NOTES ON THE CACTACEAE OF CURAÇAO, ARUBA, BONAIRE AND NORTH VENEZUELA

by

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(With plates V—XII).

The present publication deals with the distribution of the *Cactaceae* on the islands situated between Trinidad and the peninsula of La Goajira. The material and the field observations on which this study is founded, were collected on two trips to the West Indies, made respectively in 1930 and in 1936—37.

In this paper I have followed, as far as possible, the monograph of the *Cactaceae* by BRITTON and ROSE. Sometimes, however, the limits of certain species have been extended further than these and other authors would probably have allowed. In these cases, a simple comment only has been made, because, unfortunately, I have not had the opportunity to thoroughly study these questions.

The material collected, preserved partly in formaline and partly in alcohol, has been deposited in the Botanical Museum at Utrecht. All descriptions refer to this material and to my own field observations. Data cited from literature, are marked with an asterisk. Vernacular names are given only when I have heard them from the natives themselves; the spelling is Spanish (Venezuela, Colombia) or phonetic Netherlandish (Curaçao, Aruba, Bonaire). As a rule only literature in connection with the islands is quoted and only when not mentioned by BRITTON and ROSE.

BRITTON and ROSE mention three endemic species from Aruba, Curaçao and Bonaire (*Opuntia curassavica, Cereus repandus* and *Cephalocereus lanuginosus*) and one from Margarita (*Cereus margaritensis*). This pointed to a probably not unimportant apartness of the cactusflora of these islands, as compared with that of the adjacent continent.

The results of my study proved that *Cephalocereus lanuginosus* is a widespread species and occurs on the continent as well as on the Dutch and Venezuelan Islands. *Cereus marga-*

ritensis is found also on the adjacent islands and on the mainland as far as Colombia. *Cereus repandus*, however, has retained its small area; *Opuntia curassavica* has been found on Tortuga island. — We may therefore still speak of a difference between the cactusflora of the Dutch Islands and that of the continent, whilst the species of Margarita and the surrounding islands, on the contrary, are also found on the adjacent mainland.

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KEY TO THE SPECIES.

(The names of the species which are not native to the islands are printed in italics.)

Cactaceae: Perennial, succulent plants, usually very spiny, characterized by "areoles", situated in the axils of the leaves, if leaves are present, bearing the branches, flowers, spines, glochids, hairs and glands.

1a Vegetative parts with broad, flat leaves; areoles without glochids; ordinary trees or shrubs, not jointed ..... (1) **Pereskia Guamacho**

b Vegetative parts without leaves or with very small, conical leaves only; areoles with or without glochids; no similarity with ordinary trees and shrubs, many- to one-jointed .. 2

2a Vegetative parts with very small, conical, early deciduous leaves; areoles with glochids; many-jointed; joints not strongly ribbed or tubercled, areoles irregularly scattered. 3

b Vegetative parts without leaves; areoles without glochids; many-jointed or undivided; joints often strongly ribbed or tubercled; areoles not irregularly scattered 11

3a Stamens much longer than the tepals; tepals erect; joints flat, usually spineless ..... (2) *Nopalea cochenillifera*

b Stamens shorter than the tepals; tepals recurved; joints flattened or cylindrical, spiny or spineless 4

4a Joints cylindrical; spines with papery sheaths ..... (3) **Opuntia caribaea**

b Joints flattened; spines without papery sheaths 5

5a Joints readily detached 6

b Joints not readily detached 7

6a Plant prostrate; joints 3—9 cm long, transversal section oblong-elliptical ..... (4) **Opuntia curassavica**

b Plants usually erect; joints 9—20 cm long, transversal section linear ..... (5) **Opuntia Wentiana**

7a Areoles with large spines 8

b Areoles spineless, rarely with small spines 9

8a Spines usually straight, brown; areoles with few and small glochids; flower 4—7 cm long; tepals mostly salmon; fruit subglobose ..... (6) **Opuntia elatior**

b Spines usually more or less curved, yellowish; areoles with many and large glochids; flower 8—12 cm long; tepals mostly yellow; fruit pearshaped .... (8) *Opuntia Dillenii*

9a Joints pubescent ..... (10) *Opuntia tomentosa*

b Joints glabrous 10

10a Joints usually 15—25 cm long; areoles woolly, with several brown glochids; tepals reddish .. (7) *Opuntia Boldinghiana*
b Joints usually 25—50 cm long; areoles not woolly, with numerous yellow, early deciduous glochids; tepals yellowish (9) *Opuntia Ficus-indica*

11a Perianth without a tube, rotate; fruit a small whitish berry; joints cylindrical ..... (11) **Rhipsalis cassutha**
b Perianth with a distinct tube, funnelshaped, campanulate or tubular; fruit no small whitish berry; joints flat, ribbed, winged or tubercled 12

12a Areoles spineless; joints flat. (12) *Epiphyllum oxypetalum*
b Areoles spiny; joints ribbed, winged or tubercled 13

13a Flowers and spines borne by the same areoles; many-jointed plants 14
b Flowers and spines borne by different areoles; one-jointed plants 26

14a Climber, with aerial roots 15
b Erect or arching plants, without aerial roots 19

15a Ovary and fruit not bearing large foliaceous scales, their axils spiny or bristly 16
b Ovary and fruit bearing large foliaceous scales, their axils not spiny or bristly 17

16a Areoles unarmed; ovary and fruit spiny ..... (13) *Selenicereus inermis*
b Areoles armed; ovary and fruit bristly ..... (14) *Selenicereus grandiflorus*

17a Ribs very broad, thin, margin distinctly horny, strongly crenate; stigma-lobes entire .... (15) *Hylocereus undatus*
b Ribs not very broad, thick, margin not or indistinctly horny, more or less dentate; stigma-lobes entire or deeply cleft 18

18a Areoles with 7—15 acicular spines; margin of the ribs not horny, deeply dentate; stigma-lobes entire ..... (16) *Hylocereus trigonus*
b Areoles with 1—7 conical spines; margin of the ribs more or less dentate; stigma-lobes deeply cleft ..... (17) **Hylocereus Lemairei**

19a Very slender, arching plants; fullgrown branches 3—5 ribbed; tube very often with spiny areoles; fruit spiny .... (18) **Acanthocereus pentagonus**

b Stout, usually erect plants; branches 5—13 ribbed; tube without spiny areoles; fruit naked or spiny 20

20a Fruit globose, spiny; lowest filaments not united at the base, strongly decurrent; areoles without long hairs .... (19) **Lemaireocereus griseus**

b Fruit subglobose or ovoid, naked; lowest filaments wether or not united at the base, not decurrent; young areoles usually with long hairs 21

21a Fruit subglobose; perianth campanulate, persistent; lowest filaments united at the base. (20) **Cephalocereus lanuginosus**

b Fruit ovoid; perianth funnelshaped, deciduous; lowest filaments free 22

22a Flower more than 15 cm long; ribs 3—5 cm high ..... (21) *Cereus hexagonus*

b Flower less than 12 cm long; ribs 1—3 cm high 23

23a Not tree-like, rarely exceeding 4 m; younger parts 5—6 cm across, ribs 5—7; areoles densely set with white woolly hairs ..... (22) *Cereus Russelianus*

b Tree-like, often exceeding 6 m; younger parts 6—14 cm across, ribs 5—12; areoles with a grey or brownish felt. 24

24a Younger branches 6—10 cm across, usually 9—10 ribbed; areoles mostly 4—6 mm across; spines at the base not distinctly swollen, rarely occupying the whole areole .... (23) **Cereus repandus**

b Younger branches 10—14 cm across, usually 6—8 ribbed: areoles mostly 6—9 mm across; spines at the base distinctly swollen, often occupying the whole areole 25

25a Central spines acicular, 2—8 cm long ..... (24) **Cereus margaritensis**

b Central spines conical, acuminate to mammiform-apiculate, rarely more than 1 cm long ..... (24a) **Cereus margaritensis var. micracanthus**

26a Flowering areoles forming a central, terminal cephalium; spiny areoles on vertical ribs ..... (25) **Melocactus**

b Flowering areoles solitary; spiny areoles on large tubercles, one per tubercle 27

27a Flowers about 1 cm long, tepals with brown tips; spines reddish ..... (26) **Mammillaria simplex**

b Flowers about 1½ cm long, tepals without brown tips: spines yellowish ..... (27) *Mammillaria nivosa*

THE OCCURRENCE OF CACTACEAE ON THE ISLANDS OFF THE NORTH-COAST OF SOUTH AMERICA.

(La Distribución de las Cactáceos del Estado Nueva Esparta y de Curaçao).

Locality (Lugar)	*Pereskia Guamacho*	*Opuntia caribaea*	*Opuntia curassavica*	*Opuntia Wentiana*	*Opuntia elatior*	*Rhipsalis cassutha*	*Hylocereus Lemairei*	*Acanthocereus pentagonus*	*Lemaireocereus griseus*	*Cephalocereus lanuginosus*	*Cereus repandus*	*Cereus margaritensis*	*Cereus margaritensis var. micracanthus*	*Melocactus*	*Mammillaria simplex*	Locality (Lugar)
Coast of Paria Peninsula de Araya	c			c	c			c	c	c		c	c	c		North-coast of East Venezuela
Lobos	.	.	.	c		.	.		c	c	.	.	.	c	.	
Isla de Caribes		.	.	c	r	.	.	c	c		.			c		Islands South
Coche	x			c		.	.		c			c		c		of Margarita
Cubagua		c		c		.	.		c			c				
Margarita	c	r		c	c	x	r	r	c	c	.	c		c	x	Margarita
Morro de la Iguana		.	.	c		.	.		c	c	.	c				
Chiwo	.	.	.	c		.	.	.	c		.	c		c	.	
Angoletta	.	.	.	c	c	.	r	.	c	c	.	c	.	.	.	Los Testigos
Tamarindo		.		c			r		c	c		c				
Isla de Conejo		.		c		.			c	c	.	c		c		
Puerto Real		.	.	c	r	.	.	.	c		.	c		c		Los Frailes
La Pecha	.	.	.	c		.	.	.	c		.	c	c	c		
Morro Fondeadero	.	.	.	c	r	.	.		c	c	.					Los Hermanos
Morro Pando	.	.		c		.	.	.	c	c	.			c		
Blanquilla		c		c	r	.			c					c		Blanquilla
Huespen		.		c		.	.	.	c					c		Orchila
Tortuga			c	x		.			c					c		Tortuga
Gran Roque	.	.	.	c	.	.	.	.	c	.	.	.	.	c	.	Los Roques
Bonaire	.	.	c	c	r	.	.		c	c	c	.	.	c		Bonaire
Klein Bonaire	.	.	c	c	.	.	.	.	c		c	.	.	c	.	
Curaçao	.	.	c	c	c	.	.	r	c	c	c	.	.	c	r	Curaçao
Aruba	.	.	r	c	r	.	.	c	c	c	c	.	.	c		Aruba
Paraguaná	c			c					c	c		c		c		Paraguaná
La Goajira	c			c					c	r		c		c		La Goajira
Other parts of Venezuela and Trinidad	c	c		c	c	x	c	c	c	c				c	r	Other parts of Venezuela

Legenda:

c common or abundant (común o abundante).
r less common or rare (bastante común o raro).
x not observed by the author but recorded in the literature (no encontrado pero mencionada en la literatura).
not observed by the author (no encontrado).
. not observed by the author, probably absent (no encontrado, es muy probable que no se presente).

1. **Pereskia Guamacho** Weber 1898. BRITTON and ROSE 1919 p. 16, fig. 9—10. — *P. sp.* ERNST 1886 p. 360. — *P. opuntiaeflora* DC., apud JOHNSTON 1909 p. 241, 293. — *P. bleo* (HBK.) DC., apud BOLDINGH 1913 p. 301; id. 1914 p. 81; AMELUNXEN 1931 p. 20, fig. 15—16; REALINO 1936 p. 124, 2 fig. — prob. *P. colombiana* BRITTON and ROSE 1919 p. 17.

"Guamacho", "Guamache" (N. E. Ven.) or "Goeamaatsjoe" (Cur.); "Supí" (Parag.).

N. Venezuela, going inland as far as the basin of the Orinoco (type-locality!)*, Lara and Mérida*; Coche*; Margarita; Curaçao cult.; Paraguaná; La Goajira.

Common or rather common in Margarita, Coche, N. Venezuela with Paraguaná and La Goajira; occasionally cultivated in Curaçao.

Cultivated as living hedges on Margarita. The fruit is edible.

Between Pampater and La Asunción, Margarita, 7. VII. 1936 (No 101, fl.). Los Robles, id., 11. VIII. 1936 (No 102, fr.; in hedge). Urumaco, Falcón, 29. VII. 1930 (No 103, fr.; 103a, fl., fr.).

The inner tepals of this species are yellow, with filaments and anthers in the same colour (cf BRITTON and ROSE 1919 fig. 10).

The plants which, about 1850, have been introduced from Venezuela into Curaçao, plantation Canja near St. Maria, have now grown up to trees of 8—10 m high.

The specimens which I saw in La Goajira might belong to *P. colombiana* Br. et R. 1919, but as I am unable to discover any noteworthy differences in the description of this species and that of *P. Guamacho,* I refer them to the latter species.

2. **Nopalea cochenillifera** (L.) Salm-Dyck 1850. BRITTON and ROSE 1919 p. 34, pl. IV 2.

Introduced into Curaçao for the cochineal industry, but nowadays only a few cultivated plants are found on this island.

3. **Opuntia caribaea** Britton et Rose 1919 p. 49, fig. 58—59. BERGER 1929 p. 14; WERDERMANN 1931a p. 224. — *O. leptocaulis* DC., apud JOHNSTON 1909 p. 241, 281.

"Guasábano" (Araya, Marg.).

Hispaniola (type-locality!)*; Trinidad*; N. Venezuela; Margarita; Cubagua; Blanquilla.

Common in Falcón, the Peninsula de Araya, Cubagua and Blanquilla; on Margarita only to be found on a few localities (Pt. Mosquito, E. of San Antonio*, S. W. Macanao). Calciphile!

Pecaya, N. of Siquisique, Falcón, 31. VII. 1930 (No 104, fl., fr.; tab. VIa). Chacopata, Peninsula de Araya, 26. VI. 1936 (No 120, fl.; tab. VIa). N.W. Cubagua, 21. V. 1936 (No 105, fr.; tab. VIa). Morro Blanco, S.W. Macanao,

Margarita, 20. V. 1936 (No 106). El Jaque, Blanquilla, 22. VII. 1936 (No 107; tab. VIb).

Stem much branched, 1½ (—2) m high, the younger parts erect, branches porrect, many-jointed; old trunk without areoles and spines, up to 3 cm across, with a well developed corklayer which peels off in thin flakes. Joints cylindrical, the younger ones about 1 cm across, glabrous, light green or often somewhat yellowish; readily detached and easily rooting. Areoles on the younger parts subtriangular or roundish, 3—5 mm across, on rather weak to strongly developed prominences, about ¾—1 cm apart, spiny, with a brownish felt, enclosing many goldbrown glochids, in the axils of 5—7 mm long, conical, acute, hardgreen, soon withering leaves. Spines 1—3, acicular, straight, often with slightly upcurved top, porrect, 3½—4½ cm long, up to 1—1½ mm thick at base, flexible, somewhat angular, roughened towards the top, yellowish or somewhat reddish brown, covered with papery sheaths. Sheaths thin, smooth, at first golden or yellowish brown, afterwards strawcoloured, often somewhat darker at the top. Flower 2¼—2½ cm long, 12—15 of the tepals longer than ½ cm; diurnal. Inner tepals elliptical to oblong, mucronate or mucronulate, ¾—1 cm long, creamcoloured; outer ones elliptical to ovate, acuminate, up to ¾ cm long, yellowish green. Receptacle funnelshaped, about 5—6 mm across, 4 mm deep. Stamens 80—100, covering the whole surface of the receptacle except the central part up to ¾ mm from the insertion of the style. Filaments about 4—5 mm, the outer ones thicker and longer than the inner ones. Anthers versatile, ½—1 mm long, the longer ones on the larger filaments. Stigma-lobes (3—) 4 (—5), about 1 mm long, dark brown. Style slightly obclavate, 10—11 mm long, 1—1⅛ mm thick at the top, 1½—2 mm near the base. Ovary obconical, 12—16 × 9—10 mm, with 12—22, often spiny areoles in the axils of ½—1½ mm long, triangular, mucronate scales, bearing many glochids and some brownish felt. Fruit pearshaped, truncate, about 2¼ × 1¼ cm, reddish, the upper areoles very often with a single, up to 2½ cm long, sheathed spine; without seeds and cavities.

According to the description the type and the flowering material of WERDERMANN (1931), both from Hispaniola, differ from the Venezuelan plants in leaflength only: 1—2 mm in the former, 5—7 mm in the latter. In WERDERMANN's material (EKMAN H 950, H 4036, H 8501, Stockholm), however, the leaves are 3—3½ mm long, which led me to suppose that this difference in length is not very important.

4. **Opuntia curassavica** (L.) Mill. 1768. BRITTON and ROSE 1919 p. 102, fig. 125; BOLDINGH 1913 p. 299; id. 1914 p. 81; BERGER 1929 p. 66; BRITTON 1930 p. 226; AMELUNXEN 1931 p. 14, fig. 9b; BACKEBERG 1931 p. 66; id. 1931a p. 26; id. 1934; id. 1937 p. 30; WERDERMANN 1931 p. 101; HUMMELINCK 1934 p. 152, 161; id. 1936 p. 81, 1 fig.; BACKEBERG and KNUTH 1936 p. 129; REALINO 1936 p. 109. — *O. triacantha* Haw., apud ERNST 1876 p. 178.

"Kaka die poesjie" or "Kakie poesjie", "Librá" (Cur.); "Juffrouw" (Bon.).

Tortuga; Bonaire, Klein Bonaire; Curaçao (type-locality!); Aruba.

Common on Curaçao, Bonaire, Klein Bonaire and Tortuga; on Aruba only in a few localities (Canashito, Spaansch Lagoen, Baranca Alto, Isla, Boca Grandi, Quadirikiri).

S.W. coast of Tortuga, 1. VIII. 1936 (No 108). W. slope of the Brandaris, Bonaire, 27. III. 1937 (No 109). Near Willemstad, Curaçao, 5. VIII. 1935 (No 110, fl.; Fr. Arnoldo coll.; tab. VIIb). Seroe Canashito, Aruba, 7. XII. 1936 (No 111). Isla, N. of Rooi Lamoenchi, id. 29. XII. 1936 (No. 112). Quadirikiri, E. of Fontein, id., 23. XII. 1936 (No 113).

Stem usually much branched and spreading, prostrate, 20—70 cm long, 4- to 20-jointed. Joints ovate to oblong or obovate, 1½—3 times as long as broad, the transversal section oblong to elliptical, 3—8½ cm long, glabrous, green; readily detached and easily rooting. Areoles round or elliptical, 1½—3 mm across, in young joints on rather weak prominences, ½—1 cm apart, spiny, with many yellow glochids and long, white, cobwebby hairs, in the axils of very small, deltoid, soon withering leaves. Spines at first 2—4, afterwards 4—14, acicular, straight, spreading, up to 2 (—3) cm long, at first yellowish, afterwards grey or whitish, sometimes banded with brown and usually brown at the top. Flower 4½—5 cm long, 14 of the tepals longer than 1 cm; diurnal. Tepals broadly cuneate to spathulate, mucronulate, up to 25 × 15 mm, yellow. Receptacle funnelshaped, 6—7 mm across, 4—5 mm deep. Stamens 250—300, covering the whole surface of the receptacle except the central part up to 1½ mm from the insertion of the style. Filaments 3—6 mm, the longer ones higher inserted. Anthers versatile, about 1 mm long. Stigmalobes 5—6, 3—3½ mm long. Style obclavate, 10—11 mm long, 1—1½ mm thick. Ovary obconical, 25—30 × 8—10 mm, with 12—20 spineless areoles in the axils of 1—1½ mm long, triangular scales, bearing many glochids and some long, white, cobwebby hairs. Fruit unknown.

O. curassavica is a very shy bloomer. — The description of

the flower given above, is based on a plant which has been collected and cultivated in Curaçao by Fr. M. ARNOLDO. There was no fruit developed.

Material of *O. repens* Bello, collected in St. Thomas (16. III. 1937; No 114), suggests that there is hardly any difference between this species and *O. curassavica.*

5. **Opuntia Wentiana** Britton et Rose 1919 p. 116. AMELUNXEN 1931 p. 13, fig. 9a; HUMMELINCK 1933 p. 190, fig. 7; id. 1934 p. 152, 162, fig. 1, 3; BACKEBERG and KNUTH 1936 p. 130; REALINO 1936 p. 110, 1 fig. — *O. spinosissima* Mill., apud ERNST 1871 p. 540; id. 1874 p. 178. — *O. triacantha,* apud SURINGAR 1886 p. 382. — *O. Tuna* Mill., apud JOHNSTON 1909 p. 241, 293. — *O. tunoides* Britt. et Shaf., apud BOLDINGH 1914 p. 81. — *O. Schumannii* Web., apud BACKEBERG 1937 p. 30.

"Tuna" (Venez.) or "Toena" (Bon., Cur., Ar.); "Juffróuw" (Cur., Ar.).

La Guaira; Chacopata, Morro de Chacopata, Esmerarda, Morro de Esmerarda, Puerto Santo, Morro de Puerto Santo (N. coast of E. Venezuela); Isla de Caribes, Lobos, Coche, Cubagua (S. of Margarita); Margarita; Morro de la Iguana, Chiwo, Angoletta, Tamarindo, Isla de Conejo (Los Testigos); Puerto Real, La Pecha (Los Frailes); Morro Fondeadero, Morro Pando (Los Hermanos); Blanquilla; Huespen (Orchila); Tortuga*; Gran Roque (Los Roques); Bonaire, Klein Bonaire; Curaçao (type-locality!); Aruba; Paraguaná; La Goajira.

The most common cactus of this region, abundant nearly everywhere. I did not notice this species on Tortuga, though ERNST 1873 cited "*O. spinosissima*" as a common and troublesome inhabitant of this island. On Klein Bonaire I saw in 1930 one plant only, which seems to have disappeared.

On Curaçao the plants are scorched in dry periods and used as cattle food.

Esmerarda, W. of Carúpano, 11. VI. 1936 (No 115, fl.). Morro de Esmerarda, id., 11. VI. 1936 (No 116, fr.). N.W. Cubagua, 21. V. 1936 (No 117, fl., fr.). Pampatar, Margarita, 18. IV. 1936 (No 118, fl.). Matasiete, id., 27. V. 1936 (No 119, fr.). Seroe Cabajé. Porto Marie, Curaçao, 19. IV. 1930 (No 121, fr.). Seroe Commandant, St. Kruis, id., 24. IV. 1930 (No. 122, fr.). Seroe Christoffel, id., 3. V. 1930 (No. 123, fl.). Oranjestad, Aruba, 18. VI. 1930 (No 124, fl.; No 125, fl.). S. of Rio Hacha, La Goajira, 18. I. 1937 (No 126, fl.).

Flower 4—5½ cm long; diurnal. Inner tepals broadly obovate to cuneate, mucronulate, up to 30 × 25 mm, at first yellow, afterwards often becoming somewhat orange. Receptacle funnel-shaped, 9—14 mm across, 6—8 mm deep. Stamens 250—300,

covering the whole surface of the receptacle except the central part up to 2 mm from the insertion of the style. Filaments 5—12 mm, the longer ones higher inserted. Anthers versatile, 1—1½ mm long. Stigma-lobes 5—9, 3½—4½ mm long. Style obclavate, (5—) 11—16 (—20) mm long, 2—2½ mm thick at the top, 3—5 mm near the base. Ovary (15—) 20—30 (—35) × (13—) 15—20 (—24) mm, obconical, with 15—30 spineless areoles in the axils of 1—2 mm long, triangular scales; each areole bearing many glochids and short woolly hairs. Fruit pearshaped, 2½—4 × 1½—2 cm, usually red, the pulp dark red.

On Morro Pando (or Orquilla, Los Hermanos) this species occurs in the higher parts of the island only; in the lower parts a somewhat different form is found which could not be studied, because it was not flowering. On Huespen (Orchila), the Morro de Puerto Santo and the peninsula of Puerto Santo (E. of Carúpano) it is represented by a low, nearly prostrate form, ½—1 m high, which in my opinion is not systematically separable from the common erect form, which usually attains a height of 1½—2 m.

My material of *O. Wentiana* fully agrees with BRITTON and ROSE's description of *O. caracasana* Salm-Dyck, which has been collected on exposed hillsides between Caracas and La Guaira.

On St. Martin and Saba I collected some material of *O. antillana* Br. et R. (17. III. 1937, No 127, fl.; 18. III. 1937, No 128, fl.). This species is more or less prostrate, often growing in dense clumps, the spines are very stout and the tepals are perhaps more slender, but as a whole I can see but little difference with *O. Wentiana*.

BACKEBERG (1937) trys to make it probable that the *Opuntia* (undoubtly *O. Wentiana*) shown in one of his pictures of Curacao is the true *O. Schumannii* Web. The latter species is, in my opinion, nearly related to *O. elatior* and very different from the plant shown in this picture.

6. **Opuntia elatior** Mill. 1768. BRITTON and ROSE 1919 p. 153, pl. XXVI 2; BOLDINGH 1913 p. 300; id. 1914 p. 81; HUMMELINCK 1931 p. 51, fig. 6; id. 1934 p. 152, 162, fig. 4; BACKEBERG and KNUTH 1936 p. 139; AMELUNXEN 1931 p. 15, fig. 10; REALINO 1936 p. 111, 2 fig.

"Tacua" (Araya, Marg.); "Toena spanjool" (Cur.); "Sjangraan" (Bon.).

Panamá*; Colombia*; Venezuela; Morro de Esmerarda (N. coast of E. Venezuela); Isla de Caribes (S. of Margarita); Ango-

letta (Los Testigos); Puerto Real (Los Frailes); Morro Fondeadero (Los Hermanos); Blanquilla; Bonaire; Curaçao (type-locality?); Aruba.

Except on the little island of Angoletta, this species is nowhere very common but is found only here and there in small quantities or singles.

The fruit, though edible, is not recommendable because of the glochids.

Morro de Esmerarda, W. of Carúpano, 10. VI. 1936 (No 129, fl., fr.). Pampatar, Margarita, 18. IV. 1936 (No 130, fl., fr.). E. of La Asunción, id., 27. V. 1936 (No 131, fr.). Morro Fondeadero, Los Hermanos, 20. VII. 1936 (No 132, fl. fr.). El Jaque, Blanquilla, 22. VII. 1936 (No 133). Seroe Cabajé, Porto Marie, Curaçao, 19. IV. 1930 (No 134, fl., fr.). Seroe Commandant, St. Kruis, id., 24. IV. 1930 (No 135, fl., fr.).

While collecting this material I though I could distinguish at least two different species or varieties. Further study of the specimens has shown, however, that the differences do not justify a separation.

7. **Opuntia Boldinghii** Britton et Rose 1919 p. 155, pl. XXVI 3. Backeberg and Knuth 1936 p. 140. — prob. „friekampeeuw", Amelunxen 1931 p. 16, fig. 11. — prob. „Opuntia Burbank", Realino 1936 p. 120, 1 fig.

Curaçao cult. (type-locality!); N. Venezuela, near Valencia*; Patos Island*, Trinidad*.

The spineless plant sometimes grown in Curaçao, where it is, according to Amelunxen, known by the natives as „friekampeeuw", probably belongs to this species.

8. **Opuntia Dillenii** (Ker-Gawler) Haw. 1819. Britton and Rose 1919 p. 162, fig. 201, pl. XXVIII 2, XXIX 2.

West Indies and adjacent continental coast*, S. Carolina*, Bermudas*; Tamarindo (Los Testigos); Curaçao cult.

Found at two localities on Tamarindo (or Testigo Grande, Los Testigos), perhaps introduced from the northern Lesser Antilles. Plants from St. Martin are cultivated on Bacoval, Curaçao.

The fruit tastes good; the glochids are easily rubbed off.

Puerto Tamarindo, Los Testigos, 16. VI. 1936 (No 136, fl., fr.). Playa Guzmán, Tamarindo, id., 16. VI. 1936 (No 137, fl., fr.).

These specimens fully agree with material from St. Thomas, St. Martin, Saba and St. Eustatius (16—18. III. 1937, No 138—141).

9. **Opuntia Ficus-indica** (L.) Mill. 1768. Britton and Rose 1919 p. 177, fig. 217—218. — prob. *Nopalea cochinellifera* Salm-Dyck, apud Amelunxen 1931 p. 18, fig. 12; prob. *N. coccinellifera* Salm-Dyck, apud Realino 1936 p. 119, 2 fig.

Plants, probably belonging to this species, are sometimes cultivated in Curaçao.

10. **Opuntia tomentosa** Salm-Dyck 1822. BRITTON and ROSE 1919 p. 173, fig. 212, pl. XXXIII 1. — „Toena Spanjool (Van Schaarloo)", AMELUNXEN 1931 p. 18, fig. 13; REALINO 1936 p. 120, 1 fig.

Plants, very probably belonging to this species, are cultivated in Schaarloo and Bacoval, Curaçao.

11. **Rhipsalis cassutha** Gaertn. 1788. BRITTON and ROSE 1923 p. 225, fig. 222, pl. XXVII 1; JOHNSTON 1909 p. 242.

Tropical America*; West Indies, Margarita.

Once collected near El Valle, Margarita, "found hanging from the branches of trees", alt. 300 m.

El Valle, Margarita, 18. VII. 1903 (JOHNSTON 16, Gray Herb.; fr.).

This material might be identical with *Rhipsalis Pittieri* Br. et R. described from Puerto Cabello. The fruiting areoles are covered with a whitish felt and often bear a single, short bristle at the lower side.

12. **Epiphyllum oxypetalum** (DC.) Haw. 1829. BRITTON and ROSE 1923 p. 188. — *Epiphyllum strictum*, apud AMELUNXEN 1931 p. 21, fig. 17—18; REALINO 1936 p. 123, 2 fig.

Several plants, probably belonging to this species, were found cultivated in Curaçao, Aruba and Bonaire.

13. **Selenicereus inermis** (Otto) Britton et Rose 1920 p. 207, fig. 287.

Venezuela (La Guaira, type-locality!) and Colombia*.

Common in S. Falcón; also observed between Concepción and La Paz, W. of Maracaibo.

Fuente Torbes, S. Falcón, hanging over rocks, 1. VII. 1930 (No 183, fr.).

Fruit ovoid, about 10 cm long, with about 75 areoles; each areole with 60—80 acicular, ¾—1¼ cm long spines. Seed pearshaped, about 2—2½ × 1—1½ × 1 mm, rough, dull black.

14. **Selenicereus grandiflorus** (L.) Br. et R. 1909. BRITTON and ROSE 1920 p. 197, pl. XXXII 3, XXXIII 1—2. — *Cereus grandiflorus*, SURINGAR 1886 p. 362; AMELUNXEN 1931 p. 8, fig. 5; REALINO 1936 p. 120, 1 fig.

Plants, very probably belonging to this species, are not unfrequently cultivated in Curaçao, Aruba and Bonaire.

15. **Hylocereus undatus** (Haw.) Br. et R. 1918. BRITTON and ROSE 1920 p. 187, fig. 263—264, pl. XXX; ARNOLDO and HUMMELINCK 1936 p. 114, 4 fig.

Found cultivated in Curaçao (No 181, fl.).

16. **Hylocereus trigonus** (Haw.) Safford 1909. BRITTON and ROSE 1920 p. 192, fig. 268, pl. XXXVI 1.

Cultivated at Bacoval, Curaçao; introduced from St. Martin (No 182, fl., fr.).

17. **Hylocereus Lemairei** (Hook.) Br. et R. 1909. BRITTON and ROSE 1920 p. 189, 194, fig. 266, pl. XXXI; id. 1923 p. 283. — prob. *Hyl. venezuelensis* BRITTON et ROSE 1923 p. 226.

Margarita; Angoletta, Tamarindo (Los Testigos); Trinidad; Tobago*; Suriname.

Common in Trinidad; in Margarita and Los Testigos found at a few localities only.

Guatamare, N. of Porlamar, Margarita, 13. V. 1936 (No 175). Angoletta, Los Testigos, 15. VI. 1936 (No 176). Tamarindo (Testigo Grande), id., top of the Morro Grande, 16. VI. 1936 (No 177, fr.). Macqueripe Bay, Trinidad, 7. V. 1936 (No 178, fl.). Tetron Bay, id., 7. V. 1936 (No 179, fl.). Belwaarde, near Paramaribo, Suriname, in riverjungle, 3. V. 1936 (No 180, fl. rest, young fr.).

The fruit of the specimen from Tamarindo is ovoid, 7½ × 6 cm, reddish, covered with large, deltoid or subovate scales with red margins and tops; the pulp is white and reddish; seeds pearshaped, about 2½ × 1½ × 1 mm, glossy black.

The ribs of the Surinam plants have a thin horny margin, which has also been found in a part of the material from Trinidad and in that from the Venezuelan Islands. In the latter, however, it is less distinct and the areoles are also less elevated. As from the flowers but scanty remnants are available, the identification of the Surinam specimens is not quite certain.

The plants from Margarita and Los Testigos might be identical with *Hyl. venezuelensis* Br. et R. 1920, which was collected by Rose, and also by Backeberg, near Valencia, Venezuela; but as I am unable to discover any differences between the descriptions of this species and those of *Hyl. Lemairei,* I refer my material to the latter.

18. **Acanthocereus pentagonus** (L.) Br. et R. 1909. Britton and Rose 1920 p. 123, fig. 182—184, pl. XVI; Hummelinck 1935 p. 65, fig. 1—7; Realino 1936 p. 115, 4 fig. — *Cereus caripensis* (HBK.) DC., apud Johnston 1909 p. 241. — *Cereus Napoleonis* Grah., apud Boldingh 1913 p. 296; id. 1914 p. 71. — *"Hylocereus Napoleonis",* Hummelinck 1934 p. 152, 162. — *Cereus triangularis,* apud Amelunxen 1931 p. 7, fig. 3. — prob. *Ac. colombianus* Britton and Rose 1920 p. 122.

"Pitahaya" (Araya, Marg.); "Kadoesjie die koleebra" (Ar.); "Cardón casicure" (Par.).

Continental coast from Texas* to Venezuela, Cuba*, Guadeloupe*; Chuspa (E. of La Guaira); Guanta, Chacopata, Morro de Chacopata, Esmerarda, Morro de Esmerarda, Puerto Santo (N. coast of E. Venezuela); Isla de Caribes (S. of Margarita); Margarita; Curaçao; Aruba; Paraguaná; S. Goajira.

Common on the mainland, more locally on the islands. In Curaçao occurring only on the S.W. slope of the Seroe Chris-

toffel, about 300 m high. In Aruba fairly common throughout the island.

Chuspa, E. of La Guaira, 30. VII. 1936 (No 162, fr.). Morro de Chacopata, Peninsula de Araya, 27. VI. 1936 (No 163). Morro de Esmerarda, W. of Carúpano, 10. VI. 1936 (No. 164). El Piache (South Hill) near El Valle, Margarita, 18. VII. 1903, alt. 300 m (JOHNSTON 217, Gray Herb.; fl.). Porlamar, id. 13. V. 1936 (No 165). Los Robles, id., 7. VII. 1936 (No 166, fl.). Seroe Christoffel, Curaçao, 3. V. 1930 (No 167). Id., 1931 (No 168, fl.; V. H. v. d. BERGH coll.). Id., 23. VII. 1934 (No 169, fl.; Fr. M. REALINO coll.). Id., 18. XII. 1934 (No 170, fr., id.). S.W. of the Hooiberg, Aruba, 21. VI. 1930 (No 171). Alto Visto near Pos di Noord, id., 28. VI. 1930 (No 172). Rooi van Vader Piet, E. of Fontein, id., 9. II. 1937 (No 173). Salado, N. of Cúcuta, Santander del Norte, Colombia, 19. VII. 1930 (No 174).

Flower 14—19 cm long, with 60—65 tepals longer than 2 cm. Tepals oblanceolate to elliptical, acuminate or acute, 6—4 times as long as broad, up to 4¼ cm long; inner tepals somewhat shorter than the other, acuminate, white; outer tepals somewhat fleshy, greenish. Receptacle funnelshaped, thick and fleshy, 10—13 cm long, 1—1¾ cm wide at the base, 1—1¼ cm in the middle, 2½—3½ cm at the top, with 9—15 conspicuous areoles covered with brown felt in the axils of very small scales; areoles spineless or with a few, up to 1½ cm long spines. Stamens 700—900, on the upper ½ of the receptacle. Filaments 2½—6 cm long, the longer ones lower inserted; lowest filaments erect, decurrent, not connate at the base. Anthers innate, 1¾—8 mm long, the longer ones on the lower filaments, yellowish or brownish. Stigma-lobes 10—12, 10—12 mm long. Style cylindrical, 11—16½ cm long, 2—4 mm thick. Ovary ovoid, 1½—1¾ × 1¼—1½ cm, with 18—35 areoles, covered with brown felt and bearing 1—4, up to 1½ cm long spines, in the axils of small deltoid scaly bracts. Fruit ovoid or obovoid, about 8 × 5 cm, red, every areole bearing 3—6, up to 1¾ cm long, spines; pulp red. Seeds about 4 × 3 × 2 mm, pearshaped, rather smooth, glossy black.

Ac. colombianus Br. et R. 1920 seems to differ from *Ac. pentagonus* only in having shorter peripheral spines and thicker joints.

19. **Lemaireocereus griseus** (Haw.) Br. et R. 1909. BRITTON and ROSE 1920 p. 87, fig. 129, pl. XIII 2; WILLIAMS 1924 p. 274; HUMMELINCK 1931 p. 44, fig. 1; id. 1933 p. 184, fig. 1—2; id. 1934 p. 152, 162, fig. 3; BACKEBERG and KNUTH 1936 p. 306; REALINO 1936 p. 115, 2 fig.; BACKEBERG 1937 p. 30. — *Cereus griseus* Haw., BOLDINGH 1913 p. 296; id. 1914 p. 71; AMELUNXEN

1931 p. 7, fig. 2; BACKEBERG 1931a p. 40 fig.; id. 1934; WERDERMANN 1931 p. 77. — *Cereus Swartzii* Griseb. (?), ERNST 1872 p. 540. — *Cereus Swartzii* Griseb., apud ERNST 1874 p. 178; id. 1886 p. 360. — *Cereus eburneus* Salm-Dyck, apud JOHNSTON 1909 p. 241, 279, 293. — *Cereus resupinatus*, apud BACKEBERG 1930 p. 28, fig.; id. 1931 p. 66.

"Cardón" (Ven.); "Yauré" (Araya); "Datoe", "Tampanján" (Cur., Ar.); "Jatoe" (Bon.).

South America (type-locality!), N. coast of Venezuela; La Guaira, Cabo Blanco; Chacopata, Morro de Chacopata, Esmerarda, Morro de Esmerarda, Puerto Santo, Morro de Puerto Santo (N. coast of E. Venezuela); Patos Island* (Trinidad); Isla de Caribes, Lobos, Coche, Cubagua (S. of Margarita); Margarita; Morro de la Iguana, Chiwo, Angoletta, Tamarindo, Isla de Conejo (Los Testigos); Puerto Real, La Pecha (Los Frailes); Morro Fondeadero, Morro Pando (Los Hermanos); Blanquilla; Huespen (Orchila); Tortuga; Gran Roque (Los Roques); Bonaire, Klein Bonaire; Curaçao; Aruba; Paraguaná; La Goajira.

Nearly everywhere abundant and often a dominant feature of the landscape.

Very often grown as a living hedge; this is done simply by placing pieces of young branches side by side. The wood is widely used by the natives, chiefly for fences and for the roofs and the walls of their houses. The fruit tastes good and is frequently eaten by the natives, especially by the Goajiro Indians; the spines are very easily rubbed off.

La Guaira, 7. IV. 1930 (No 158, fr.). Morro Fondeadero, Los Hermanos, 20. VII. 1936 (No 159, fl., fr. tab. VIIIb). Seroe Cabajé, Porto Marie, Curaçao, 18. IV. 1930 (No 166, fr.; No 161, fl., fr.; tab. VIIIb).

Tree-like, up to 8 (—16) m high, strongly branched at the top, sometimes branching near the base; old trunk without ribs and spines, up to 30 (—40) cm across, with a rather weakly developed corklayer which peels off in thin flakes. Branches ascendent, sometimes with several shallow constrictions, the younger parts about 10 cm across. Ribs (5—) 7 (—10), 1½—2½ cm high, dark green, glaucous, the young parts often reddish. Areoles round or ovate, often truncate at the top, 8—12 mm across, 1—2½ cm apart, spiny, covered with greyish felt; without long hairs. Spines 7—12, rarely more, central ones different from the peripheral ones, acicular, straight, stiff, usually round but sometimes flattened; surface fibrous, light grey, sometimes darker; top black. Central spines 1 (—3), rarely more, pointing upwards, 2—5 cm long, 1—2 mm thick. Periferal spines 7—11,

rarely more, spreading, usually distinctly smaller than the central ones, ½—1¼ mm thick. Flower 6—8 cm long; with 20—30 tepals longer than 1 cm; nocturnal. Inner tepals oblong, sometimes mucronulate, 4—3 times as long as broad, 18—26 mm long, cream-coloured, rosa or whitish; apex sparsely and minutely fimbriate. Receptacle funnelshaped, thick fleshy, 3—4¼ cm long, 1—1½ cm wide at base, 2½—3 cm wide at the top, with several imbricate, spathulate, for the greater part adnate, fleshy bracts at the top, towards the base reduced into a few scales, the lower with a little felt in their axils. Stamens 600—800, on the upper 2/3—3/4 of the receptacle. Filaments 12—27 mm long, the longer ones lower inserted; lowest ones erect, strongly decurrent, free at the base. Anthers innate, 1¾—2½ mm long, yellowish. Stigma-lobes 9—10, 6—8 mm long. Style cylindrical, 3½—4½ cm long, 1½—3 mm thick. Ovary ovoid, 1½—2½ × 1¼—1½ cm, with 30—50 areoles, covered with felt, often provided with a few small spines, in the axils of 1—1½ mm long, deltoid scales; perianth deciduous. Fruit subglobose, 2½—5 cm across, reddish; every areole bearing 12—20, spreading, up to 1¼ cm long spines; pulp red. Seeds about 1—2 × 1—1¼ × ¾ mm, rough, rather dull black.

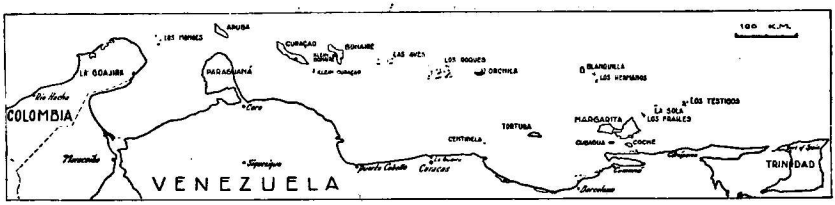
The plants from the Hermanos Islands possess smaller and darker spines and smaller flowers than those from other localities.

Judging from the description and the photograph given by Britton and Rose 1920, *Lem. griseus* is hardly separable from *Lem. deficiens* (Otto et Dietrich) Br. et R. 1920, which also occurs in the central part of the Venezuelan coast.

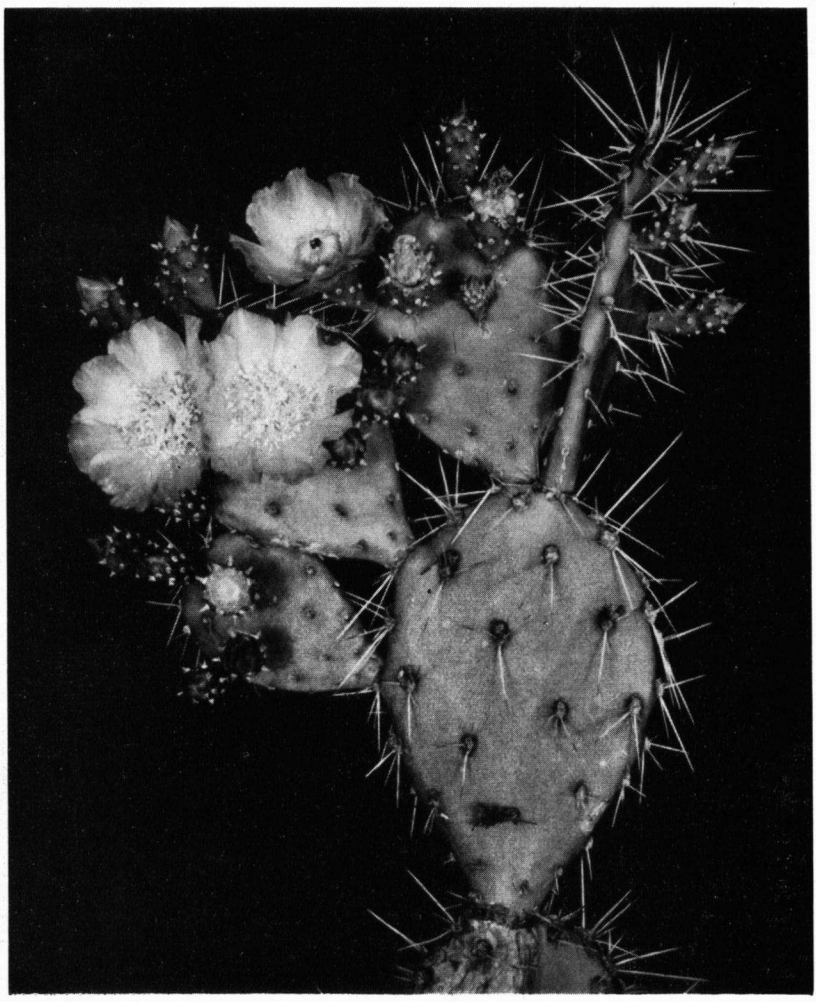
20. **Cephalocereus lanuginosus** (L.) Br. et R. 1909. Britton and Rose 1920 p. 49, fig. 73; Boldingh 1913 p. 297; id., 1914 p. 71; Hummelinck 1931 p. 51, fig. 8; id. 1934 p. 152, 162, fig. 5; Amelunxen 1931 p. 9, fig. 6; Realino 1936 p. 112, 2 fig. — *Cereus lanuginosus* L., Berger 1929 p. 157; Werdermann 1931 p. 72. — *Pilocereus lanuginosus* (L.), Backeberg 1930 p. 26, fig. p. 28; id. 1931 p. 66; id. 1931a p. 23; id. 1934; id. 1937 p. 30; Backeberg and Knuth 1936 p. 332. — *Cereus Swartzii* Griseb., apud Johnston 1909 p. 241 (p.p. ?). — prob. *Ceph. colombianus* Rose 1909 p. 55.

"Pataculu" (Araya, Marg.); "Kadoesjie die poesjie", "Breebee die poesjie" (Cur., Ar., Bon.); "Fonjó", "Foenfoen" (Cur.).

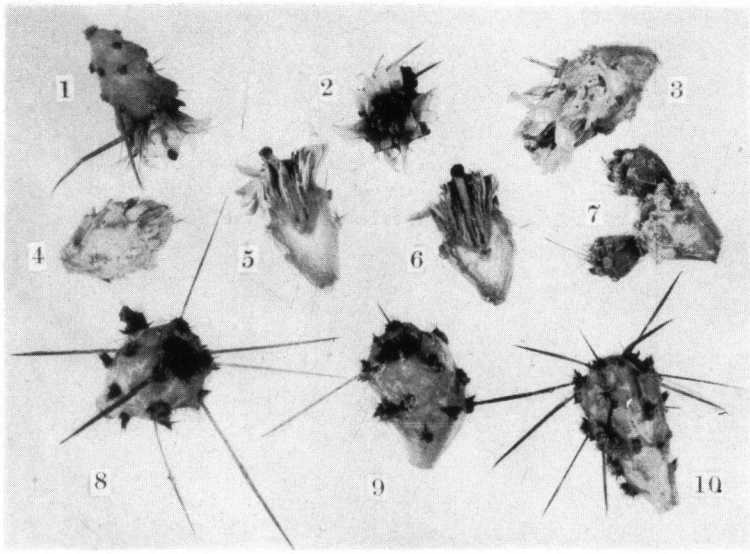
Chacopata, Esmerarda, Puerto Santo (N. coast of E. Venezuela); Lobos (S. of Margarita); Margarita; Morro de la Iguana,



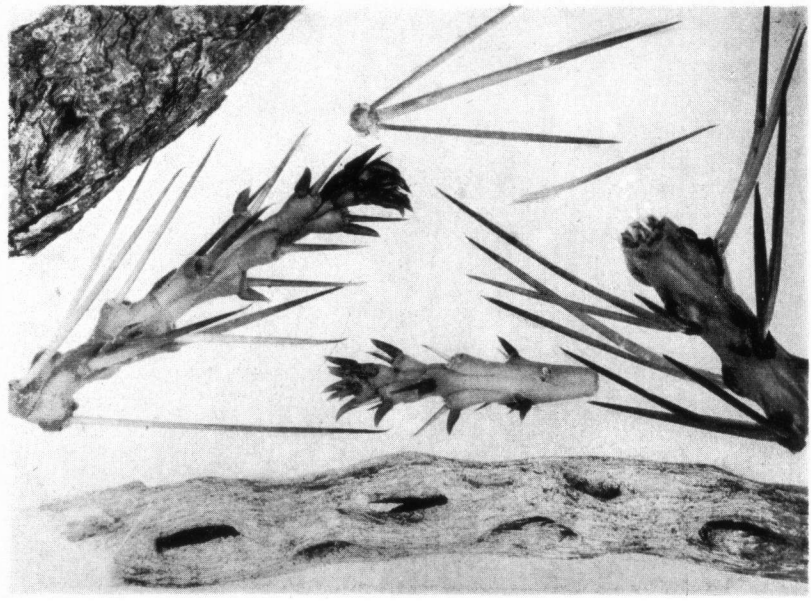
a Sketch map of the North Coast of Venezuela.



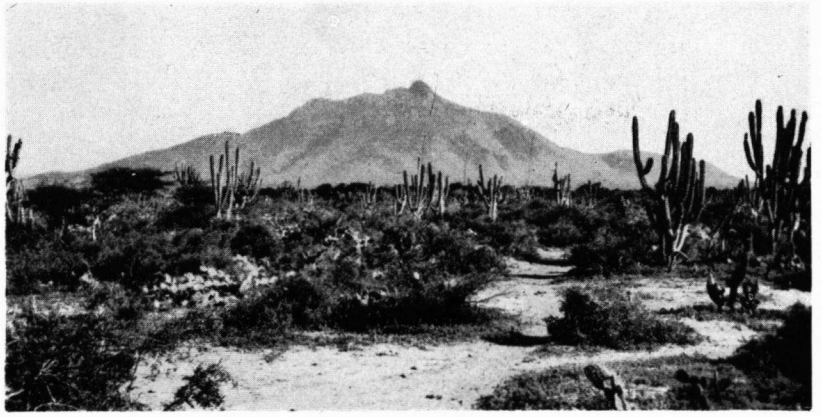
b *Opuntia Wentiana,* Curaçao (about 2/5 nat. size, from life; fr. M. Arnoldo phot.).



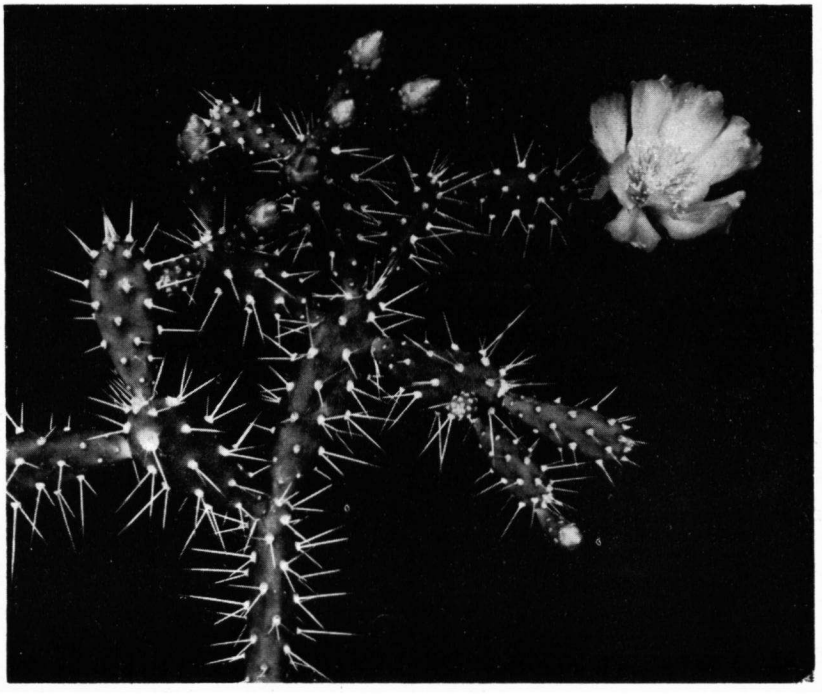
a *Opuntia caribaea,* showing flowers (5—6 in length section), flowerbud (4) and sterile fruits (8—10, 7 proliferous); 1, 3 Araya, No 120; 2, 4—7, 9 Falcón, No 104; 8, 10 Cubagua, No 105. (nat. size).



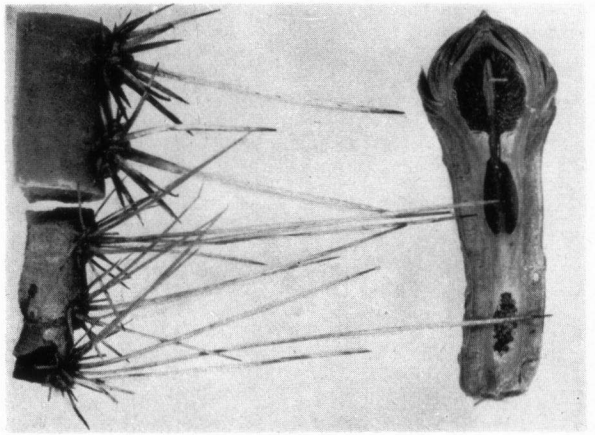
b *Opuntia caribaea,* Blanquilla (No 107), showing parts of young joints, spines, sheath and parts of old trunk with and without cortex. (nat. size).



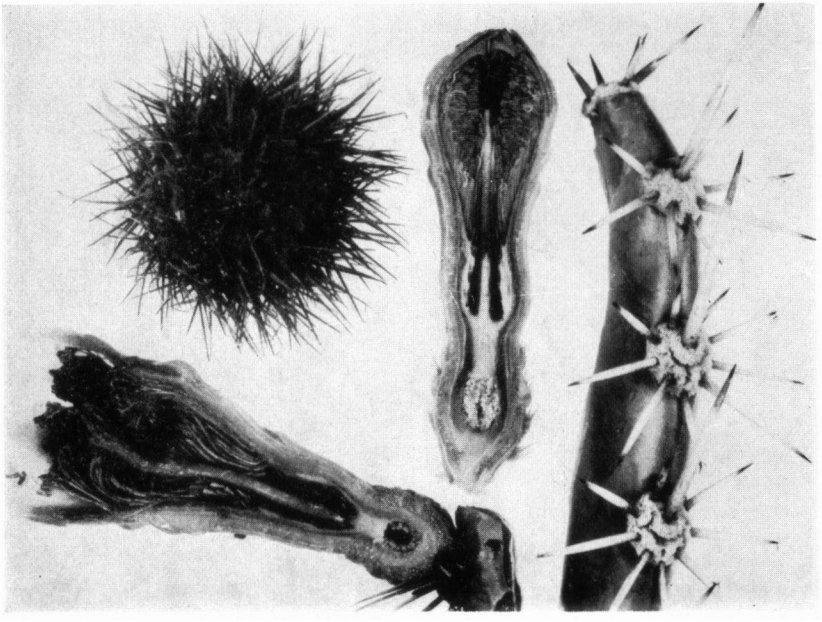
a Landscape North of the Cerro de Santa Ana, Paraguaná; low table-land of soft limestone with thorny shrubs, *Lemaireocereus griseus* and *Opuntia Wentiana.*



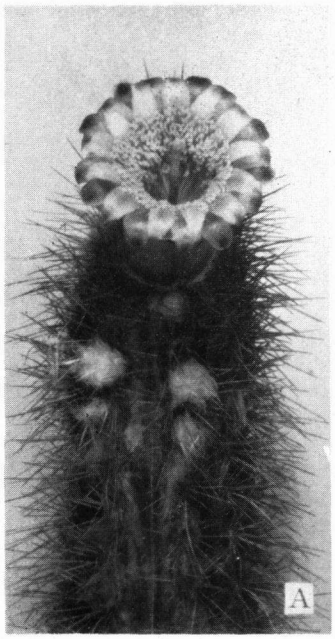
b *Opuntia curassavica,* Curaçao (No 110) (about 3/5 nat. size, from life; fr. M. Arnoldo phot.).

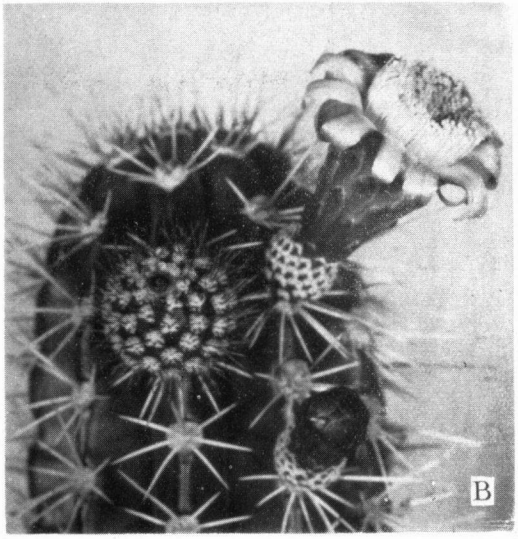


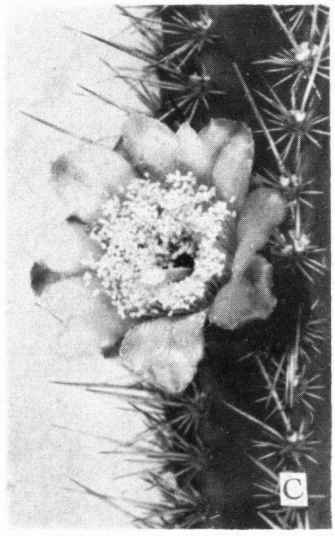
a *Cereus repandus*, showing spiny areoles (above: Curaçao, Boldingh coll.; below: Bonaire, No 143) and flowerbud in length section (Curaçao, No 144). (nat. size).

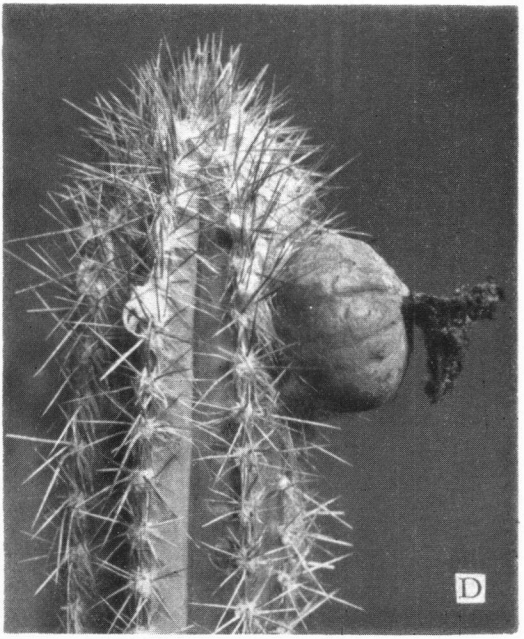


b *Lemaireocereus griseus*, showing flower in length section and fruit (Los Hermanos, No 159), areoles from the top of the stem and flowerbud in length section (Curaçao, No 161). (nat. size).

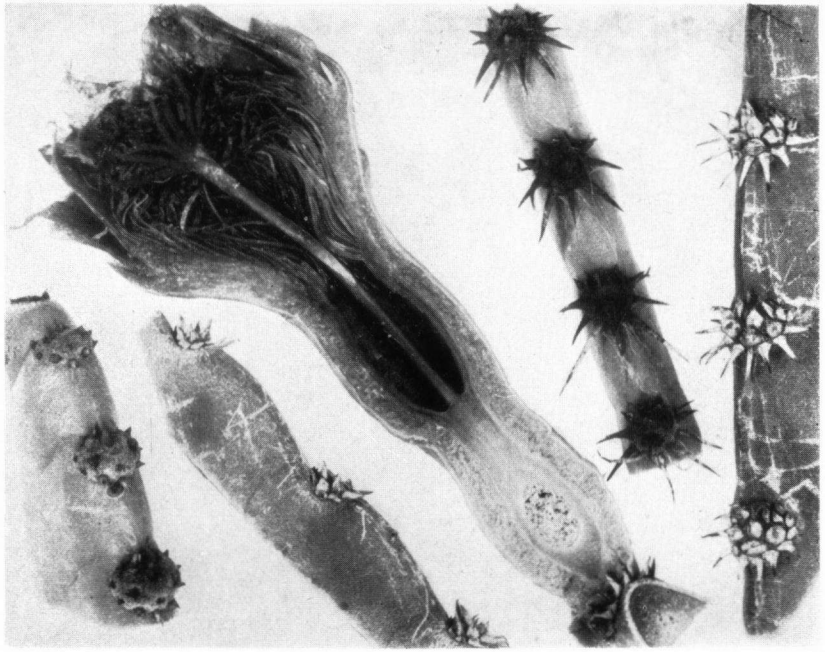




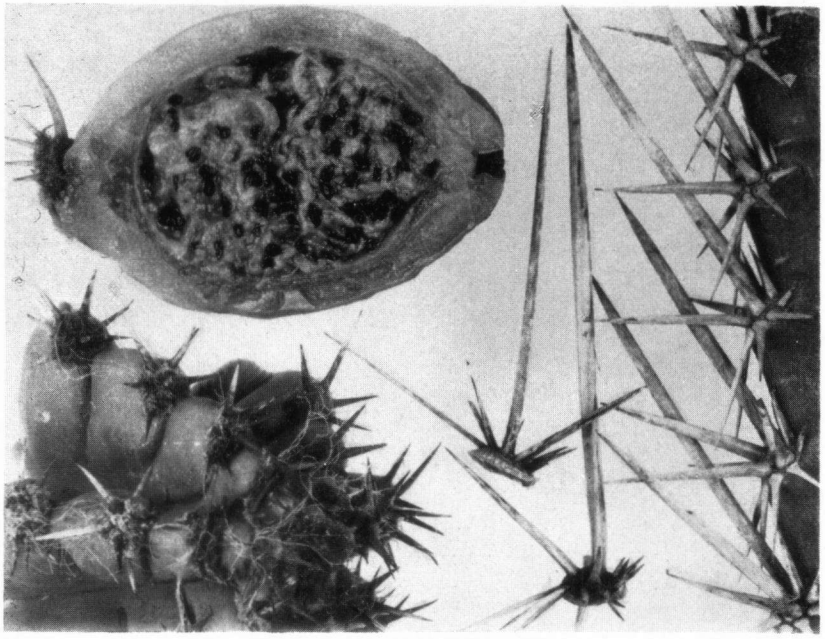




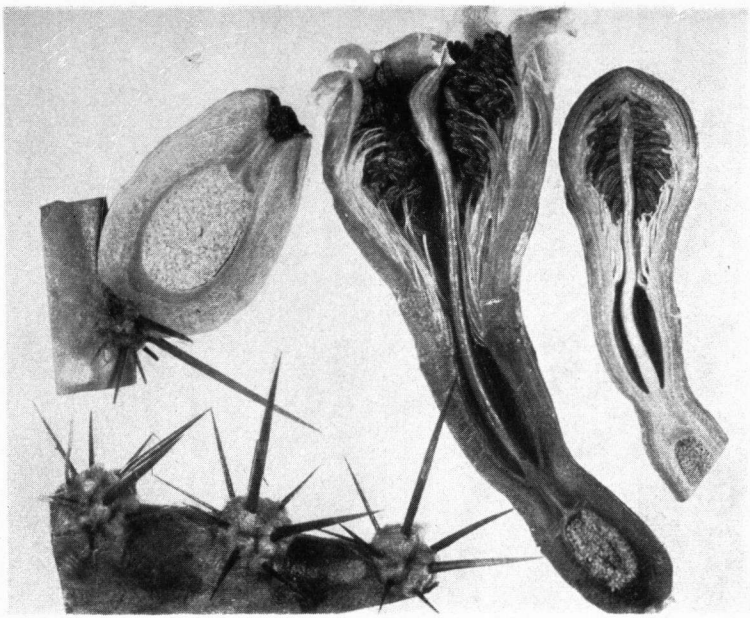
a *Cephalocereus lanuginosus,* Curaçao. — b *Lemaireocereus griseus,* Curaçao. — c *Cereus repandus,* Curaçao. — d *Cephalocereus lanuginosus,* Margarita (No 152); fruit, two days before bursting. (1—3 about 3/4 nat. size, fr. M. Arnoldo phot.; 4 about 1/2 nat. size; from life).



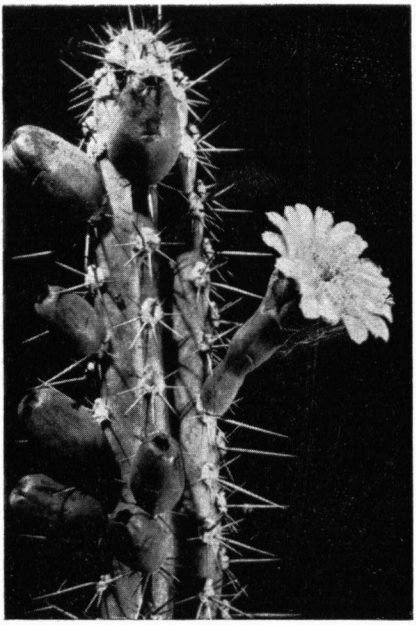
a *Cereus margaritensis* var. *micracanthus*, showing flower in length section and parts of the stem, the left one from the top (Esmerarda, No 146; second from the right: Los Frailes, No 147). (nat. size).



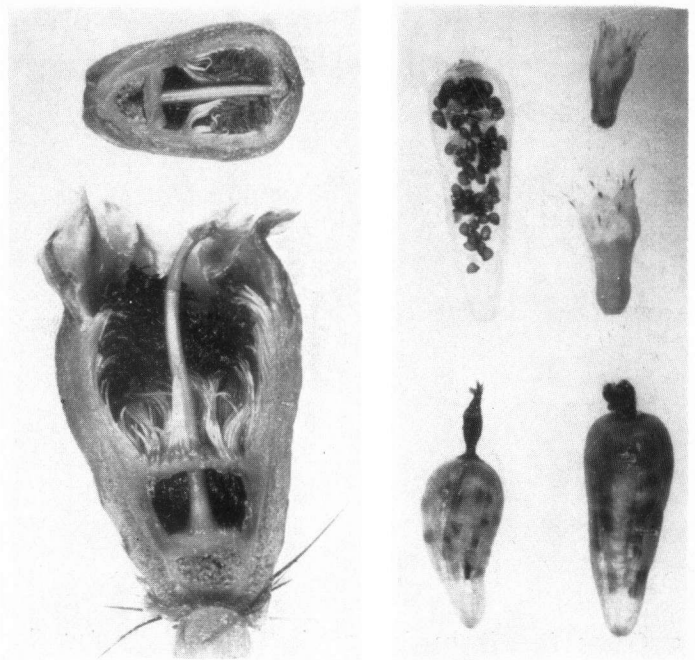
b *Cereus margaritensis*, showing fruit in length section (Esmerarda, No 148), part of the top of the stem (Margarita, No 149), single areoles (left one: La Goajira, No 150; right one: Esmerarda, No 148) and part of the stem (Margarita, No 149). (nat. size).



a *Cereus Russelianus*, Paraguaná (No 151), showing flower, flowerbud and unripe fruit in length section and part of the stem. (nat. size).

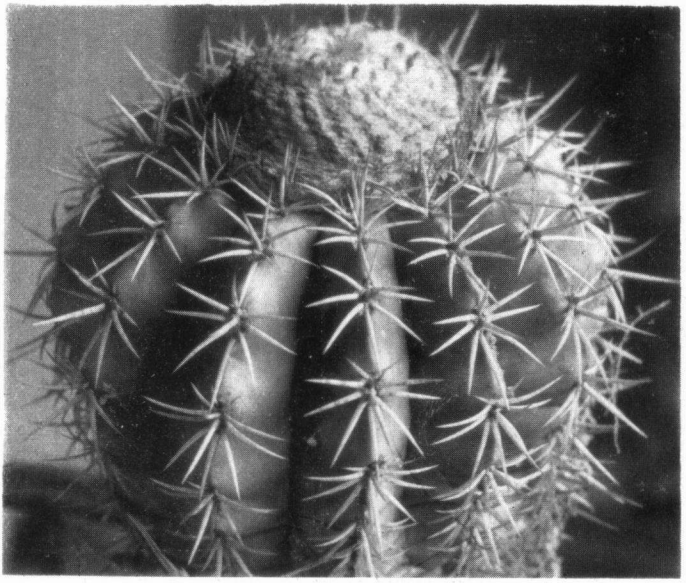


b *Cereus Russelianus* (No 151). (about 2/3 nat. size, from life).
c *Cereus Russelianus* (No 151), top of flowering plant with unripe fruits. (about 1/3 nat. size, from life).



a *Cephalocereus lanuginosus*, Los Hermanos (No 154), showing flower and flowerbud in length section; note the bases of the lowest filaments which are united into a 3—5 mm heigh collar! (nat. size).

b *Mammillaria simplex*, Curaçao (No 194), showing flower and fruits, one of the latter in length section, with ripe seeds. (about 7/4 nat. size).



c *Melocactus (Mel. Lobelii* Suringar), Margarita (No 186). (5/11 nat. size, from life).

Angoletta, Tamarindo, Isla de Conejo (Los Testigos); Morro Fondeadero, Morro Pando (Los Hermanos); Bonaire; Curaçao; Aruba; Paraguaná; S. Goajira.

Common or fairly common; in the Goajira observed only just south of Rio Hacha.

The fruit is edible and tastes very good. The wood is used by the natives.

La Plaza, N. of La Asunción, Margarita, 13. V. 1936 (No 152, fr.; tab. IXd). Isla de Conejo, Los Testigos, 17. VI. 1936 (No 153, fl., fr.). Morro Fondeadero, Los Hermanos, 20. VII. 1936 (No 154, fl.; tab. XIIa). Seroe Paskoe, Lagoen, Curaçao, 24. IV. 1930 (No 155). Seroe Commandant, St. Kruis, id., 24. IV. 1930 (No 156, fl., fr.).

Often tree-like, up to 5 (—8) m high, either nearly simple or much branched; trunk up to 15 (—25) cm across, with a very weakly developed corklayer which peels off in thin flakes. Branches mostly ascendent, sometimes curved, often with several shallow constrictions, the younger parts 4—8 cm across. Ribs (7—) 8—10 (—13), 1—2 cm high, green, greyish green or somewhat glaucous. Areoles round or elliptical, 4—8 mm across, 1—1½ cm apart, spiny, covered with a grey or brownish felt; the younger ones with many thin, up to 2 cm long, woolly hairs; the flowering areoles with dense tufts of hairs. Spines 10—20, rarely more, usually differentiated into central and radial ones, acicular, straight, flexible, usually round but sometimes angular; surface often somewhat fibrous, often twisted, at first light yellow or yellowish-green, afterwards brownish or greyish; top darkbrown or black. Central spines 1—5, rarely more, longest more or less porrect, 1½—5 cm long, ½—1 mm thick near the base. Radial spines 9—15, rarely more, more or less spreading, usually distinctly smaller than the central ones, about ½ mm thick near the base. Flower about 6 cm long; about 50 of the tepals longer than 1 cm; nocturnal. Inner tepals ovate to oblong, apiculate, 3—2½ times as long as broad, 16—22 mm long, cream-coloured or, often, somewhat greenish; apex sparsely and minutely fimbriate. Receptacle campanulate, thick and fleshy, about 3 cm long, 2—2¼ cm wide at the base, 2½—3 cm wide at the top, at the top with several imbricate, ovate, fleshy bracts, towards the base the bracts reduce to a few, subdeltoid, 1½—4 mm long scales. Stamens 400—500, on the upper 2/3 of the receptacle. Lower filaments 14—18 mm long, the upper ones 6—11 mm; lowest filaments ascending, not decurrent, connate at the base into a 3—5 mm heigh collar. Anthers innate, 1¾—2¾ mm long, greyish. Stigma-lobes 10—15, about 3—4 mm long,

yellowish green. Style cylindrical, about 4 cm long, 2—2½ mm thick. Ovary short, cylindrical, about 1 × 2 cm, with a few deltoid scales; perianth persisting. Fruit depressed globose, up to 3½ × 5 cm, green or somewhat reddish, with a few remnants of the scales; pulp reddish, smell of strawberries. Seeds about 1¾ × 1¼ × ¾ mm, covered with very low and very flat tubercles, glossy black.

Some material of *Cephalocereus*, which I collected between Concepción and La Paz, W. of Maracaibo (16. VII. 1930, No 157, fl.), perfectly agrees with the description and the photographs of *Ceph. colombianus* Rose 1909 given by BRITTON and ROSE. On the other hand I cannot find noteworthy differences with the material of *Ceph. lanuginosus* described above. I therefore doubt wether *Ceph. colombianus* is a distinct species.

21. **Cereus hexagonus** (L.) Mill. 1768. BRITTON and ROSE 1920 p. 4, fig. 1—4. — *Cereus peruvianus* Mill., apud AMELUNXEN 1931 p. 8, fig. 4; REALINO 1936 p. 121, 3 fig. — *Cereus Jamacaru* DC., apud JOHNSTON 1909 p. 241.

Tacarigua, Margarita, 15. VIII. 1903 (JOHNSTON 341, Gray Herb.; fl.).

Plants, very probably belonging to this species, are not unfrequently used as a living hedge in Margarita. Sometimes cultivated in Curaçao and Aruba.

22. **Cereus Russelianus** Otto 1849. WERDERMANN 1931 p. 70. — *Cephalocereus russelianus* (Otto) Rose, BRITTON and ROSE 1920 p. 33, fig. 36—38. — *Pilocereus russelianus* (Otto) Rümpl., BACKEBERG 1931 p. 64, 66; id. 1931a p. 23; BACKEBERG and KNUTH 1936 p. 327. — *Cereus (Pilocereus) horrispinus* BACKEBERG 1930a p. 164, 1 fig.; WERDERMANN 1931 p. 70.

Colombia* and North Venezuela (La Guaira type-locality!).

Common N. of the Cerro de Santa Ana, Paraguaná.

The fruit is edible.

Guacurebo, just N. of the Cerro de Santa Ana, Paraguaná, 18. II. 1937 (No 151, fl., young fr.; tab. XIa—c).

Erect or more or less straggling, up to 4 m long, not much branched, not tree-like, covered with a conspicuous wax layer; no definite woody trunk. Branches ascendent or curved, up to 2 (—3) m long, the younger parts 5—6 cm across. Ribs (5—) 6 (—7), 1½—2 cm high, crenate, with horizontal creases in the sides, glaucous. Areoles round, (8—) 10 (—12) mm across, 1—2½ cm apart, spiny, densely set with ¼—½ cm long, white woolly hairs; the younger ones with several white cobwebby hairs of about 1½ cm long; the flowering areoles with a few long hairs. Spines 8 (—14), the central ones usually different from the peripheral ones, acicular, straight, rather stiff, at the base in trasverse section round or somewhat elliptical; surface not distinctly fibrous, at first brown, afterwards greyish; top dark-brown or black; central spines 1 (—3), the longest ones more or less porrect, 3—4 cm long; near the base 1½—2 mm thick; peripheral spines 7 (—11), more or less spreading, usually distinctly smaller than the central ones, near the base ¾—1½ mm thick. Flower 8—9 cm long; 25—30 of the tepals longer than 1 cm; nocturnal. Inner tepals oblong to elliptical, obtuse, apiculate to mucronulate, 3—2¼ times as long as broad, up to 23 mm long, greenish or cream-coloured; apex sparsely fimbriate. Receptacle funnel-

shaped, narrowed in the middle, thick and fleshy, 4½—5¼ cm long, about 1 cm wide at the base, about 3 cm wide at the top, at the top with several imbricate, shortly elliptical, partly adnate, fleshy bracts, downwards the bracts reduce to a few small scales and towards the base they disappear altogether. Stamens 500—600, on the upper 3/5 of the receptacle. Filaments 7—18 mm, the longer ones lower inserted, yellowish; lowest filaments erect, not decurrent, bases entirely free. Anthers innate, 2½—3¼ mm long, yellowish brown. Stigma-lobes 10—12, 6—8 mm long, yellow. Style cylindrical, 4—5 cm long, about 2 mm thick, yellowish. Ovary sybcylindrical to ovoid, 2¼—2½ × 1¼—1½ cm, naked except for a few remnants of the scaly bracts; perianth deciduous.

Judging from the descriptions and the photograph, *Cereus horrispinus* Backeberg must be conspecific with *C. Russelianus* Otto.

23. **Cereus repandus** (L.) Mill. 1768. Britton and Rose 1920 p. 17, fig. 18—19; Boldingh 1913 p. 297; id. 1914 p. 71; Hummelinck 1931 p. 41, fig. 1—4; id. 1933 p. 185, fig. 3; id. 1934 p. 152, 162; Amelunxen 1931 p. 5, fig. 1; Realino 1936 p. 112, 2 fig. — *Cereus albispinus* Salm-Dyck, apud Werdermann 1931 p. 69. — *Pilocereus albispinus* Rümpl., apud Backeberg 1930 p. 26; id. 1931 p. 66; id. 1931a p. 23; id. 1932 p. 56; id. 1934; id. 1937 p. 30; id. 1937a p. 142; Backeberg and Knuth 1936 p. 326. — *Pilocereus albispinus* var. *Weberi* Backeberg 1931 p. 66; id. 1931a p. 23; 1937 p. 30; Werdermann 1931 p. 69; Backeberg and Knuth 1935 p. 326. — *non Cereus repandus* (L.) Mill., apud Werdermann 1931a p. 239. (*non Cereus repandus*, Haworth. — *non Cereus albispinus* Salm-Dyck; *non Pilocereus albispinus* (S.—D.) Rümpler.) (In Miller's Gardeners Dictionary, ed. 8 1768, the names Cereus (*Lanuginosus*) and Cereus (*Repandus*) have to change places).

"Kadoesjie" (Cur., Ar., Bon.); "Breebee" (Cur., Ar.).

Curaçao; Aruba; Bonaire, Klein Bonaire.

Abundant and often a dominant feature of the landscape; in Aruba, its area shows considerable gaps.

The wood is widely used by the natives, chiefly for the roofs and walls of their houses. The fleshy tissue of the stem, dried and grinded, is used for their beloved caduchy-soup. The fruit is edible. The plant is also important as cattle-food.

E. coast of Washikemba, Bonaire, 12. V. 1930 (No. 142). S.W. Lima, id., 31. III. 1937 (No 143, fl., fr.; tab. VIIIa). Seroe Cabajé, Porto Marie, Curaçao, 19. IV. 1930 (No 144, fr.; tab. VIIIa). N. coast of Savonet, id., 29. IV. 1930 (No 145, fl.). Scherpenheuvel, id., 4. XII. 1937 (No 196; Fr. Realino and Fr. Carlos coll.).

Tree-like, up to 8 (—12) m high, with a much branched top; old trunk without ribs and spines, up to 30 (—40) cm across, with a weakly developed corklayer which peels off in thin

flakes. Branches ascendent, often with numerous constrictions, the younger parts 6—10 cm across. Ribs (8—) 9 (—12), 1—2 cm high, crenate, often with horizontal creases in the sides, greyish green, green or glaucous, the youngest parts often somewhat reddish. Areoles round, 3—6 mm across, ½—2 cm apart, spiny, covered with a grey or brownish felt; the younger ones usually with several thin hairs. Spines 8—20, rarely more, the central ones not always different from the peripheral ones, acicular, straight, flexible, usually in transverse section round but sometimes angular or flattened, often twisted; surface usually somewhat fibrous, greyish; top dark-brown or black. Central spines 1—7, rarely more, longest directet upwards, 2—6½ cm long, 1—1½ mm thick near the base. Peripheral spines 7—13, rarely more, spreading, usually distinctly smaller than the central ones, ½—1 mm thick near the base. Flower 6—11 cm long, 20—30 of the tepals longer than 1 cm; nocturnal. Inner tepals ovate to lanceolate, apiculate, 2½—4 times as long as broad, up to 26 mm long, white or greenish, sometimes rose-coloured; apex sparsely and minutely fimbriate. Receptacle funnelshaped, narrowed in the middle, thick and fleshy, up to 4½ cm long, 1—1¾ cm wide at the base, 2½—3 cm wide at the top, at the top with several imbricate, spathulate, for the greater part adnate, fleshy bracts, towards the base the bracts reduce to a few small scales, sometimes with a litte felt in their axil. Stamens 500—600, on the upper 1/2 of the receptacle. Filaments 7—18 mm long; the longer ones near the base; lowest filaments erect, not decurrent, bases entirely free. Anthers innate, 2—2½ mm long, yellowish. Stigma-lobes 8—10, about 8 mm long, yellowish. Style cylindrical, 3—5¼ cm long, 1½—2 mm thick. Ovary cylindrical to ovoid, 1¾—3½ × 1¼—1¾ cm, naked except for a few remnants of the scaly bracts; perianth deciduous. Fruit cylindrical to ovoid, 4—5½ × 2½—3½ cm, somewhat violet or reddish, naked; pulp white or slightly reddish. Seeds about 2 × 1½ × 1 mm, covered with low and blunt tubercles, dull black.

The plants from Curaçao which BACKEBERG and WERDERMANN describe as *Cereus* or *Pilocereus albispinus* (Salm-Dyck) Rümpl. are in my opinion identical with *Cereus repandus* (L.) Mill. The *Pil. albispinus* var. *Weberi* Backeberg from Curaçao has no value at all, the differences with the typical plants being found only in more slender shoots and shorter spines, while the fruit is not violet, but yellowish tinged with violet (reddish green according to WERDERMANN).

PITTIER (1926 p. 168) records *Cereus repandus* from Puerto Cabello; these plants, however, may possibly belong to *Cereus margaritensis*.

The *Cereus* from Hispaniola which WERDERMANN (1931a) identifies with *Cereus repandus* (L.) Mill. of Curaçao, Aruba and Bonaire is surely not identical with this species; especially the vegetative parts look very different (EKMAN H 4446, H 5377, Stockholm): Ribs 11—14; areoles 2½—4 mm across, 1—1½ cm apart, the youngest ones with some long cobwebby hairs; spines 12—20, of one kind only, the peripheral ones slightly shorter than the central ones, spreading, (1—) 1½—2 (—3) cm long, ¼—½ mm thick at the base, at first yellow, afterwards greyish, without a dark top.

24. **Cereus margaritensis** Johnston 1905. JOHNSTON 1909 p. 241, 293; BRITTON and ROSE 1920 p. 18 (line 3 of description read: 10 mm, instead of 10 cm); BACKEBERG and KNUTH 1936 p. 182.

"Yaurero" (Araya, Marg.); "Cardón lefaria" (Parag.).

Chacopata, Morro de Chacopata, Morro de Esmerarda (N. coast of E. Venezuela); Coche, Cubagua; Margarita; Morro de la Iguana, Chiwo, Angoletta, Tamarindo, Isla de Conejo (Los Testigos); Puerto Real, La Pecha (Los Frailes); Paraguaná; La Goajira.

Common, sometimes a dominant feature of the landscape; in Margarita and La Goajira (f.i. between Uribia and Manaure and near Rio Hacha) however, the distribution sometimes shows considerable gaps.

The wood is widely used by the natives; the fruit is edible.

Morro de Esmerarda, W. of Carúpano, 11. VI. 1936 (No 148, fl., fr.; tab. Xb). El Valle, Margarita, 27. VII. 1903 (JOHNSTON 344, Gray Herb., the type!; fl., fr.). La Sabana, between Pampatar and La Asunción, id., 27. V. 1936 (No 149, fr.; tab. Xb). Laguna de Tucacas, La Goajira, 15. I. 1937 (No 150; tab. Xb).

Central spines usually clearly different from the peripheral ones, acicular, mostly straight, stiff, usually round but sometimes angular and dorsally flattened near the base, often twisted; bases somewhat swollen; central spines 1—5, longest as a rule pointed upwards, (3—) 5—7 (—8) cm long, (1—) 1½—2 (—2½) mm thick; peripheral spines 9—17, rarely more, spreading or sometimes reflexed, usually much smaller than the central ones, ¾—1½ mm thick.

24a. **Cereus margaritensis** Johnston var. **micracanthus** Hummelinck nov. *Spinis conicis, acuminatis vel mammiformibus, apiculatis, raro 1 cm superantibus.*

Esmerarda, Morro de Esmerarda, Puerto Santo, Morro de Puerto Santo (N. coast of E. Venezuela); La Pecha (Los Frailes).

Common near Carúpano, sometimes even forming a dominant feature of the landscape; on the Venezuelan Islands found in one locality only. On the Morro de Esmerarda and on the top of La Pecha this form grows together with typical, longspined specimens; in Puerto Santo, the Morro de Puerto Santo and Esmerarda, only shortspined plants have been observed.

Morro de Esmerarda, W. of Carúpano, 11. VI. 1936 (No 146, fl. fr.; tab. Xa). La Pecha, Los Frailes, 19. VI. 1936 (No 147, fl., fr.; tab. Xa).

Central spines not clearly different from the peripheral ones, varying between conical, conical-acuminate and mammiform-apiculate, dorsally flattened, rarely exceeding 1 cm; at the base distinctly swollen; peripheral spines spreading or reflexed, sometimes curved; central spines often somewhat shorter than the lower peripherals.

The following description is common to *Cereus margaritensis* as well as to the var. *micracanthus*.

Tree-like, up to 8 m high, with a much branched top; old trunk without ribs and spines, up to 30 cm across, with a weakly developed corklayer which peels off in thin flakes. Branches ascendent, often with several shallow constrictions, up to 20 cm across. Ribs (5—) 6—8 (—9), about 2—3 cm high, crenate, with horizontal creases in the sides, green or greyish green. Areoles round, 6—9 mm across, 1—2 cm apart, spiny, covered with a grey or brownish felt; the younger ones with several thin, up to 2 cm long hairs. Spines 10—20, rarely more; surface somewhat fibrous, greyish or brownish; top dark-brown or black; bases bulbous, often occupying the whole areole. Flower 6—11 cm long, 20—30 of the tepals longer than 1 cm; nocturnal. Inner tepals lanceolate to ovate, apiculate, 2—3 times as long as broad, 18—26 mm long, white or greenish; apex sparsely and minutely fimbriate. Receptacle funnelshaped, narrowed in the middle, thick and fleshy, 3¾—4½ cm long, 1½—1¾ cm wide at the base, 3—4 cm wide at the top, at the top with several imbricate, spathulate, for the greater part adnate, fleshy bracts, towards the base the bracts reduce into a few small scales. Stamens 600—700, on the upper 1/2 of the receptacle. Lower filaments 18—26 mm long, the upper ones 10—16 mm; lowest

filaments erect, not decurrent, the bases entirely free. Anthers innate, 2½—4 mm long, greyish or yellowish. Stigma-lobes 10, 9—11 mm long, yellowish. Style cylindrical, 4—5 cm long, 1½—2 mm thick. Ovary cylindrical to ovoid, about 3 × 1½ cm, naked except for a few remnants of the scaly bracts; perianth deciduous. Fruit cylindrical to ovoid, 5—6 × 3—4½ cm, green or somewhat reddish, naked; pulp white or somewhat reddish. Seeds about 2½ × 1¾ × 1¼ mm, covered with low and blunt tubercles, dull black.

Although the flower and the fruit do not show any noteworthy differences with those of *Cer. repandus*, and in some cases (f.i. in specimens from Paraguaná and La Goajira) even a certain resemblance in armature could be noted, it is, in my opinion, not allowed to unite *Cer. repandus* and *Cer. margaritensis*.

25. **Melocactus** Link et Otto 1827. Ernst 1872 p. 540; id. 1876 p. 178; id. 1886 p. 360; Suringar 1886 p. 364, 1 fig.; Valckenier Suringar 1902 p. 522; id. 1903 p. 1047; id. 1931 p. 134; Johnston 1909 p. 241, 293; Boldingh 1913 p. 297; id. 1914 p. 72; Berger 1929 p. 262; Hummelinck 1931 p. 44, fig. 5; id. 1933 p. 189, fig. 4—6; id. 1934 p. 152, 164, fig. 1—2; Amelunxen 1931 p. 11, fig. 7; Backeberg 1931 p. 66; id. 1931 a p. 26; id. 1934; Backeberg and Knuth 1936 p. 342; Realino 1936 p. 117, 2 fig. — *Cactus* L., Britton and Rose 1922 p. 220. [The name *Cactus* L. has to be cancelled as it figures in the list of the Nomina generica rejicienda (Intern. Rules Botan. Nomencl. ed. 3 1935 p. 103). Proposed lectotype of the Linnean name *Cactus* is *Cactus mammillaris* (l.c. p. 139).]

„Melón", „Buchi" (Ven.); „Boesjie" (Bon.); „Meloon die seeroe", „Kabees indiaan" (Cur., Ar.).

La Guaira, Guanta; Chacopata, Morro de Chacopata, Esmerarda, Puerto Santo (N. coast of E. Venezuela); Isla de Caribes, Lobos, Coche (S. of Margarita); Margarita; Chiwo, Isla de Conejo (Los Testigos); Puerto Real, La Pecha (Los Frailes); Morro Pando (Los Hermanos); Blanquilla; Huespen (Orchila); Gran Roque (Los Roques); Tortuga; Bonaire, Klein Bonaire; Curaçao; Aruba; Paraguaná; La Goajira; Santander del Norte.

Common or abundant nearly everywhere.

The central part of the plant is sometimes used as cattle-food; the fruit tastes very good.

Esmerarda, W. of Carúpano, 10. VI. 1936 (No 184, fl.). Lobos, S. of Margarita, 26. VI. 1936 (No 185, fl. fr. Cristate!). El. Fuente, N. of La Asunción, Margarita, 11. V. 1936 (No 186, fl., fr.; tab. XIIc). Morro de Moreno, N.E. of Porlamar, id., 8. VII. 1936 (No 187, fl. fr.). S. of Kralendijk, Bonaire, 17. V. 1930 (No 188). Lima, id., 17. V. 1930 (No 189). Seroe Cabajé, Porto Marie, Curaçao, 19. IV. 1930 (No 190). El Cardón, La Goajira, 27. I. 1937 (No 191, fl.). Cúcuta, Santander del Norte, Colombia, 18. VI. 1960 (No 192).

SURINGAR and VALCKENIER SURINGAR have described, apart of 7 already known species, 76 new species from the Dutch part of the Leeward Group. 53 Species were to be found on Aruba, 30 on Curaçao and 4 on Bonaire. Neither SCHUMANN nor BRITTON and ROSE have paid credit to their work; the latter, in 1922, recognize 19 species of *Melocactus* in total, which, however, have been delimitated by the same characters as has been used by the SURINGARS. — It has been impossible for me to identify with certainty the collected specimens. BRITTON and ROSE and also BERGER reckon all specimens from Venezuela to *Cactus caesius*, those of N.E. Colombia to *C. amoenus* and those of the Dutch Islands to *C. macracanthus;* BACKEBERG, however, calls the specimen from the Venezuelan mainland *Melocactus amoenus* and only those of Patos Island *Mel. caesius.*

The first reference to a species of *Melocactus* may be found in LOBELIUS' Stirpium adversaria nova, 1576 p. 376. On his description and figure, SURINGAR (1896) has based a new species, *Melocactus Lobelii:* Caulis conico-ovoideus, costis 14 perpendicularibus rectis obtusis, lateribus undulatis, areolis 6 remotiusculis, spinis firmis aduncis, marginalibus 7 stellatim expansis, centralibus 3 (—5?); cephalium setis croceis exsertis obsitum; bacca coccinea elongato-obconica. Hab: In sabuletis maritimis insulae Margaritae. — The heigh of the stem he calculated at 20¼ cm, the width at 21½ cm and the length of the spines at 3½ cm.

As far as I know, no other material of *Melocactus* from Margarita has been described since; it may therefore be of some interest to describe and figure (tab. XIIc) a specimen from that island (No 186), which is in perfectly agreement to LOBELIUS' illustration.

Plant subglobose, without the cephalium 16 cm high and 16½ cm thick; ribs 12, acute, 2½—3 cm high, green. Areoles broadly elliptical, 10—12 × 8 mm, white woolly when young, about 2 cm apart, 8—9 on every rib. Spines (9—) 12, acicular, lightbrownish horncoloured, often somewhat yellowish, usually with a greyish haze, utmost top with dark brown; peripheral spines (8—) 10, usually recurved, spreading, 1½—3 cm long, lower spines the longest, the base round, 1½—2 mm thick; central spines (1—) 2, straight or slightly curved, 2½—4 cm long, lower spine the longest, the transverse section of the base round or elliptical, 2—3 mm thick. Cephalium 7½ cm broad, 2½ cm high, not broader than the apex of the stem, composed of white, long, woolly hairs and brownish bristles. Flower 3—3½ cm long, about 20 of the petals longer than ½ cm; opens in the afternoon. Tepals narrow oblong to narrow lanceolate, acute or obtuse, 3—5 times as long as broad, up to 10 mm long, purplish. Receptacle cylindrical but narrowed at the middle, 1½—1¾ cm long, 3—5 mm broad. Stamens about 100—120, on the upper half of the receptacle. Filaments ½—3 mm long, the longer ones lower inserted. Anthers innate, about 1 mm long. Stigma-lobes 5—7, 2—3 mm long. Style cylindrical, 2—2¼ cm long, about ½ mm thick. Ovary obconical, 5—8 × 3—4 mm; style persisting. Fruit obconical, 3—4 × 1—1¼ cm, purple. Seeds about 1¼ × 1¼ × ¾ mm, covered with very low and very flat tubercles, glossy black.

26. **Mammillaria simplex** Haw. 1812. ERNST 1886 p. 360; JOHNSTON 1909 p. 241; BOLDINGH 1913 p. 298; id. 1914 p. 80; BERGER 1929 p. 315; AMELUNXEN 1931 p. 19, fig. 14; WERDERMANN 1931 p. 99; BACKEBERG 1932 p. 58; id. 1934. — *Mamillaria mamillaris* (L.) Karst., BACKEBERG and KNUTH 1936 p. 397; BACKEBERG

1937 p. 30. — *Neomammillaria mammillaris* (L.) BRITTON et ROSE 1923 p. 70, fig. 64; BRITTON 1930 p. 230; HUMMELINCK 1934 p. 152, 164, fig. 6; REALINO 1936 p. 117, 1 fig. [The name *Mammillaria* Haw. is conserved in the list of the Nomina generica conservanda (Intern. Rules Botan. Nomencl. ed. 3 1935 p. 103), hence the name *Neomammillaria* must be rejected. Proposed lectotype is *Mammillaria simplex* Haw. (M. mammillaris Karst.) (l.c. p. 145).]

Northern Venezuela, Patos Island*; Margarita*; Curaçao.

On Curaçao only found near the Seroe Cabajé, Porto Marie; recorded by ERNST from the vicinity of Juan Griego, Margarita. Several times observed on Patos Island* and the North Coast of Venezuela*, probably going inland as far as Lara.

Seroe Cabajé, Porto Marie, Curaçao, 19. IV. 1930 (No 193). Id., 1934 (No 194, fl., fr.; tab. XIIb; Fr. M. ARNOLDO coll.). Id., 5. X. 1935 (No 194a, fl.; Fr. M. REALINO and Fr. M. ARNOLDO coll.). No special time of flowering could be noted.

Depressed globose, globose or short cylindrical, 4—7 × 5—7¼ cm, often forming clusters. Tubercles 7—12 mm long, conic, green, slightly woolly in their axils, thick woolly near the flowering parts. Areoles round, about 2 mm across, (1/3) 1/2 (—3/4) cm apart, covered with a brownish felt, with some woolly hairs if young, spiny. Spines 13—21, central spines not always different from the peripheral ones, acicular, round, reddish brown, often with darker top. Central spines 3—5, usually 7—8 mm long, 1/3—1/2 mm thick at the base. Peripheral spines 10—16, spreading, 5—8 mm long, 1/4—1/3 mm thick. Flower 8—11 mm long, cream-coloured. Tepals about 20, elliptical, long mucronate, the top darkbrown; apex sometimes very sparsely fimbriated. Style cylindrical, with 5 yellow stigma-lobes. Stamens (40—) 45 (—50), on the lower half of the tube, with short, innate anthers. Ovary cylindrical, about as long as broad; perianth persisting. Fruit obconical, 10—20 × 6—8 mm, reddish; pulp white. Seeds about 1¼ × ¾ × ½ mm, roughened, brown.

Flowerless plants which were observed in S. Falcón looked quite the same as those from Curaçao.

27. **Mammillaria nivosa** Link 1837. BRITTON and ROSE 1923 p. 71; BÖDEKER 1933 p. 49.

Cultivated at Bacoval, Curaçao, introduced from St. Martin, on which island I collected this species in 1937 (Signal Hill, 17. III., No 195, fl.).

Mammillaria nivosa differs from *Mamm. simplex* chiefly in having larger flowers, more stamens and yellowish or yellow-brown spines; moreover the tepals have no brown tips.

RESUMEN.

La flora de cactos de las islas situadas entre Trinidad y la peninsula de La Goajira comprende trece especies silvestres, aparte del género *Melocactus: Pereskia Guamacho, Opuntia caribaea, O. curassavica, O. Wentiana, O. elatior, Rhipsalis cassutha, Hylocereus Lemairei, Acanthocereus pentagonus, Lemaireocereus griseus, Cephalocereus lanuginosus, Cereus repandus, C. margaritensis, C. margaritensis* var. *micracanthus* y *Mammillaria simplex.* Doce especies son aborígenes de las islas venezolanas y ocho de las islas neerlandesas.

Con exclusión de Tortuga, las islas venezolanas no poseen especies que no se encuentren en el continente. Margarita, con las islas situadas más hacia el sur, Los Frailes, Los Testigos y Blanquilla, poseen cinco especies: *Pereskia Guamacho, Opuntia caribaea, Cereus margaritensis* y su var. *micracanthus, Rhipsalis cassutha, Hylocereus Lemairei,* que no se han encontrado en ninguna de las otras islas, aunque ciertamente se podía esperar encontrar las tres primeras especies tambien ahí, teniendo en cuenta que el medio ambiente es el mismo.

Las islas holandesas, por el contrario, muestran cierta diferenciación: el *Cereus repandus* se presenta solo en Curaçao, Aruba y Bonaire; *Opuntia curassavica,* fuera de esas localidades, no se encuentra sinó en Tortuga. La especie que más se acerca al *Cereus repandus* es *Cereus margaritensis;* como el pariente más próximo de *Opuntia curassavica* se puede considerar *Opuntia repens,* que se presenta en Puerto Rico y las Islas Vírgenes.