

INSTITUT DES PARCS NATIONAUX
DU CONGO BELGE

INSTITUUT DER NATIONALE PARKEN
VAN BELGISCH CONGO

Exploration du Parc National de l'Upemba

MISSION G. F. DE WITTE

en collaboration avec

W. ADAM, A. JANSSENS, L. VAN MEEL et R. VERHEYEN (1946-1949).

FASCICULE 40

Exploratie van het Nationaal Upemba Park

ZENDING G. F. DE WITTE

met medewerking van

W. ADAM, A. JANSSENS, L. VAN MEEL en R. VERHEYEN (1946-1949).

AFLEVERING 40

II.

TENEBRIONIDÆ
(COLEOPTERA POLYPHAGA)

OPATRINÆ

First part :

PLATYNOTINI, LITOBORINI and LOENSINI

BY

CARLO KOCH (Pretoria)



BRUXELLES
1956

BRUSSEL
1956

Imprimerie M. HAYEZ, Bruxelles
— 112, rue de Louvain, 112 —
Dom. légal : av. de l'Horizon, 39

PARC NATIONAL DE L'UPEMBA
I. MISSION G. F. DE WITTE
en collaboration avec
W. ADAM, A. JANSSENS, L. VAN MEEL
et R. VERHEYEN (1946-1949).
Fascicule 40

NATIONAAL UPEMBA PARK
I. ZENDING G. F. DE WITTE
met medewerking van
W. ADAM, A. JANSSENS, L. VAN MEEL
en R. VERHEYEN (1946-1949).
Afllevering 40

II (*)

TENEBRIONIDÆ
(COLEOPTERA POLYPHAGA)

OPATRINÆ

First part :

PLATYNOTINI, LITOBORINI AND LOENSINI

BY

CARLO KOCH (Pretoria)

(With 8 maps, 282 figures and 35 plates.)

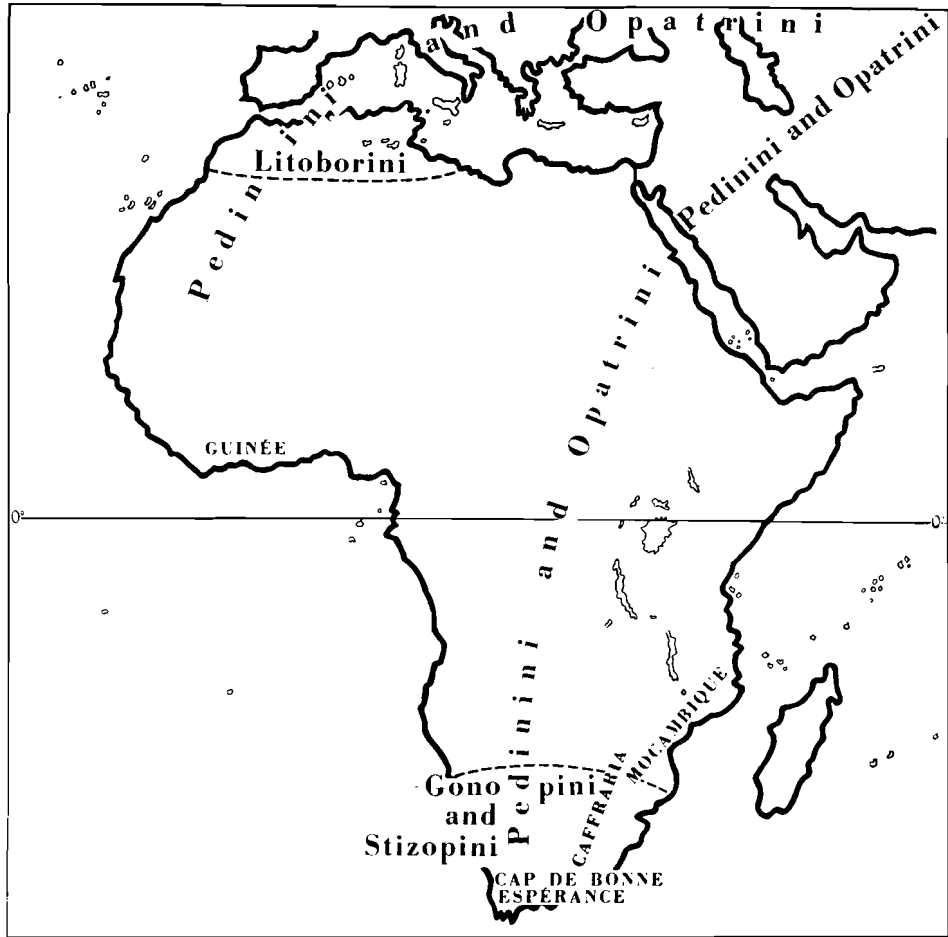
PREFACE ⁽¹⁾

The present work is a Pan African study and forms the second volume to a monograph of the *Tenebrionidæ* of the Upemba National Park, based on the rich material collected during a period of several years (1946-1949) on the expedition by Mr. G. F. DE WITTE. It deals with the three new tribes of *Platynotini*, *Litoborini* and *Loensini* of the subfamily *Opatrinæ*, and introduces a new systematic division into the African *Opatrinæ* in general. The main purpose of the monograph is to make an analysis of the fauna of the Upemba National Park, but, in the case of *Opatrinæ*, it has become necessary to extend its scope to the whole of the African Continent, owing to the lack of seriously based data ; to a certain extent even investigations into European, Indian and Madagascar genera were involved. Hitherto the modern catalogues to *Tenebrionidæ* have recorded

(*) The first article of this series (*Pycnocerini*) appeared in n° 24 of the publications of the « Institut des Parcs Nationaux du Congo Belge », on the exploration of the Upemba National Park.

(1) The present study has been realized thanks to a financial aid of the « Fondation pour favoriser l'Étude Scientifique des Parcs Nationaux du Congo Belge ».

five species of the concerned groups from the Belgian Congo. Together with 50.000 Belgian Congo specimens before me, I have had to include in this revision another 50.000 specimens from Southern, Eastern and Northern Africa, in order to avoid adding to the already existing accumulation



MAP N° 1.

Distribution of *Opatrinæ* in Africa, based on the previously available scientific data.

With the exception of a few tropical localities, all patria indications were restricted to a few general data (printed in capitals).

of detached descriptions. The comprehensive results achieved have brought to light the incorrectness of the hitherto adopted systematics, as well as some new zoogeographic findings, particularly in regard to the determination of the phylogenetic relations between the faunæ of the Belgian Congo and the Southern African Region.

The bringing forth of these results has been made possible by the goodwill of the « Institut des Parcs Nationaux du Congo Belge » and the « South African Council for Scientific and Industrial Research ». In addition I wish to thank the former for having entrusted me with the study of its precious material from the Upemba National Park, and to express my sincere indebtedness to the following institutions : the Transvaal Museum, South African Museum, Musée royal du Congo Belge, Institut royal des Sciences naturelles de Belgique, Coryndon Museum, National Museum of Southern Rhodesia and the Naturhistoriska Riksmuseum at Stockholm. Finally may I be allowed to express my gratitude to Dr. F. V. FITZSIMONS, director to the Transvaal Museum, as well as to Pr. V. VAN STRAELEN, president, and Mr. H. DE SAEGER, secretary to the « Institut des Parcs Nationaux du Congo Belge », for the many facilities extended in connection with the technical side of my work.

SYNOPSIS.

For the first time a revision of the *Opatrinæ* from South of the Sahara is being given, as worked out on the basis of entirely new findings in comparative morphology and detailed chorological data. The incorrectness of the systematics hitherto applied is proved, resulting in the collapse of previous zoogeographic conclusions. The supposed connections between the *Opatrinæ* of the Palæarctic Region and those of the Tropical and Southern African Regions are clearly refuted. For the stenotopic tribes there is established the affinity of the Tropical to the Southern African Fauna, while in a wider sense there is shown an evident relationship with the Tropical Faunæ of Madagascar, India and America, and finally the probable existence of an ancient, pre-Saharan Pan African Fauna, as is manifest by the Recent dispersal of *Litoborini*.

THE NEW SYSTEMATICS OF AFRICAN « OPATRINÆ ».

The modern systematics of *Opatrinæ*, as reflected by the world catalogue of GEBIEN, 1938-1942, assumed for the African Continent five tribes, namely the « Asiatic - Southern African » *Platyscelini*, the « South- and West African » *Gonopini*, the « Southern- and Tropical African » *Stizopini*, as well as the *Pedinini* and *Opatrini*, both believed to represent rather indifferent Pan African - Mediterranean - Asiatic groups.

According to the present results, however, the African *Opatrinæ* show a quite different composition and can be sharply divided into the following tribes, without it being necessary to allow for any exceptions in regard to transitional links.

Platynotini KOCH. Including a part of *Gonopini* GEBIEN, a few genera of *Opatrini* GEBIEN, and in addition the greater part of *Pedinini* GEBIEN from

South of the Sahara. From this change it follows that the supposed *Pedinini* from South of the Sahara do not belong to a North-west African-Mediterranean-Palæartic-Asiatic group, but represent an independent Tropical- and Southern African, Madagascar, American and Indian tribe.

Oncotini KOCH. Southern African. Composed of the « Southern African branch » of GEBIEN's *Platyscelini*, plus parts of the *Gonopini*, *Pedinini*, *Opatrini* and *Helopinini* sensu GEBIEN.

Litoborini ANTOINE. A Pan African tribe of disjunct dispersal, and not an Atlasic element of the Palæartic Fauna, as believed previously. As a result of LACORDAIRE's cardinal error in the judging of the systematic importance of the dimorphism of legs, its species were mixed up within the tribes *Pedinini*, *Opatrini* and *Helopinini* sensu GEBIEN.

Loensini. A new tribe, formerly placed to the *Pedinini*, is endemic to a small Southern East African area.

Leichenini. A new tribe, having been included in GEBIEN's *Opatrini*. Mediterranean, Indo-Malayan-Australian and Pan-African.

Dendarini ESPAÑOL. Correctly separated from the *Pedinini* GEBIEN by ESPAÑOL. Of similar distribution as the *Pedinini* MULSANT & REY, in the African Continent found in the central and western parts of North Africa.

Pedinini MULSANT et REY. A small part of GEBIEN's palæartic *Pedinini*. Euro-Mediterranean and Palæartic-Asiatic, confined in the African Continent to a small area of the north-eastern part of North Africa.

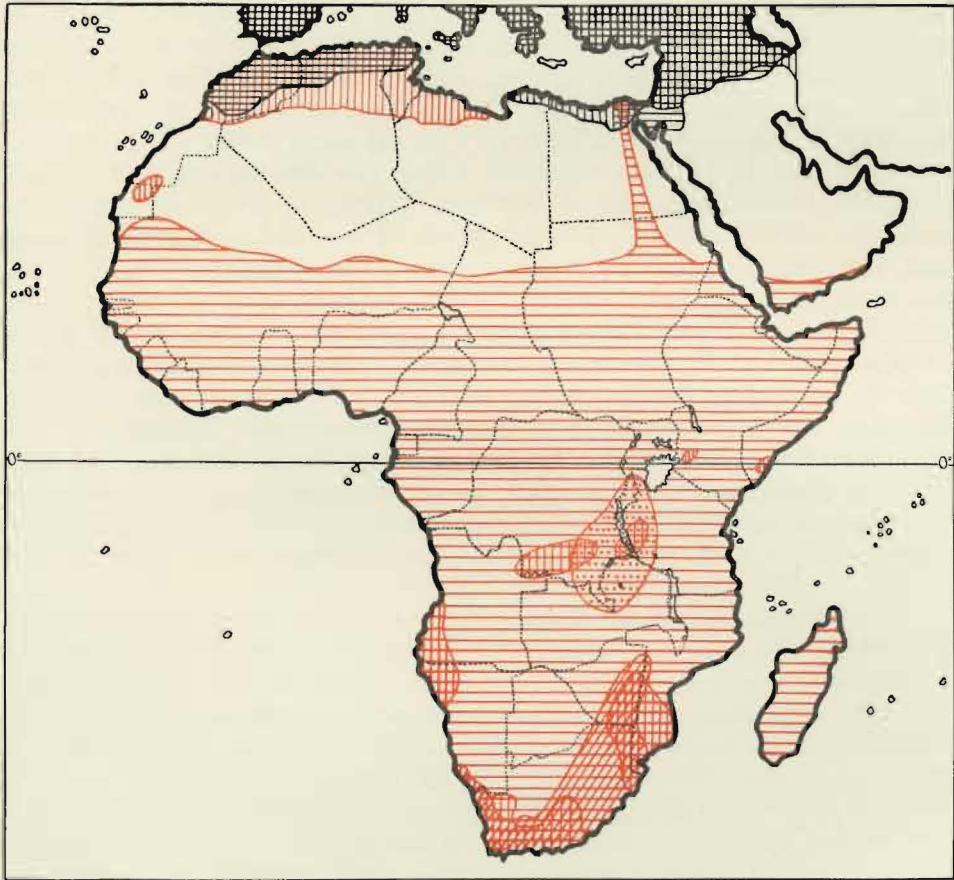
Pythiopini KOCH. An ancient and peculiar tribe, endemic to the western part of the Cape Province and Southern Namib. The only previously known genus, viz. *Meglyphus*, has been listed among the tentyrioid *Stenosini* by GEBIEN.

Melanimini. A new tribe, previously standing within the *Opatrini* GEBIEN. Of presumably world-wide distribution.

Opatrini. In its new conception and as far as the African Fauna is concerned, including the *Stizopini*, large parts of *Opatrini*, some *Gonopini* and *Pedinini* sensu GEBIEN.

Heterotarsini. A newly defined tribe, restricted to *Heterotarsus* of the previous *Heterotarsini* GEBIEN. Tropical African and Indian. The remainder of GEBIEN's *Heterotarsini* genera, ranging over the Tropical zones of the world, will have to be re-studied in regard to their systematic position.

Heterocheirini. A new tribe, composed of a small part of GEBIEN's *Pedinini*. Littoral, of Indo-Malayan-Australian origin, in the African Continent on the shores of Eastern and the eastern part of Southern Africa.



MAP N° 2.

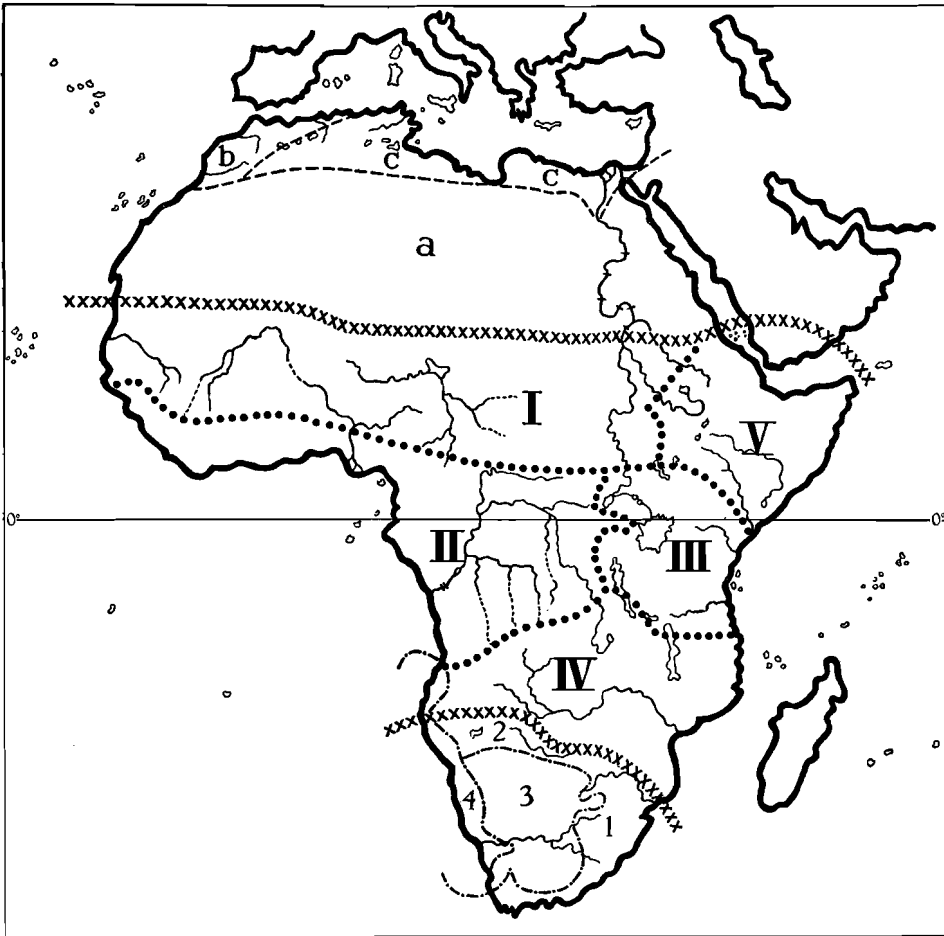
The distribution of the stenotopic tribes of *Opatrinæ* in the African Continent.
 RED : Of Tropical origin. — Horizontal : *Platynotini*; Vertical : *Litoborini*;
 Diagonal : *Oncotini*; Dotted : *Loensini*.
 BLACK : Of Palæarctic origin. — Horizontal : *Dendarini*; Vertical : *Pedinini*.

THE « OPATRINÆ » FAUNA OF THE BELGIAN CONGO.

On comparing map 1, drawn on the basis of the previously available scientific data, with map 2, it can be seen at a first glance that the fauna of *Opatrinæ* from South of the Sahara has nothing in common with that from North of the Sahara and the Sahara itself. Without taking into consideration those tribes, the distribution of which is world-wide (*Leichenini*, *Melanimini* and *Opatrini*), all the other tribes are Tropical or Southern African in their dispersal, except for the ancient and disjunct *Litoborini* which, although of Southern African or Tropical origin, also occupy a relict-like area in Western North Africa. But neither the *Platynotini*, *Oncotini*, *Loensini*, *Pythiopini*, *Heterotarsini* and *Heterocheirini*, nor the *Emmallina*, *Stizopina* and *Stenolamina* of *Opatrini*, cross the northern boundary of the Tropical African Region (with the exception of two species of *Opatrinus* and *Diphyrrhynchus*, which penetrate to a negligible extent into the Palæarctic Region by way of the Nile valley or the shores of the Red Sea, respectively). Of these tribes the *Platynotini*, *Heterotarsini* and *Heterocheirini* extend to the Tropical zones of Asia, Australia and even America (*Opatrinus* of *Platynotini*), while the *Loensini* and *Emmallina* of *Opatrini* are endemic to the Tropical African Region, and the *Oncotini*, *Pythiopini*, as well as the *Stizopina* and *Stenolamina* of *Opatrini*, are Southern African (map 5).

In the composition of the Belgian Congo fauna the following participate : *Litoborini*, *Heterotarsini*, *Loensini*, of the *Platynotini* the opatrinoid, anchophthalmoid and selinoid *Platynotina*, and of the stenotopic subtribes of *Opatrini* the *Emmallina*. But only the opatrinoid *Platynotina* and *Heterotarsini* inhabit there all three Provinces (of which the Belgian Congo is built up), namely the Guinean, Oriental and Zambesi Provinces of the Tropical African Region (map 3). The narrow Belgian Congo stretch of the Oriental Province is characterized by the presence of the genus *Quadrideres* of selinoid *Platynotina*, but all tribes, subtribes and groups suddenly meet with each other south of the central equatorial forest in the Bas-Katanga Guinean savanna and the Haut-Katanga dry forest, where a remarkable concentration of overlapping, heterogeneous elements takes place, particularly in the south-eastern part, in the centre of which the Upemba National Park area is situated. For the greater part, this territory belongs to the Zambesi Province, and outside of this area of zoogeographic concentration the stenotopic tribes of Belgian Congo *Opatrinæ* are poorly developed (cf map 4).

This state of affairs clearly points to a southern orientation of Belgian Congo *Opatrinæ*. In the North there are no relations at all with the Saharan or North African faunæ, and even the participation of Trans-Sudanese or Ethiopian elements is practically nil. East African elements are abruptly stopped at the Tanganyika fault, extending westwards only



MAP N° 3. — Faunistic map of the African Continent.

- ×××× Boundaries of the Tropical Region.
- Tropical African Region. — I : Sudanese Province; II : Guinean Province; III : Oriental Province; IV : Zambesi Province; V : Ethiopian Province.
- - - - Palæarctic Region. — a : Saharan Province; b : Atlasic Province; c : Mediterranean Province.
- - - - Southern African Region. — 1 : Eastern and Cape Province; 2 : Trans-Bechuana Province; 3 : Karroo- and Kalahari Province; 4 : Namib Province.

in the South into the Haut-Katanga dry forest (*Quadrideres*). Thus, apart from the clearly established southern connections, a poorly developed, but widely spreading influence can be observed only from the West. These western elements are the only *Opatrinæ* which, apart from the indifferent *Opatrinus* and *Heterotarsus*, enter into the Central Equatorial Forest District, expanding eastwards to about the middle and dividing this phytogeographic District into a western area, where the western-tropical *Ectateus* dwell, and an eastern one which is altogether bare of stenotopic *Opatrinæ*. This eastern boundary of western elements in the North is the only deviation from the floristic division which, for the remainder, is strictly observed by the *Opatrinæ*.

The Belgian Congo, probably in correlation with its continental character, is extremely poor in the development of endemic groups. Apart from *Upembarus* there is no other endemic genus, subtribe or tribe known. In the adjacent western and eastern faunæ a great tendency for the development of endemic genera can be observed, growing in intensity towards the coastal areas, in particular in the biogeographic zone between the East African coast and the Rift Valley fault. The greatest percentage of endemism, however, is found in the Southern African Region, where not only endemic genera, but also a considerable number of peculiar tribes, subtribes and generic groups occur.

The complex affinity of the Belgian Congo *Opatrinæ* to those from Southern Africa may be explained by the following analysis of the stenotopic tribes.

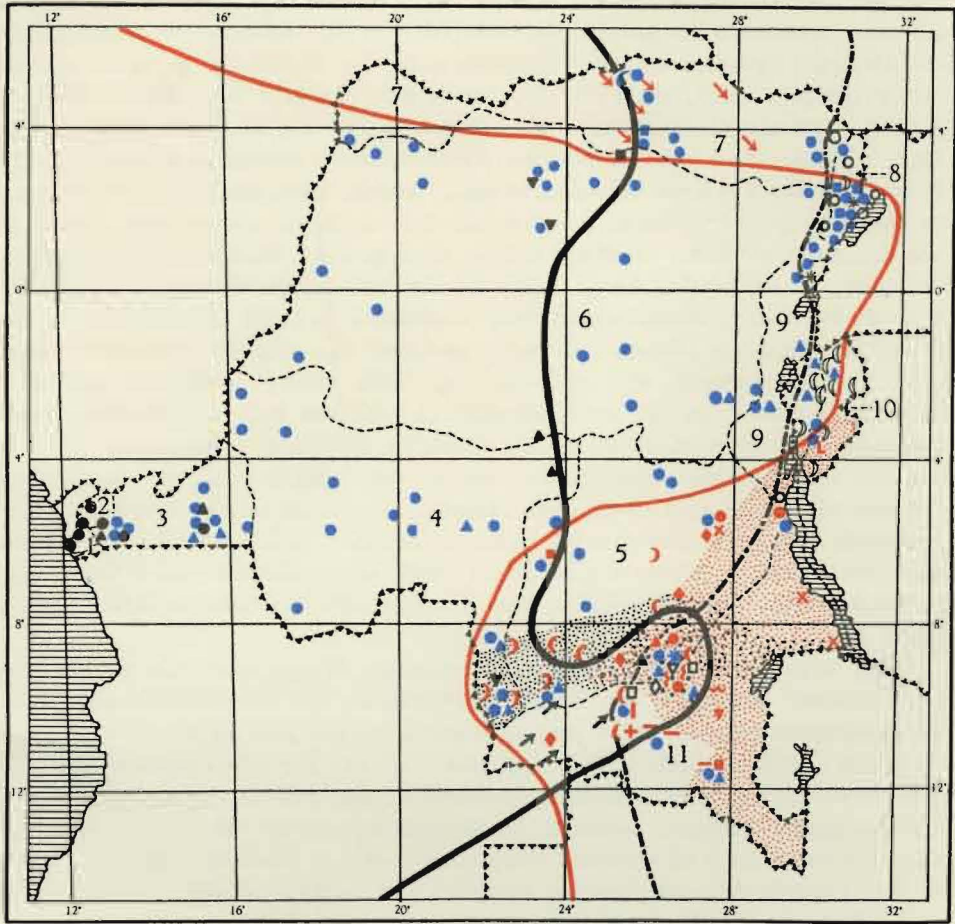
The *Platynotini*, deriving from the alate, arboreal to detritivorous, primitive genus *Opatrinus* are widely spread and predominant in forest, savanna and grassland country, strictly avoiding arid, desertical or semi-desertic conditions, with the exception of *Gonopina* (cf. map 6). The boundary of the great group of the Southern African trigonopoid *Platynotina*, for example, follows closely the floristic limits of the dry area of Namib and Karroo (cf. map 6). The separation between Southern African and Tropical groups is sharp, with only the *Gonopina* and *Anomalipina* expanding to the Oriental Province of the Tropical African Region, whereas for the remainder there is but a small area in the extreme South-east of the Zambesi Province of the Tropical African Region and in the North-east of the Southern African Region, where the peripheral species of the tropical genera *Anchophthalmus* and *Opatrinus* overlap the northern and easternmost range of the South African genera *Bantodemus*, *Eviropodus*, *Zophodes*, *Trigonopus* and *Selinopodus* (map 6).

None of the South African groups reach the Belgian Congo and consequently the direct communication between the Belgian Congo and Southern Africa is confined to *Anchophthalmus* and *Opatrinus*. Apart from these genera, the Belgian Congo is inhabited by the anchophthalmoid genus *Phallocentrion* and the selinoid genera *Selinus*, *Ectateus*, *Upembarus* and *Quadrideres* (map 4).

The *Opatrinus* are rather eurytopic and Trans-Tropical, with the widely diffused *Opatrinus latipes* found occurring in all biotopes of country. In the Oriental savanna and the Haut-Katanga dry forest up to three species occur sympatrically, of which two (*opatrinus exalatus* and *micrabilis*) are greatly specialized and endemic. The anchophthalmoid *Platynotina* are East African, but have developed a latitudinal, northern Trans-Tropical branch to West Africa (*Phallocentron*), which, however, does not expand to the Sudanese Province, nor beyond the southern and eastern limits of the Guinean savanna of the floristic Ubangi-Uele District. The western boundary of *Anchophthalmus* enters the Belgian Congo through the Ruanda-Urundi Territory, thence expanding westwards beyond the western limits of the Bas-Katanga District. Strictly avoiding the central equatorial forest, the *Anchophthalmus* are splitting up into many endemic, probably orophilous species in the southern part of both the Bas- and Haut-Katanga Districts and in particular in the Upemba National Park area. In this region, ten endemic species are found, of which five are sympatric. Outside of the Belgian Congo the range of *Anchophthalmus* stretches from Northern Transvaal into the Ethiopian Province. A few orophilous species and the endemic genera *Cosmogaster* and *Oncotiphallops* have developed in the biogeographic District between the East African coast and Rift Valley fault.

The large and tropical group of selinoid *Platynotina* reaches to just the southern limits of the Zambesi Province, and is divisible into four zoogeographic groups, i.e. a pair of eastern and a pair of western groups, with the limits of both widely separated, except for the Upemba National Park area, where they overlap. A singular, disjunct dispersal is displayed by the genus *Selinus*, forming three isolated groups of species. Of the two eastern groups of selinoid *Platynotina*, one is most strikingly confined to the biogeographical District between the coast and Rift Valley fault, and built up by the endemic genera *Anchophthalmops*, *Glyptopteryx*, *Microselinus*, *Phymatoplata*, the disconnected East African stem of *Selinus* (with the morphological groups of *menouxi* and *platessa*), and a considerable number of endemic species of the East African genus *Quadrideres*. The second eastern group has spread westwards beyond the barrier of the Rift Valley fault, but is rather abruptly stopped at the Tanganyika fault, in the South it expands moderately to the dry forest of the Haut-Katanga District and the Upemba National Park area. To this group belong the western species of *Quadrideres*, being thus the only East African selinoid elements found in the Belgian Congo. Up to four species of *Quadrideres* occur in the Oriental savanna of the Lake Albert District, three endemic and sympatric species in the Upemba National Park area.

The more northern of the two western groups is formed by the Guinean genera *Monodius* and *Ectateus*, and the north-western stem of *Selinus* (*planus* group). Of these, only the *Ectateus* are found also in the Belgian Congo, where they live together with *Opatrinus* in the equatorial forests of



MAP N° 4. — Distribution of *Opatrinæ* in the Belgian Congo.

Phytogeographic division, according to ROBYNS. — Fine, striolate lines in black colour refer to boundaries between the following phytogeographic Districts :

- 1 : Coastal District (Guinean savanna);
- 2 : Mayumbe District (Equatorial forest);
- 3 : Bas-Congo District (Guinean savanna);
- 4 : Kasai District (Guinean savanna);
- 5 : Bas-Katanga District (Guinean savanna);
- 6 : Central Equatorial District (Equatorial forest);
- 7 : Ubangi-Uele District (Guinean savanna);
- 8 : Lac Albert District (Oriental savanna prevalent);
- 9 : Lac Edouard and Kivu District (Oriental savanna prevalent);
- 10 : Ruanda-Urundi District (Oriental savanna);
- 11 : Haut-Katanga District (dry forest).

Opatrinoid *Platynotina* : BLUE.

- : *Opatrinus latipes* (SAHLBERG), the only eurytopic Platynotin;

the phytogeographic Central- and Mayumbe Districts, the Guinean savanæ of the Bas-Congo- and Kasai Districts, with one widely diffused species (*Ectateus ghesquierei*) even reaching the Upemba National Park area. The southern of the two western groups comprises the Zambesi and xerophilous group of *Selinus punctatostratus*, from which the endemic genus

- ▼ : *Opatrinus attenuatus bottegoi* GRIDELLI;
- ▲ : *Opatrinus setuliger* MUELLER;
- : *Opatrinus costulatus* (GUÉRIN);
- ◀ : *Opatrinus exalatus* sp. nov.;
- * : *Opatrinus mirabilis* sp. nov.

Anchophthalmoid *Platynotina* : RED.

- : *Anchophthalmus obsoletus* (ANCEY);
- : *Anchophthalmus striolipennis* sp. nov.;
- ▲ : *Anchophthalmus straeleni* sp. nov.;
- ◆ : *Anchophthalmus eurychoroides* sp. nov.;
- ▼ : *Anchophthalmus pedestris* sp. nov.;
- ◀ : *Anchophthalmus cariniceps* sp. nov.;
- ◐ : *Anchophthalmus pulvereus* sp. nov.;
- ⊕ : *Anchophthalmus brevis* sp. nov.;
- ⊖ : *Anchophthalmus curvipes* sp. nov.;
- : *Anchophthalmus katangicus* sp. nov.;
- ~ : *Anchophthalmus soleatus* sp. nov.;
- ∞ : *Anchophthalmus spinipes* sp. nov.;
- ⊕ : *Anchophthalmus basilewskyi* sp. nov.;
- × : *Anchophthalmus plicipennis* PÉRINGUEY, forma;
- ↘ : *Phallocentrion praelacinatum* sp. nov.

Red line : western boundary of anchophthalmoid *Platynotina*.

Selinoid *Platynotina* : BLACK.

a) East African elements : ENCIRCLED BY BLACK.

- : *Quadrideres lineatus* sp. nov.;
- : *Quadrideres elegans* sp. nov.;
- △ : *Quadrideres schoutedeni* sp. nov.;
- ▽ : *Quadrideres witteanus* sp. nov.;
- ◇ : *Quadrideres stigmaticollis* sp. nov.;
- ⌋ : *Quadrideres ruandanus* sp. nov.;
- ◐ : *Quadrideres robynsi* sp. nov.;
- * : *Quadrideres interioris* (GEBIEN).

Striolate — punctate black line : western boundary of East African selinoid *Platynotina* (*Quadrideres*).

b) West African (Guinean and West-Zambesi) elements : FULLY BLACK.

- : *Ectateus modestus* (FAIRMAIRE);
- : *Ectateus curtulus* (FAIRMAIRE);
- ▲ : *Ectateus ghesquierei* sp. nov.;
- ▼ : *Ectateus latipennis* sp. nov.;
- ↗ : *Selinus basilewskyi* sp. nov.;
- : *Upembarus* (gen. nov.) species.

Continuous black line : eastern boundary of West African selinoid *Platynotina*.

Litoborini (*Hanstrœmium* KOCH and *Silvestriellum* gen. nov.) : DOTTED IN BLACK.

Loensini (*Loensus* [GEBIEN]) : DOTTED IN RED.

Upembarus appears to be derived. An endemic species of this *Selinus* group, viz. *Selinus basilewskyi*, closely allied to South-western Angolan species, has been discovered in the south-western part of the Haut-Katanga dry forest. *Upembarus* is the northern and easternmost example of this group of selinoid *Platynotina*, with seven different, partially orophilous forms adding to the faunistic complexity of the Upemba National Park area.

The poorly developed *Loensini*, probably allied to the *Litoborini*, represent the only existing, endemic and tropical tribe of *Opatrinæ*. They occupy a restricted area around Lake Tanganyika, but do not stretch far beyond the western boundaries of the Upemba National Park area. The *Heterotarsini* and *Emmallina* of *Opatrini* are tropical and both enter into the northern parts of the Southern African Region. The *Emmallina* do not cross the southern limits of the central equatorial forest nor the Rift Valley fault towards the East.

The *Litoborini* are the only true Pan African tribe, displaying a typically relict-like and disjunct dispersal, with distribution centres in Southern Africa (map 5), North-western Africa plus the central-mediterranean part of Europe, and also in Tropical Africa (map 2). This type of distribution suggests a very ancient origin, dating to a pre-Saharan age. On the other hand, the existence of the Sahara and its acting an important part as a faunistic barrier, is clearly revealed by the dispersal of all the other and consequently more Recent tribes.

The disjunct distribution areas of *Litoborini* cover, with a few exceptions in North-west Africa [e.g. *Hoplarion* (*Saharoplarion*) and *Bermejoina*], a rather homogeneous floristical type of macchia, bush and deciduous forest. They are composed of xerophilous, in particular orophilous elements, probably descended from the tropical, arboreal and alate genus *Silvestriellum*, the only known winged genus in the otherwise constantly apterous *Litoborini*. The Southern African subtribe of *Zadenina* is southern peri-karoooid (bounded by the Zambesi River in the North) and its range almost covers that of the ecologically similar *Oncotini*. The West-Zambesi genus *Hanstræmium* is a geographically and morphologically strongly isolated group of myrmecophilous species, which range from the Kaokoveld through Southern and Central Angola to the South-eastern Belgian Congo, partially overlapping the distribution area of the *punctatostriatus* group of *Selinus*. The north-eastern group of *Hanstræmium* reaches the Upemba National Park and is there almost in contact with the East African group of *Zadenina* (with the two isolated genera *Silvestriellum* and *Gridelliopus*).

The palæarctic *Litoborini* (*Litoborina* and *Melambiina*) are endemic to the Atlantic District of North-western Africa, spreading slightly also to the Tyrrhenic parts of the Mediterranean Province, and with an isolated genus (*Bermejoina*) found in West Saharan Rio de Oro. The divergence between the palæarctic *Litoborini* and *Zadenina* is well indicated, and in no case do either cross the northern boundary of the Tropical African Region.

**THE FAUNISTIC CONCENTRATION IN THE UPEMBA NATIONAL
PARK AREA ⁽¹⁾.**

The following list of localities, visited by the G. F. DE WITTE expedition to the Upemba National Park, and arranged according to the altitude, may help explaining the concentration, vertical and sympatric occurrence of species of the three stenotopic tribes *Platynotini*, *Litoborini* and *Loensini* (cf. map 9).

Mabwe, 585 m, eastern shore of Lake Upemba.

Opatrinus latipes, *setuliger* and *mirabilis* ;
Anchophthalmus pulvereus ;
Quadrideres elegans ;
Upembarus saegeri and *wittei wittei* ;
Hanstræmium tropicale ;
Loensus wittei.

Kaswabilenga, 680 m, right shore of Lufira River.

Opatrinus setuliger ;
Anchophthalmus pulvereus and *obsoletus* ;
Quadrideres elegans and *witteanus* ;
Upembarus saegeri and *wittei wittei* ;
Loensus gebieni.

Kanonga, 695 m, right tributary of Fungwe River.

Anchophthalmus pulvereus ;
Upembarus wittei masculinus.

Lukawe, 700 m, right tributary of Lufira River.

Upembarus wittei wittei ;
Loensus gebieni.

Lufira, 700-750 m, near Mount Sombwe.

Anchophthalmus obsoletus.

Lupiala, 700-850 m, right tributary of Lufira River.

Anchophthalmus obsoletus ;
Quadrideres witteanus ;
Upembarus saegeri ;
Loensus gebieni.

Shinkulu, 800 m, locality near the junction of Muye and Lufira Rivers.

Upembarus saegeri.

(1) All the localities between [] are situated outside the Park's boundaries.

Ganza, 860 m, salt works near the Kamandula River, right tributary of the Lukoka River.

Upembarus wittei debilis.

Munoi, 890 m, bifurcation Lupiala and Lufira Rivers.

Opatrinus setuliger ;

Anchophthalmus pulvereus and *obsoletus* ;

Upembarus saegeri and *wittei wittei* ;

Loensus gebieni.

[Kimiala, 900 m, near Sampwe (Kundelungu).]

Anchophthalmus soleatus ;

Upembarus wittei wittei.

Kateke, 960 m, right tributary of Lufira River.

Anchophthalmus obsoletus ;

Quadrideres witteanus ;

Upembarus saegeri and *wittei wittei* ;

Loensus gebieni.

Loie, 700-1.000 m, left tributary of Lufira River.

Upembarus saegeri.

Kalule-Nord, 1.050 m, spurs of Mount Kia, near Kiamalwa.

Anchophthalmus pulvereus.

[Masombwe, 1.070 m, near Mulungwe River.]

Opatrinus setuliger.

Kilwezi, 1.000-1.400 m, right tributary of Lufira River.

Quadrideres elegans ;

Upembarus saegeri, *upembaensis upembaensis* and *sympatrius*.

Kaziba, 1.140 m, left tributary of Senze River.

Upembarus upembaensis glabrior.

Kankunda, 1.300 m, left tributary of Lupiala River.

Anchophthalmus obsoletus ;

Quadrideres witteanus ;

Upembarus saegeri ;

Loensus gebieni.

Kabwe, 1.320 m, on the right shore of the Muye River.

Upembarus saegeri.

Pelenge, 1.250-1.600 m, right tributary of Lufira River.

Anchophthalmus obsoletus ;

Quadrideres elegans ;

Upembarus saegeri.



MAP No 5. — Distribution of stenotopic tribes of *Opatrina* in Southern Africa, with the exception of *Platynotini*.

Litoborini: BLACK.

- : *Zadenos* LAPORTE DE CASTELNAU;
- ▲ : *Minorus* MULSANT & REY;
- : *Lasioderus* MULSANT & REY;
- + : *Tragardhus* gen. nov.;
- * : *Hadroderus* gen. nov.;

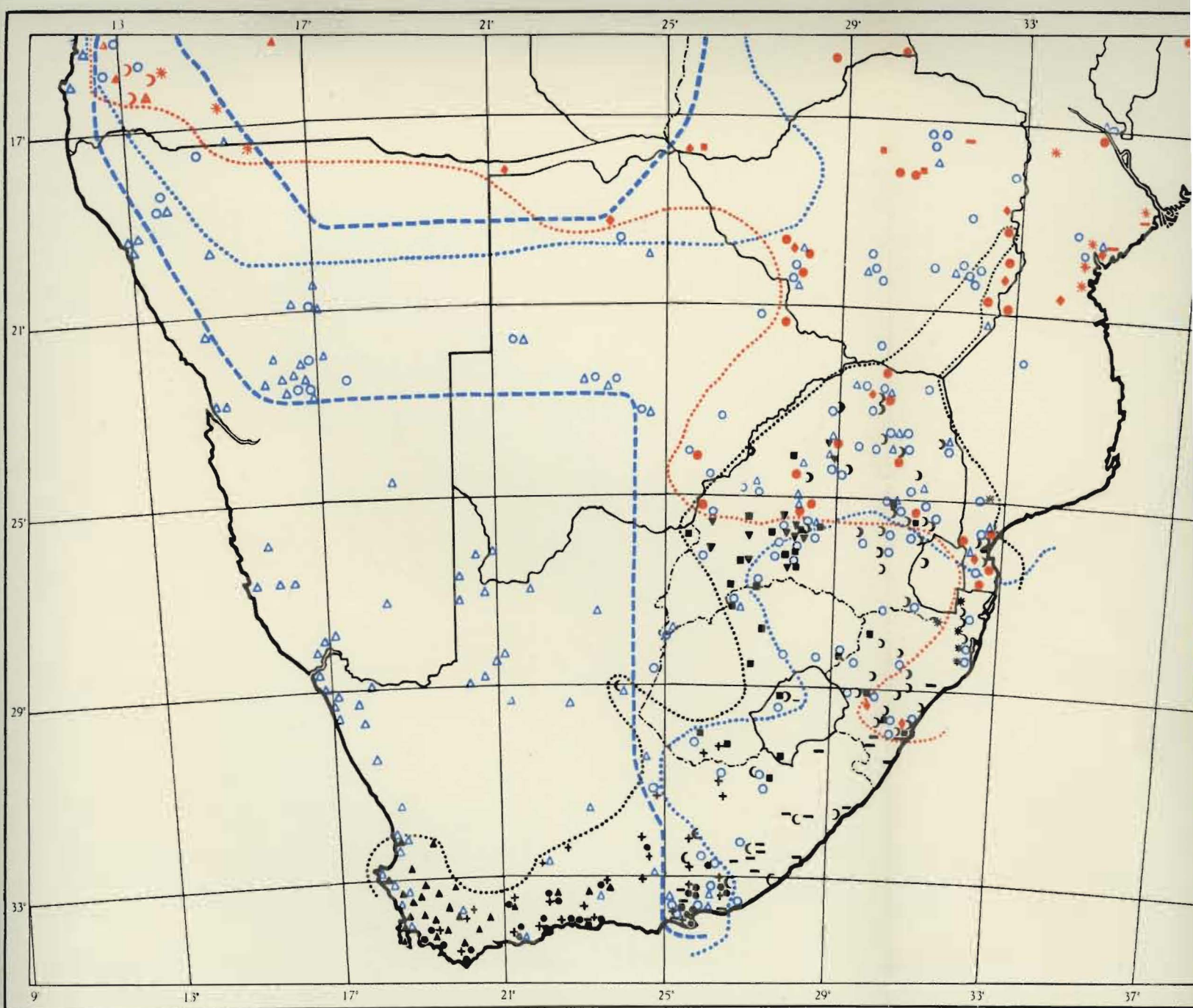
- ◆ : *Zoutpansbergia* gen. nov.;
- : *Pseudemmallus* gen. nov.;
- ⊂ : *Hermodus* (PÉRINGUEY);
- ⊃ : *Hanstremium* KOCH.

Black line: boundary of the disjunct distribution areas of Southern African *Litoborini*.

Limits of other tribes, and stenotopic subtribes of *Opatrina*: RED.

- : *Oncolini*;
- : *Pythiopini*;

- - - : *Stizopina* of *Opatrina*;
- ++++ : *Stenolamina* of *Opatrina*.



MAP N° 6. — Distribution of *Platynotini* in Southern Africa.

A. — *Anomalipina* and *Gonopina* : BLUE.

○ : *Anomalipus* LATREILLE;

▲ : *Gonopus* LATREILLE and *Stenogonopus* GEBIEN.

Southern and northern limits in Southern Africa of :

Anomalipina : striolate line;

Gonopina : punctate line.

B. — *Platynotina*.

a) Tropical *Platynotina* (opatrinoïd, anchophthalmoid and selinoïd *Platynotina*) : RED.

1. Opatrinoïd *Platynotina*.

◆ : *Opatrinus* LATREILLE.

2. Anchophthalmoid *Platynotina*.

● : *Anchophthalmus* GERSTAECKER;

+ : *Oncoliphallops* gen. nov.

3. Selinoïd *Platynotina*.

■ : *Anchophthalmops* gen. nov.;

■ : *Quadrideres* gen. nov.;

* : *Selinus* MULSANT & REY;

▲ : *Angolositus* KOCH.

Southern limits of Tropical *Platynotina* : punctate line.

b) Southern African *Platynotina* (trigonopoid *Platynotina*) : BLACK.

● : *Melanopterus* MULSANT & REY;

▲ : *Altochrates* gen. nov.;

▼ : *Zophodes* FAHRAEUS;

■ : *Eviropodus* gen. nov.;

◆ : *Crypticanus* FAIRMAIRE;

○ : *Amblychirus* gen. nov.;

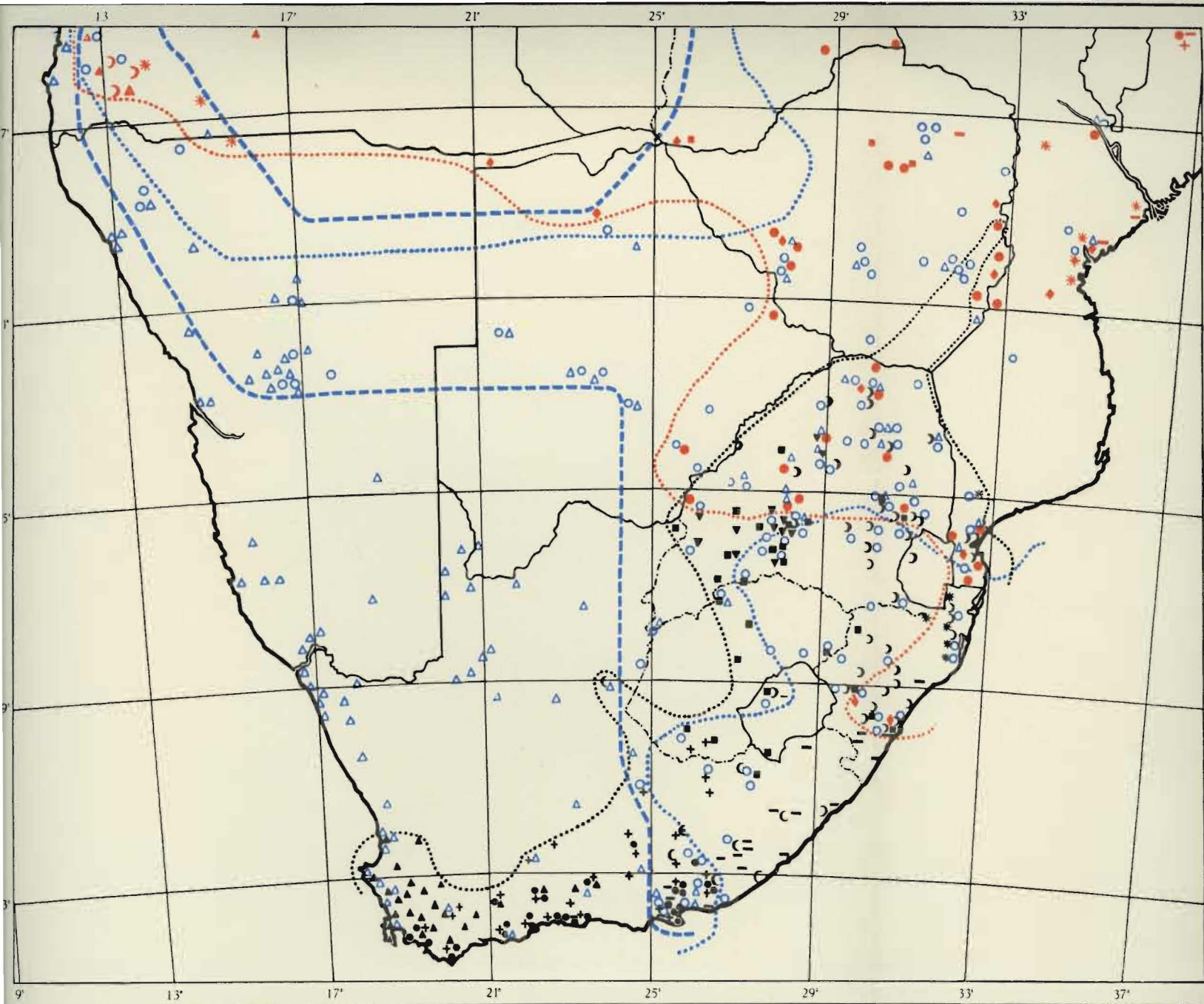
○ : *Banlodemus* KOCH;

+ : *Schelodontes* gen. nov.;

- : *Trigonopus* MULSANT & REY;

* : *Selinopodus* gen. nov.

Limits of distribution area of trigonopoid *Platynotina* : punctate line.



MAP No 6. — Distribution of *Platynotini* in Southern Africa.

A. — *Anomalipina* and *Gonopina* : BLUE.

○ : *Anomalipus* LATREILLE;

△ : *Gonopus* LATREILLE and *Stenogonopus* GEBIEN.

Southern and northern limits in Southern Africa of:

Anomalipina : striolate line;

Gonopina : punctate line.

B. — *Platynotina*.

a) Tropical *Platynotina* (opatrinoïd, anchophthalmoid and selinoïd *Platynotina*) : RED.

1. Opatrinoïd *Platynotina*.

◆ : *Opatrinus* LATREILLE.

2. Anchophthalmoid *Platynotina*.

● : *Anchophthalmus* GERSTAECKER;

+ : *Oncotiphallops* gen. nov.

3. Selinoïd *Platynotina*.

■ : *Anchophthalmops* gen. nov.;

* : *Selinus* MULSANT & REY;

■ : *Quadrideres* gen. nov.;

▲ : *Angolositus* KOCH.

Southern limits of Tropical *Platynotina* : punctate line.

b) Southern African *Platynotina* (trigonopoid *Platynotina*) : BLACK.

● : *Melanopterus* MULSANT & REY;

◐ : *Amblychirus* gen. nov.;

▲ : *Atrocates* gen. nov.;

◑ : *Bantodemus* KOCH;

▼ : *Zophodes* FAHRÆUS;

+ : *Schelodontes* gen. nov.;

■ : *Eviropodus* gen. nov.;

- : *Trigonopus* MULSANT & REY;

◆ : *Crypticanus* FAIRMAIRE;

* : *Selinopodus* gen. nov.

Limits of distribution area of trigonopoid *Platynotina* : punctate line.

Luanana, 1.400-1.600 m, close to the intersection of the tracks Pelenge-Lufira.

Anchophthalmus obsoletus.

Mubale, 1.480 m, country of the junction of Mubale and Munte Rivers.

Opatrinus setuliger.

[Kenia, 1.585 m, right tributary of Lusinga River.]

Quadrideres stigmaticollis.

[Dipidi, 1.700 m, right tributary of Lufwa River.]

Opatrinus setuliger.

Kamitunu, 1.760 m, left tributary of Lusinga River.

Anchophthalmus straeleni.

Buye-Bala, 1.750 m, left tributary of Muye River.

Anchophthalmus straeleni.

Kapelwa, 1.780 m, left tributary of Grande-Kafwe River.

Anchophthalmus straeleni.

Lusinga, 1.810 m, shore of the Lufwa River, source.

Opatrinus setuliger ;

Anchophthalmus straeleni and *spinipes*.

Mukana, 1.810 m, swamps near Lusinga.

Opatrinus setuliger ;

Anchophthalmus straeleni.

Kabwekanono, 1.815 m, swamps near to the source of the Lufwa River.

Anchophthalmus straeleni.

ABBREVIATIONS.

The only abbreviations used in the following taxonomic part refer to main collections of the following institutions.

B.C.M. Musée royal du Congo Belge, Tervueren.

C.M. The Coryndon Museum, Nairobi.

D.M. Durban Museum & Art Gallery.

I.R. Institut royal des Sciences naturelles de Belgique, Bruxelles.

I.P.N. Institut des Parcs Nationaux du Congo Belge, Bruxelles.

M.C.A. The Science Museum of the Californian Academy of Sciences, San Francisco.

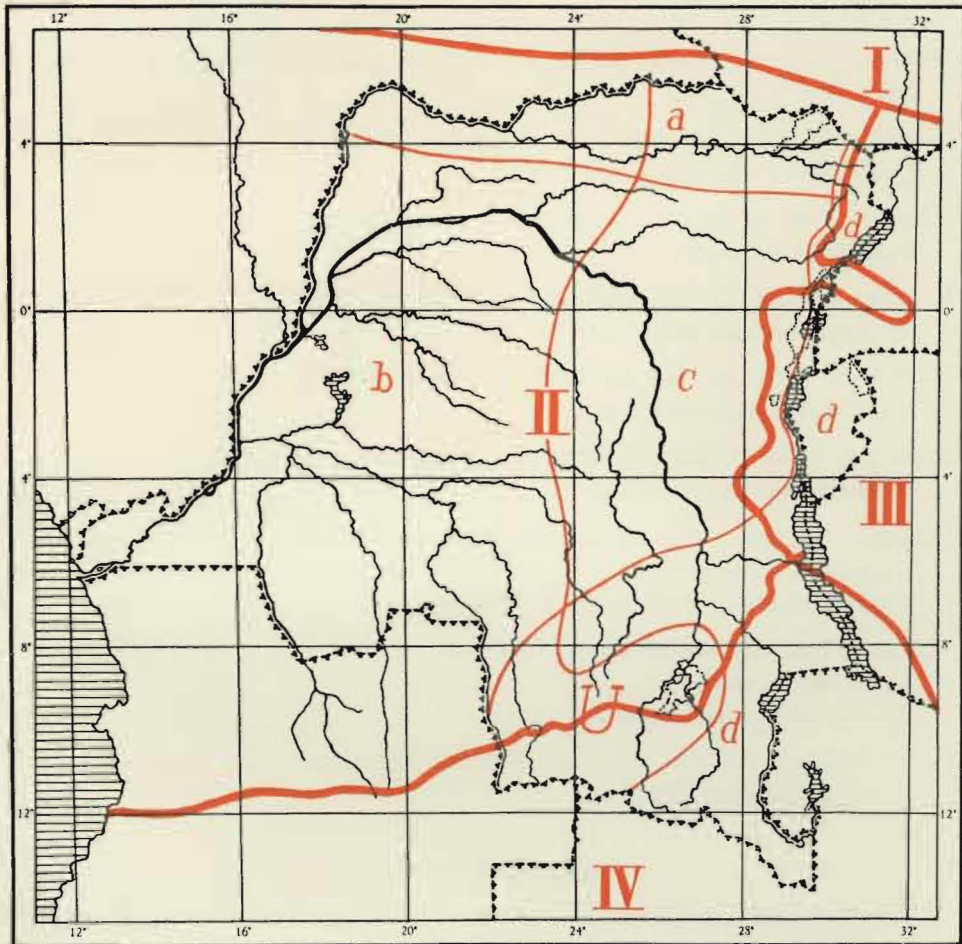
M.D. Museu Companhia de Diamantes de Angola, Dundo.

M.St. Naturhistoriska Riksmuseum, Stockholm.

N.M.S.Rh. . National Museum of Southern Rhodesia, Bulawayo.

S.A.M. South African Museum, Cape Town.

T.M. Transvaal Museum, Pretoria.

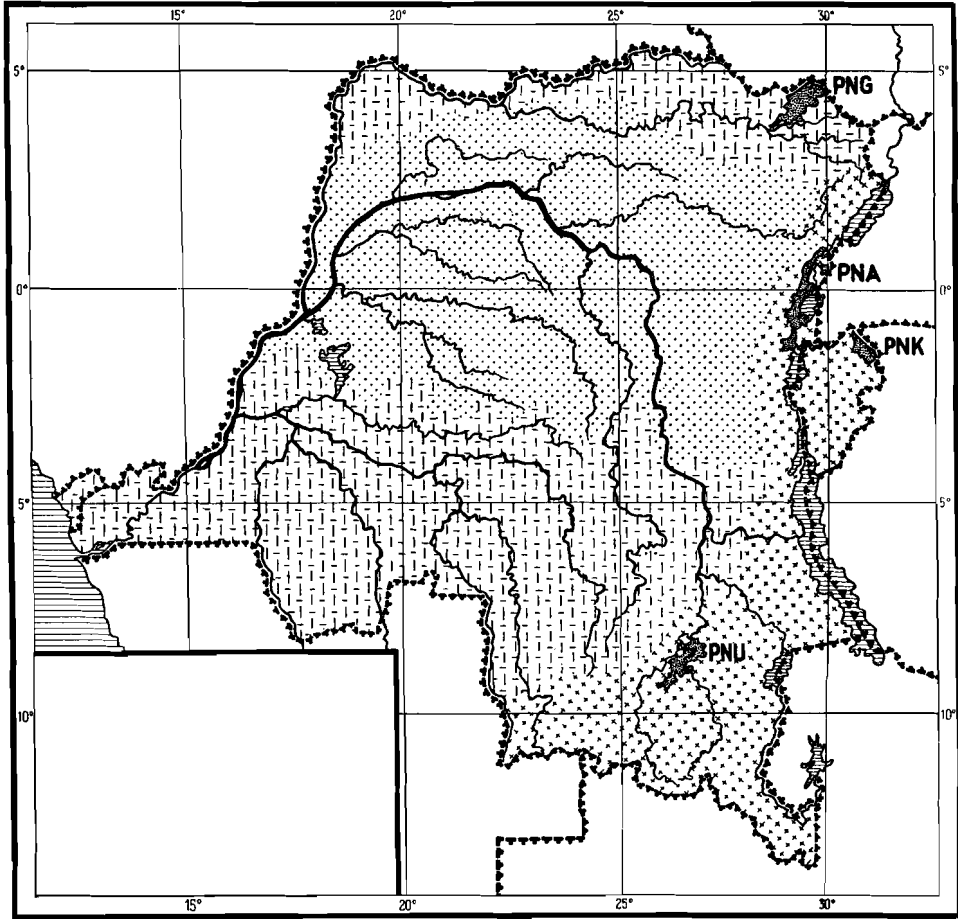


MAP N° 7. — Faunistic map of the Belgian Congo.

Provinces of the Tropical African Region and their boundaries. — I : Sudanese Province;

II : Guinean Province; III : Oriental Province; IV : Zambesi Province.

Faunistic Districts based on the distribution of the stenotopic *Opatrinæ*. — *a* : Northern District; *b* : Western District; *c* : Central District; *d* : Eastern District; *U* : Southern District, including the concentration area of the Upemba Park, and formed by the overlapping of the Western and Eastern Districts.



MAP N° 8. — Vegetation map of the Belgian Congo.

- ⋯⋯⋯ : Equatorial forest (cf. Plate XXXV, above).
- ||||| : Guinean savanna (cf. Plate XXXIV, above, and Plate XXXV, below).
- xxxxx : Oriental savanna (cf. Plate XXXIV, below).
- PNA : National Albert Park.
- PNG : National Garamba Park.
- PNK : National Kagera Park.
- PNU : National Upemba Park.