

## The genus *Pterocactus*

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This is a genus endemic to the south and west of Argentina. The plants are small with cylindric or globose segments, apical flowers, conspicuous winged seeds and a very thick tuberous rootstock.

Only *P. kuntzei* (= *P. tuberosus sensu* B. & R.) is known in cultivation. Without exception the other species are small gems of nature and merit a place in collections of succulents and also among those of hardy plants and alpine.

Herbarium material is cited according to the abbreviations in Index Herbariorum, ed. 6 (1974). Additionally, the abbreviation 'RL' refers to the IADIZA herbarium where the collections of Dr. Ruiz Leal are deposited (IADIZA: Instituto Argentino de Investigaciones de Zonas Aridas, Mendoza). For reasons of space, only types and important specimens are listed. A complete list has been prepared and is available in the libraries of the Instituto Darwinion and the Cactus & Succulent Society of Great Britain.

***Pterocactus*** K. Schum. in Monats. f. Kakteenk. 7: 6 (1897).

*Roots* tuberous, usually large, up to the size of one's fist, from which arise one or more slender underground stems ('necks') ascending to ground-level where they branch into the aerial stems. *Stems* small, globose, cylindric or clavate, not more than 10 cm. long and 2 cm. diam., green, brown or purple, epidermis usually papillate. *Leaves* subulate, small, quickly caducous. *Spines* acicular, subulate or papery. *Glochids* numerous to few or absent. *Flowers* immersed in the apex of the stem-segments, rotate, yellow to reddish, with sensitive stamens. *Fruits* dry, umbilicate, opening, splitting transversely (pyxidial dehiscence), with spines similar to or more developed than those of the vegetative parts. *Seeds* arranged irregularly within the fruit or in some species arranged like the pages of a book, smooth, with three integuments, the outermost (of funicular origin) expanded to form a light brown papery wing, wind-dispersed. Type species: *Pterocactus kuntzei* K. Schum.

The species of this genus are confined to Argentina, occurring throughout Patagonia and in the west of the country from Mendoza to Salta. They grow in flat or gently sloping sandy or stony soils.

### Relationships

*Pterocactus* belongs to the subfamily Opuntioideae, as is shown by the structure of the flowers and seeds and the

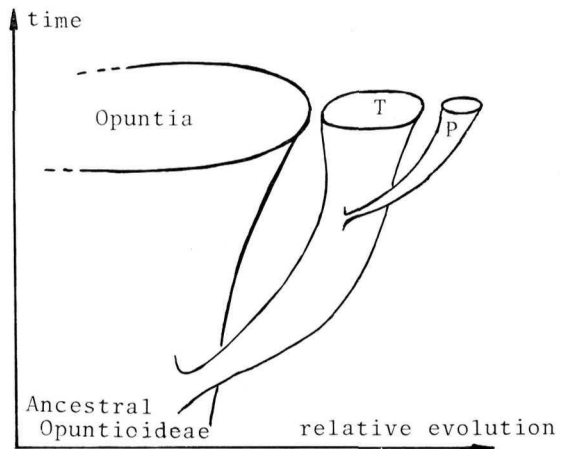
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presence of glochids. They are plants with very remarkable adaptations: the big tuberous root, underground shoots adapted to terrain with shifting sands, short-lived aerial stems, flowers immersed in the shoots, wind-dispersed winged seeds and fruits which open like a box with a hinged lid. All these specializations lead me to believe that we are dealing with a highly evolved genus\*.

The most closely related genus, in my opinion, is *Tephrocactus* whose species have very similar pollen and seeds with a very well-developed aril (though not wing-like), roughly similar to those of *P. hickenii*.

*Marenopuntia*, from Mexico, a genus with one species only (*M. marenae* (Parsons) Backeb.), closely resembles *Pterocactus*, but the similarity is superficial due to what is called 'convergent evolution'. Without doubt, this species is derived from *Cylindropuntia*.

The following diagram will clarify my idea of the origin of *Pterocactus* (T = *Tephrocactus*; P = *Pterocactus*):



\*This is exactly contrary to the view recently expressed by H. Friedrich in this journal (CSJGB 41(3): 67-69, 1979), who maintains that this is a very primitive genus derived from *Maihuenia*. This is based on the flower being inserted at the apex of the shoots. To me, this same feature proves the contrary, since cacti belong to the order *Centrospermae* whose members generally have pedunculate flowers. The *Cactaceae* would have been derived from a primitive group of *Centrospermae* involving a process of *reduction* and the loss of peduncles, branches and leaves (for which reason we consider that *Pereskia* is the most primitive genus in the family, since it has peduncles, branches and normal leaves).

## Distribution

*Pterocactus* occurs in the phytogeographical provinces known as Patagonian and the Monte. *P. kuntzei* has the widest distribution: it corresponds to the whole of the Monte area. On the western edge of this province are the endemic species *P. megliolii*, *P. reticulatus* and *P. gonjianii*. Further south, in the northwest of the Patagonian province (District of La Payunia), *P. fischeri* occurs in some abundance and more rarely *P. araucanus* is encountered. In the south of the Patagonian Province, over a wide area, there is *P. australis*. *P. hickenii* is more scarce. *P. valentinii* has only been collected a few times, making its exact distribution and its characters, uncertain.

These plants are fairly abundant but difficult to find because of their colour and shape. Furthermore, in winter the aerial parts dry up and break off. The wind carries seeds far away, so that very often the specimens found are isolated. Other times they grow in small colonies.

## Climate

The Patagonian Province has a dry cool-temperate climate. Frosts occur for the majority of the year and snow falls in winter. Depending on the latitude, the mean temperature varies from 7° to 13°C (with a mean annual minimum of 1.7° to 6°C and a mean annual maximum of 12° to 22°C, absolute minima of -5° to -24°C and absolute maxima of 29° to 39°C). Rainfall is very irregular, fluctuating between 120 mm. and 270 mm. per annum; usually it is distributed uniformly throughout the year (in some localities slightly more in winter and in others in spring).

The Monte Province, more than 2000 km. from north to south, is subject to very extreme temperatures. The mean temperatures range from 13° to 17°C (mean minimum 7° to 10°C; mean maximum 20° to 27°C, absolute minima -8° to -13°C and absolute maxima 29° to 39°C). The rainfall is predominantly in summer and very light, 80 mm. to 260 mm. per annum, and is rapidly lost thanks to the high spring temperatures and soil structure.

## Cultivation

The cultivation of these plants is easy. Rooting is by placing the tuberous root on the soil or partly burying it, or doing the same with stem-segments. The plants should get bright sun and cold, dry conditions in winter. Without these conditions the form of the shoots and the number and size of the spines changes completely. In winter, the aerial shoots break off, and this also sometimes happens in cultivation.

## Etymology

The generic name is derived from the curious form of the seed (Greek, *pteron*, a wing).

## Key to species

1. Central spines flat (everywhere or only the upper part of the shoot):
  2. Stem-segments globose or obpyriform; central spine thick ..... 1. ***P. australis***
  2. Stem-segments cylindrical; central spines papery ..... 2. ***P. fischeri***
1. Spines terete:
  3. Stem-segments globose or obpyriform, sometimes some elongate:
    4. Spines sparse, less than 5 mm. long; not covering the stem:
      5. Fruits apical ..... 3. ***P. araucanus***
      5. Fruits lateral ..... 4. ***P. reticulatus***
    4. Spines very dense, 4-15 mm. long, covering the stem:
      6. Spines 4-5 mm. long, yellow, bristly ..... 5. ***P. valentinii***
      6. Spines 10-20 mm., brown or black (rarely yellow), stiff ..... 6. ***P. hickenii***
  3. Stem-segments cylindrical:
    7. Plants very spiny, with uniformly-coloured epidermis:
      8. Areoles very woolly; spines less than 2 mm. long ..... 7. ***P. megliolii***
      8. Areoles not woolly; spines more than 4 mm. long ..... 5. ***P. valentinii***
    7. Plants not very spiny (rarely very spiny); epidermis brown or violet with darker stripes below the areoles:
      9. Stem tuberculate ..... 8. ***P. gonjianii***
      9. Stem not tuberculate ..... 9. ***P. kuntzei***

## Enumeration of species

1. ***P. australis*** (Weber) Backeb. in Desert Plant Life 22(10): 17 (1950).

*Opuntia australis* Weber in Bois, Dict. Hort., 896 (1899) (description completed in Bull. Mus. Hist. Nat. Paris 10: 398. 1904). Type not known to have been preserved.

Stems formed of obpyriform segments superposed, 1-1.5 cm. diam. and a little longer than this (up to 8 cm., according to the original description), greenish-brown to purple. Central spines 1-2, developing only at the apices, upward-pointing, 2 cm. long, thick, flattened, whitish to brown or blackish. Radial spines 10-15, 3-4 mm. long, white; glochids few and inconspicuous. Flowers yellow and somewhat pink to brown, 2-3 cm. diam. Receptacle with areoles similar to those of the stem and spines somewhat more developed. Outer perianth-segments with small, slender, cylindrical, axillary spines. Fruits with the areoles caducous when ripe; seeds 4-6 mm. diam. (3 mm. without the small wing), 1 mm. thick.

Grows in the provinces of Santa Cruz and Chubut, on sandy or stony hillsides, including amongst stones near the coast. It is the most southerly-occurring species of cactus. The type locality is south of the Rio Santa Cruz. I did not find the holotype in the Museum of Natural History, Paris, where Weber's herbarium is preserved.

2. ***P. fischeri*** Britton & Rose, The Cact. 1: 31 (1919). Type: Rio Negro, 1914, *W. Fischer* (NY!).

Stem-segments cylindrical unbranched, up to 10(-15) cm. long, 1-1.5 cm. diam., tuberculate, greenish-brown. Spines numerous. Central spines about 4, sometimes only developed in the upper

part of the stem, 1-3(-5) cm. long, subpapyraceous, brown to black with base and tip yellowish, usually basipetal. *Radial spines* 12 or more, 6 mm. long, setaceous, whitish; *glochids* numerous, 3-4 mm. long, yellowish. *Flowers* c. 2.5 cm. diam., coppery yellow to clear brown or purple. *Stamens* yellow. *Style* pinkish, fusiform; *stigma* 4-lobed. *Fruits* in the apex of the segments, 2-2.5 cm. diam., strongly tuberculate with areoles similar to those of the stems, well developed; *seeds* with well-developed but incomplete wing, 6-9 mm. diam. (4 mm. without the wing) and 2 mm. thick.

From the low and dry zones of the south of Mendoza, Neuquén and Rio Negro; there is also a specimen from Peninsula Valdez in Chubut.

*P. fischeri* is very close to *P. australis*, both having flattened central spines and a similar arrangement of the spines in the areole. They are differentiated by the characters given in the key, by the presence of numerous glochids in *P. fischeri* (almost non-existent in *P. australis*), by the number and direction of the central spines (c. 4, basipetal in *P. fischeri* and 1-2 in *P. australis* covering the apex). The seeds of *P. australis* have a rudimentary wing whereas that in *P. fischeri* is more developed.

3. ***P. araucanus*** Castellanos in Rev. Fac. Cienc. Agr. Mendoza 8(2): 6 (1964 [1960-61]). Type: Chubut, small mesas near the Rio Hualojaina, 14 Feb. 1945, Castellanos 16812, said to be deposited at the Instituto Lillo (LIL) but actually in the Museo de Ciencias Naturales de Buenos Aires (BA, preserved in spirit).

*Stem-segments* globose to obpyriform, superposed, 3-4 cm. long, 1-1.5 cm. diam., greyish-brown. *Spines* c. 8, 3 mm. long, pectinate adpressed, somewhat arched over the stem, yellowish or thickest black with yellowish tip. *Flowers* c. 4 cm. diam., opaque, red-brown. *Stamens* and *style* yellow. *Fruits* globose, not very umbilicate, 2 cm. diam., with areoles and spines like those of the stem but the spines longer, 5-7 mm.; *seeds* discoid, irregular, 4-9 mm. diam. (3-6 mm. without the wing) and c. 2 mm. thick, with irregular very wavy wing.

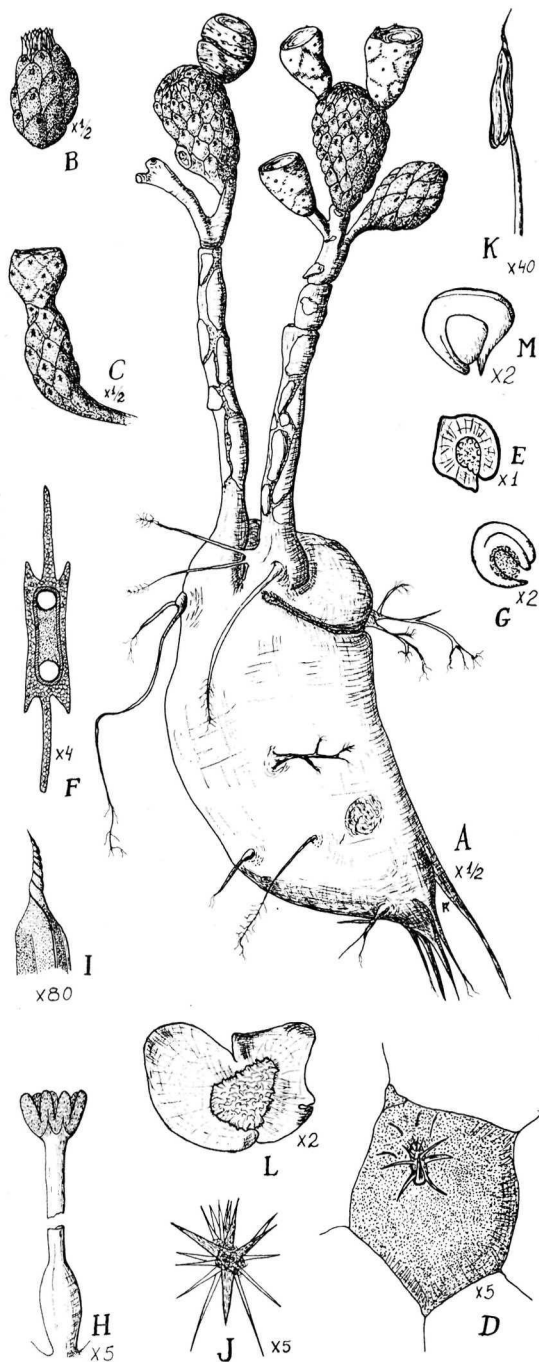
Grows on the plains of Neuquén, the west of Rio Negro and northwest of Chubut.

The structure of the areole indicates that it is related to *P. hickenii*.

4. ***P. reticulatus*** Kiesling in Bol. Soc. Argent. Bot. 14(1-2): 144 (1971). Type: San Juan, dpto. Iglesia, Llanos de la Patria, Kiesling 56 (LP, holo.; SI, iso.).

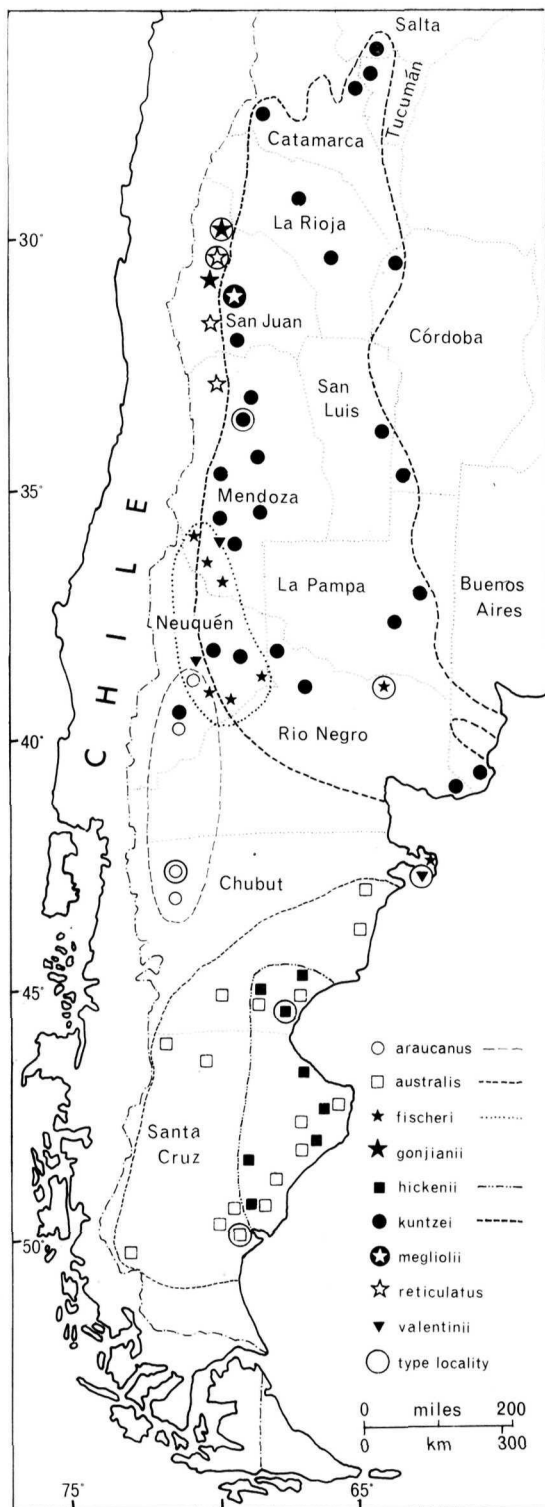
*Stem-segments* pyriform to globose, 2-3 cm. long, 1-2 cm. diam., greyish-purple or brown to olive-green, unbranched, with conspicuous rhomboid tubercles. *Central spine* 0-1, erect, *radials* c. 6, pectinate, all 2-5 mm. long, whitish to brown; *glochids* few, inconspicuous. *Flowers* apical, 4-5 cm. diam., pearly white, lightly tinged pink. *Style* short, thick, white; *stigma* 5-9 lobulate, dark red, very papillose. *Fruits* dry, lateral by the growth and tapering of the stem after flowering, globose to obconic, 2-2.5 cm. diam., umbilicus almost flat, dehiscence transverse; *seeds* with regular wing, c. 1 cm. diam. (4 mm. without the wing) and 1-2 mm. thick.

In the wild, flowers appear between December and February opening for a few hours after mid-day only for 2-3 days.



**Figs. A-G, *Pterocactus reticulatus*:** A, fruiting plant; B, stem-segment with closed flower; C, stem and fruit, with beginnings of neck formation; D, tubercle and areole; E, seed; F, diagrammatic section of seed showing (from outside to inside), the spongy outer integument, the dark inner integument (cross-hatched), the embryo (unshaded) and the endosperm (dotted); G, embryo and endosperm.

**Figs. H-M, *P. meglholii*:** H, style and stigma; I, apex of stamen; J, areole (drawn without wool); K, stamen; L, seed; M, embryo with endosperm. Drawn by the author.



Argentina: Distribution of *Pterocactus*

It grows in the valleys of Calingasta (San Juan) and Uspallata (Mendoza) between 1500 and 3000 m.s.m. in full sun, on clayey soils covered with pebbles and swept daily by the wind. *P. gonjianii* and *Austrocylindropuntia clavarioides* grow with it.

5. ***P. valentinii*** Spegazzini in An. Soc. Cient. Argent. 48: 51 (1899).

*P. pumilus* Britton & Rose, The Cact. 1: 32 (1919).  
Types: see below.

*Tuberous roots* relatively small, 2-4 cm. long, 1-2 cm. diam. *Aerial stem-segments* little branched, cylindrical, 4-8 cm. long, 1-1.5 cm. diam., green. *Spines* 25-30, 4-5 mm., radiating, hyaline. *Flowers* yellow to coppery. *Fruits* c. 2 cm. diam., yellowish-pink, with spines like those of the vegetative parts or with several additional flat, papery centrals.

In the original description, Spegazzini mentions two collections, the first not encountered amongst herbarium material examined and surely not extant, the second (Valdez, Lahille, LPS 23189) I designate as *lectotype*. The type of *P. pumilus* B. & R. is from the same locality: Peninsula Valdez, Pto. Piramides, 8 Jan. 1914, *Hicken* (& *Haumann*) 3286 (SI, isotype!; ?NY, holotype, not seen), clearly showing that it is the same species.

This species is little known. In addition to those mentioned from Chubut (Peninsula Valdez), I have seen two other specimens from the south of Mendoza and one from Neuquén. Some of the specimens cited by Castellanos are, in my opinion, depauperate plants of *P. fischeri*.

*P. valentinii* is well-differentiated from all the other species by its very numerous radiating spines with no difference between radial and central.

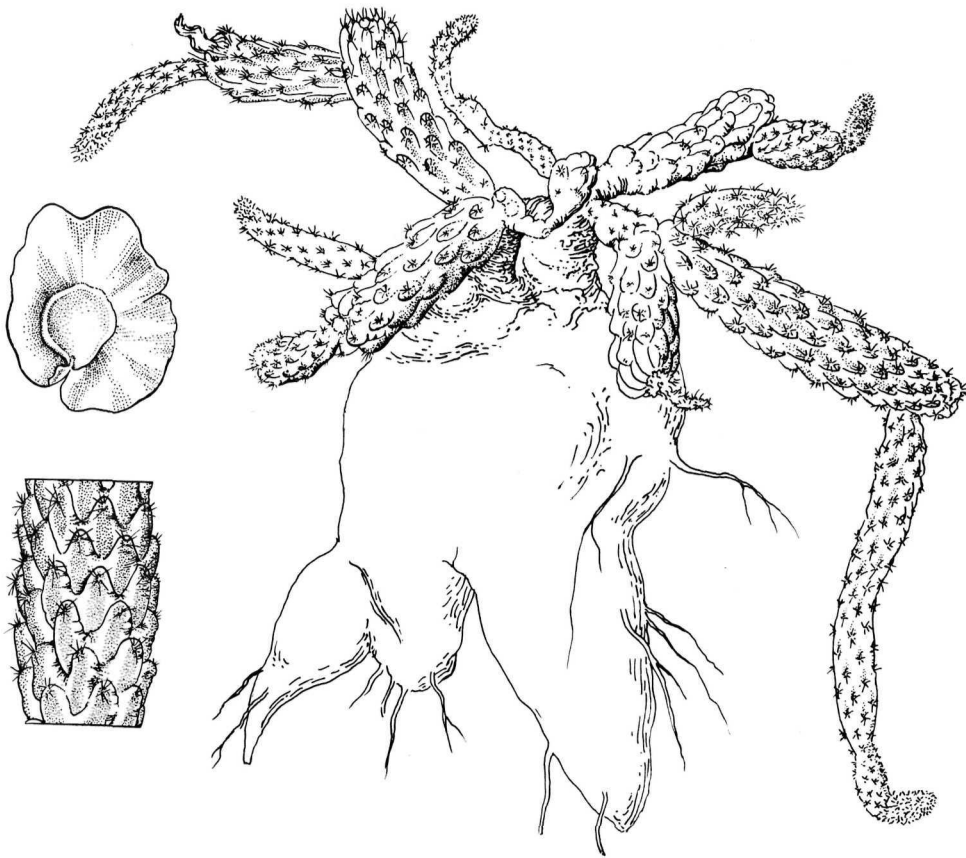
6. ***P. hickenii*** Britton & Rose, The Cact. 1: 31 (1919).  
Type: near Comodoro Rivadavia, 10 Jan. 1914, *Hicken* (& *Haumann*) 3281 (NY, holo., SI, iso.).

*Roots* enlarged, composed of several narrow-necked segments. *Stem-segments* globose to cylindroid, short, 2-3(-5) cm. long and 1 cm. diam., completely covered with spines. *Spines* very numerous, c. 20, 1-2 cm. long, acicular, straight, ± rigid, yellowish with brown base to black throughout; *glochids* numerous. *Flower* separated from the stem by a slight narrowing at the base of the ovary, c. 3 cm. long and 3 cm. diam., with the areoles of the receptacle spiny, similar to those of the stem. *Perianth-segments* broad, c. 2 cm. long and 1 cm. broad, mucronate. *Stamens* numerous, 0.5-1 cm. long; *anthers* narrow, ending in a sharp point. *Style* cylindrical, c. 2 cm. long; *stigma* with about 5-6 short, obtuse, papillate, violet-red lobes. *Fruit* not described. *Seeds* c. 7 mm. diam. (5 mm. without the wing) and 1.5 mm. thick, with narrow incomplete wing.

Found in the east of Chubut and Santa Cruz.

7. ***P. megliolii*** Kiesling in Bol. Soc. Argent. Bot. 14(1-2): 111 (1971). Type: San Juan, dpto. Zonda, on the way to Maradona, 24 Mar. 1971, *Volponi* 157 (LP).

*Tuber* up to 15 cm. long and 5-8 cm. diam. *Underground stems (necks)*, 1-8 cm. long, cream-coloured. *Aerial stems* c. 5(3-10) cm. long and 0.5-1 cm. diam., rarely articulate, brownish-green. *Areoles* small, crowded, woolly. *Central spines*



*Pterocactus gonjianii*: Plant,  $\times 2/3$ ; seed,  $\times 2$ ; portion of stem,  $\times 1\frac{1}{2}$ . Drawn by Christabel King.

usually 4(0-5), light to dark brown. Radial spines 10-20, up to 2 mm. long, adpressed, hyaline; glochids few or lacking. Flowers rotate, 3 cm. diam., yellow. Style cylindric to clavate, 2 cm. long; stigma 8-lobed, wine-red. Fruits dry, slightly thicker than the stems; seeds c. 10 mm. diam. (4 mm. without the wing) and 1 mm. thick.

From the surroundings of the town of San Juan in very dry, sun-drenched places with stony soil or fine sediments, very poor in organic material. The sparse rainfall (c. 80 mm. per annum) is mainly in spring.

8. ***P. gonjianii*** Kiesling, **species nova**; caespitosa radice tuberosa crassa c. 15 cm. longa, 6 cm. diametro, caulibus cylindraccis non vel parce articulatis 5-10 cm. longis, 1-1.5 cm. crassis violaceis, mammillis prominentibus surco 4-6-gonali conspicuo circumdati, areolis circularibus c. 2 mm. diametro copiose albilanoso, spinis 6-10 hialinis vel castaneis, glochidiis numerosis. Flores ad apices ramorum inserti solitarii sessiles rotati c. 3.5 cm. diametro, petalis luteis vel cremeis, stylo cylindrico, stigmatibus 5-lobato viridi vel rubro. Fructus apicalis, siccus, transverse circumscissus, seminibus  $\infty$ , alatis, 5-10 mm. diametro. Holotypus: San Juan, dpto. Iglesia, way to Quebrada of the Agua Negra, c. 2000 m.s.m., Jan. 1971, Kiesling 307 (LP).

Plant caespitose, with thick tuberous root up to 15 cm. long and 6 cm. diam. Underground stems 2-7 cm. long, cream in colour, with a few inconspicuous areoles and branching at soil level. Aerial stems not articulate, cylindric, 5-10 cm. long, 1-1.5 cm. diam., purple; tubercles prominent, rhomboid, c. 4-6 mm. long and broad and 1-2 mm. high, surrounded by a groove. Areoles at the apex of the tubercles, circular, 2 mm. diam., with abundant white wool. Spines 6-10, not differentiated into central and radial, (1-3)-4 mm. long, hyaline to light brown; glochids numerous, 2 mm. long, situated in the upper part of the areole. Flowers inserted in the apex of the stem, rotate, 4-5 cm. diam., outer perianth-segments brown edged cream, inner cream or yellow overall, the larger broadly spatulate, 2.5 cm. long and 1.5 cm. broad, margin slightly serrate. Style cylindric, c. 1.5 mm. long and 2 mm. diam. cream; stigma 5-lobed, green or purple, papillose. Fruits dry, with transverse dehiscence, somewhat broader than the stems, c. 2.5 cm. long, 2 cm. diam., with areoles and spines similar to the vegetative; seeds numerous, with large, regular wing, 5-10 mm. diam. (4-5 mm. without the wing) and 2 mm. thick.

Further material studied: San Juan, dpto. Iglesia, Camino to Quebrada del Agua Negra (type locality), Dec. 1972, *Gonjian* 10 (LP); the same, Tocota, Jan. 1979, *Gonjian* 12 (SI).

This new species occurs in the high valleys of the west of San Juan in the departamento of Iglesia, at 1500-2500 m.s.m., on plains and gentle sloping ground where



the soil is sandy or stony and covered with pebbles. It grows with *P. reticulatus* which it resembles in colour and the tuberculation of the stem; but it is distinguished by the more cylindrical shape of the stems, by the number, nature and disposition of the spines, by the numerous long glochids, by the colour of the flowers and especially by the apical fruits. The similarity to *P. reticulatus* has made me delay the publication of this species in order to prove by means of cultivation and repeated observation in habitat that they are different species. In the original locality both species are found but only very rarely intermediate forms, possibly hybrids or abnormal specimens.

*P. gonjianii* is also allied to *P. kuntzei*, a species from which it differs in the stem being divided into more or less isodiametric tubercles surrounded by a groove (tubercles very elongate with decurrent marks in *P. kuntzei*); by its spines (number, nature and disposition) and by its much larger and somewhat differently coloured flowers.

I dedicate this species with much pleasure to my friend Barkev Gonjian, outstanding collector of cacti who has known and grown this species for several years and whom I thank for the valuable information about it.

9. ***P. kuntzei*** K. Schumann in Monatschr. Kakt. 7(1): 6 (Jan. 1897); in Engler & Prantl, Nat. Pflanzenfam. Nachtr., 259 (Oct. 1897), and in Gesamt. Kakt., 753, fig. 107 (1898). Type: Paso Cruz, 1150 m.s.m. *O. Kuntze* (B†).

*P. decipiens* Guerke in Monatschr. Kakt. 17(10): 147 (1907). Syntypes: La Rioja, Paganzo; Mendoza, Puesto Lima, *Bodenbender* (comm. Kurtz).

[*P. tuberosus* Britton & Rose, The Cact. 1: 32 (1919), non *Opuntia tuberosa* Pfeiff. (species dubia, vide infra)].

#### KEY TO FORMS OF *P. KUNTZEI*

1. Stem-segments 8–15 mm. diam. .... f. **kuntzei**  
 1. Stem-segments 5–8 mm. diam. .... f. **lelongii**

#### f. **kuntzei**

*Aerial stems* cylindrical, 7–13(–20) cm. long and 8–15 mm. diam., brown or greenish-brown, with a vertical violet line below the areoles. *Spines* 8–12, small 0.5–1 cm. long, whitish. *Flowers* 3(–5) cm. diam., dirty yellow (somewhat brown) to coppery. *Style* cylindrical, c. 2 cm. long; *stigma* 6–8-lobed, pink to dark red, occasionally green, cavity of ovary cylindrical or fusiform, c. 1–1.5 cm. long and 4–5 mm. diam. *Seeds* with broad, complete and regular wing 1–1.2 cm. diam. (0.5 cm. without the wing) 2–4 mm. thick, light brown.

*P. kuntzei* K. Schum. (generic-specific description) was based on collections made by Otto Kuntze in Mendoza at Paso Cruz, alt. 1500 m.s.m., on the road to Chile. Schumann gave a good description and illustration. The holotype is not mentioned in the original description but it was preserved in the Berlin-Dahlem herbarium. Regrettably it was destroyed in the Second World War, together with the greater part of the herbarium. The species grows in the west of Argentina

from S. Salta (Cafayate), W. Tucuman (Amaicha del Valle), Catamarca, La Rioja, W. Cordoba, San Juan, Mendoza, La Pampa, N. Neuquén, N. Rio Negro and extreme S. Buenos Aires, between 500–1500 m.s.m. It flowers between December and March. It inhabits sandy, sometimes a little saline, soils. There are chromosome counts for this species (2n = 22, 44 and 66) indicating the existence of diploid, tetraploid and hexaploid forms.

f. **lelongii** Ruiz Leal ex Kiesling, **forma nova**; a f. *kuntzei* habitu magis ramoso, ramis gracilioribus, floribus citrinis stigmatibus viridibus differt. Holotypus: Mendoza, dpto. La Paz, environs of Villa La Paz, 5 Dec. 1948, *Ruiz Leal* 12017 (RL).

Differs from f. *kuntzei* by being more branched with more slender branches only 5–7 mm. diam., and by the lemon-yellow flowers with green stigma.

Further material studied: Mendoza, depto. Junin, Alto Verde, 820 m.s.m., very common on sandy soils, 13 Jan. 1948, *Ruiz Leal* 3828 (RL), San Juan, dpto. Sarmiento, Media Agua, *Meglioli* s.n. (cultivated).

This form occurs in the NE. of Mendoza (deptos. of Junin and La Paz) and the S. of San Juan (depto. Sarmiento), between 400 and 900 m.s.m. It grows with f. *kuntzei*, so the rank of form rather than variety or subspecies seems appropriate.

At a time when we mourn the recent death of Dr. Adrian Ruiz Leal, botanist of Mendoza and indefatigable collector of the flora of that province, I have the pleasure of dedicating this form, in accordance with his wish, to Sra Herminia Lelong de Castellanos, wife and collaborator of Dr. Alberto Castellanos.

#### INSUFFICIENTLY KNOWN SPECIES

*Opuntia tuberosa* Pfeiffer

*O. tuberosa* was described, (no doubt from plants sent by J. Gillies) from a species from Mendoza. The description is short and one cannot say whether it applies to *P. kuntzei* or *P. reticulatus* both of which grow in the same province. It is very unlikely that a type exists which would permit its identification and it must therefore be considered a name of doubtful application (nomen dubium).

*Pterocactus kurtzii* K. Schum. in Engl. & Prantl, Nat. Pflanzenfam. Nachtr. 259 (Oct. 1897) (as *kurtzei*) was a nomen *subnudum*, since the author only mentioned it as a second species of the genus more than twice as large as *P. kuntzei* and in flower. It was sent from Tucuman by F. Kurtz. Britton & Rose placed it in the synonymy of '*P. tuberosus*' and may have assumed it to be merely a variant spelling of *P. kuntzei*, saying 'we have not seen the type of *P. kuntzei*, which is doubtless at Berlin, but have examined co-types in the Kurtz Herbarium at Cordoba, Argentina and at New York'. The latter may, however, represent the Kurtz collection rather than that of Kurtze.