

which sometimes are found at an altitude of 8000 feet. Once started under the auspices of a mild spring, the barley has a good chance, for when well on it only needs an occasional wetting, and after that there is nothing better for ripening than the dry heat that follows. The cold nights do no harm to cereals, but what keeps them down to comparatively much lower levels in our climate (after taking latitude into account) are the shivery rains and snowfalls of late summer.

(To be continued.)

A JOURNEY THROUGH THE EASTERN PORTION OF THE CONGO STATE.*

By Major P. H. G. POWELL-COTTON.

AFTER my Northern Uganda trip of 1902-1903, I spent a year at home in preparation for a journey to the Congo State. November 2, 1904, saw me on the way to Lado, the chief station on the White Nile. In this district my principal quest was the northern white rhino, known only by a single specimen, shot by its discoverer, Major Gibbons, and eventually sent to America. My search for the animal, and for a couple of elephants standing as near 12 feet in height as possible, occupied five and a half months. During this time I made the Congo stations along the Nile my headquarters for short expeditions westward into the plain. All these posts are malarious, and swarm with mosquitoes, Kiro, the most picturesque of them all, being literally infested. In fact, the Enclave generally must rank among the most unhealthy districts of Central Africa; in one year the death-rate among the Europeans rose to over 20 per cent.

On my arrival in the latter part of December, and throughout the first fortnight of January (the dry season), the heat was intense, the thermometer standing as high as 104° at 2 p.m. in my tent. Once away from the Nile, the scarcity of water proved a great difficulty. Stagnant pools in the river-beds, fouled by man and beast, and these only at rare intervals, formed the sole supply. In the rainy season so much of the country lies under water that travelling is almost impossible. Owing to the flatness of the thorn-dotted plain, Lado hill forms a conspicuous landmark for many miles. This district is peopled by the Bari, a peculiar feature of whose huts is the floor sunk 18

* Read at the Royal Geographical Society, June 17, 1907. Map, p. 468.

inches below the surface of the ground—a method of construction which appears particularly curious in view of the heavy rainy season.

As my caravan moved further southwards, I was struck by the numerous ruins of villages and almost continuous stretches of what had once been cultivated ground. It was evident that at no very distant date, probably before the dervish raids had devastated the country, it must have supported a considerable population. Much of the ground



A TYPICAL ITURI FOREST STREAM.

had been terraced and cleared of stones. The village sites were marked by numerous circles, some 6 yards in diameter, formed of wide, thin stones set upright, and standing some 18 inches to 2 feet above the surface. The top of each of these stones was nicked to receive the end of a roof-pool. Here and there a double circle of stones denoted a hut built after the form of the modern Abyssinian tucal, with a passage round it. Judging from a few higher stones still standing, these villages had evidently been surrounded by a palisade. At the present time the population is scanty, so that considerable difficulty is found in

provisioning the stations. The greater part of the grain for my men had to be drawn from a district several days east of the Nile, on the Uganda side.

Working southwards from Rejaf, I struck up the valley of the Kaya, where scattered settlements of nomad Bari plied the double trade of fishermen and blacksmiths. The women generally took their part in the work as well as the men. In little hollows on the flat surface of a rock, they would pound the filbert-like nuts of iron ore to powder. This was then carried to the smelting-pits near by, grass-roofed constructions shaped like the letter V and encircled in heaps of dross



A GROUP OF PYGMIES.

and charcoal. Here and there couples of men were hard at work forging hoes, one of them beating the mass of glowing metal into shape with two stones, to serve the purpose of hammer and anvil, while his companion plied the bellows. One of the blacksmiths told me that the iron ore is collected from the surface of the ground at a place ten days distant. When the hoes are completed they are taken over to the great chief of the Bari tribe, on the Uganda side, who buys them for flour.

Striking up the side of the Kaya valley, in a southerly direction, the caravan made its way on to the Kajo-kaji plateau, which lies some 1200 feet above the Nile. It is from this plateau that supplies of

grain are sent northwards by caravan to the mouth of the Kaya, and thence by canoe to Lado, and southwards to Dufile. In fact, Kajo-kaji might well be called the granary of the whole Enclave. On no part of my journey did I see ground more highly cultivated or natives more obviously contented.

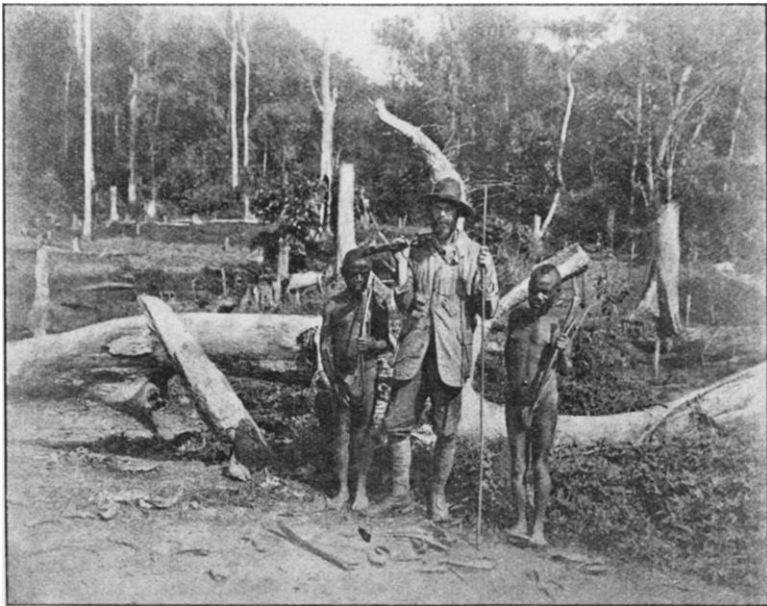
As the caravan drew nearer Wadelai, I found a stretch of country which proved to be the favourite haunt, at that time of year, of not only white rhino, but bull elephants. Here I was able to realize the two chief objects of my visit to the Enclave, by securing a complete skin and skeleton of a white rhino bull and the hides of two elephants nearly 12 feet in height. One of these latter was destined for the British Natural History Museum, whose director had been trying to procure such a specimen for the last three years. The other I proposed presenting to the Tervueren Museum near Brussels. The preservation of these skins gave great trouble, but they were eventually sent off in good condition to Kampala, which place, thanks to the courtesy of the late Mr. Fowler, sub-commissioner Nile provinces and collector at Hoima, they reached in excellent time. But unfortunately, for some reason yet to be explained, the skins were afterwards detained so long that the lake-shore climate completely ruined them, to the loss of the museums and to my disgust, for there was a heavy bill of carriage to pay. When two years previously, in 1903, I traversed the country between Wadelai and Mahagi bay, at the north-western corner of Lake Albert, it was practically depopulated, for the villagers had moved over to the Uganda side. Now, to my surprise, I found new villages being established all along the route, the natives having returned to escape the Uganda hut-tax.

From Mahagi bay station we pushed our way up the hills to Mahagi proper, lying $4\frac{3}{4}$ hours from the lake and 1180 feet above it. Here, as in all the other stations I had visited, great improvements were to be seen. New brick houses had been constructed, and stretches of bush had been cleared to give place to vegetable gardens and cultivation. My route now led over the Nile-Congo watershed, a series of rolling grass hills, intersected by running streams fringed with belts of timber. My highest camp was at Mongolula, at an elevation of 5950 feet. This region is for the greater part very sparsely inhabited, and gives promise of one day becoming a valuable grazing-ground for white settlers. Through Irumu bands of natives were passing on their way to the Kilo gold-mines, where work on the alluvial deposits has been successfully commenced, some 35 ozs. of gold being washed per day.

The Ituri river, a day's journey from Irumu, forms the dividing-line between the grass land and the great forest. When my canoe had almost crossed the clear, rapid waters, 150 yards wide, I noticed on the opposite bank two miniature houses built close to the edge and

resembling in every feature the huts of the villagers. The old chief was loth to explain the object of these houses, but at length I was told that they were erected for the shade of his predecessor, who was told that he must recompense them for their labours by guarding the passage of those crossing the river. From that time, whenever a caravan was seen to approach the bank, a little food would be carried down to the ghost-houses, as a warning that the shade's protection was needed for the caravan about to cross.

The great Ituri forest, rendered famous by Stanley's remarkable journey across it, differed greatly from the dismal miasmatic place of my



MAJOR POWELL-COTTON WITH TWO OF HIS PYGMY TRACKERS.

imagination, where unhealthy mists and perpetual twilight reigned supreme. Far from shutting out the sunshine, the lofty dome of interlaced branches above our heads only served to soften the pitiless heat of the equatorial sun. Myriads of little sunbeams filtered through the leaves, to settle on the undergrowth in bright patches of light, where the butterflies and birds loved to flit to and fro. In the morning, it is true, the foliage would often be heavy with dewdrops and gossamer, but before eight the sunbeams had lifted the mists from the dense undergrowth, the giant trees, and the graceful creepers that flung their fantastic coils and festoons from branch to branch and from tree to tree. It was in the early morning that one felt the hush of the great forest,

whose impressive stillness was only broken by the crackling of the sticks under the feet of our caravan. Here and there in the forest are little natural glades, called by the natives "eddos," some watered by sluggish marshy streams that almost lose themselves in the rich grass, while in others the waters rush and tumble over clear quartz sand-beds and among moss-grown boulders. Dark tunnels, worn through the undergrowth by generations of beasts on their way to water, lead down to these rifts in the dense vegetation. For it is here that the beasts of the forest, from elephant to the timid little dik-dik, come down to drink, bathe, and crop the fine grass at the water's edge.

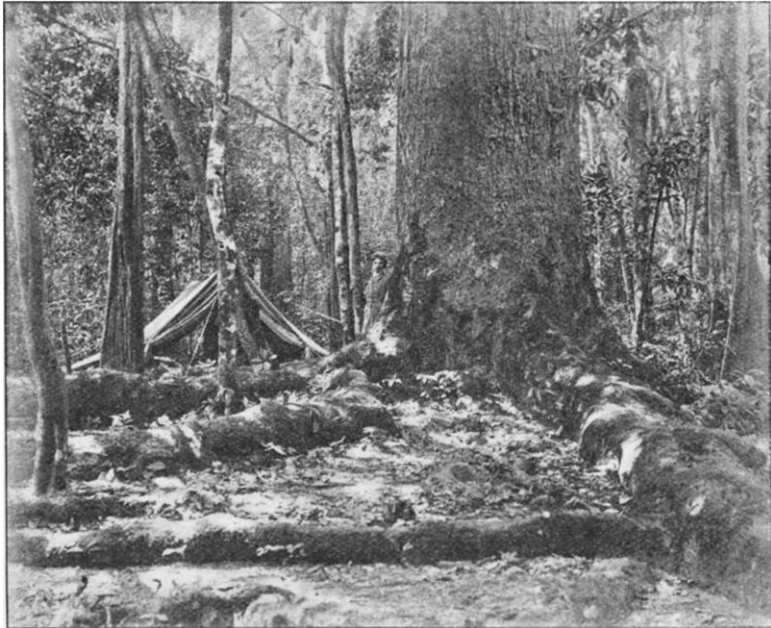
The seasons in the forest are very ill-defined. Generally rain falls on four or five days of every week, while seven days without a thunderstorm was the longest dry period I experienced. In any big clearing, it was curious to hear a storm coming up, for the sound of the drops pattering on the leaves of the trees reached us long before the rain. The roar of a hurricane through the forest was an experience not to be forgotten. Our camp was nearly wrecked on one occasion, and a passage several hundred yards wide was cleared through the trees for a distance of some miles. In 1905 I was in the forest from the last few days of June to the first half of August, while in the following year I spent from the last week of January to the first days of August in practically the same districts. July of 1905, passed between Irumu and Mawambi, was by far the wettest month of the ten. The following July, however, spent between Makala, Mawambi, and towards Beni, was one of the driest. While the forest is damp, I came across but very few boggy places, and no large marshes. Mosquitoes are almost unknown.

The population of the forest is numerous, from the pygmies, considered to be the most savage and primitive, to the Mongwana, the followers and descendants of the Arab ivory and slave dealers, to whom a certain amount of Moslem civilization and handicraft have been handed down; and dotted about at wide intervals, the neat, well-ordered stations of the Congo Government gave evidence of a European civilization that has crushed Mongwana power and effectually abolished the slave trade.

The climate of the forest seems to have no detrimental influence on the physical development of any of the tribes who find their home under its shelter. The Mongwana are a tall, well-proportioned race of men, and many of the women seem to have inherited a certain Arab grace of form. The Babila, another tribe with which I came in contact, although short in stature, are a sturdy, healthy-looking race, while the pygmies certainly show no signs of physical degeneration. But the native from the plain, or the white man, usually suffers severely after a few months' residence in the damp atmosphere of the

forest, rheumatism, dysentery, and bilious fevers being the most common complaints.

The soil of the forest is so rich in leaf-mould that it produces two to three crops a year. Like all natives, the villagers are in the habit of continually changing their cultivation from one spot to another, although here it necessitates a great deal of labour. The underwood and saplings are first of all cut down, and then attention is turned to the smaller trees, which are felled some 8 feet from the base, and left to cumber the ground where they fall. By this time the underwood is sufficiently dry to help in the destruction of the larger trees that are



A FOREST GIANT, WITH TENT BETWEEN TWO EMBEDDED ROOTS.

alone left standing. Piling it around the trunks, the natives set it alight in order to burn the bark, and thus kill the trees, which eventually stretch out their gaunt arms over crops of banana, millet, rice, maize, sweet potatoes, and manioc.

Grass in the forest can only be found in the eddos, and in the clearings made by the natives for their gardens. For this reason there are no cows, and the few imported sheep and goats that manage to withstand the hardships of the march through the forest to the villages are cherished by the owners as their most precious possessions. Among the little flock that followed us on our journey, the death-rate in the forest was over 50 per cent., and this in spite of every care. Night

after night a platform strewn with leaves was built for them, with a roof as shelter, and during the march each animal had a nose-bag with a few potatoes in the bottom, to prevent them getting hungry or eating poisonous leaves from the undergrowth.

On the site of an abandoned garden vegetation rapidly springs up, to form a favourite haunt of elephant, buffalo, wild pig, bush-buck, bongo—an animal even rarer in the Ituri forest than the okapi—and leopards, which latter are, curiously enough, never to be found far from a native settlement. In coloration the animals of the forest have a tendency to become darker in shade than those of the plains. A notable example of this is the ratel (*Mellivora cottoni*), which is entirely black, while in the south and west of Africa the whole of the upper surface of the body, head, and tail are an ashy grey.

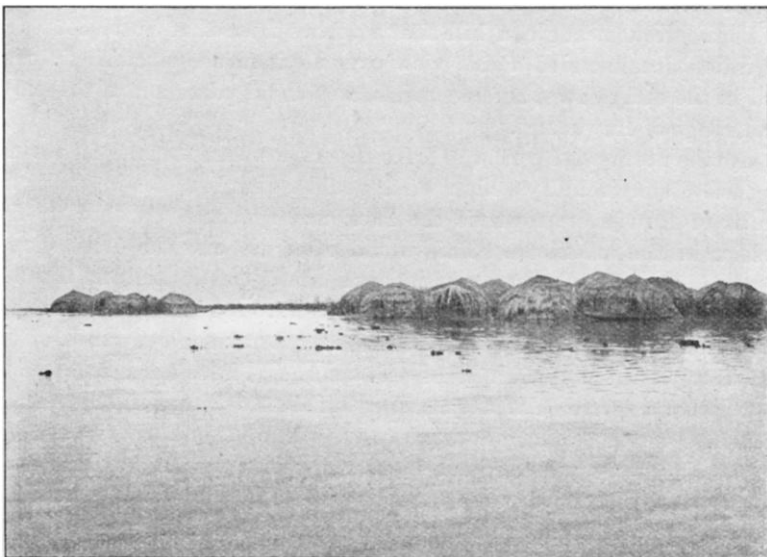
Mica abounds in the neighbourhood of Mawambi, and the whitewash used for the houses in the post is so full of minute fragments that the walls sparkle in the sunshine.

This station is a great centre of the pygmies. They live in small communities of six to eighteen men with their wives and families. Each group is governed by an elder, but there does not appear to be any recognized supreme chief, and the communities are often at war with one another. They have no permanent villages; their low primitive huts, thatched with the large leaf of *Sarcophrynium arnoldianum*, are built in a little clearing in the forest, and are moved, not only for their customary bi-annual migration, or when hunting in that district is becoming difficult, but also on the death of any member of the group, or when they have killed some large animal. It is easier, in the latter case, to move the village to the animal than the animal to the village. Their time is passed in hunting and collecting honey, wild fruits, and roots. While they kill the larger animals, even elephants at times, with a short-shafted, broad-bladed spear, by far the greater quantity of their game is taken by driving it into nets.

The pygmy is a most expert climber, and no matter how high the wild bees may have their nest, he will scale up and cut it out in an incredibly short space of time. Each group of pygmies attaches itself to the chief of one of the other forest tribes, whom they supply with meat, honey, creepers as ropes, and leaves for thatching, in exchange for vegetable produce. Tilling the ground is an occupation regarded with scorn by the true pygmy. Bows and arrows are his weapons of war. With these he is a skilled marksman, for he is constantly practising on monkeys and other small beasts. All the ironwork used by a pygmy is traded from other tribes. Bark cloth dyed terra-cotta or a soft grey is his principal manufacture, but he also makes wooden honey-pots, pipe-stems, bows and arrows, together with personal ornaments of fur and feather, and sleeping-mats of skin. The dances of the pygmies are the most interesting of any I have seen, and are

carried on with great energy and enthusiasm for hours at a stretch. Nearly all of them portray some feature of a hunt, and end up with the feast that follows its success.

From Mawambi we pushed on to Makala in search of okapi, for it was here that a native hunter had secured the two specimens brought to Europe by Dr. David. Makala, on the banks of the Lindi, we found to be a neat, well-ordered station off the main routes through the forest, and maintained solely for administrative purposes and the collection of rubber. An avenue lined with pineapples and bananas leads up to the post, which crowns a little slope.



FLOATING VILLAGE OF KATANGA, AS SEEN FROM THE SHORE.

The native renowned for his skill in okapi hunting was sent off immediately on our arrival at the post, in search of tracks. A few days later news was brought in that he had found and shot a fine male okapi. In addition to my disappointment at thus losing a chance of shooting it myself, there was the difficulty of getting in the beast from the place in the forest where it lay, and dealing with the skin before it was too late. However, by dint of working on it nearly all one night, I managed to preserve it well enough for it to be considered one of the most perfect specimens that has yet reached Europe. It is now to be seen, together with the complete skeleton, at the Natural History Museum, South Kensington.

Still in hopes of shooting a specimen myself, I searched the neighbourhood; but in spite of hours spent in following fresh tracks, I never

so much as caught sight of an okapi. Indeed, the chances of a sportsman coming across these extremely timid denizens of the forest undergrowth seem to me to be very remote.

Makala is one of the great rubber centres of the Congo, and during our sojourn of three and a half months in the district, we had unrivalled opportunities of studying the method of rubber-collection. This apparently varies considerably in different districts. At Makala, each hale adult man has to bring in 5 kilos per month, and this can be collected in forty working hours. Payment is at the rate of 30 centimes per kilo, of which 10 per cent. is given to the chief, and the balance to the actual gatherer.

In the end of June, we made our way slowly back through the forest to Beni. Kokomeangle, a hill four marches from that post (3450 feet elevation), commanded a fine view over an immense stretch of forest, and in the early dawn, before sunrise, a splendid panorama of the snow-clad range of Ruwenzori.

At the north-west corner of Lake Albert, we were camped for several weeks. Before midday a high wind would spring up, blowing from the slopes of Ruwenzori towards the lake, and continue till four or five o'clock in the afternoon. This would often disperse the dense clouds of small flies that hung over the lake, sometimes looking so like the smoke of an advancing steamer, that it was hard to realize none were yet plying on the lake. The water is slightly brackish, and much of the reed-fringed shore is formed of minute shells. It was at this camp that I shot a specimen of the Semliki buffalo, a red variety of the Cape species.

At Katwi we passed the curious crater-lake where a considerable salt industry is carried on by the natives. Besides the almost daily caravan to Fort Portal, this salt finds its way far into the forest and southwards almost to Tanganyika. If this salt deposit passes to the Congo, as the result of the corrected Anglo-Congo boundary, it will probably be exploited under European supervision, and prove a valuable asset to the State.

Continuing our journey round to the eastern side of the lake, we reached Kissegnies, the main camp of the Congo Geographical Mission for the demarcation of the 30th meridian. To Commandant Bastien, the officer in charge, we are indebted for much courtesy, more particularly for his care of me when I was mauled, on the banks of the Sassa, by a wounded lion.

Katanga was the most southerly point we touched. This village was one of the most curious I have ever visited. The main group of thirty huts were built on one huge floating platform some little distance out on the waters of a sheltered bay. The platform rises and falls with the surface of the lake, being moored by poles driven into the mud. The villagers are a robust, well-built race, in spite of constant inter-

marriage, for the men never choose their wives from among the women of the plains. They subsist by hippo-hunting and fishing, carrying on a lucrative trade by the purchase of salt from Katwi, to exchange for sheep at the southern end of the lake.

By the Toro-Entebbe route, we returned to Mombasa, and thence home, after a twenty-seven months' trip. The chief scientific results of the journey are—(1) Several good specimens of the northern white rhino. (2) An okapi skin and skeleton. (3) Six new mammals, viz. (a) A water-chevrotain, *Dorcatherium aquaticum cottoni*; (b) the Central African ratel, *Mellivora cottoni*; (c) the dusky African tiger-cat, *Felis chrysothrix cottoni*; (d) an elephant shrew, *Rhynchocyon stuhlmanni nudi-*



THREE HUTS OF THE FLOATING VILLAGE, KATANGA.

caudata; (e) a black-and-white monkey, *Colobus palliatus cottoni*; (f) the Semliki red buffalo, *Bos caffer cottoni*. Some 8000 lepidoptera, among which several new species have already been described, a number of ethnological objects, some phonographic records, and about seven hundred photographs complete the list.

In conclusion, I should like to add that my journey was only rendered possible, firstly, through the goodwill of Sir Constantine Phipps, our minister at Brussels at the time I started; secondly, by the kindness of the Egyptian and Sudanese officials, who took the greatest interest in my expedition, and did all in their power to make the passage of myself and my equipment easy through their country, as well as to ensure the prompt return of all the specimens sent back that way; lastly, and most

important of all, I am indebted to the courtesy of the Congo Government, who not only gave me permission to travel and shoot through the game reserves on their eastern border, but allowed me to take my own armed escort from Uganda. Almost throughout I received every attention and assistance from the Congo officials, many of whom put themselves to great personal inconvenience in order to give me greater comfort.

The PRESIDENT: I have to introduce to you the lecturer of the evening. Major Powell-Cotton is one of the most notable and best known of those travellers who have been led into exploration by an intense love of sport and by a great aptitude for natural history. His first important expedition was in Western Tibet some eighteen years ago. I believe he visited Tibet twice. He travelled in Somaliland in 1895-6, and afterwards in Abyssinia. In 1903 he travelled in Northern Uganda, and an account of his journeys there was given to us early in 1904. In November of that same year, he started for his later journey, which he will describe to-night. He remained partly in the equatorial forests and partly in the eastern part of the Congo for twenty-seven months, and during those long twenty-seven months, as during all his previous journeys, he made very large and important collections in natural history. That is the principal feature, I may say, of his life's work.

After the paper, the PRESIDENT: I will ask Mr. Lydekker, the distinguished zoologist, if he is present, to say a few words.

Mr. LYDEKKER: I think I may speak on behalf of the Natural History Branch of the British Museum as to how much it is indebted to Major Powell-Cotton for having brought the first male okapi. It is not only the first male specimen the museum has received, but it is the best okapi-skin, the taxidermists tell me, that has been brought to this country. Those who have been in the tropics know how difficult it is, especially when marching, to preserve skins, and it is a great triumph for Major Powell-Cotton to have brought this specimen home in such splendid condition. I am not going to weary you with a dissertation about the animals collected by Major Powell-Cotton, and will confine myself to a few remarks about okapis. It has been hitherto thought that in the case of big game animals from the same district all individuals were alike; but with these okapis, so far as we know at present, this is not so. Thus the specimen Sir Harry Johnston brought home has very large white knee-caps; but in Major Powell-Cotton's specimen there are none at all, the knees being absolutely black. The Alexander-Gosling Expedition has presented another specimen to the museum, also a male, which has small white knee-caps, and also differs from all others I have seen in other respects. The black stripe, for instance, that extends from the knee to the fetlock is usually complete, but in the specimen brought home by the Alexander-Gosling Expedition it stops short so as to leave a white gap above the fetlock-band. These three specimens are altogether different, and if we had been dealing with any other animal I think we should have said they were distinct races; but the curious fact is that out of some ten or fifteen specimens, at least nine or ten seem more or less distinct from one another. Of course, these okapis have attracted a great deal of interest, and every specimen brought has been mounted and exhibited. If the differences prove to be connected with locality, they will indicate distinct races; but if, as I think, they are, so to speak, accidental, we must amend our conception of the colouring of big animals. It is most peculiar that the striping is restricted to certain parts of the body and limbs, because in many large animals, like mo-t zebras and tigers, it is