(1) *Definition of area*

The Namib Desert may be considered as the only true desert in that part of Africa lying in the Southern Hemisphere. It is a foggy, coastal desert and in this respect comparable only to the South American Atacama Desert, as in both the development of desertic phenomena is due to cold oceanic currents.

When compared with the 8,000,000 km.^{2} occupied by the Sahara Desert (Drouhin, Pierre), the Namib, with a roughly estimated area of only 270,000 km.^{2}, is a dwarf only one-thirtieth the size of the former (cf. map 1). But in spite of its small size, it shows edaphic features of an ultra-desertic status (absence of macro-vegetation)† similar to those found in the Sahara; such are, for example, massifs of barren dunes, sandy and gravel plains without or with only very scattered, desertic vegetation, and salty pans, which correspond almost exactly to the Saharan terms of *Erg*, *Reg* and *Sebkha* respectively.

The unfavourable biotic conditions typifying the true desert of the torrid zones, viz. the irregular and very low rainfall in association with intense evaporation, are also similar. It is evident, however, that they are of a less hostile quality because of an additional factor of precipitation in the form of mist from the sea, which, in one way or the other, may help to adjust the merely episodic quality of rainfall, by reducing the degree of the evaporation of all precipitation and that of the transpiration of the fauna and flora.

According to Meigs's homoclimatic classification of the arid zones of the world, the Namib Desert is defined as an extremely arid‡ but mild§ desert without a distinct season of precipitation, characterized by the temperature index *22*.§ Among the extremely arid deserts of the world a similar homoclimate is shown only by the likewise mild Atacama Desert (temperature index *23*); the remaining extremely arid deserts are either hot deserts (temperature index *24*) such as the Sahara, the Arabic Rub' al-Khali and the North American Mohave and Sonoran Deserts, or the cold winter Takla Makan Desert in Turkestan (temperature index *03*).

The Namib (cf. map 2) is a coastal desert, which attains a width of approximately 100 miles at some places, and extends along the Atlantic Ocean roughly for 1300 miles from the Olifants River in Little Namaqualand (Republic of South Africa), through the whole of South-West Africa to as far northwards as Moçamedes in the south-western part of Angola.‖ There are no sharp limits in

† Since all classification terms for degrees of aridity relate to vegetation, the term 'ultra-desertic' is used in the present paper for such areas of the desert, in which no natural and active macro-flora exists (e.g. the barren sandy dunes and vegetationless plains of the Namib).

‡ In regard to moisture, Meigs subdivides the arid climates of the world as follows (cf. map 1):

Extremely arid, based on rainfall records which show at least one year without rain, with no regular seasonal rhythm of rainfall.

Arid, (with reference to Thornthwaite's precipitation–evaporation system in relation to the needs of plants) those areas in which the rainfall is not adequate for crop production.

Semi-arid, (based upon Thornthwaite's system) areas with sufficient rainfall for certain types of crops, and where grass is an important element of the natural vegetation.

§ In regard to temperatures, Meigs's arid zones are classified as *hot* (indices *24*, *33*, *34*), *mild* (indices *22*, *23*), *cool winter* (indices *12*, *13*, *14*) and *cold winter* (indices *02*, *03*, *04*). The first digit of these temperature indices represents the coldest month and the second digit the warmest month based on mean monthly temperatures. The digits read as follow: *0* = below 0° C.; *1* = 1–10° C.; *2* = 10–20° C.; *3* = 20–30° C.; *4* = above 30° C.

‖ This statement is well documentated from the point of view of the fauna in the south (Koch, 1952*c*) and north (Koch, 1958). It agrees fairly well with the physiographic extension of the Namib as indicated by Wellington, but not with Meigs's homoclimatic map of the eastern hemisphere. On this map the Namib is indicated as ending in the north just south of the border of South-West Africa, at about Rocky Point; this is incorrect and must be rectified, as the Angolan Namib not only faunistically and physiographically, but also climatologically, does not differ from the South-West African part of the Northern Namib.

the east, however, and we may accept the 2000 ft. contour of the South African maps (or the 600 m. contour of the South-West African maps) as the more or less arbitrary limitation of the coastal low ground, except for areas in Great Namaqualand, where the extension of the barchan dunes clearly determines the desertic nature of the country, although the dunes rise considerably above the 2000 ft. contour, reaching inland in some places to 4000 ft. (cf. map 2).

(2) *Composition, xerophilous character and origin of the Namib Tenebrionidae*

In regard to both the degree and the extent of aridity, the Namib is the extreme component of the arid Kalahari–Karroos–Namaqualand phyto-geographical system (Monod, 1957; cf. map 1). In close agreement with this definition the fauna of the Tenebrionids is composed almost entirely of very xerophilous groups.

If we exclude the indifferent, widely diffused and usually alate groups—such as psammophilous representatives (e.g. *Anemia* of Melanimini) or the inhabitants of hygrophilous strata (e.g. *Gonocephalum*) or those of arboreous biotopes (Strongyliini, Praogenini,† Epitragina of Tentyriini, etc.)—the analysis of the composition of this fauna establishes the fact that all Tenebrionids of the Namib, without exception, belong to such tribes or subtribes as are distributed over the whole of South-West Africa and south-western Angola. These tribes and subtribes may be regarded, for convenience sake, as the basic groups of Southern West Africa (viz. South-West Africa plus south-western Angola, cf. Koch, 1958). These basic groups are the Cryptochilini, Tentyriini, Scaurini, Caenocrypticini, Adesmiini, Eurychorini, Zophosini, as well as the subtribes Hypomelina, Oxurina and Phanerotomeina of Molurini, Gonopina of Platynotini, Drosochrina of Drosochrini, Stizopina and Stenolamina of Opatrini; the two endemic tribes Calognathini and Vansoniini may be here included, as they are linked phylogenetically with the Cryptochilini.

The prevailing xerophilous disposition of these groups is readily proved by their distribution pattern,‡ which has kept strictly to regions with low to moderate precipitation. The following are the characteristic outlines of this distribution:

(*a*) All groups are absent from the neighbouring South-East African Province (see Koch, 1958), except for the two extra-Guinean tribes Zophosini and Eurychorini, and the Ethiopian (or Tropic African) Phanerotomeina of Molurini. The reason for this unusually constant pattern is simply the increased humidity of the South-East African Province, where the rainfall exceeds 20 in., this area being inhabited mainly by subtropical and mesophilous Tenebrionids.§

† We consider *Praogena* Laporte and several closely allied genera the representatives of a tribus proper (viz. Praogenini *sensu novo*), on the basis of various hitherto unobserved characters such as the constant occurrence of a stridulatory gula of the Platynotini and Oncotini type (cf. Koch, 1956), the pleural structure of the elytra, which deviates greatly from that in the other Strongyliini, etc.

‡ Cf. the following maps of distribution: Cryptochilini (Koch, 1952*b*); Tentyriini (Koch, 1955*a*); Caenocrypticini (Koch, 1952*c*); Adesmiini (Koch, 1944–48, 1952*c* and 1955*a*, Reymond); Eurychorini (Koch, 1952*a* and Brown); Molurini (Koch, 1955*a*); Hypomelina, Oxurina and Phanerotomeina of Molurini (Koch, 1955*a*); Gonopina of Platynotini (Koch, 1956); Drosochrina of Drosochrini (Koch, 1958); Stizopina and Stenolamina of Opatrini (Koch, 1956); Calognathini and Vansoniini (Koch, 1955*a*).

§ There is no uniform terminology for classifying a territory according to degrees of humidity and aridity (Meigs). Drouhin proposes for North-West Africa the following definitions: humid zone, over 500 mm. of rain p.a.; semi-arid zone, between 500 and 100 mm.; arid zone proper, less than 100 mm. Emberger's quotient representing the dryness of the arid regions of North Africa $= 100R/[(M+m)(M-m)]$ (R is the normal total annual rainfall; M is the normal maximum temperature of the hottest month; and m is the normal minimum temperature of the coldest month). Simaika, using Emberger's