases these rhinos are known to make rather long seasonal migrations, living in naturally dry areas during the wet season and in naturally wet areas in the dry season. There are also stories of Javan rhinos moving over thousands of miles. One old hunter in Vietnam found a musket ball in a rhino which he was certain the animal received in Bengal. Considering the climatic and cultural conditions in this region, however, it hardly seems possible that a rhino could find a suitable and safe corridor between two such distant places.

Of the mating habits, care of the young and gestation period almost nothing is known. There was one reported case in which there was evidence of two male Sumatran rhinos fighting over one female rhino. It is also fairly certain that the calf of both species travels with its mother for many years but the exact length of the period is not known. These pieces of information must be considered only disconnected facts as the true nature of these animals remains unknown.

The Southeast Asian species of rhino possess some quite peculiar characteristics which need special study. Among these is the periodically reported habit of always returning to one

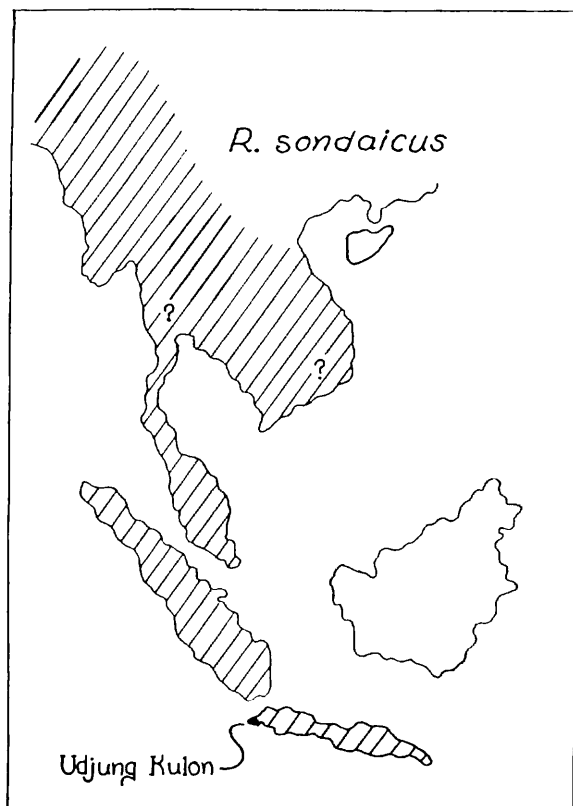
or two places to defecate so that large piles of dung are built up; the reported ability of the Sumatran rhino to swim over long distances to off-shore islands; and the peculiar anatomy of the penis of the Sumatran rhino and its habit of spraying the foliage with urine as it moves.

Of the two species, the Javan rhino appears to be the true native of the area. Fossil remains of what appear to be the ancestor of this species have been found in Asia. The Sumatran rhino, however, seems to be most closely related to fossil remains found in western Europe and is probably an immigrant from that area.

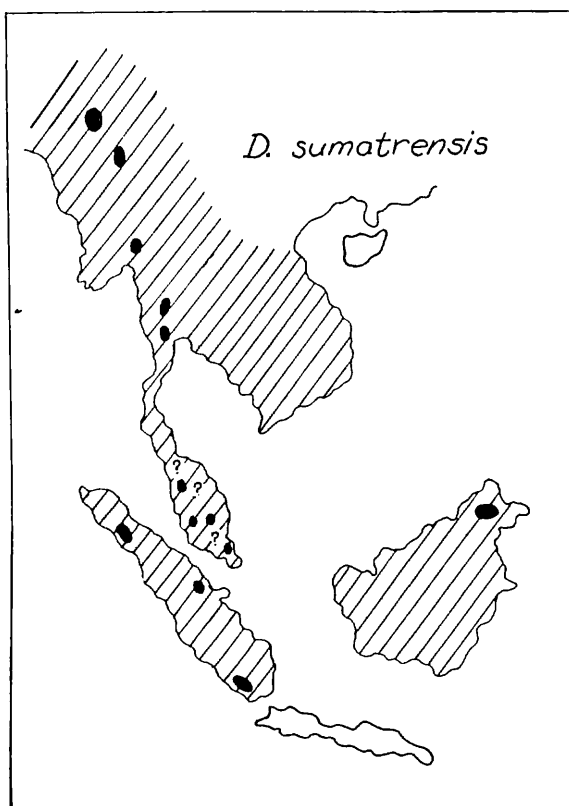
Status and Distribution

Both the Javan rhino and the Sumatran rhino are among the world's most rare animals. They were once probably common through a large part of Southeast Asia, but have been reduced in recent times by the expansion of human agriculture and hunting to a few scattered individuals.

The two maps in this article show the approximate distribution of both species in recent historic times and today. Because of the very dense forests in which these rhinos usually live,



Distribution of the Javan rhino (*R. sondaicus*) and the Sumatran rhino (*D. sumatrensis*) today—(black areas) and in recent historic times—(lined areas)



it is very difficult to make accurate counts. Local people are also extremely reluctant to give information because of their fear of being arrested for past poaching and because they fear future competition on their poaching grounds if they reveal the location and estimated number of rhinos.

Sumatran Rhino. It is fairly certain that there are small numbers of Sumatran rhinos in small areas scattered through Burma, peninsular Thailand, Malaya, Sumatra and Borneo. The following estimates of numbers have been made: Burma 26, northern Sumatra 20, North Borneo 20–30. The existence of this rhino in Thailand along the Tenasserim Range on the Thai-Burmese border is certain but no estimate of numbers has been made. They probably exist in several areas in Malaya and are fairly well protected at the newly established Slim River Reserve.

These estimates of the numbers of Sumatran rhino cannot be considered reassuring as poaching most certainly still continues to decrease their numbers. We also cannot assume that all or even most of them are in sufficient concentration and under proper conditions to breed. In many places though there are a few scattered individuals, this species of rhino may be effectively extinct.

Javan Rhino. It is only certain that the Javan rhino exists in one small area: the 117 square-mile reserve of Ujung Kulon in Java.

It is estimated that 24-50 individuals exist there and, if poaching is prevented, they may be safe. There are periodic reports of Javan rhinos in Burma, peninsular Thailand and Malaya but these are unsubstantiated. A recent report from Vietnam confirms the fact that there is almost certainly a small group of rhinos, possibly Javan, in that country. For the Javan rhino, however, we must rely almost entirely on the security and suitability of the Ujung Kulon Reserve.

Superstitions

There remains a long-standing body of superstition about the rhinoceros and because of this our Southeast Asian species are approaching extinction. Today the rhino horn and many other parts of the body, including the feces and urine, are sold at extremely high prices as cures for various ailments. The powdered rhino horn is especially prized as a cure for male sterility and for rejuvenation. There is no doubt that these superstitions are entirely unfounded. At times various substitutes have been sold in place of the rhino horn and the buyers were entirely satisfied until they later discovered the truth. Research on the rhino horn in Thailand has yielded nothing which would indicate that the horn has any medical value.

The origins of these superstitions are difficult to determine. In part they probably arose from the unique features of the animal and later, from its rarity. There also seems to be some connection, probably European in origin, between the rhino and the mythical unicorn. The only physical similarity, however, seems to be the position of the horn. Magical properties were assigned to the horn of the unicorn and later transferred to the horn of the rhino. The horn was said to be capable of detecting poison, and so cups were made of rhino horn. If anything containing poison were put into such a cup, a violent bubbling was supposed to occur, neutralizing the poison. No doubt there were a number of owners of rhino cups whose less superstitious assassins saw their opportunity. It is unfortunate that they departed the earth unable to tell their stories and discredit the tales of magic.

In Asia today, the parts of the rhino are used mainly for "medical" purposes, though in India there seems to be some spiritual significance. The sale of the rhino horn seems to be carried out principally by rather small numbers of independent merchants, but the superstition is perpetuated by the ignorant people of all nationalities. Such practices can only be viewed with disgust, especially by people from outside our area. All parts of the world, of course, have their traditions of folk medicine, and some are no doubt useful. But in the case of the rhino preparations, there can be little doubt that it is simply a case of unscrupulous businessmen sell-



▲ The slaughter of rhinos is not confined to Asia. The carcass of an African rhino is shown here with only the horn taken. It will be sold and made into useless medicines. A great beast is sacrificed to ignorance and superstition. Photo from Das Tier.

ing useless drugs at very high prices to the few people of our area that remain uneducated. It is certainly not becoming to the old and great cultures of Southeast Asia to allow such practices to continue, especially as they profit no one but a very few greedy persons who have no interest in the countries where they live.

Habitat Requirements and Sanctuaries

Both species of Southeast Asian rhino can probably live in almost any kind of topography. They probably once inhabited much of the swampy lowlands and wet highlands of our area, but have been forced exclusively to the most inaccessible mountain forests by the pressure of human agriculture and hunting. Our rhinos prefer fairly cool areas with much shade. It is certain that they must live in very wet areas, as wallowing seems absolutely necessary to their health. They seem to have no very unique food requirements and could probably find nourishment in almost any natural area that meets their other requirements. They seem to require a rather large area in which to roam and forage and in some cases they make rather long seasonal movements. Without proper protection, an absolutely necessary requirement is inaccessibility to man, their only, but very formidable, enemy. All conditions which make hunting difficult are necessary.

It should be remembered that very little is known about either Southeast Asian species of rhino and that there may be some very important habitat requirements, especially those concerning reproduction, that are totally unknown.

Sanctuaries for the rhino must be very wet, at least in part, for the entire year and during the most severe droughts. They should

include a fairly large area. The minimum size probably depends mostly on the seasonal availability of water and the quantity of edible twigs and fruits, but some other unknown factors may be important. The rather small but wet reserve of Ujung Kulon in Java seems to be adequate. Probably the most difficult decision



A Sumatran two-horned rhinoceros in Malaya,
Photo: T. Hubback

that must be made concerning a sanctuary involves the prevention of poaching. The ideal situation is a well-policed and very inaccessible area. Inaccessibility and good policing is, however, a difficult combination to achieve, so a compromise must usually be made. From past experience it may be safely concluded that not even the most difficult terrain will stop a determined poacher. Considering the very large amount of money that can be made from a single rhino, we must have many very determined poachers in our area. Therefore, no sanctuary should be considered adequate without some degree of continuous good policing.

Conclusions and Recommendations

The present methods of protecting the rhino are inadequate. Hunting laws are extremely difficult to enforce because of the great profit that can be made poaching. The existing game preserves are inadequately staffed to protect against poaching. The natural habitats of the rhino are constantly being reduced by the expansion of human agriculture.

Beyond the establishment of properly staffed sanctuaries, the only adequate method of protecting our rhinos, and probably a necessary

method, is legal reform on the part of the governments concerned. The sale and possession for the purpose of sale of any part of the rhino must be made illegal with severe punishments prescribed for violators. The urgency and necessity for such reforms must be emphasized immediately to all governments in Southeast Asia.

It may also be considered necessary for many of the rhinos that are thinly scattered to be moved into a few good areas where they are adequately protected and in sufficient concentration to breed. Such a project has been proposed in Burma.

Before many very effective protective measures can be taken, however, there must be more research done on both species of our rhino. It is essential that we have more information on their status and distribution, on their habitat requirements and on their mating behavior.

The End of the Rhinos

The rhino is an ugly creature; it is completely wild and uncivilized. If man finds this creature unpleasant, however, we may be sure that the rhino finds man even more unpleasant. There is no doubt whatever that man has the power to destroy every single rhino. In fact, it seems that he will do so without even the slightest effort.

We speak of man's intelligence and compassion. We say we are civilized. But we might ask if truly civilized cultures would put to death the few survivors of a once great horde of animals, animals representing eons of development and embodying some of the most hidden secrets of the long development of life of which man himself is a most intricate part. We will in effect destroy part of our own history. And it will indeed be destroyed. No skeleton or stuffed head will tell the story, for the story is carried with the living animal and its relations with its surroundings.

R. Bruton

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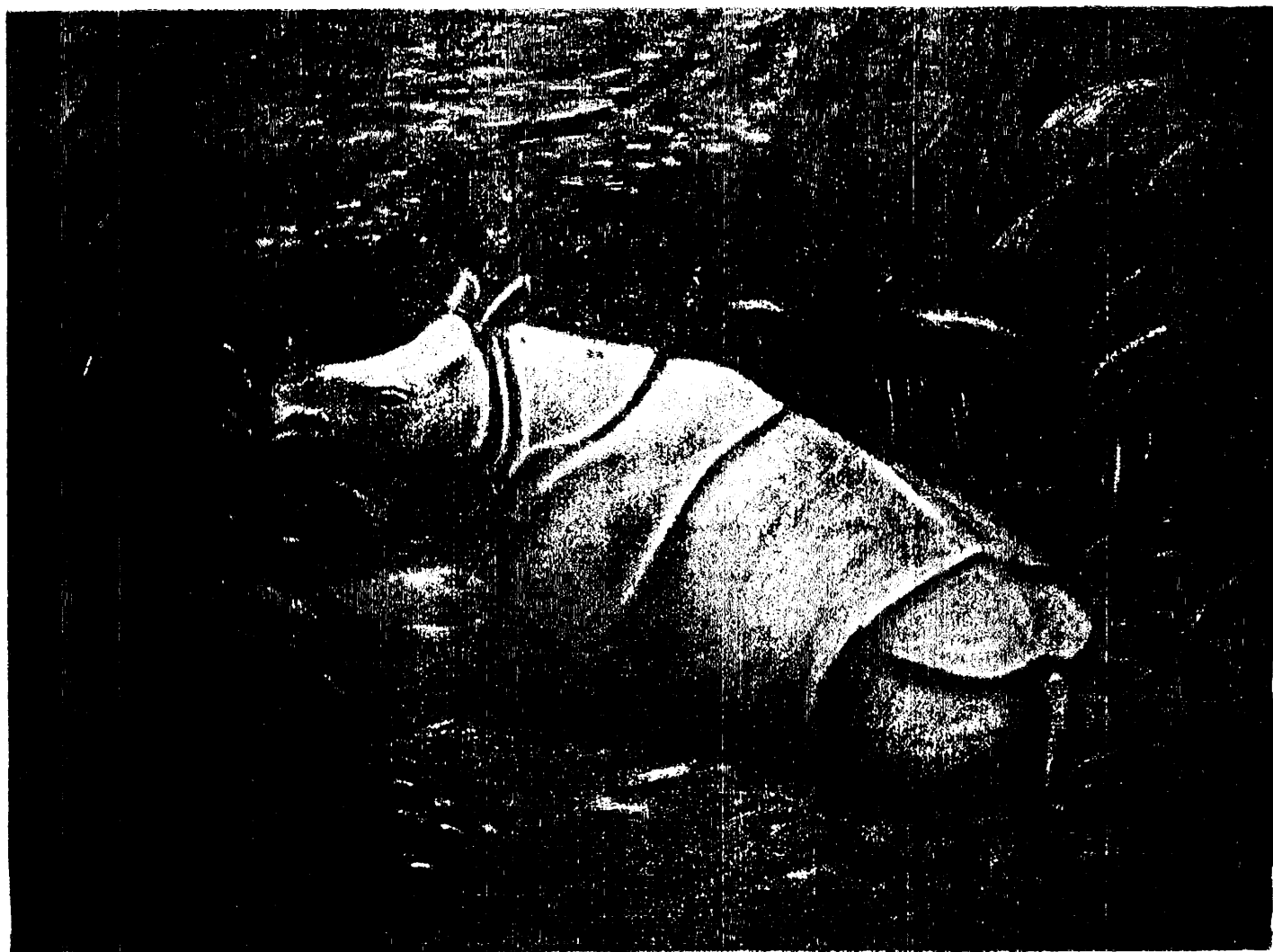
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