

## THE MOUNTAIN GORILLA AND ITS HABITAT IN THE BIRUNGA VOLCANOES

By JOHN BLOWER, B.Sc.

### INTRODUCTION

In about 500 B.C. the Carthaginian navigator Hanno brought back the first reports of the existence of gorillas in the forests of West Africa. They were doubtless known also to the early Portuguese and other voyagers along the Guinea coast and in 1590, Battel, who called them "pongos" to distinguish them from the smaller "engeco" or chimpanzee, described them with fair accuracy:—"exactly proportioned like a man, but he is more like a giant in stature for he is very tall and hath a man's face, hollow eyed, with long hair upon his brows . . . they sleep in the trees and build shelters from the rain. They feed upon fruit that they find in the woods and upon nuts for they eat no kind of flesh."

In 1861 Paul du Chaillu, the Franco-American explorer, brought back the first eye-witness accounts of the West African gorilla in its wild state, though unfortunately his descriptions were somewhat highly embroidered and were largely responsible for the popular but mistaken belief in the gorilla's extreme ferocity.

In 1862 the explorer Speke, as he was marching northward in his quest for the source of the Nile, was told by natives of fierce man-like monsters which dwelt in the mountainous country to the west and he had seen on the horizon the "bold sky scraping cones" which could have only been the Birunga volcanoes. This was the first news of the mountain gorilla, which lives in the very mountainous regions of the western Rift valley near Lake Kivu.

The mountain gorilla was first described scientifically by Matschie in 1903, from a specimen collected two years previously on the southern slopes of Mount Sabinio by a German, Captain von Beringe. It was named *Gorilla gorilla beringei* after its discoverer, to distinguish it from *Gorilla gorilla gorilla*, the West African forest race.

Carl Akeley, the famous American naturalist, was the first man to attempt a study of the mountain gorilla in its natural habitat. He made two expeditions to the Birunga Volcanoes in the nineteen-twenties, collected specimens for the American Museum of Natural History and carried out valuable investigation into the life and habits of these animals. Unfortunately

Akeley died during his second expedition in 1927. His grave lies on Karasimbi, the highest of the Birunga volcanoes, in the heart of the gorilla country.

### DESCRIPTION

There is no marked difference in size between the mountain and forest gorillas, and such differences as there are, are due mainly to environmental influences. The chief distinguishing characteristic of the mountain race is the well developed crest or "helmet" of hair on the top of the head; it occurs in both sexes, but is more pronounced in the male. The jet black hair of the body is coarser and longer as one would expect in such a cold and wet environment and there are also certain slight differences in the skull and limbs (the mountain gorilla is somewhat shorter in the arm and longer in the leg than the forest race).

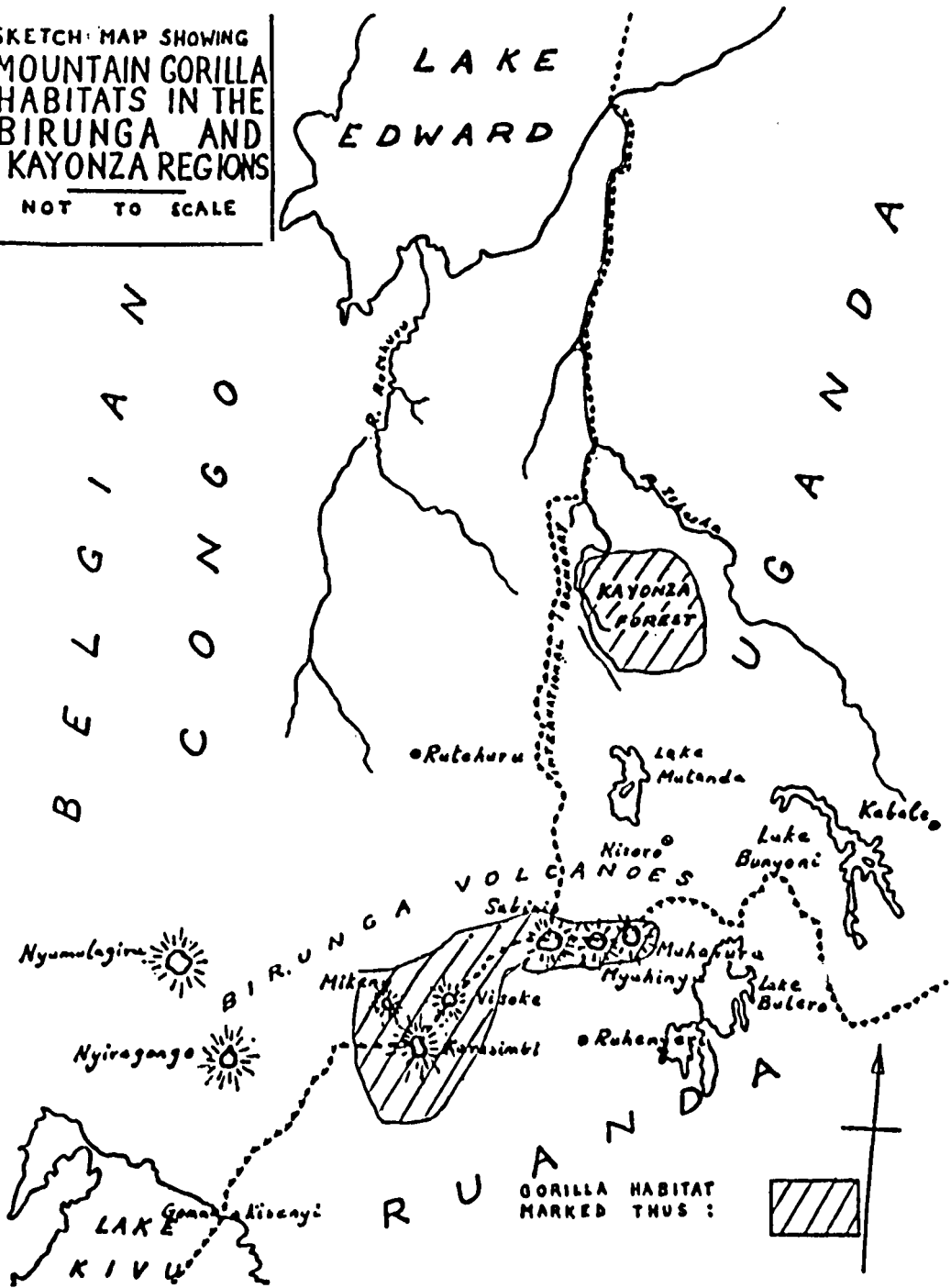
An adult male gorilla is about 6 feet in height when fully erect, although a specimen measuring 7 ft. 1 in. has been recorded, and weighs some 400 pounds. In its natural habitat it is usually seen in a crouched or semi-erect position and consequently one is more impressed by the immense bulk of the animal's body and by the girth of the chest and neck than by its height. The chest measurement of an adult male is in the region of 70 inches. The head, body and limbs are covered with coarse black hair except for the central part of the face from the eyes down to the mouth which is naked, as also are the ears, the inside of the hands and the soles of the feet.

In old males the chest is bare or only sparsely covered in hair, jet black and rather shiny in appearance like the face, while the hair of the back is silvery grey from the nape of the neck to the top of the buttocks. The females are considerably smaller and probably do not exceed 4 ft. 6 in. in height.

### RANGE

There have at various times been reports of gorillas in the forests of Ruwenzori, and a Belgian hunter is reliably reported to have shot a solitary specimen on the southern slopes of Ruwenzori in 1906 (Derscheid), but as far as is known, the most northerly limit of their range today is Tshiaberimu, a 10,000 ft. mountain on the escarpment to the west of Lake Edward. They are also found in small numbers on Mount Kamuzi to the south-west of Lake Kivu and in the Maniema forest to the north-west of Lake Tanganyika, the southern extremity of their range. Their most easterly occurrence is in the Kayonza forest in the Kigezi

SKETCH MAP SHOWING  
MOUNTAIN GORILLA  
HABITATS IN THE  
BIRUNGA AND  
KAYONZA REGIONS  
NOT TO SCALE



District of Uganda. The largest concentration of mountain gorillas is to the north-east of Lake Kivu in the Birunga volcanoes, which lie mainly in Belgian territory, but extend into Uganda.

These five habitats, Tshiaberimu, Kamuzi, Maniema, Kayonza and Birunga are all comparatively small and entirely separate. It has been suggested that the gorillas found in each of them

should be classified as sub-species but the differences, if any, between these gorillas are so small that this could hardly be justified.

#### STATUS

By international agreement under the London Convention of 1933 the gorilla was given complete protection. The Belgian Parc National Albert which includes the whole of the Birunga volcanoes lying in Belgian territory was established in 1925 specifically to provide protection for the mountain gorilla. The part of the Birunga range lying in Uganda is a gorilla sanctuary, but not the Kayonza forest.

In 1927, Derscheid made the following estimate of the gorilla population in Birunga.

(a) Eastern Birunga, Muhavura, Mgahinga and Sabinio (Belgian territory)	150-200
(b) Eastern Birunga (Uganda territory)	100-150
(c) Central Birunga (Mikeno, Karasimbi and Vishoke)	350-500
	Total 600-850

Akeley put the total at between 450 and 650 which is possibly nearer the mark. I certainly do not think that there are more than fifty gorillas on the Uganda side of the volcanoes today and there may be rather less. Pitman suggested that there were between fifty and eighty in the Kayonza forest. No estimates are available for the other three small habitats in Belgian territory, but it is improbable that there can be more than a total of 1,000-1,500 mountain gorillas in existence to-day.

#### HABITAT AND ECOLOGY

What follows is based on a study of the gorilla in that small part of the Birunga volcanoes which lies in Uganda.

Like its West African congener the mountain gorilla is a forest dweller, but unlike it, is only found at high altitudes in very mountainous country—6,000 feet and above in Kayonza, 8,000 feet and above in Birunga. Here owing to the altitude and thinness of the soil, the forest is somewhat stunted and nowhere, except perhaps in Kayonza, compares with the tropical rain-forest of West Africa.

The Birunga range consists of three distinct groups of volcanoes: the eastern group consisting of Muhavura, Mgahinga and Sabinio, lying half in Belgian territory and half in Uganda; the central group consisting of Karasimbi, Mikeno and Vishoke; and the western group of Nyamulagira and Nyiragongo. The

two latter groups are entirely in Belgian territory. The eastern and central groups are extinct and show no signs of recent activity, whilst the western group is still active and erupts at fairly frequent intervals. Gorillas are found on all the inactive volcanoes, but not on either Nyamalagira or Nyiragongo.

The part of the eastern group lying in Uganda consists of the northern slopes of Muhavura 13,547 feet, Mgahinga 11,400 feet and Sabinio 11,960 feet. Along their summits runs the international boundary. The mountains are of typical volcanic formation, conical in shape and with old craters. They lie in a straight line from east to west and are linked by saddles, that between Muhavura and Mgahinga being at about 10,000 feet and that between Mgahinga and Sabinio somewhat lower.

The vegetation which covers them from the limit of cultivation (7,000–8,000 feet) to the summits may be conveniently divided into five distinct zones, working upwards :—

- (a) Mountain woodland 7,500–8,500 feet. Trees 30–40 feet high. *Myrica salicifolia* predominating with *Agauria*, *Hagenia* and others.
- (b) Bamboo forest 8,500–9,500 feet, known locally as the “Rugano”. Almost pure bamboo, *Arundinaria alpina*, with ground vegetation of *Laportea alatapes* (nettle), *Plectranthus* sp., *Alchemilla kivuensis*, *Viola abyssinica*, etc. Occasional clearings where rock is near the surface.
- (c) *Hypericum* woodland 9,500–11,000 feet. Known as the “Rugeshi”. The dominant tree species is *Hypericum lanceolatum*, with some *Hagenia abyssinica* and undergrowth of woody shrubs such as *Erlangea tomentosa* and *Pycnostachys goetzenii* with ground vegetation of *Peucedanum kersteni*, *Anthriscus sylvestris*, *Rumex* spp., *Rubus medulus*, *Laportea alatapes* and other species.

In the few flat areas, open marshy spaces are found with ground orchids *Disa stairsii*, also *Alchemilla kivuensis*, *Cardamine johnstonii*, *Impatiens* sp., etc. This zone and those above it are cold and misty throughout the year and the trees are festooned with beard lichen and mosses.

- (d) Tree-heather or sub-Alpine zone, 11,000–12,500 feet, the “Rutiti”, characterized by tree-heather, *Erica arborea*, with stunted *Hypericum*, some *Hagenia*, also giant groundsel, *Senecio*, giant lobelia, *Lobelia mildbraedii*, *Phillipia johnstonii*, *Anthriscus sylvestris*, *Peucedanum* spp. and bracken.

- (e) Mountain heathland or alpine zone, 12,500 feet upwards.  
lobelias, giant groundsel, *Phillipia johnstonii*, everlasting flowers and a variety of mosses and lichens.

There is considerable variation in the vegetation according to aspect and soil and there is some overlapping between zones. Rainfall on the mountains is high and precipitation from mist and cloud heavy, particularly in the rainy season from April to July. The atmosphere is consequently very humid and the ground damp at all times of year. The vegetation at higher altitudes is festooned with beard lichen, mosses and epiphytes producing a weird and somewhat sinister effect.

#### FAUNA

Apart from gorillas the fauna includes elephants of the small Congo race, *Loxodonta africana cyclotis*, though they are only occasional visitors to the Uganda side of the volcanoes. Buffaloes are fairly numerous up to about 11,000 feet and a large variety of red forest duiker, *Cephalophus nigrifrons kivuensis*, is found up to about 12,000 feet. The golden monkey, *Cercopithecus mitis kandtii*, occurs in the bamboo forest.

Leopards are fairly common and probably responsible for the death of some young gorillas. The giant forest hog, yellow-backed duiker and golden cat, *Profelis aurata*, are said to occur. Tree hyrax are numerous and mongoose, *Myonax*, tree squirrels and a number of small rodents are found.

There are not many birds—sunbirds are among the commonest. The magnificent mountain francolin, *Francolinus nobilis nobilis*, occurs on the lower slopes of the mountains.

Few snakes have been recorded from the Birunga volcanoes, but three varieties of chameleon are found, one three-horned and another diminutive and tailless, also several species of amphibians including the common African toad, *Bufo regularis*.

#### ETHIOLOGY

Traces of gorillas are found at all elevations from about 9,000 feet to the summits of the mountains, but they appear to favour the *Hypericum* woodland zone or "Rugeshi". They make forays into the bamboo zone in search of bamboo shoots, and to a lesser extent into the sub-alpine and alpine zones, but their beds are rarely found elsewhere than in the *Hypericum* woodland and this must be regarded as the true gorilla habitat.

Gorillas are usually found in troops of from five to fifteen but averaging about a dozen individuals, though several troops will

sometimes join together to form a much larger group (Derscheid records having seen as many as forty-three in one group). Every troop seems to be made up of several family groups, each of an adult male with one or two females and immature animals, one of the males being dominant and recognized as leader of the troop. The typical troop thus consists of three or four adult males, a number of females and immature males and two or three young. The low proportion of young animals is most noticeable and seems to indicate a very low breeding rate. A high infant mortality due to the depredations of leopards and to chest complaints may be a contributory factor. Solitary individuals are occasionally met with. They are invariably old silver-backed males which have presumably been driven from troops by younger rivals.

Each troop has its own quite limited territory in which it remains for weeks or months at a time and from which it is loath to move even when disturbed by human activity. A troop encountered on five separate occasions during a period of two months was each time found in the same area of less than half a mile in diameter. Troops change their territory at different times of the year and there are undoubtedly considerable seasonal movements in both the Birunga and Kayonza habitats. These movements are mainly influenced by food requirements. For instance on the Birunga volcanoes the gorillas move down into the bamboo forest in August and September in search of the bamboo shoots which ripen then. At the height of the dry season, according to natives, they move up into the sub-alpine and alpine zones in search of the succulent juicy stems of various plants found on the steep slopes of the volcanoes.

Foods which gorillas have been observed to favour include :—

- (a) *Erlangea tomentosa*, native name "Ijiheriheri". A woody shrub 6–12 feet high with whitish coloured composite flowers. The bark of the young stems is stripped off and the inner pith eaten, the rest being discarded.
- (b) *Peucedanum linderi*, native name "Kisengosengo". So called "giant celery" 2–4 feet high, found at all elevations up to about 11,000 feet. The fibrous outer skin of the stem is stripped off and the juicy inner portion eaten.
- (c) *Peucedanum kerstenii*, also called "Kisengosengo". Another smaller variety of "celery" which is found at higher altitudes than (b). 6–12 inches high with fine fern-like leaves.

- (d) *Hypericum lanceolatum*, native name "Mushunguru". A tree or shrub 10–25 feet high with bright yellow flowers. Is found as a tree up to about 11,000 feet and as a stunted shrubby form in the sub-alpine zone. The bark of young twigs up to about half an inch in diameter is eaten.
- (e) *Arundinaria alpina*, Bamboo. Occurs as a pure stand between about 8,500 and 9,500 feet. Gorillas seem particularly fond of bamboo shoots and will go to considerable trouble to find them. The tough outer sheaths are peeled off and discarded and the succulent inner part eaten.
- (f) *Anthriscus sylvestris*. An umbelliferous plant two to four feet high which occurs up to about 11,000 feet and is said by Derscheid to form an important part of the gorilla's food.

They are said by the natives to eat also docks, *Rumex* spp., and nettles, *Laportea alata*.

Gorillas are entirely diurnal and spend most of the day feeding, when the troop keeps fairly close together and movement is slow. They make little noise apart from an occasional low staccato bark.

A feeding troop is easily followed by the crushed and broken vegetation left in its path and by the very characteristic droppings. These are two to two and a half inches in diameter and roughly triangular in section, resembling those of a pig in general appearance and consistency. As the undergrowth is dense, one seldom gets a glimpse of gorillas until one is within twenty or thirty yards of them, in fact the first indication of their proximity is usually a violent agitation of the vegetation, often accompanied by the appearance of a long hairy black arm reaching up for a piece of greenery.

Gorillas are entirely vegetarian, their food generally consisting of some part of the stem of a plant rather than the leaves. Pieces of stem two–three feet long are broken or twisted off the plant and quite commonly a gorilla will take a handful of such pieces to some convenient spot nearby. There he will sit or crouch down and eat them at his leisure. This habit is easily demonstrated by the neat piles of bark or inedible fibrous material which may be found where gorillas have been feeding.

Compared with most other animals gorillas are easy to approach and their senses of hearing and scent are not particularly keen. Like other primates they seem to rely mainly on sight to warn them of danger. The alarm cry is loud and high





MT. MUHAVURA. SHOWING TYPICAL GORILLA  
HABITAT IN THE HYPERICUM ZONE.



*Photos: John Blewett.]*  
A GORILLA BED AMONG GIANT LOBELIAS IN  
THE SUB-ALPINE ZONE.



*National Parks Institute, Belgian Congo.*

## **THE MOUNTAIN GORILLA**

*[Photo : J. Noirot.]*

pitched, a mixture between bark and roar. This is a signal for the immediate retreat of the females and young, while the adult males remain as a rearguard. The males watch the intruder intently and sometimes repeat the alarm cry until they are sure that the remainder of the troop have withdrawn to safety, then they follow them, generally moving backwards until out of sight. I have never seen the chest drumming sometimes referred to nor has any gorilla I have so far encountered shown any signs of aggressiveness. The alarm cry is only given when danger appears imminent, for the detection of humans at a distance inspires curiosity rather than alarm. The curiosity of gorillas was referred to repeatedly by natives and was confirmed to some extent by my own observations. A troop of gorillas once constructed their beds on the mountain side just above and overlooking my camp. This was full of very noisy African porters of whom the gorillas must have been fully aware. At another time a troop spent over an hour watching my wife and me as we ate our lunch. On both occasions the gorillas probably thought they were undetected.

There are very few records of deliberate attacks on human beings by gorillas though there have been a number of reports of demonstrations by old males. Gorillas will, however, attack if wounded or cornered or if their young are threatened and they are most formidable opponents. Philipps records that he at various times saw the bodies of a leopard, an old man and a child killed by gorillas. In each case the neck was nearly twisted off, while in the case of the two humans, most of the joints had apparently been deliberately dislocated. On the whole, however, the ferocity of gorilla has been greatly exaggerated and, unless molested or provoked, they are normally most docile and harmless creatures.

Gorillas are only partially bipedal, generally moving in a semi-crouched position with most of the weight on the hind limbs and with the knuckles of the fore-limbs resting lightly on the ground. There is a tendency to pace with the leg and arm on one side moving forward together. When resting or eating they sit or squat down, sometimes resting the back against a convenient tree. They use their hands freely for grasping and breaking off vegetation and for conveying it to their mouths. They generally feed in a crouched position, but will stand erect in order to reach up for food or to get a better look at an intruder. They climb trees where necessary to obtain food or in order to construct beds, but their normal habit is terrestrial rather than arboreal.

In the Birunga volcanoes gorillas almost invariably make their beds on the ground rather than in trees, but this is probably merely because there are few trees which would bear a gorilla's weight. In the Kayonza forest, on the other hand the placing of beds in trees is the rule rather than the exception (Pitman). Beds are made by pulling down surrounding woody vegetation and forming it into a roughly circular or oval pad about twelve inches thick, two to three feet in diameter and slightly hollowed in the centre. The beds of a troop are grouped together with from two to five yards between each. They are generally found among moderately dense undergrowth but adjoining nests are intervisible and are always so sited that they have a good view of all approaches.

Beds are sometimes placed at the foot of an overhanging tree seemingly to provide some degree of shelter. I have examined forty or fifty beds in the Birunga volcanoes and of these all except four were on the ground. These four were on low platforms some four to five feet above ground level and formed by bending over the tops of woody shrubs or bushes.

Besides beds, gorillas sometimes make temporary resting places in the bamboo forest by bending over the feathery tops of a number of bamboos, thereby forming a springy and comfortable platform six to eight feet above ground level, apparently for use during the day. I have seen only three of these though an African guide has told me of others. All the beds proper were heavily fouled with excrement but the bamboo platforms were not, presumably because they had only been occupied for a short time. Gorillas appear to construct fresh beds at frequent intervals and probably every day.

Little is known concerning the reproduction of gorillas under natural conditions, but the composition of the typical troop suggests a form of limited polygamy. The period of gestation is not known, but is probably not less than ten months (Frechkop).

There is little data on the rate of growth and development, but Pitman has recorded that a young mountain gorilla in captivity weighed nine pounds two months after birth and he suggests that puberty is reached at about twelve–fourteen years of age. Urbain, 1939, states that in the West African gorilla the female reaches puberty at from fourteen–fifteen years of age and the male at about eighteen. Frechkop records that a young male in the Berlin zoo acquired a silvery grey back when it was ten or eleven years old. Nothing is known concerning the longevity of gorillas but it would seem doubtful if they can have an expectation of life of more than about forty years.

PRESERVATION OF THE GORILLA

The mountain gorilla is a very rare animal whose continued survival is by no means assured unless more effective steps than at present are taken for its preservation. The animal itself is adequately protected by law in both Uganda and the Belgian Congo and it is safe from the hunter. The danger to the gorilla is indirect, through destruction of its habitat. Unfortunately, this is particularly true in Uganda where cultivation on the lower slopes of the Birunga volcanoes has already reduced the original gorilla habitat by half. Mining activities and new roads are likely soon to become a threat to the gorilla in the Kayonza forest.

BIBLIOGRAPHY

- AKELEY, M. L. J. (1931). *Carl Akeley's Africa*. Gollancz, London.
- DESCHEID, J. M. (1927). Notes on the gorilla of the Kivu volcanoes. *Annals of the Royal Zoological Society of Belgium*, vol. lviii (translation), Brussels.
- FRECHKOP, S. (1943). Exploration du Parc National Albert. Fascicule I. Mammifères. *Inst. des Parcs Nationaux du Congo Belge*. Brussels.
- PHILIPPS, T. (1930). Gorillas at Home. *The Times*, 8th Feb., 1930. London.
- PITMAN, C. R. S. (1931). A Game Warden among his charges. Nisbet, London.
- (1935). The gorillas of the Kayonsa Region, S.W. Uganda. *Proc. Zool. Soc. of London*.
- ROBYNS, W. (1948). Les Territoires Biogéographiques du Parc National Albert. *Inst. des Parcs Nationaux du Congo Belge*, Brussels.