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THE RIDDLE OF CERVUS SCHOMBURGKI.

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PART 1.

*Evidence taken from the Proceedings of the Zoological Society of Great Britain, and evidence regarding specimens of this deer living in captivity, as well as data of specific antlers.*

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According to Mr. Kemp, in his article on this deer published in the Journal of the Natural History Society of Siam, vol. III., part I., November 1918, the name Schomburgki was conferred on this deer by Mr. Blyth as a compliment to his distinguished friend, Sir Robert Schomburgk, probably in 1863. Sir Robert Schomburgk was at that time H. B. M.'s Representative at the Court of Siam. This gentleman arrived in that country on the 6th December 1857, and left on the 30th May 1864. He was stationed in Bangkok.

Mr. Blyth, up to the year 1862 or 1863, was of the opinion that the deer in question was a Siamese variety of the *Rucervus duvauceli*, the Barasingh of India, with which he was familiar. The Barasingh was well known in Europe, as many of these animals were kept as pets in the deer parks of the nobility of England and France, notably by the Duke of Bedford and the Earl of Derby. The evidence on which this animal was classified by Mr. Blyth as a distinct species seems somewhat slender.

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There are records to show that there have been several specimens of *Cervus schomburgki* living in captivity in Europe and one in Asia between 1860 and 1911:

(a) A stag received from Bangkok, when a year old, was in 1860 living in the Zoological Gardens in Hamburg. This animal is mentioned by the famous Naturalist, Dr. Brehm, in his book *Thierleben* published in 1865. Dr. Brehm was in charge of the gardens when the animal arrived in 1860, and up to 1865. He believed the animal to be a variety of *Rucervus duvauceli* living in Siam. This animal, on arrival, had antlers with one tine. These antlers corresponded to the forked horns of the Red deer. In February 1860, it shed its antlers and new ones began to grow, which in due course matured with 14 points. Each horn had brow tines equally forked. The antlers which grew in the third year were the same, having 14 points as in the second year, differing only in that they were larger and stronger. This animal was probably the father of the buck deer mentioned by Mr. Kemp as living in the Zoological Gardens in London in 1873.

(b) A stag deer (*Cervus schomburgki*) was known to be living in the Jardin des Plantes, Paris, in 1867, and had probably been there for some years prior to that date. Plate I. is a picture of the stuffed body of this animal now standing in the Trocadero Museum, Paris.

(c) A stag, bred in captivity, believed to be the son of the Hamburg deer, was living in the Zoological Gardens, London, certainly between 1873 and 1877, and probably for some years after. This deer was believed to be a Barasingh, but was eventually classified as a *Cervus schomburgki*.

(d) A stag was living in the Zoological Gardens, in Cologne, in 1897. This animal is mentioned by Dr. Heck, senior. It came from Siam some years before. It developed a savage temper and became uncontrollable. In one of its fits of temper it damaged its antlers which were in velvet at the time, and had to be shot in 1897.



(e) A stag was living in the Zoological Gardens, Berlin, between 29th July 1899 and 7th September 1911. The history of this animal is well known. It was caught at Hat Song Kwe (หาดสองแคว) near Geng Koi (แก่งคอย) in the Province of Saraburi. Hat Song Kwe is in the valley of the Basak river, longitude  $101^{\circ}\text{E.}$ , latitude  $14^{\circ} 35' \text{N.}$  This animal was captured in 1897 when quite young. No one suspected that it was a Schomburgki. The Governor of Saraburi gave it to Mr. Passmore, a section engineer, stationed at Saraburi. Mr. Passmore presented it to his chief, Herr Bethge, director of the Siamese State Railways. This gentleman, not knowing that there was anything remarkable about the animal, gave it to a friend of his in Germany, Herr Cruesemann. Herr Cruesemann sent this animal to the Zoological Gardens in Berlin on the 29th July 1899, some two years after it had been captured and when it was probably about two years old. Plate II. is a picture of this animal. The original print was obtained from Mr. Chance of the London firm of Jamrach, who came to Siam about 1905, in search of the Schomburgk deer. It is probable that Mr. Chance took a photograph of the animal which was then living and in its prime in the Berlin Zoological Gardens. The animal was probably eight years old when the photograph was taken. This very rare print was lent to me for the purpose of this paper by Mr. A. H. Duke, Barrister-at-Law, Bangkok, who has done much research work in connection with the Schomburgk deer.

(f) Mr. Kemp, in his article published in November 1918, mentions the existence of another specimen living in Shanghai. This animal was said to be in the possession of a European, to whom it had been presented by the King of Siam. The Proceedings of the Zoological Society of Great Britain, in which this animal is mentioned, are dated 1872.

It is an unfortunate circumstance that apparently no record was kept to show from what part of Siam these animals came except in the case of (e) the Berlin Deer. One fact is, however, clear, that in the middle of the last century these deer were fairly plentiful. No one seems to have considered them to have been a



distinct species of deer until Blyth conferred the name of Schomburgk on them. Sir Robert Schomburgk must have noticed that there was something peculiar about their antlers for he took some of these to Europe. He, however, does not seem to have placed on record anything about these deer, although it is certain that they were living on the swampy lands in close proximity to Bangkok. If it is true that a female deer from the Berlin Zoological Gardens was sent to Hamburg and covered by the Schomburgk stag there, the resulting progeny being the deer (c) mentioned above, then it is a matter for regret that we do not know to what species that female deer belonged. If she was a Barasingh or an Eld, then we would be on most interesting ground, for it is quite possible that the deer we are discussing do mate. The evidence here recorded brings us up to the year 1897, when the last living specimen was captured in Siam.

There is proof to show that some of these deer have been shot since that year, one in 1923, west of the Suphan river near Chorake Samphan (จระเข้สามพัน) (longitude  $99^{\circ} 52'$  E., latitude  $14^{\circ} 19'$  N.). Another in 1932 was reported to have been shot near Sai Yok, longitude  $98^{\circ} 50'$  E., latitude  $14^{\circ} 30'$  N., on the Kwe Noi, the Western branch of the Meklong river in the province of Kanchanaburi. This information was given by Luang Visit, the then district officer of Kanchanaburi. This animal was shot by Nai Lien in the middle of the year 1932. Luang Visit told me that he had seen the head some days after the animal had been shot, when particles of flesh were still attached to the skull. These antlers were eventually mounted on a made-up head as is represented in Plate III. The head simply represents that of a deer, without any attempt to reproduce the head of a Schomburgki, for the craftsman who made it had probably never seen a specimen of the Schomburgk deer. It is significant that the man who shot this animal states that it was running with a herd of Eldi deer. He had no idea that the animal he had shot was anything remarkable. The truth of this story is open to grave doubts, because Eldi deer could not live in the region mentioned owing to the density of the forests. Eldi deer are unknown in both the western and eastern branches of the Meklong



river. If there are no Eld deer in this territory then it is certain that there are no Schomburgki. That the animal referred to was shot near Kanchanaburi is certain, and therefore was probably shot on the eastern slopes of the hills facing the Suphan river.

In Part two of this paper I state the *Cervus schomburgki* were not only living in the Rangsit area and in the region round Bangkok, but also in that portion of the delta lying between the Menam Chao Phya and the Suphan or Nakorn Chaisri. About the year 1897 two deer of this race were killed near Tachin. Their antlers came into the possession of Phra Chayasatisakarn, an uncle of Phra Chamnan Jolakarn. Plate IV. is a reproduction of one of these heads which when given to Phra Chayasatisakarn was quite fresh, particles of flesh still adhering to the skull. Phya Cholamark Picharn has obtained a photo of this head from Phra Chamnan Jolakarn. The head is remarkable for the wide spread of the antlers, which can be seen from the measurements shown in the plate. This head was obtained at a place slightly south of longitude  $100^{\circ} 21' E$ , latitude  $13^{\circ} 41' N$ .

There are a large number of Schomburgk deer horns in Siam and foreign countries, but there is little evidence to prove where they came from. Between 1897 and 1923, one could buy these antlers in Bangkok and some provincial towns. In fact, most of the horns in the possession of Europeans and Siamese were so bought. The vendors made no enquiries as to where they came from. Since 1924 it has been more difficult to find these antlers offered for sale. I have been at some pains to procure photos of antlers about the history of which we have some data in order to place on record the true habitat of these animals.

The deer which was living in the Berlin Zoological Gardens was captured at Hat Song Kwe near Geng Koi, longitude  $101^{\circ} E$ , latitude  $14^{\circ} 35' N$ , on the Basak river. (Plate II).

Herr Kolbe found a fine pair of antlers of the Schomburgk deer in the valley of the Basak river, at a place a few miles north of Geng Koi a few years later. (Plate V).

Phya Cholamark Picharn, Director-General of the Department of Agriculture, has in his possession a pair of antlers of a deer shot in 1892, near the Chulalongkorn Lock in the Rangsit district. The place where this deer was shot is about 6 miles east of the river Chao Phya and about 18 miles north of Bangkok, situated at longitude  $100^{\circ} 40' E.$ , latitude  $14^{\circ} N.$  In the year 1892, the Rangsit area, known as the Great Plain (ทุ่งหลวง), was swampy, covered with grass, and practically uncultivated. A picture of these horns was published in the Natural History Supplement, vol. VIII., no. IV. I reproduce this print in this paper. (Plate VI). It is fortunate that these antlers are in existence and that we know their history, for I think the clue to the habitat of these deer is associated with these antlers. This point will be discussed later on.

Phya Cholamark has in his possession a single antler picked up in the jungle, north of Suphanburi. This antler was undoubtedly shed by its owner and had lain undisturbed in the jungle for many years. A picture of this antler was given in the Natural History Supplement of the Journal of Siam Society, vol. VIII., no. IV.

Phya Visya Phiphol (พระยาวิชัยปัทม) has in his possession a pair of antlers which were taken out of a swamp by a fisherman in the year B. E. 2401 (A. D. 1858). The name of the fisherman was Khao (ขาว), and the swamp which is called Lam Tha Manao (ลำท่ามะนาว) is situated in the commune of Khao-din (เขาดิน), amphur Nang Buat (นางบัว), in the Province of Suphanburi (สุพรรณบุรี). The place where these antlers were found is approximately longitude  $100^{\circ} 10' E.$ , latitude  $14^{\circ} 40' N.$  When the antlers were taken out of the swamp the skull was intact, but got broken owing to the jolting of the cart in which it was brought to Nai Khao's house. In 1881 these horns were given by Nai Khao to Nai Kam (นายคำ) and Nang Lo (นางโล), and they eventually came into the possession of Luang Boribun Balakorn (หลวงบริบูรณ์พลากอร์), who married the daughter, Nang Ving, of the above couple. Luang Boribun gave these antlers in the year 1924 to Phya Visya, in whose possession they now are. These antlers appeared to be covered with a thick crust of lime or some similar



substance, probably owing to their having been submerged in the swamp for many years. Chemists alone can decide the approximate period of submersion. Herr Guehler, a member of the Siam Society, advances the theory that the peculiar condition of these horns may have been due to the animal having received injury to its testes. He supports this theory by evidence obtained from the Proceedings of the Zoological Society of Great Britain, where horns in much the same condition were exhibited in 1876. (Plate VII).

The point raised by Herr Guehler is interesting and of some importance, so I record the extract from the Proceedings mentioned:

"The entire external surface of the abnormal horns (fig. 2) is covered with dense nodular exostosis, intersected by deep furrows, which adds greatly to their circumference, and gives to the extremities of the tines a blunt rounded outline. A section through the centre of one of the tines shows no line of demarcation between the external and internal portions of the horn, the same remarkable density pervading the whole; hence the very great weight of the horns, which is nearly double that of the normal pair.

"There can, I think, be no doubt that this abnormal condition has been the result of injury to the testes of the deer to whom these horns belonged—many specimens, affected by a similar exostosis, which exist in my own and public collections, having been the direct result of castration. Though much still remains to be ascertained by carefully conducted experiment and observation before an exact and exhaustive knowledge of the effects of injuries to the testes of deer upon their antlers can be obtained, the three following propositions may, I think, be considered as resting upon a moderately firm basis.

"(1) If a deer is perfectly castrated within the first six months of his life, no antlers are ever developed. (2) If castrated during the growth of his antlers, their growth in a natural direction is immediately arrested, and the velvet is retained during life, the horns frequently assuming very varied monstrous forms. (3) The castration of a deer with fully grown antlers free from velvet, causes the premature fall of these antlers, which are immediately replaced

by a pair of antlers of normal or subnormal external outline and dimensions." (Note on *Cervus schomburgki* (Blyth) by Sir Victor Brooke, Bart., F. Z. S.—Extract taken from Proceedings of the Zoological Society of London, 1876).

The measurements of the horns in the possession of Phya Visya, which were taken by Herr Guehler, are, in inches :

Length on outside curve	28"
Circumference, right horn	9 $\frac{1}{4}$ "
Circumference, left horn	10"
Tip to tip	25"
Widest inside	32"
Points, right	6 tines
Points, left	6 tines

These antlers are represented by plate VIII., a front view.

Phya Cholamark Picharn has in his possession a pair of antlers obtained north of Pak Nam Pho (Plate IX). This gentleman does not know the exact place where they were found.

I reproduce a photo of a collection of horns of this deer, numbering 18, which was in the possession of the late Lieut.-General E. W. Trotter (Plate X). This plate should prove most valuable to Zoologists, for it shows the many variations in form Schomburgki antlers can assume and proves that the brow tine is forked, and that tines leave the main beam at any distance from one-third to two-thirds up the beam.



## PART II.

*The Schomburgk deer shot in 1892 near the Chulalongkorn lock gate is accepted as a clue to the true habitat of these animals.*

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Phya Cholamark Picharn, in a note which he has prepared from evidence collected by him in the Rangsit area, in the vicinity of Bangkok, has I think given us a clue to the true locality inhabited by this animal, and also proves that they are essentially swamp deer. Phya Cholamark Picharn's father, Mom Rachawong Yai Sanit Wong, known to Europeans as Dr. Yai, was a man possessed of great intellectual gifts, a lover of nature, and he had an intimate knowledge of all matters connected with the Rangsit area. He was a director of the Siam Canals, Land & Irrigation Company, which was granted a charter by the Government of Siam to dig canals and develop the Rangsit area for cultivation in 1888.

At the time of which I am speaking a vast area of land falling within the boundaries of the provinces of Ayuthia, Thanyaburi, Saraburi, Nakorn Nayok, Chachoengsao, Prachinburi and portions of the province of Samut Prakarn were uncultivated. This was due to the conditions which existed, for this vast territory covering several thousands of square miles was under water for a great portion of the year. It was in this region, as well as in the lands situated in the valley of the Suphan river where similar conditions existed, that the Schomburgk deer lived. In 1892 a deer of this species was shot near the Chulalongkorn Lock gate and given to Dr. Yai. It would seem that the animal was a young one. This evidence was accepted as a clue, and the examination of the older people in this area brought to light the fact that the Schomburgk deer, or *saman* as the Siamese call it, had lived in considerable numbers in the swampy plain of Rangsit and adjoining regions, together with herds of semi-wild elephants. I myself in 1898-1899 have seen great herds of elephants, sometimes aggregating as many as seventy, browsing in this region, in which I lived for two years. Unfortunately I was not interested in the animal life of the country at that time, and therefore did not make enquiries about this deer.



It should be remembered that portions of this land have only come into being within the last thousand years. There is evidence to show that the land is gaining on the sea at about the rate of one mile in 20 to 30 years. In certain regions this gain may have been faster or slower. This would go to prove that centuries ago the Schomburgk deer did not live in this region, but must have lived on the swampy lands lying to the north. This would bring us to that territory lying north of Lopburi and Suphanburi, that is the territory already mentioned by Mr. Kemp. Above these two places, extending North for a distance of over 230 miles with a breadth of 70 to 100 miles, is a vast swampy plain. In this territory is included the provinces of Lopburi, Suphanburi, Angthong, Singburi, Nakorn Savana, Kambaengbejr, Sukhothai, Savankaloke, Tak, Pichit, Phitsanuloke, and Uttaradit. Prior to the year 1897 the population was not great, and the area of land under cultivation was small. This area formed a suitable home for the Schomburgk deer, and there is evidence to prove that these animals lived there in considerable numbers. Mr. Kemp in his article mentions this point. With the construction of the Northern Railway above Ayuthia in the first decade of the present century people migrated from the congested areas of Petchaburi, Rajburi, Nakorn Chaisri and Ayuthia and took up land for cultivation. These events sounded the death knell of the Schomburgk deer in those regions. Some of the animals which migrated in search of new feeding grounds moved South into the Rangsit area and to the plains bordering the Suphan river lying to the West where their kin already lived. Others moved to the East, towards the valley of the Basak river.

Since 1856 when Siam came into treaty relations with foreign countries, there has been a great expansion of trade. Rice, which hitherto had only been grown in quantities sufficient for the needs of the then small population, was cultivated in increasing quantities and began to form the main article of export. The population grew rapidly. In fact, the impetus thus given to the growth of rice gained a yearly momentum. I came to this country in 1897 when the area under rice in central Siam was comparatively small. Since that date,



however, the expansion has assumed such dimensions that practically the whole of the grass lands and swamps have now come under cultivation.

The Schomburgk deer is a swamp deer. With the growth of rice cultivation this deer was driven south to what one might call "the Rangsit region", which includes all lands south of that area. These lands with certain areas in the provinces of Suphanburi, Nakorn Pathom, Samutsakorn as well as Samut Songkram and Rajburi, situated between the Meklong River and the Menam Chao Phya, were the last to be brought under cultivation, and it is on these lands that the Schomburgk deer found their last home. We have evidence in the statements of old residents to show that prior to the construction of the Bangkok-Tachin-Meklong and the Bangkok-Rajaburi railway lines, which took place after 1900, Schomburgk deer were plentiful in this area. Cultivation drove those animals which had escaped death from hunting to the forest lands lying to the east and west of this great plain. The forest lands lying to the east are included in the valley of the Basak river, and those lying to the west are included in the valley of the Suphan river. It is due to this cause that an occasional Schomburgk deer has been shot in these regions since 1897. The antlers of the Schomburgk deer stand erect from the head like those of the *Cervus eldi* or Thamin deer and prevent the animal moving through dense forests like the Sambar. The Sambar can throw its antlers along its back by raising its head and thus moves through dense forest. The Schomburgk deer which had escaped destruction on the swampy plains, found the new conditions of life intolerable and became an easy prey to tigers and leopards. The grass in the forests was not so nutritious as on the plains. Everything in their new home told against the possibility of their continued existence. Those which were fortunate enough to enter open forest glades had some chance, and it is probable that they joined up with herds of the *Cervus eldi*. It is significant that our evidence shows that those which have been shot in recent times were running with the Eld deer. It is but reasonable to assume that



*Cervus schomburgki* are practically extinct, or if any remain they must be sought for amongst the herds of *Cervus eldi* or Thamin.

Phya Cholamark Picharn has written the following note published in Vol. VIII, Part IV, 1932, of the Natural History Supplement of the Journal of the Siam Society, which I reproduce: "There is in my possession a pair of antlers which I have always considered to be those of the swamp deer but, never having heard mention of such a deer as being in existence in Siam, I did not dare to broach such a subject as it would not come in the discussion of the Schomburgk deer. If, however, it is not a swamp deer it might be a Schomburgki, but this will be left for experts to decide. I have brought this pair of antlers with me to-night. I may mention that this animal was shot in Rangsit district about 40 years ago, in front of the Royal Irrigation Department dry dock, close to the Chulalongkorn Lock. This kind of deer, I am told, was once plentiful in that region. My father, Dr. Yai Sanitwongse, said that people used to hunt it in the high water season in "rua muang," a special kind of dug-out. The animals took refuge on high ground, the hunters surrounded them in their boats and speared them. These deer then ranged to the Bang Plakod district and Thung Dong Lakorn in Nakorn Nayok. The Bang Plakod people used to chase these deer in boats, as at the high water season the animals remained on floating grass islands and could be secured by spearing.

"At Dong Lakorn an old man told me that in his younger days he used to hunt these animals by going in parties on buffalo back and surrounding them. Some people used to file the antlers of this deer very thin, in order to make them light so that the antlers could be put on their heads when stalking, and the wild animal, thinking the antlers belonged to their own kind, did not take flight and were killed by the hunters at close range. These animals are no longer to be seen, but it was suggested that they may still exist on the Aranya Pradesa side. From what this old man told me, it appears that in the young deer the number of tines is fewer than in the old ones."



The antlers exhibited by Phya Cholamark were declared to be those of a *Cervus schomburgki*.

The people of Nakorn Nayok are well known as horse breeders and for their horsemanship. They are fond of racing. I think it is probable that these deer were also run down and killed by parties of men on horseback. The land between Dong Lakorn and the Nakorn Nayok river is very low-lying, and horses could not be used here in the rainy season, and it is possible that buffaloes were used in the chase. The land to the east of Dong Lakorn is not so low. These deer existed in Ban Sang (บ้านสง), Bang Bluang (บางพลู), and Bang Kra Bao (บางกระบือ) in the adjoining district of Prachin. I travelled from Chong Tako (ช่องตะโก) to Aranya Pradesa (อรัญประเทศ) in 1922, and although the Thamin or Lamang were plentiful, the Saman or Schomburgk deer was unknown. Chao Phya Aphai Pubesr, the governor of Pratabong (พระตะบอง) under the Siamese régime, that is prior to 1907, a famous hunter, has declared that the Schomburgk deer were unknown on the plains of Pratabong and after he took up his residence in Prachin in 1907 he could not find any trace of these deer. The districts of Ban Sang (บ้านสง), Bang Bluang (บางพลู) and Bang Kra Bao (บางกระบือ) were converted from swamp land to rice cultivation from 1896 onwards. There are stories current of this deer having been shot in the provinces of Rayong and Chantaburi. In fact, I have seen a head said to have been obtained in Chantaburi. If *Cervus schomburgki* were ever in these two provinces, then they must have been animals which escaped from the three districts mentioned above and succeeded in passing through the forests and found their way to the district of Chantaburi. The distance is not great, the forests are fairly open, and therefore this movement is within the range of possibility.

## PART III.

*The relationship between the Barasingha or Rucervus duvauceli of India and the Thamin or Cervus eldi of Burma and Siam and Cervus schomburgki.*

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Now that we know that the Schomburgk deer is a swamp deer and could only thrive on low lying land, a question of some importance arises. This question is: why were these deer not known in the plains of Burma where conditions exist similar to those in Siam? It is true that Burma proper lies north of latitude 16°45' N., and is therefore north of that region in Siam in which we find *Cervus schomburgki*. It may be that these animals at one time lived in Burma, but that they have been forgotten. In the southern portion of Burma rice cultivation on a fairly large scale was probably engaged in from the years prior to the Christian Era. The great Kingdoms of Sirikasetr and Sudhammavadi were flourishing till about the seventh century A. D. The territory lying to the north of these Kingdoms was inhabited by a number of tribes amongst whom the Thai predominated. The population was not great and this region was largely covered by forests which would not suit the habits and requirements of the Schomburgk deer. Lying between Burma and Siam is a vast region of mountainous country which these deer could not pass over or live in. It is generally accepted that the *Cervus eldi* and the *Cervus schomburgki* are allied to the *Rucervus duvauceli* or Barasingha of India. The word Barasingha means twelve points or tines. As the *Cervus eldi* is found all over Eastern Asia including Burma, the question of its being allied to the Barasingha need not arise. However, the case of the *Cervus schomburgki* is different, for we find it isolated in Siam far distant from its prototype, the Barasingha in India.

The question as to how this animal came into Siam will probably never be solved, unless we accept the theory that the Barasingha were brought to this country by Indian princes or colonists as pets, and eventually took to the wild life. That Indian princes and colonists came to this country and established themselves in the valley



of the Meklong and the valley of the Basak river, and also in the North is beyond doubt, and similar settlements were made in Burma notably at Tagaung. In the Basak river we have the ancient city of Sridheh, which was an Indian city and probably in those early days not far from the sea. Indian settlements on the Meklong are numerous, and it is probable that Lopburi was originally an Indian settlement. We know that the ancient state of Suvana Komkham, with its capital on the Meklong river, was settled by Indians and that the city of Umong Sela Nakorn was inhabited by Indians. This latter place is situated on Doi Tong, which now forms the boundary between the State of Chieng Tung and Siam. If these animals were taken a century or more ago to Europe to adorn the deer parks of the nobility of England and France, why should not the Indians have brought them to Siam when they came to this country? It is, of course, also possible that the non-existence of *Cervus schomburgki* in Burma may be due to geological causes. The mountain ranges lying to the west of Burma, dividing Burma from India, are known to be of the greatest antiquity. This mountain range presented a barrier over which the Barasingha of India could not travel. The mountains of Yunnan, and the ranges dividing Burma from Siam, came into being at a much later date. It may be due to the difference in date of these geological foldings or formation that allowed the *Cervus schomburgki* to enter territory now known as Siam. It may be that some of the Northern ranges of the mountains dividing Burma and Yunnan were as old as the main range itself, and it was this northern range which acted as a barrier and forced the deer to take an Eastern route.

The suggestions made by me to solve the problem as to why the deer known as *Cervus schomburgki* are found only in Siam are mere theories. To my mind the question is of some importance, because our evidence goes to prove that the *Cervus schomburgki* approximates to the Barasingha of the United Provinces of India so closely that it is probable that they are one and the same animal.

Lydekker, in his book entitled *The Game Animals of India*, published in 1907, gives us some interesting and perhaps relevant information about the Barasingha, the Eldi and the Schom-



burgk deer. He tells us that the *Cervus eldi* of Burma and Siam and *Cervus schomburgki* are allied to the Barasingha of India. The habitat of this latter species, he says, is confined to certain regions in India and Assam, and it is unknown outside that territory. He also tells us that the Thamin of Burma differs somewhat from that found in Siam. The Thamin of Burma is known as *Cervus eldi typicus*, and that in Siam as *Cervus eldi platyceros*. He tells us that in the Burmese Thamin the antlers are cylindrical to their summits, with few or no additional points on the prongs of the main fork, and have a long brow-tine. On the other hand, in the Siamese Thamin the front or larger branch of the main fork is considerably flattened, and carries a large number of snags on its sharp hind edge, and the brow tine is relatively shorter. It is in this race (the Siamese Thamin) that the antlers make a close approximation to Major Wood's specimen of the swamp deer (Barasingha of India). In both races one or more prominent snags are usually developed at the point of junction between the brow-tine and the beam, that is to say, immediately above the pedicle; and it is a general feature of the species that the antlers of opposite sides are unsymmetrical when compared with each other.

This statement gives us evidence of a link existing between the *Cervus eldi* of Siam and the Barasingha of India. It is admitted by zoologists that the *Cervus schomburgki* is also allied to these Barasingha. In fact, naturalists such as Dr. Brehm did not suspect that the deer now known as Schomburgki was any other than the Barasingha until Mr. Blyth conferred a specific name on it. Notwithstanding the fact that the evidence on which Mr. Blyth declared this deer of Siam to be a distinct species was of the most slender nature, zoologists both in America and Germany still hold to this thesis.

Mr. A. A. Dunbar Brander, in his book entitled *Wild Animals in Central India*, published in London by Edward Arnold & Co., 1931, chapter VIII, gives us a graphic description of the Barasingha found in the United Provinces and the Central Provinces of India. It will be seen that the habits of the Barasingha living in the Terai of the United Provinces are exactly the same as the habits of our Schomburgki as related by Phya Cholamark Picharn.



A very close link probably exists between these Barasingha of India and our *Cervus schomburgki*, and if such a great naturalist as Dr. Brehm accepted the deer sent from Siam to Germany as a Barasingha, then the link must be very intimate indeed.

I cannot do better than give some extracts from Mr. Dunbar Brander's work dealing with the Barasingha of India in order to illustrate the point that I am trying to make clear, *i. e.*, that the *Cervus schomburgki* of Siam is very closely allied to the Barasingha of India. Herr von Arentschildt, a gentleman widely conversant with the wild life of Siam, is inclined to believe that our *Cervus schomburgki* is a Barasingha which has slightly diverged from type owing to the processes of evolution and environment, and should not be classified as a distinct and separate species. A gentleman who is interested in natural history has said to me that he cannot accept this theory for he sees certain differences in the development of the antlers. For instance, in the case of *Cervus schomburgki* he holds that the tines branch off from the beam about one-third of the distance from the base, whereas in the case of the Barasingha they branch off at about two-thirds of the distance. I am not in a position to give an opinion which would be of any decisive value, but am inclined to lean towards the opinion expressed by Herr von Arentschildt, as it is quite evident that the antlers of *Cervus schomburgki* show great variations. The tines branch off from the main beam at any distance between one-third and two-thirds of its length. Whether the classification of *Cervus schomburgki* as a distinct species by Mr. Blyth has been premature or not must be left to scientists to decide.

I now quote some of the passages from Mr. Dunbar Brander's book, pages 192-204: "This deer is one of the handsomest representatives of the deer tribe that exists in the world, and of all the India deer, both in appearance and on account of his proud carriage, most strongly reminds one of the European stag. This general resemblance does not imply any relationship between the animals. There has been some discussion as to his name, and the suitability of referring to the animals as swamp-deer. This term aptly describes his habits in the Terai, where he is hardly ever found out of swamps; on the other



hand, it is a complete misnomer for the Central Provinces, where there are no swamps for it to frequent. In these Provinces therefore it is more frequently referred to as the Barasingha, *i.e.* "12 pointer". This animal has been found from the neighbourhood of Haldwani eastwards along the foot of the Himalayas as far as Assam, throughout Assam and parts of Bengal. It has also been reported from Upper Sind by Blanford, and this is repeated by Lydekker. It would be interesting to know whether it still exists there, as I have never had the fortune to meet with anyone who had come across it in this locality. In these areas the animal inhabits grass lands, islands, river banks, swamps, and the vicinity of swamps inside the forest. The great majority of the animals I saw in the United Provinces were standing in water in long grass, and they seemed to spend their whole time in localities of this nature, only emerging at dusk to wade up to their bellies into deeper water in order to graze off water weeds. When disturbed by a line of elephants they rushed about in the grass and water, and it was only by the most persistent hunting that they could be induced to forsake their cover and make for the forest. In fact it was a matter of no small astonishment that the animals' feet and legs could withstand the continual soaking they were subjected to.

"Sportsmen who have only had experience of the animal in the Central Provinces will read the above with surprise. In this part of India no swamps exist in the sense that they do in the United Provinces, but this apart, the animal shows no special addiction to water, and he is less exacting as regards a plentiful water supply than the Chital. The *sine qua non* for this animal's requirements are large grassy plains or maidans, on which he can graze. He lives in or along the edge of these plains, and only penetrates the jungle-clad hills to a short distance. The distribution in the Central Provinces is as follows: The Jagmandal and Banjar Reserves of the Mandla district, and thence eastward to Amakantak and the Bilaspur Zemindaris, where a very few of the countless herds seen by Forsyth still survive. There are two isolated herds, one north of the Nerbudda, near Sarastal, and the other in the neighbourhood of the Dindori Road in the Shahpura Range. The Sal forests of Balaghat,



Bilaspur and Raipur and adjacent Zemindaris, the Baster State, parts of Bandara and South Chanda contain this animal. It has been asserted that the Barasingha confines himself to Sal forest, but this is not so, as he occurs in Jagmandal and in Bandara and South Chanda in ordinary mixed forest. There would appear to have been a few Barasingha in the out-lier of Sal forest round Pachmarhi at the time of Forsyth, but all my enquiries showed that they are now extinct, and the tradition of their ever having existed was lost, but rumours of their persistence in the Chindwara Jagirs are still current, but require confirmation. The distance to which the Barasingha extends into the neighbouring Province of Bihar and Orissa is not known. The tribes on the borders of the two Provinces are inveterate hunters, and using poisoned arrows have exterminated nearly all the game over a vast tract of country. It is unlikely therefore that many Barasingha have escaped.

"The Swamp-deer of the Terai and the Central Provinces are undoubtedly the same animal, nevertheless there is an indescribable difference in their appearance—a general impression, too elusive to lay hold of. The only definable differences are the whiteness and smoothness of the horns which are a common feature of the Terai animal; dark, almost black, horns with white tips are rare, but are often found on master stags in the Central Provinces. In the Provinces the animal is also often much darker than any I saw in the Terai. The hoof is also hard and well knit, the hoof of an animal accustomed to gallop on hard ground, whereas in the Terai the hoof gives one the impression of being spongy—the heel pads as well as the whole hoof are larger and have a tendency to splay. Considering the very long period that these animals have existed under such very different conditions, it is surprising that much more marked differences have not developed. It may be argued that at one time the Central Provinces animal did inhabit swamps, but this is untenable as, although some of the plains they now frequent may have been swampy at a very remote period, others certainly never were so.

"The description of the swamp-deer's appearance requires to be re-written. Lydekker states: 'With the exception that it retains



in most instances a line of whitish spots on each side of the dark dorsal streak, the swamp-deer is as uniformly coloured an animal as the sambar, and like that species exhibits no marked seasonal change in the colour of the coat.' This statement is, however, qualified later on by the remark that 'the coat of adults is in most cases nearly uniformly coloured.' The ordinary colour of the animal is brown, shading to yellowish brown on the lower parts. Females are lighter in colour, the hair is moderately fine and often woolly in texture. The necks of stags are maned. There is often a darker dorsal line, and it is common to see master stags so dark all over as almost to appear black in the distance. The under side of the tail is white or light yellow. There is a marked seasonal change in the colour both in this animal and the sambar. As the hot weather advances they become much lighter, the stags being reddish brown and the does yellowish brown. At this season also they develop spots. These spots are arranged in precisely the same manner as those of the Chital; they are not white, but the hair is merely somewhat lighter in colour, or may even only be apparent when viewed at an angle when they appear as water marks. The first occasion on which my attention was drawn to these marks was on May 11, 1902, when I shot a stag. This is an extraordinarily late day for a warrantable stag to be carrying his horn, and as the spots do not commonly appear until after the horns drop, their presence often escapes the notice of sportsmen. Out of many scores of animals I have seen shot, I have never noticed these spots on the winter-coat, nor have I ever seen a white spot. Without shooting the animal it would often be impossible to say whether it had spots or not, but so far as one can discover by the use of a glass I am inclined to think that some animals never develop spots at all. The young when born are spotted in the same way, but the marks are much more distinct and might be called whitish. This phenomenon would seem to indicate that the animal was at one time spotted like a chital, and these are the last vestiges of that condition. The following are the dimensions of a good average stag shot on March 12, 1903. Taking the measurements from the tip of the tail :



to the rump	...	...	9 in.
to the withers	...	...	4 ft. 6 in.
to a point between the horns			6 ft. 3 in.
to the tip of the nose	...	...	7 ft. 4½ in.
Girth behind shoulder	...	...	4 ft. 4 in.
Height	...	...	3 ft. 11 in.
Right horn	...	...	33 in. & 7 points
Left horn	...	...	32 in. & 6 points
Girth of horn	...	...	5½ in. above brow tine.

"Blanford, quoting from THE ASIAN, gives weights of 460 and 570 lbs. These animals were from Cooch Behar, which seems to have been a wonderful place for producing remarkable animals. The stags of the Central Provinces are in no way inferior to those of other parts of India. In fact, they excel all others in size and beauty of horn, but they cannot compete with these weights. The stag referred to above was 370 lbs., and 420 lbs is an extreme weight. There are two types of horns typical examples of which are described below, and but for the fact that all degrees of intermediary types are found, one could hardly credit that they belonged to the same animal. In one case, the beam is a regular curve in the shape of a scythe curving from the skull backwards and then forwards so as to bring the point of the horn into position in a line with the top of the head. At intervals along the beam and commencing rather more than half way up, tines are given off, the first tine generally producing a shoot of its own. This type of head seldom attains a larger size, and is ugly and not to be compared either in beauty or size with the other type.

"In this type the horn, instead of being curved from the base, grows comparatively straight up, but with an outward curve so as to produce spread, and only at the point where the first tine appears does it begin to curve forward, which it does abruptly, so that the last foot or so of the beam is horizontal. The tines develop vigorously, and throw off two or more shoots, and a number of large tines growing straight up vertically from the horizontal beam produce one of the most beautiful horns in the world. I have been

given to understand that this type of horn is rare outside the Central Provinces. Out of thirty-one mature heads in my possession I have made the following classification :

Central Provinces type ...	...	6
Intermediate type ...	...	14
Teraï or curved type ...	...	8
Sambar type ...	...	3

"The brow tines are long and very pointed, and come off at a right angle from the beam ; it is never forked but often has "sports" which grow on the tine itself, not from the axil. I believe I am correct in saying that the number of heads exceeding 41 in. in length which have been shot, could be counted on one hand. Heads having eighteen and twenty points have been procured, but ten to fourteen is the usual number carried by a mature stag. Bigger heads than those so far shot may yet be killed, as really old stags are exceedingly wary, and I have found dropped horns in the Mandla district which in size and girth were things to dream about, and much heavier than anything yet bagged.

" Before leaving the subject of horns it is necessary to refer to one more type. It is not uncommon to see a large dark stag with a horn very much resembling a sambar's, or possibly only to the extent of having one more point. I have seen a number of these animals shot, and after Mr. Eardley Wilmot raised the possibility of their being the result of hybridization they were naturally examined with special care. Beyond the shape of the horn, and that such animals were usually large and dark in colour, I could detect no other signs which suggested sambar blood. Moreover, I once shot a light coloured stag having no resemblance whatever to a sambar except his horn. A stag of the sambar type was shot during the shoot of H. R. H. the Duke of Connaught in the big maidan of the Banjar Valley, Mandala. Having a number of other heads freshly killed for comparison, it had to be admitted that the skull of this particular animal was somewhat larger than that of the others. Skulls of stags, however, vary very considerably in size, and I came to the conclusion that this was mere coincidence. The stags of both



species find an abundance of hinds to satisfy all their desires. Moreover the rut of the two species does not coincide, although it may overlap. In the country inhabited by the two species the barasingha stags are actually and relatively more numerous, and their breeding season extends over a longer period. Moreover, sambar hinds have been seen more or less associating with a herd of barasingha, whereas sambar stags never do this. In addition, there are other reasons for thinking that if hybridization ever did take place, it would be between a barasingha stag and young sambar hind. The subject however need not be elaborated as the most natural explanation of these heads is that they are one of the modifications due to the animal no longer living in a swamp, and that, as his mode of life and the country he lives in differ but little from that of many sambar, the same influences which produced the horn which this animal now carries are at work on the barasingha.

"The following is quoted from Lyddeker: 'In spring the members of these herds disperse, single stags being met with on the grass plains of Assam during March with their antlers in velvet.' I am in no position to contradict this statement as regards Assam, but it is certainly not true with regard to the United Provinces or the Central Provinces. The herds do not disperse in spring, and stags do not shed their antlers until April, and many small stags are still, in horn at the end of the month. To find a stag in velvet in March, presupposes that the horn was shed in February or even January.

"Barasingha commence to grow their horns shortly before or at the commencement of the rains, coincident, as in the case of most deer, with the approach of the period of plenty. At this season the stags lead comparatively solitary lives, and the large mobs of hinds break up into small lots. The horns are clear by the end of October, and the stags then congregate together for a period awaiting the development of the rut. It is common in November to find a number of stags dotted about a small maidan and issuing challenges without having yet commenced to fight. The actual rut is an ill-defined period, as I have seen a stag jump a hind in December and also in March, but the chief breeding period is between December 15

and January 15, and the great mass of the fawns are born in the hot weather, shortly before the rains. The master stags collect a herd of does and fight for the possession of their harem in the same way as the European stag. This is contrary to the habit of the sambar which fights for territory. Barasingha are noisy animals, and on being alarmed scream loudly, the whole herd, and even other adjacent ones taking up the echo; the noise is a shrill "bray" and they will utter this while trotting away from the cause of alarm. The "roaring" of the stags is a sound which cannot be compared with that of any other wild animals in India: it has been likened to the "ee on ee on" of a donkey, but this gives a very inadequate idea of what it is really like. The noise commences with a loud and penetrating "Ring Hon Ring Hon", which is repeated in gradually decreasing volume as the air in the lungs becomes exhausted; but in addition to this call there is an accompanying drone which is kept going all the time the call is being repeated. Barasingha are much less nocturnal than sambar. Their eye-sight without being remarkable is moderately good, and consistent with the semi-open life they lead. Their powers of hearing are moderate. On the other hand their sense of smell is excellent, and I have known them wind a man at 400 yards. Compared with most animals they are tame and confiding, and are lacking in the instincts of self preservation when hunted."



## PART IV.

*A description of Cervus schomburgki by Dr. Brehm.*

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Dr. Brehm, the renowned German naturalist, had under his care in the Hamburg Zoological Gardens from the year 1860 to 1865 a deer which was sent there from Bangkok, Siam, and which Dr. Brehm believed to be a Barasingha. As this deer came from Bangkok, it must have been of the race which Mr. Blyth classified as *Cervus schomburgki*.

Dr. Brehm gives a very clear description of this animal. The following is a translation from Dr. A. E. Brehm's book, entitled *Thierleben*, published in 1865. This extract is taken from vol. II., pp. 461-462:—

"The red deer has only a few relatives. In N. W. Africa there is a deer species distinguished by the name of *Cervus barbarus*, but even this is not recognised on all sides as a separate or distinctive species but only as a sub-variety of the red deer. He seems to be very similar to the red deer in every respect. A magnificent deer, known as *Cervus wallchii*, is known from Persia, showing much which it has in common with our red deer, that is, its large size and strongly developed main. However it differs in many other points. Lastly there is the biggest of all genuine *Cervi*, the Wapiti of North America (*Cervus canadensis*) to be brought in here.

"All other deer have little in common with our red deer, which contrary to them always deserves its name of Edelhirsch (Noble deer). There are, however, a few species which are truly remarkable owing to the beauty of their build. Among them in my opinion, the Barasingha (*Rucervus duvauceli*) should take first place. He is nowadays rightly looked upon as belonging to a distinct species as he shows many features which are his alone. He is slim and highly set; the head is comparatively short, tapering into a pyramidical muzzle. The ears are long and unusually broad, the eyes very large and beautiful. The legs are high but stout. The tail is short, considerably longer however than that of the red deer,

but half as long as that of the fallow deer. Very distinctive are the horns. They are remarkable for their width and many points. Looked upon as a whole they have some resemblance to that of the moose, although it goes without saying there can be no question of shovels. Each beam rises right from the base and bends sideways and upwards but only slightly backwards. Right above the base the beam throws off forward the long and distinct browtime curving up and pointing outwards. The main beam divides itself at about two-thirds of its height into a pair of equal branches, which in their turn fork again. The hind antler, which can be considered as the extremity of the beams, ends in a crown and spreads one end tine up and backward and two considerably shorter side tines which bend backward. The foremost tine grows outward, upward and forward and splits in a single or double fork, that is, forks again.

“Rather peculiar are the few coarse long hairs which encircle the muzzle and eyes. The four year stag, on which the above description is founded, a remarkable specimen of game, is a fourteen pointer. The coat is heavily set and thick. The hair is long and fairly fine but the appearance of the coat as a whole is coarse, the hairs not being of uniform length. The ears are covered with short, even hair, on the outer side, and with very long, uneven, shaggy hair inside. The hairs are dark greyish brown at the root, golden brown at the middle, greyish and light yellow at the tip. In summer time the general hue of the coat is of a golden reddish brown, changing gradually to grey and then light yellow on the nether part of the body, the tips of the hairs being grey and somewhat light yellow in that region. Along the back there runs a dark brown streak which extends along the greater part of the tail which is yellowish and pointed. The part of the head comprising the forehead and the ridge of the nose is reddish, sprinkled with golden spots. The cheeks and the sides of the nose are grey; the under part of the muzzle, the chin and the throat are of a greyish white colour. Below the naked portion of the muzzle there runs a fairly wide dark brown streak, which is also observed on the pure white of the underlip. A new, and not very noticeable streak, the



continuation in a way of the dark eyebrows, runs from one eye to the other, in the shape of a V with its point towards the muzzle. A peculiar feature is the long coarse and single hairs which surround the muzzle and the eyes. The ears are brownish, of a darker hue along the outer edge and yellowish white towards the root. The same coloration is found in the hair of the inner part of the concha. The belly and the inner part of the thighs are yellowish, the forelegs are of a brown grey colour, the pasterns being dun. On the hind legs the pasterns are darker than the shanks. The hoofs are large and they can be very widely spread.

"As far as is known the habitat of this deer covers the whole of Further India. Whether he prefers hilly or flat country is not known. Cuvier, the discoverer, placed this deer after antlers which had been sent to him, and only later had he a living specimen at his disposal.

"The Earl of Derby, who owns one of the largest deer parks, seems to have been the first to own Barasinghas. Later this deer came also to London and at present one can see some specimens in different zoological gardens, although of course they are still rare. The Barasingha of the Hamburg Zoo came from Siam, from where he was sent directly to Hamburg. He came as a yearling but carried already a forked horn. He dropped the horns at the beginning of February and immediately developed horns of 14 points, each beam having browtines and two equally developed forked tines. The next horns were also 14 pointers but stronger and bigger in size.

"I could not get any information about the rutting season nor the time when fawns are born but I presume from the time of shedding the horns that this must be about the same as with the red deer. According to my observation of our specimen I think that this deer should become acclimatized, our climate being well suited for him. He is such a magnificent animal that he would be an ornament to any park or forest. His carriage is proud and somewhat challenging. His manner is affectionate but full of dignity. His behaviour is livelier, I should say even more petulant, than that of many other deer.

“Our specimen is a very lively fellow, of an inquiring nature. He keeps on friendly terms with his warden, understands and follows him and his call; however he will take every opportunity of butting at the man, although more in a playful manner than through temper. He often challenges the deer in the neighbouring enclosure and starts duels through the railing, even against the strongest. A white deer, a giant compared with him, was often teased and challenged, so that we were forced to remove him to some distance to prevent an accident to the Barasingha. His voice is rather short and has a highly bleating tone, resembling that of a kid overcome by fear, but thrown out much shorter. Contrary to other deer the Barasingha calls at any time of the season, one is led to believe often for pleasure only. He also always responds when called.”



## PART V.

*A few concluding remarks.*

I think that the evidence placed before us in this paper goes far to prove that the *Cervus schomburgki* is a true swamp deer and that it is intimately related to the swamp deer Barasingha of the United Provinces of India, if not the same animal. This deer undoubtedly occupied at one time the whole of the Central Plains of Siam which are generally swampy. It is probable that the animal moved from North to South and was eventually driven from its last homes in the plains round Bangkok and the valley of the Suphan or Nakorn Chaisri river by the rapid extension of rice cultivation which commenced in 1856. It is curious that Sir R. Schomburgk, who lived in Bangkok for several years between 1857 and 1864, did not place anything on record about this deer, as far as we know. It is almost certain that if he had been interested in the matter, and it would seem that he was for he collected some antlers, he must have heard of the existence of this deer close to Bangkok. These animals would seem to have left the swampy plains between 1892 and 1906 and to have taken refuge from the attacks of man in the forest country lying to the east and west of these plains. Specimens of these deer have been found in the Basak valley lying to the east, as well as in the country lying west of the Suphan river, which forms the western boundary of this great plain. The last deer of this race to be shot in the latter region was shot in 1932.

Are these deer now extinct? For all practical purposes, I think that we may assume that they are extinct. When driven into the forest country they entered on a new condition of life, and there was not time enough for them to adapt themselves to this new condition. Some of these deer entered dense forest and owing to the upright nature of their antlers could not move about freely. These animals probably fell a prey to tigers. Those who were more fortunate and entered open forest country, probably in the course of time joined herds of *Cervus eldi*. The Schomburgk deer which have been shot were running with Eldi deer.

It is possible that a few may still survive and be found amongst *Cervus eldi*. There is no evidence to show that these animals exist in the Basak valley to-day, but it may be premature to accept this statement as final. It seems possible that a few may still exist mixed with *Cervus eldi* in the valleys of the Basak and Suphan rivers. If zoologists and naturalists desire to obtain a specimen then they should concentrate their efforts on these regions. They would have to examine very closely all herds of *Cervus eldi*. To presume that any separate herds of *Cervus schomburgki* are still in being would be absurd.

The honour of solving the riddle of the *Cervus schomburgki* lays with Phya Cholamark Picharn. It is fortunate for Science that he still has in his possession the pair of antlers of a young deer shot near the Chulalongkorn Lock gate in 1892, which he inherited from his father, Dr. Yai, and that his father, who died in 1930, should have told him of the existence of this deer in the Rangsit plain. Had it not been for this the whole position would still be obscure.

In the body of this paper I have said that it will be difficult to prove how this deer entered Siam, and I have advanced two theories which will probably be brushed on one side by naturalists as fantastic. Truth often emerges from the fantastic. However, that this deer is intimately related to the Barasingha of India is beyond doubt.

I find in Mr. Kemp's articles, published in vol. III., part I., (1918) of the Journal of the Natural History Society of Siam, that he refers to a pair of antlers mentioned in Bentham, *Asiatic Horns and Antlers*, India Museum, 1908, which it is said were collected by John Anderson in the Sunda Valley, Western Yunnan. Was this pair of antlers really found in Western Yunnan? An attempt to verify the correctness of this statement and the locality should be made. If this statement is correct it would probably help us to know how this deer entered Siam, for the migration of people and possibly animals has followed this route.

Is the animal described by Dr. Brehm a Barasingha or a Schomburgki? He makes a definite statement that the animal came



from Bangkok, Siam. Such being the case the animal must have belonged to the race of deer we now call Schomburgki. In his description he says that the tines branched off from the main beam of the antlers at about two-thirds up. I believe that in the case of *Cervus schomburgki* this branching off of the tines sometimes takes place at about one-third though this cannot be accepted as a fixed rule. An examination of the 18 heads in the collection of the late Lieut.-General Trotter shows 6 branching off at about one-third of the main beam; 8 at half-way and 4 at about two-thirds up. This is a point of some importance and may raise doubt in the minds of naturalists as to whether Dr. Brehm was describing a Barasingha or a Schomburgki. Dr. Brehm was a naturalist of repute and stood high in the ranks of zoologists. It is incredible that a man holding such a high position in the world of zoology could have given us a description of an animal other than the one which came to Hamburg from Siam. As the antlers of all deer seem to show great divergence from type and as the Schomburgk deer is closely allied to the Barasingha, it is possible that this particular animal approximated to original type more than is usual.

Herr von Arentschildt in discussing this point says: "It is true that the tines of the Schomburgk deer branch off in some cases from the main beam at about one-third from the pedicle. However, I have seen many antlers of Schomburgk deer in which the dividing point is about half or even two-thirds up the main beam. There are instances of this in the photograph of General Trotter's collection. This does not influence the main features or characteristics of the horn. It is very generally the case (certainly with those of red deer) that the older the animal gets, the stouter his antlers become; consequently even if the total length of the horn should remain the same, the proportions between beam and branches change. Secondly, it is true that when these animals live under better food conditions they grow stouter horns, and the beam becomes thicker and shorter. In the latter case such animals also put forth more points. I am convinced that Brehm's animal was a Barasingha from Siam, a race which is now known as *Cervus schomburgki*."

I cannot find any trace of *Cervus schomburgki* on the Korat Plateau, which I have traversed from South to North and West to East. I do not believe that it ever existed there. The La-ong is the name used by Eastern Laos for *Cervus eldi*, and this term is still used in the region of Aranya Pradesa, which is inhabited by these Laos. The word La-mang is used by the Siamese or Thai proper for *Cervus eldi*. The etymology of this word is interesting. The Thai people in the early years of the Christian era were the dominant people in Central and Northern Burma. The Burmese people had not come into existence. It is certain that the Thai in this region knew *Cervus eldi* and called it Lamang. When the Burmese became a people and overthrew the Thai power in Burma they borrowed many words from the Thai language, notably in regard to animals which they did not know, such as the word for elephant, bullock, buffalo and many others. They borrowed the word Lamang and wrote it Thamang. The consonant "Th" approximates to an "S". The word written "Thamang" is pronounced by the Burman "Thamin". Therefore the word "Lamang" is undoubtedly of great antiquity and goes to prove that *Cervus eldi* have lived in this region for certainly 2,000 years. Where does the Thai word "saman" (สามັນ), for *Cervus schomburgki* come from? I have no evidence on this point. Philologists might be able to solve this problem if they examined the vocabularies of all Thai "dialects." If they can find this word referring to any type of deer used by any particular sept of the Thai race, then it might help us to prove that the "Saman" had existed at some remote date in the territory occupied by that sept of the Thai people.

Very little scientific work has been done by zoologists in connection with the fauna of this country, with the exception of birds and reptiles. I am inclined to think that it will be found that *Cervus eldi* inhabiting the eastern jungles of Siam differ in some respects from those in the western areas.

An analysis of the evidence recorded in this paper brings forth clearly the following points:



1) That *Cervus schomburgki* is essentially a swamp deer and its true habitat was the central plains of Siam. This statement is in agreement with that made by Mr. Kemp.

2) This deer was driven from its original home by the development of cultivation, and its numbers were considerably reduced while in its original home by spearing and shooting at the hands of hunters.

3) It took refuge in the forests lying to the East and West of this central plain, where it found existence difficult owing to the upright nature of its antlers and the new conditions it had to face.

4) Although a few *Cervus schomburgki* may be still living, it can be assumed for all practical purposes to be extinct. If any of these animals are still living they are not in separate herds, but must be searched for among the herds of *Cervus eldi* with which it is certain they run.

5) The two points so frequently raised in arguments connected with this deer (a) that the tines branch off from the main beam at one-third of the distance of the beam, and (b) that the browtines are not forked as stated by Mr. Kemp, can no longer be upheld. Antlers showing the dividing point from the beam at distances from one-third to two-thirds exist, and antlers with the browtines forked are numerous.

6) *Cervus schomburgki* is closely related to *Rucervus duvauceli*, the Barasingha of India. In fact, they may be the same animal. Many eminent zoologists apparently did not notice that they possessed any peculiar characteristics differentiating them in any marked degree from the Barasingha until Mr. Blyth declared them to be a separate and distinct species. This classification has been generally accepted. I am inclined to think with Herr von Arentschildt that this classification was premature, that this deer should be classed as a subvariety of the Barasingha, and that its classification should be *Rucervus duvauceli siamensis* or, if it is desirable to retain the name Schomburgk in order to honour that distinguished gentleman, then *Rucervus duvauceli schomburgki*.

In writing this paper I am making an attempt to clear up the riddle of *Cervus schomburgki*. I am not a zoologist nor am I a naturalist; I am merely a compiler, but one who has spent many years of his life in the wildest part of Burma away from civilization and who has travelled throughout the length and breadth of Siam. Without the assistance of the gentlemen mentioned below I could not have recorded the evidence on this subject which I have given.

My thanks are due to Mr. A. H. Duke, Barrister-at-Law, of Bangkok. Mr. Duke made extensive inquiries throughout Siam regarding this deer. He has placed all his papers with some valuable photos and books at my disposal. My thanks are due to Phya Chalamark Picharn for much kind help given to me and for some of the photos reproduced. To this gentleman must be given the honour of solving the riddle of *Cervus schomburgki*. Herr von Arentschildt, a gentleman who has spent long periods in the forests of Siam and has an intimate knowledge of the wild life of the country, has given me generously of his great knowledge. My thanks are due to him.

Herr U. Guehler is much interested in Natural History and has given much thought to the subject of the Schomburgk deer. He has most kindly placed at my disposal all he knows and has also supplied many valuable photos. I desire to thank him.

Bangkok,

1st March, 1937.





The stuffed body of *C. Schomburgki* in the Trocadero Museum, Paris. This specimen is, I believe, the Bocourt deer referred to by Mr. Kemp in the Journal of the Natural History Society of Siam, Vol. III, Part I, 1918.







A picture of the *C. Schomburgki* which was captured at Hat Song Kwe, Saraburi, in 1897, and was living in the Berlin Zoological Gardens from 1899 to 1911,



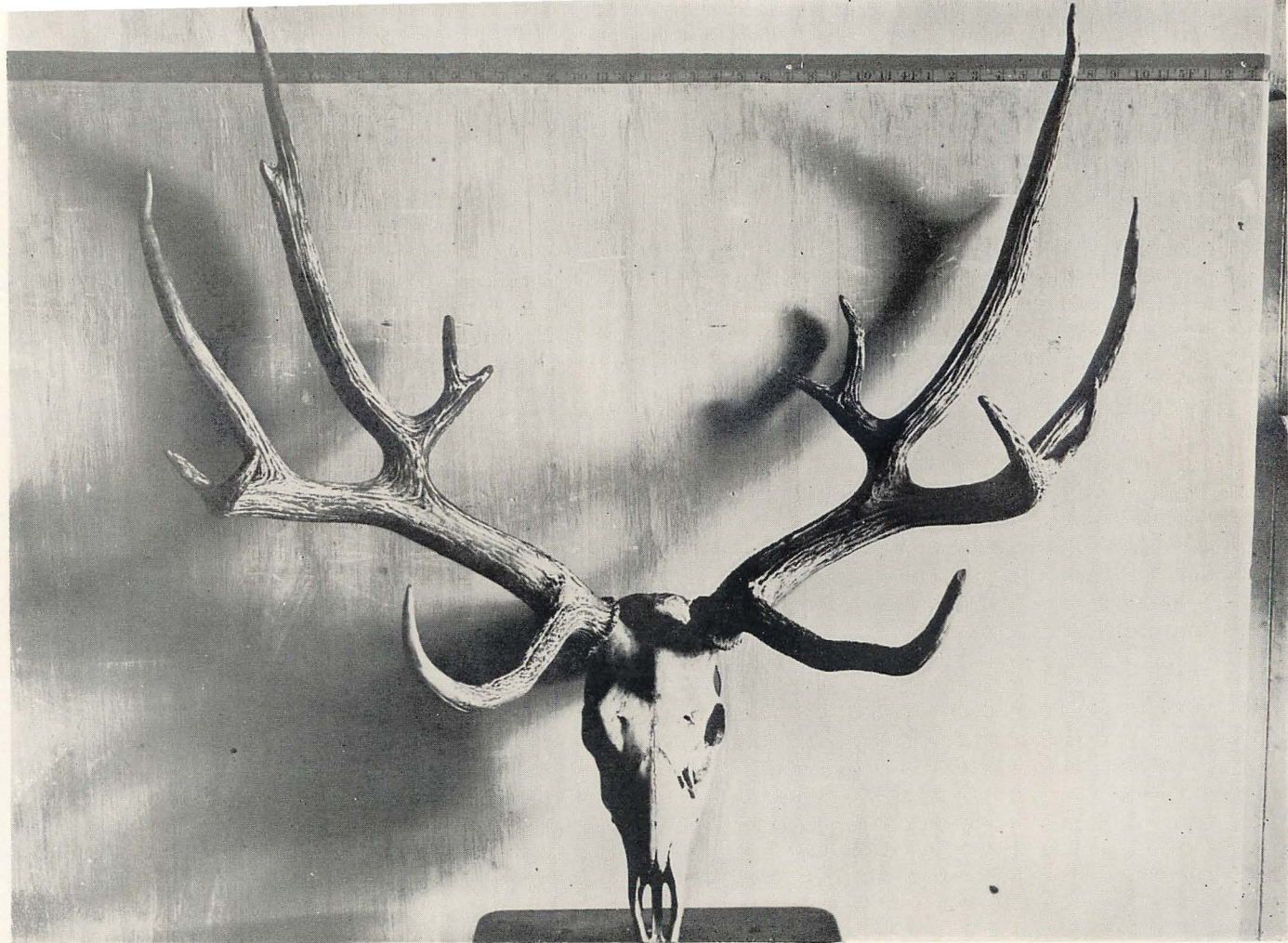




Head of *C. Schomburgki* shot in 1932 in Kanchanaburi.  
This plate is a reproduction of a plate published in  
the Natural History Supplement, Vol. 9,  
Part I, page 148.



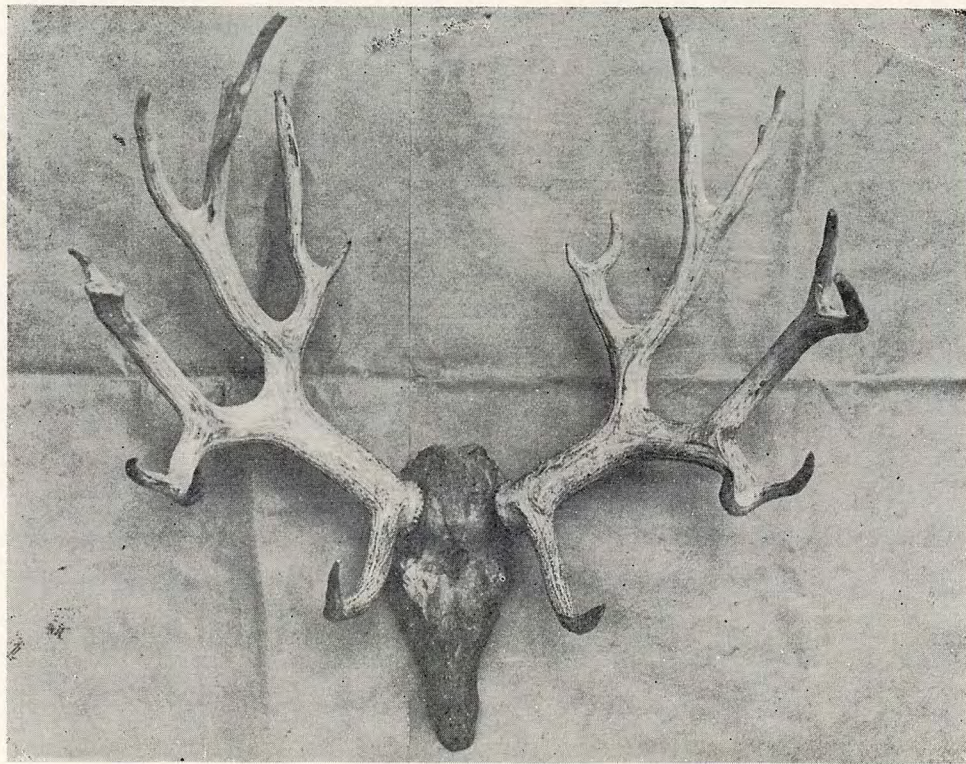




Head of *C. Schomburgki* shot near Tachin. In the possession of Phra Chamnan Jolakarn,



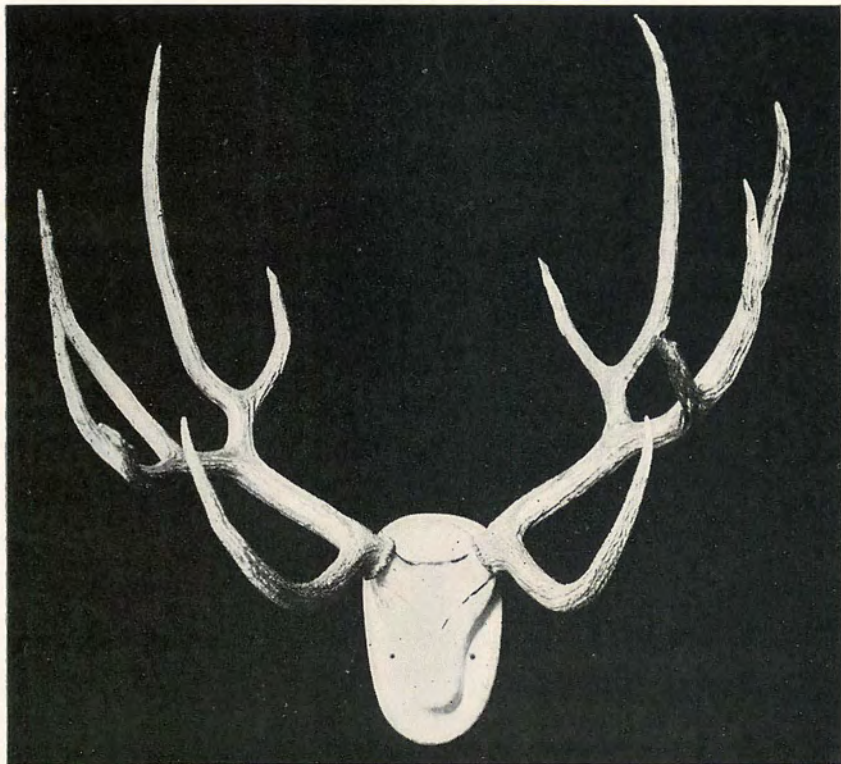




Head of *C. Schomburgki* obtained by Herr Kolbe in the valley of the Basak river about 1899.



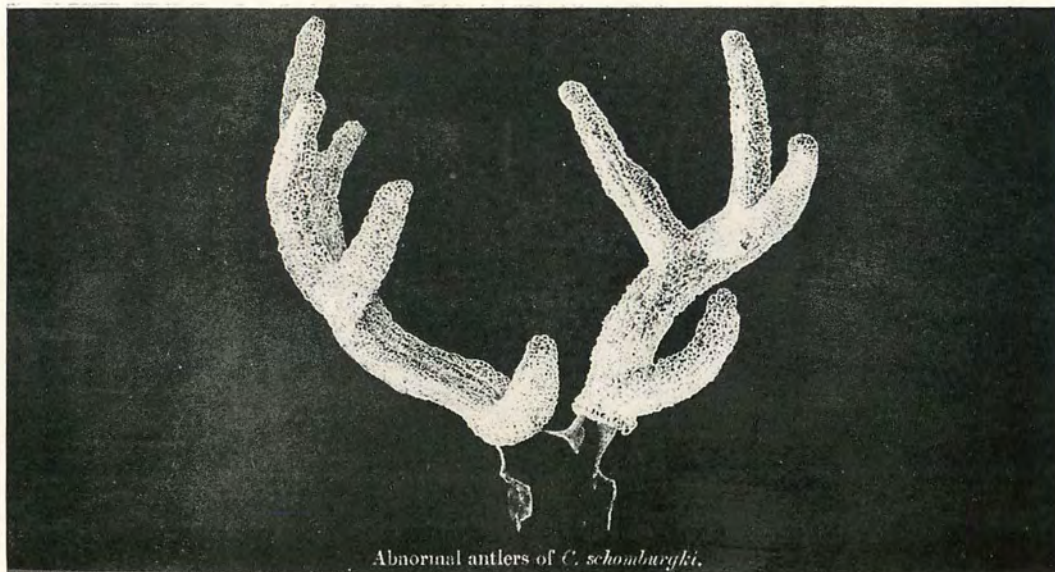




Head of *C. Schomburgki* shot near the Chulalongkorn  
lock in 1892.





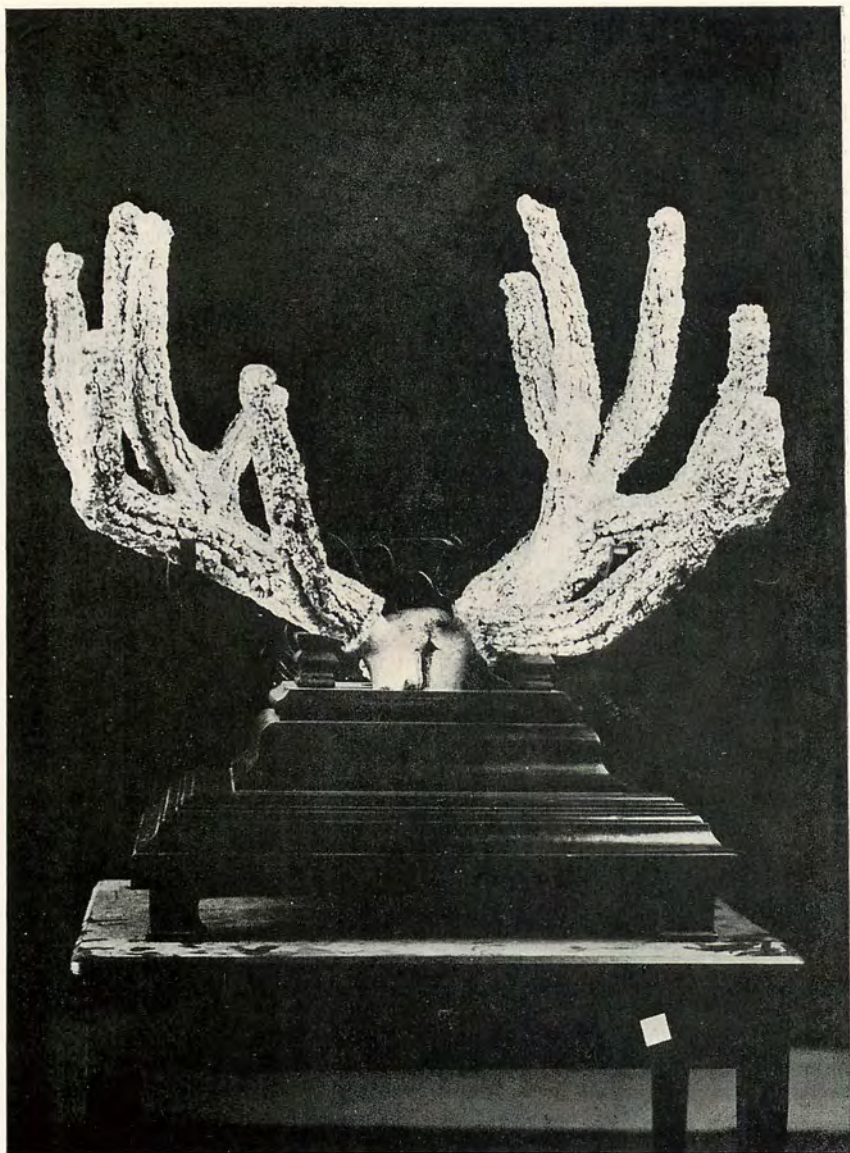


Abnormal antlers of *C. schomburgki*.

Abnormal antlers of *C. Schomburgki* reproduced from the Proceedings of  
the Zoological Society of Great Britain, 1876.







Head of *C. Schomburgki* found near Nang Buat in the province of Supanburi in 1858. These antlers are abnormal.



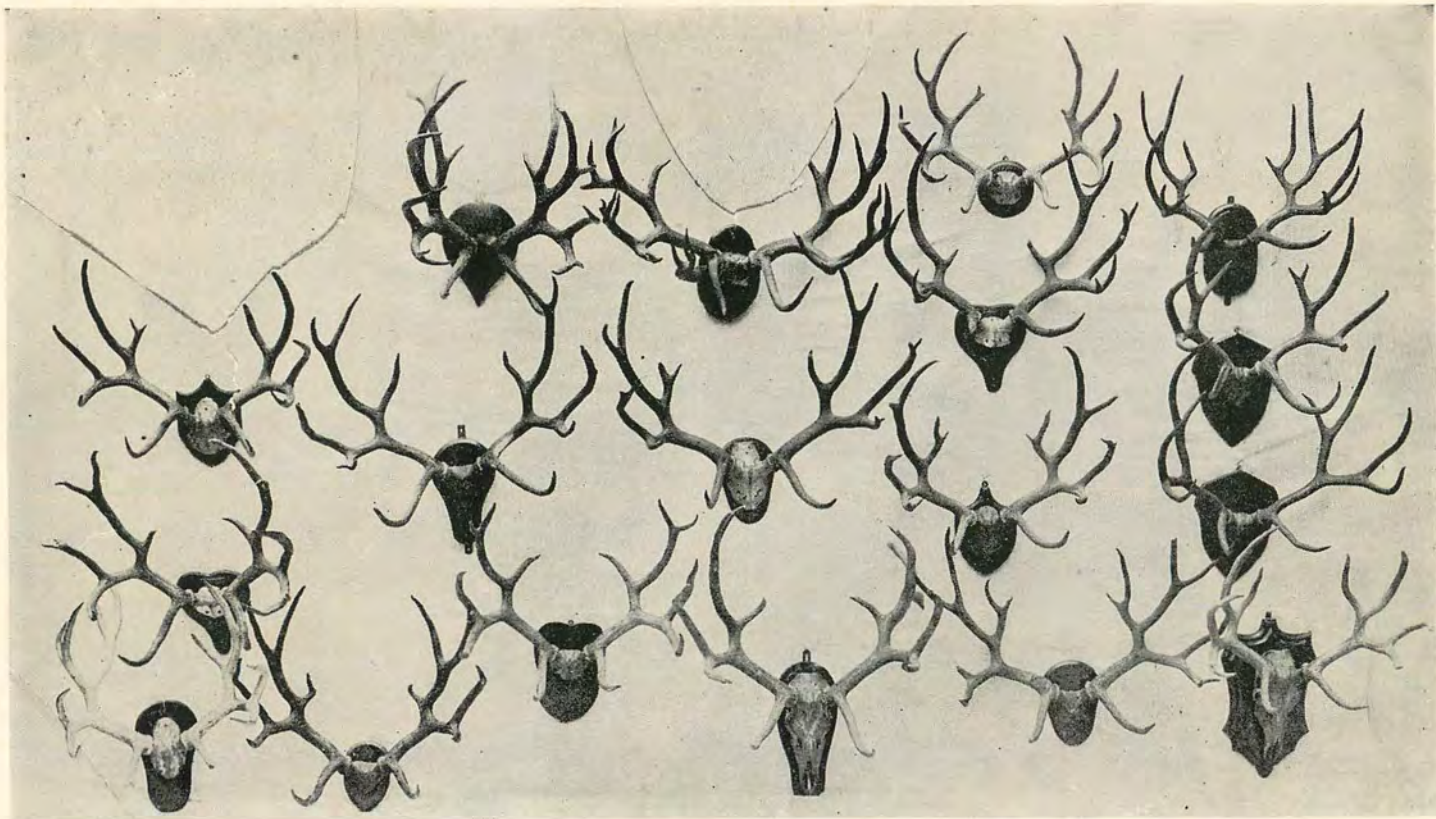




Head of *C. Schomburgki* obtained north of Paknam Poh.







Assemblage of eighteen heads of *C. Schomburgki* from the collection in the possession of the late Lieut.-General E. W. Trotter,

