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Notes on *Potentilla* (Rosaceae). VI. New species from the Himalaya and China

JIŘÍ SOJÁK

RÉSUMÉ

SOJÁK, J. (1988). Notes sur *Potentilla* (Rosaceae). VI. Espèces nouvelles d'Himalaya et de Chine. *Candollea* 43: 159-171. En anglais, résumés français et anglais.

Sept espèces nouvelles du genre *Potentilla* sont décrites. *P. contigua* Soják (Népal, Bhutan) et *P. oxyodonta* Soják (Tibet Sud-Est) sont semblables à *P. peduncularis* D. Don d'après leurs habitus; *P. vittata* Soják (Tibet Sud-Est) est apparentée à *P. stenophylla* (Franch.) Diels. *P. festiva* Soják (Népal, Tibet Sud-Est, Sichuan) se rapproche de *P. lineata* Trev. *P. aristata* Soják (Népal, Sikkim, Bhutan, Tibet) rappelle *P. microphylla* D. Don. *P. illudens* Soják (Népal, Tibet Sud et Sud-Est) a une position intermédiaire entre *P. saundersiana* Royle, *P. thibetica* Cardot et *P. potaninii* Wolf. *P. venusta* Soják (Himalaya) était jusqu'à présent considérée comme une variété de *P. argyrophylla* Wall. ex Lehm.

ABSTRACT

SOJÁK, J. (1988). Notes on *Potentilla* (Rosaceae). VI. New species from the Himalaya and China. *Candollea* 43: 159-171. In English, French and English abstracts.

Seven new species of *Potentilla* are described. *P. contigua* Soják (Nepal, Bhutan) and *P. oxyodonta* Soják (SE. Tibet) are similar by their habits to *P. peduncularis* D. Don. *P. vittata* Soják (SE. Tibet) is related to *P. stenophylla* (Franch.) Diels. *P. festiva* Soják (Nepal, SE. Tibet, Sichuan) is close to *P. lineata* Trev. *P. aristata* Soják (Nepal, Sikkim, Bhutan, Tibet) resembles *P. microphylla* D. Don. *P. illudens* Soják (Nepal, S. and SE. Tibet) is intermediate between *P. saundersiana* Royle, *P. thibetica* Cardot and *P. potaninii* Wolf. *P. venusta* Soják (Himalaya) has so far been treated as a variety of *P. argyrophylla* Wall. ex Lehm.

***Potentilla aristata* Soják, spec. nov.**

Caudex brevis, eramosus (rarius 2-3-ceps), non caespitosus, \pm 3-8 mm crassus, residuis stipularum \pm ferrugineis omnibus opacis tectus. *Caules* 1-3.5(-5) cm alti, 1(-2)-flori, saepe recti, tenues (0.3-1 mm), pilis brevibus subappressis (interdum erecto-subpatentibus) rectis (raro subflexuosis) vestiti. *Folia radicalia* 10-18(-20)-jugo-pinnata, (0.7-)1.5-4(raro ad 10) cm longa. Stipularum auriculae liberae, in vivo \pm albicantes, (0.8-)1.5-4 mm latae. Petioli nulli vel brevissimi. Rhaches pilis rectis crassiusculis rigidis \pm subappressis (0.3-)0.5-1(-1.8) mm longis indutae. *Foliola* densa, inter se plerumque marginibus tegentia (saepe conduplicata vel canaliculata dentibus involutis), raro modice remota (tunc \pm plana), basi oblique inaequilateralia, ambitu ovata, ad (1/2-)2/3(-3/4) serrata serraturis utrinque 3-6 anguste (vel lineari-) triangularibus apice sensim attenuatis et acutis (quasi aristatis), utrinque pilis \pm subappressis rectis crassiusculis rigidulis \pm 0.3-1 mm longis dispersis vel mediocriter densis (in foliis juvenibus densissimis) tecta, supra interdum glabra. Foliola in medio lateris 2-5 \times 1.3-4.5 mm magna; serraturae 0.5-2 \times 0.2-0.6 mm magnae; folioli pars media indivisa 0.4-2 mm lata. *Folia caulina* 2 (rarissime 3), ad basin vel in dimidio caulis inferiore disposita, plerumque parva, simplicia vel ternata usque 4(-7)-jugo-pinnata, basi vaginata. *Flores* solitarii, raro 2, ca. 1.2-1.6 cm in diam. Sepala \pm late \pm triangularia, 2-4 \times 1.3-2.2 mm magna; episepala oblongo-elliptica vel lanceolata, 1.5-2.3 \times 0.4-1 mm magna, sepalis breviora. Petala lutea, 5-7.5 mm longa, apice leviter sinuata, calycem longe superantia. Stamina 20; antherae ellipticae vel

rotundatae, sordide fuscescentes, 0.4-0.55 mm longae. Stylus lateralis, basi non incrassatus, 1-1.3(-1.7) mm longus, glaber vel sparse pilosus, stigmatate dilatato. Nuculi (\pm subcompressae) globulares, 1.8-2 mm longi, sculptura prominente valida irregulari, dorso pilis dispersis praediti.

P. microphylla, quae speciei nostrae similis est, bene differt stylis subterminalibus, nuculis glabris laevibus, caudice caespitosim ramoso et stipulis (saltem nonnullis) nitidulis tecto, stipularum auriculis in vivo ferrugineis et angustioribus, foliolis minus numerosis profundius dentatis, dentibus eorum oblongo-linearibus (non triangularibus) apice obtusis vel subobtusis, foliis petiolatis, pilis rhachium et paginae foliolorum inferioris distincte mollibus tenuibus longioribusque.

Typus: Bhutan: Kantanang, Tsampa, 13 000', *Ludlow, Sherriff & Hicks 19067, 1949 (E)*.

Specimina examinata

Nepal. Langtang Himalaya: Dupku Danda, Keldang, 4300 m, *G. & S. Miede 6970, 1986*; Ganja-La, 4630 m, *G. & S. Miede 6620, 1986*; Naukunda Lekh, 4050 m, *G. & S. Miede 9124, 1986*; ibid. 3980 m, *G. & S. Miede 9322, 1986*; ibid. 4350 m, *G. & S. Miede 9270, 1986*; Surdscha Kunda, 4730 m, *G. & S. Miede 9013, 1986*; Schiabru Kedo, Dokatsche, 3970 m, *G. & S. Miede 1217, 1986*; Schiabru, Tarutsche, 4040 m, *G. & S. Miede 14750a, 1986*; Pangsang Lekh, 4050 m, *G. & S. Miede 10037, 1986*; ibid. 4300 m, *G. & S. Miede 2250, 1986*; Langtang, Tangsep, 4000 m, *G. & S. Miede 2928, 1986*; ibid. 4600 m, *G. & S. Miede 10647 & 10743, 1986*; Palpa, 3540 m, *G. & S. Miede 3557, 1986*; Tsona, 4460 m, *G. & S. Miede 3959, 1986*; Kyangjin, 3730 m, *G. & S. Miede 11447, 1986*; Tikeapsa, 4430 m, *G. & S. Miede 4314 & 4328, 1986*; ibid. 4490 m, *G. & S. Miede 4225, 1986*; Yala, 4760 m, *G. & S. Miede 5431, 1986*; Nubamadang, 3980 m, *G. & S. Miede 11779, 1986*; ibid. 4100 m, *G. & S. Miede 11665, 1986*; ibid. 4500 m, *G. & S. Miede 11675, 1986*; Branschen Karka, 4130 m, *G. & S. Miede 5639, 1986*; Nyeng Tscha, 4800 m, *G. & S. Miede 13974, 1986*; Langshta Karka, 4310 m, *G. & S. Miede 11927, 1986*; Pemdang Karpo, 4600 m, *G. & S. Miede 13113 & 13139, 1986*; ibid. 4660 m, *G. & S. Miede 13526 & 13691, 1986* (the gatherings by G. & S. Miede will be deposited in BM and GOET); Tak Tor, 12-13000', *Lall Dhwoj 47, 1930 (E)*; Rolwaling, 27°55'N, 86°23'E, 13500', *Stainton 4693, 1964 (BM)*. **Sikkim.** Kangpupchuthang, 16000', *Ribu & Rhomoo 5228, 1911 (E)*; Bijan, King's Coll. s.n., 1889 (K, DR, LE). **Bhutan.** Damchang, Ha Valley, 10000', *Ludlow & Sherriff 64, 1933 (E)*; Changsethang, Mangde Chu, 14-14500', *Ludlow & Sherriff 3405, 1937 (E)*. Marlung, Tsampa, 14500', *Ludlow, Sherriff & Hicks 19422, 1949 (E)*. Champa, Pumthang, 12000', *Cooper 4004, 1915 (E)*; Laya, Upper Mo Chu, *Ludlow, Sherriff & Hicks 16436, 1949 (E)*. **China.** Tibet: Jelep La to Yatung, 12000', *Gould 2024, 1939 (E)*.

Potentilla aristata resembles *P. microphylla* D. Don by its habit and has so far been merged with it. *P. microphylla* and the related *P. tapetodes* Soják have subterminal styles, glabrous ovoid fruits without prominent sculpture, oblong, obtuse teeth on the leaflets, all stipules rust-brown, at least some of them shiny, auricles of stipules narrow and caudex branched in numerous caudiculi. *P. aristata* has lateral styles, almost globular achenes hairy on the top with prominent sculpture, triangular acute teeth on the leaflets, leaves with larger number of leaflets, dead stipules dull and rusty-brown, live stipules whitish, their auricles broad and caudex unbranched. I have not seen any transition or hybrid between *P. microphylla* (or *P. tapetodes*) and *P. aristata*, both the species are clear-cut. All three species of the *P. microphylla* aggregate have free auricles of the stipules; in this character they differ from the similar (but not related) *P. commutata* Lehm. which has been, in the past 150 years, merged with *P. microphylla* or treated as its variety.

***Potentilla contigua* Soják, spec. nov.**

Caudex validus, simplex vel biceps, superne residuis stipularum tectus, ibidem 0.6-2 cm crassus. *Caules* (2-)5-20(-35) cm alti, foliis radicalibus aequilongi (interdum parum breviores vel longiores), recti vel arcuati, firmi, 0.8-2 mm crassi, viriduli, brunneoli vel rubroviolacei, in (1/2-)1/3(-1/4) superiore pauciramosi vel uniflori, pilis longis albis rectis vel irregulariter flexuosis subappressis usque horizontaliter patentibus densiuscule vestiti. *Folia radicalia* (10-)14-19(-23)-jugo-pinnata, non interrupta, (2.5-)4-20 cm longa, in medio latissima, jugis foliolorum 4-12 superioribus distincte decurrentibus ceteris sessilibus. Stipulae magnae, subappresse pilosae; auriculae liberae, ferrugineae, \pm 5-17 mm longae. Petioli plerumque breves. Rhaches pilis (1-)2(-3) mm longis

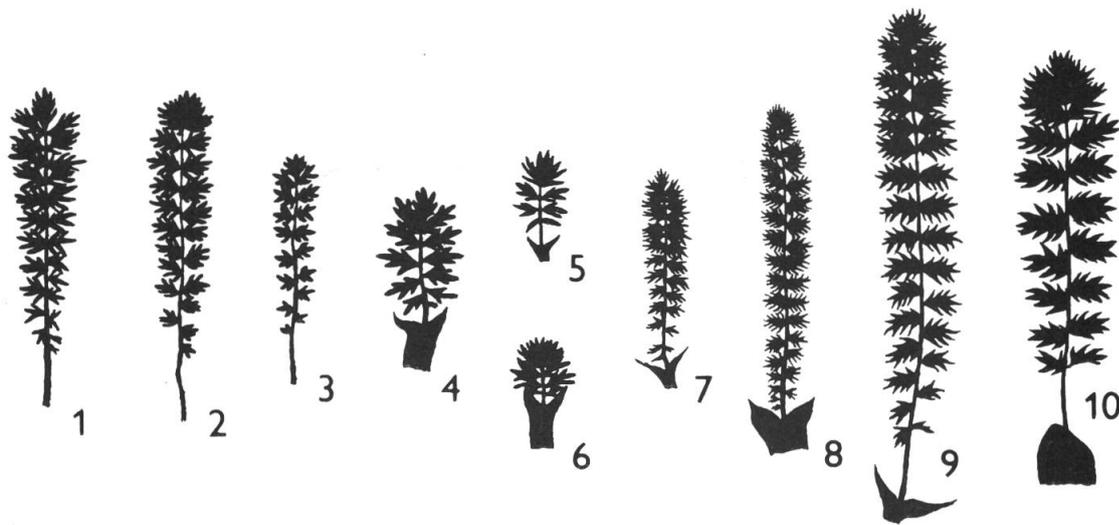


Fig. 1. — Basal leaves: 1-3, *Potentilla microphylla*; 4-6, *P. tapetodes*; 7-9, *P. aristata*; 10, *P. commutata*. The natural size.

rectis tenuibus plerumque albis subappressis usque horizontaliter patentibus indutae. *Foliola* late oblonga, apice rotundata, approximata, marginibus saepe obtegentia, rarius inter se non tangentia, non profunde, i.e. ad $2/5(-1/2)$ serrata serraturis crebris acutis antrorsum porrectis utrinque (5-)6-9(-14), supra viridula usque cano-sericea, puberula vel pilis rectis valde tenuibus longis subappressis sericeo-tomentosa, subtus cana, cano-viridia, rarius viridia, pilis subappressis rectiusculis insigniter tenuibus vestita (aut pagina tota aequaliter — modice usque densiuscule — oblecta, aut ad nervos pilis densis, in pagina tantum dispersis induta, quare superficies infra indumentum bene visibilis). *Foliola* in medio lateris (0.7-)1.2-2(-4) × (0.4-)0.6-0.8(-1.2) cm magna; serraturae eorum (0.6-)1.5(-2.5) × (0.6-)1(-1.5) mm magna. *Folia caulina* 1-2, pinnata, 2-7-juga, stipulis magnis ± dentatis instructa. *Flores* 1.8-2.6 cm in diam., solitarii vel in inflorescentiis 2-4-floris laxis. Calyx pilis rectis longis tenuibus vel crassis modice dense vestitus. Sepala (2.5-)4-6 × (2-)2.5-3.5 mm; episepala integra vel denticulata, (2-)3-7 × 1-2(-4) mm magna, sepalis saepe aequilonga. Petala lutea, (8-)10(-12) mm longa, sepalis multo longiora. Stamina ± 20; antherae 0.6-0.9 mm longae. Stylus lateralis vel fere subterminalis, basi non incrassatus, 1.6-2 mm longus. Nuculae ± 3 mm longae, laeves, atro-ferrugineae.

A *P. pedunculari*, quacum folia et foliola conformia possidet, praesertim auriculis stipularum liberis (non connatis) et in vivo ferrugineis, lana alba longa in stipulis emortuis deficiente et foliolis subtus etomentosis (non argenteo-albis) dignoscitur. Auriculis liberis, stipulis emortuis haud lanatis et foliolorum vestitu *P. taliensem* admonet, a qua foliolis superioribus decurrentibus, summis diminitis, caulibus paucifloris, floribus majoribus et vestitu paginae foliolorum superioris valde diverso differt. Notis eisdem (et insuper alia foliolorum forma et numero dentium eorum diverso) a *P. tatsienluensi* distincta.

Typus: Bhutan: Pangotang, Tsampa, 12-14500', Ludlow, Sherriff & Hicks 19739, 1949 (BM).

Specimina examinata

Nepal. Langtang Himalaya: Dupku Danda, Dupku, 3960 m, G. & S. Miede 7500, 1986; ibid. 3950-4000 m, G. & S. Miede 7238, 7357 & 7544, 1986; ibid. 4200 m, G. & S. Miede 7200, 1986; Dupku Danda, Keldang, 4300 m, G. & S. Miede 6954 & 7022, 1986; Malemchi, 4340 m, G. & S. Miede 16432, 1986; Naukunda Lekh, 3880 m, G. & S. Miede 15573, 1986; ibid. 3970 m, G. & S. Miede 9181, 1986; ibid. 4050 m, G. & S. Miede 9150, 1986; ibid. 4350 m, G. & S. Miede 9288, 1986; Surdscha Kunda, 4660 m, G. & S. Miede 8509, 1986; ibid. 4270 m, G. & S. Miede 8472 & 8496, 1986; ibid. 4290 m, G. & S. Miede 8405, 1986; Yürung-Gatsche, 3690 m, G. & S. Miede 8259, 1986; Dakatsche, Schiabru Kedo, 3970 m, G. & S. Miede 1223, 1986; Schiabru, 4040 m, G. & S. Miede

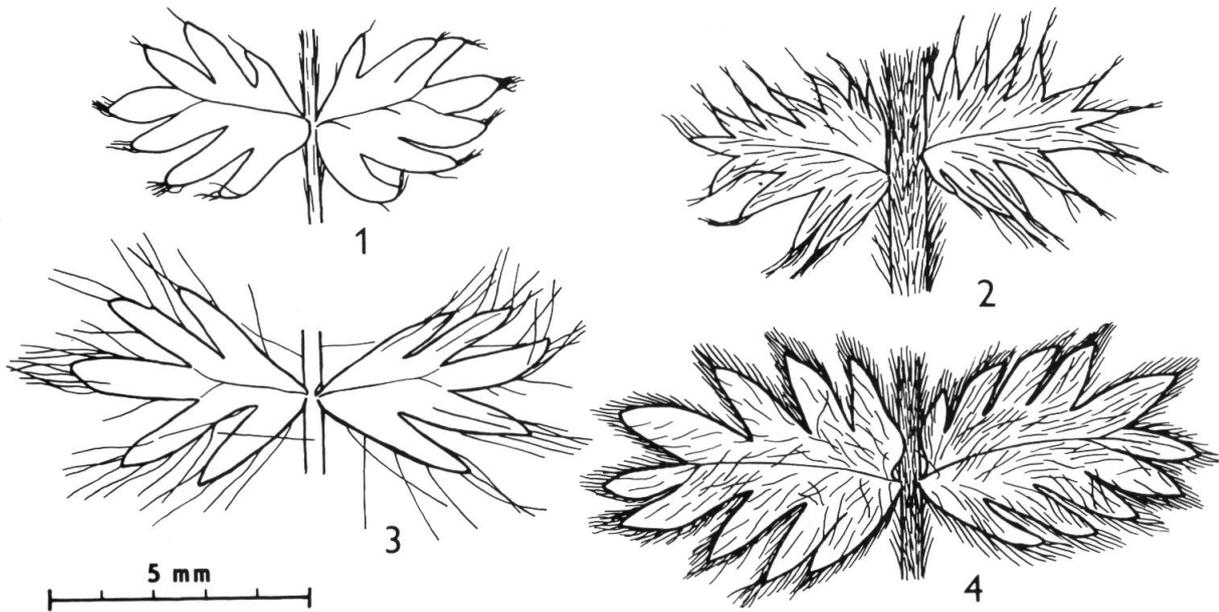


Fig. 2. — Pairs of leaflets: 1, *Potentilla microphylla*; 2, *P. aristata*; 3, *P. tapetodes*; 4, *P. commutata*.

14748, 1986; ibid. 4150 m, G. & S. Miede 14818, 1986; ibid. 4160 m, G. & S. Miede 14802, 1986; ibid. 4400 m, G. & S. Miede 14706, 1986; Pangsang Lekh, 3520 m, G. & S. Miede 2182, 1986; ibid. 3760 m, G. & S. Miede 2392, 1986; Tangsep, 4000 m, G. & S. Miede 2229, 1986; ibid. 4250 m, G. & S. Miede 10795, 1986; ibid. 4680 m, G. & S. Miede 10632, 1986 (the gatherings by G. & S. Miede will be deposited in BM and GOET). **Bhutan.** Rodu La, Ludlow & Sherriff 281, 1933 (BM); Sakden, 12500', Ludlow & Sherriff 626, 1934 (BM).

By its habit, *P. contigua* resembles *P. peduncularis* D. Don. Both species have the same shape of leaves and leaflets, the same character of stems and inflorescences and the same size of flowers. The auricles of stipules and indumentum of leaflets are different. *P. peduncularis* has coalesced auricles and leaflets silvery tomentose beneath; in *P. contigua* they are free and leaflets are sparsely hairy, not tomentose. These differences are important and constant; therefore *P. contigua* is a clear-cut species.

By its free auricles and indumentum of the underside of leaflets, *P. contigua* resembles *P. taliensis* W. W. Sm. and *P. tatsienluensis* Wolf but differs in decurrent leaflets of the upper pairs and other important characters. Decurrent leaflets not tomentose beneath has, in addition to *P. contigua*, also *P. oxyodonta* Soják; the latter has however coalesced auricles of stipules, leaflets with only few teeth and reduced cauline leaves.

***Potentilla oxyodonta* Soják, spec. nov.**

Caudex eramosus, crassus (0.7-1.5 cm), apice residuis stipularum atrofusis tectus. *Caules* ± 6-15 cm alti, ± recti, viriduli vel brunnescentes, 0.8-1 mm crassi, foliis valde reductis superne sitis instructi, superne laxe ramosi, 1-3-flori, pilis longis rectis vel flexuosis ± oblique patentibus vestiti. *Folia radicalia* 10-14(-16)-jugo-pinnata, non interrupta, 5-14 cm longa; foliola 3(-5) summa ceteris minora, illa jugorum 3-7 superiorum decurrentia, cetera basi rotundata sessilia. Stipulae latae, plerumque glabrae (rarius dorso albo-lanatae); auriculae latae, glabrae, longe connatae. Rhaches pilis rectis 2-3 mm longis tenuibus subappressis vestitae. *Foliola* ambitu ± late oblonga vel elliptica, antice rotundata vel fere truncata, marginibus sese vix tangentia (raro obtegentia), ad 1/2(-2/3) serrata serraturis utrinque 2-4 acutis a sese subremotis oblique protractis saepe anguste triangularibus, supra viridia, opaca, pilis longis rectis ± patentibus dispersis tecta, subtus cana vel cano-viridia, saltem ad nervos nitidula, ad costam pilis longis rectis ± appressis densis, in pagina praeter

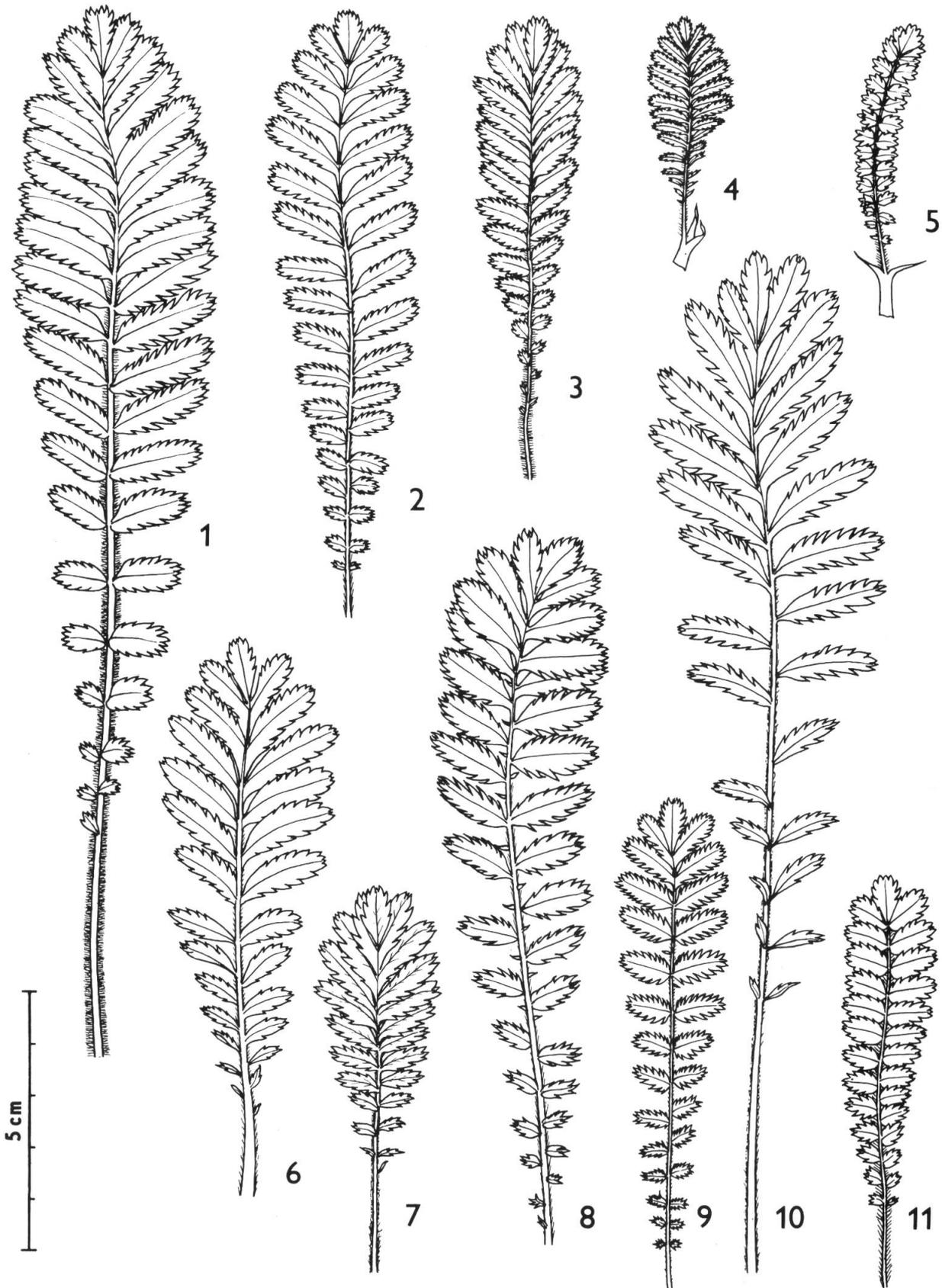


Fig. 3. — Basal leaves: 1-4, *Potentilla contigua*; 5, *P. tatsienluensis*; 6, 7, 10, *P. peduncularis*; 8, *P. cardotiana*; 9, *P. leuconota*; 11, *P. taliensis*.

pilos longiusculos rectiusculos tenues etiam pilis brevibus rectiusculis vel flexuosis modice densiuscule vestita (superficie infra indumentum sub lente bene visibili). Foliola in medio lateris 1-1.6 × 0.5-0.7 cm magna; serraturae 2-3 × 1-1.5(-2) mm magnae. Folia caulina 0-2, valde reducta, e stipulis parvis et foliolo uno consistentia; bractee angustae, valde reductae. Flores 1-3, magni, 2.3-2.8 cm in diam. Calyx pilis longis ± rectiusculis ± subpatentibus modice dense vestitus. Sepala lata, 4.5-5.5 × 3-4 mm magna; episepala ± lanceolata, 4.5-5.5 × 1.5-2 mm, sepalis subaequilonga. Petala lutea, lata, apice rotundata, 1-1.2 cm longa, calycem multo superantia. Stamina ± 20; antherae latae, 0.6-0.7(-0.8) mm longae. Stylus subterminalis? (vel lateralis?), aequicrassus, ± 1.5 mm longus, stigmatibus dilatato. Nuculae ignotae.

Habitu *P. contiguam* admonens, a qua auriculis stipularum connatis, foliolis parum serratis (serraturis utrinque 2-4, non 5-14), foliis caulinis simplicibus (non pinnatis) et stipulis parvis praeditis bene differt. A *P. pedunculari* foliolis pauciserratis subtus canis minus dense pilosis et foliis caulinis reductis (non pinnatis) satis distinguitur.

Typus: SE. Tibet, Kongbo: Deyang La, 13500', Ludlow, Sherriff & Elliot 14296, 1947 (BM).

Potentilla oxyodonta is distinct in having few (2-4 pairs) of acute teeth on the leaflets of basal leaves and reduced cauline leaves with narrow stipules. By the indumentum of the underside of the leaflets, *P. oxyodonta* resembles *P. contigua* but the auricles of stipules are coalesced. In this character, *P. oxyodonta* agrees with *P. peduncularis* but differs, in addition to the characters mentioned above, also by the sparse indumentum of leaflets. The only collection known to me, made in SE. Tibet, contains six identical, well-developed specimens. One specimen collected in E. Bhutan (Ludlow & Sherriff 626, BM) might be referable to *P. oxyodonta* but its identity is uncertain.

Potentilla vittata Soják, spec. nov.

Caudex eramosus, validus (1-2.5 cm in diam.), superne residuis stipularum atroferrugineis tectus. *Caules* ± 9-25 cm alti, ± ascendentes, 0.8-2 mm crassi, viriduli vel rubroviolacei, superne ramosi, foliis radicalibus aequilongi usque duplo longiores, pilis longis rectiusculis vel flexuosis ± patentibus ± dense vestiti. *Folia radicalia* 15-25-jugo-pinnata, 6-18 cm longa; foliola in medio lateris maxima, sursum diminuta, omnia marginibus tangentia vel 1-6 mm remota. Stipulae dorso dense appresse pilosae; auriculae glabrae, inter se longe connatae. Petioli breves vel ad 5 cm longi. Rhaches pilis ± rectis 2-4 mm longis appressis vel oblique patentibus dense usque densissime obtectae. *Foliola* omnia (interdum infimis exceptis) decurrentia, latitudine 3-4 × longiora, oblonga, marginibus integerrimis parallelis vel antice modice convergentibus, summo apice 3-denticulata (denticulus terminalis lateralibus brevior et multo angustior), supra viridia, glabra vel pilis rectis longis subpatentibus modice densis tecta, subtus aut cana usque viridula, modice micantia, ad costam pilis rectis longis ± subappressis tecta, in pagina glabrescentia vel pilis tenuissimis flexuoso-rectiusculis ± modice densis longis et item brevibus vestita (superficies folioli infra indumentum visibilis), aut argenteo-tomentosa, pilis rectis longis tenuissimis densissimis induta. Foliola in medio lateris 1-1.5 × 0.3-0.45 cm magna; dentes eorum 0.5-1.5 × (0.3-)0.8-1.5 mm magni. *Folium caulinum* deficiens vel unum, ± 2-jugo-pinnatum, stipulis mediocriter magnis instructum; bractee simplices vel ternatae. Flores 1.6-2.4 cm in diam., solitarii vel in inflorescentiis 2-30-floris. Calyx pilis longis ± rectis ± subpatentibus mediocriter densis vel interdum densissimis (et pilis brevibus flexuosis tenuissimis immixtis) vestitus. Sepala 3-4 × 2-2.5 mm; episepala lanceolata, 3-5 × 1-1.5 mm magna, sepalis breviora vel longiora. Petala lutea, lata, apice orbiculata, 7-12 mm longa, calycem multo superantia. Stamina ± 20; antherae 0.6-1 mm longae. Stylus subterminalis, aequicrassus, 1.2-1.5 mm longus, stigmatibus dilatato. Nuculae maturae ignotae.

A *P. stenophylla* foliolis decurrentibus insigniter longioribus sufficienter diversa.

Typus: SE. Tibet, Kongbo: Ba La, Pasum Chu, 14000', Ludlow, Sherriff & Elliot 13966, 1947 (BM).

The leaflets of *P. vittata* are unique in the section *Pentaphylloides* (*Anserina*). They are long, decurrent, entire, except for three small teeth at the apex. The only related species *P. stenophylla*

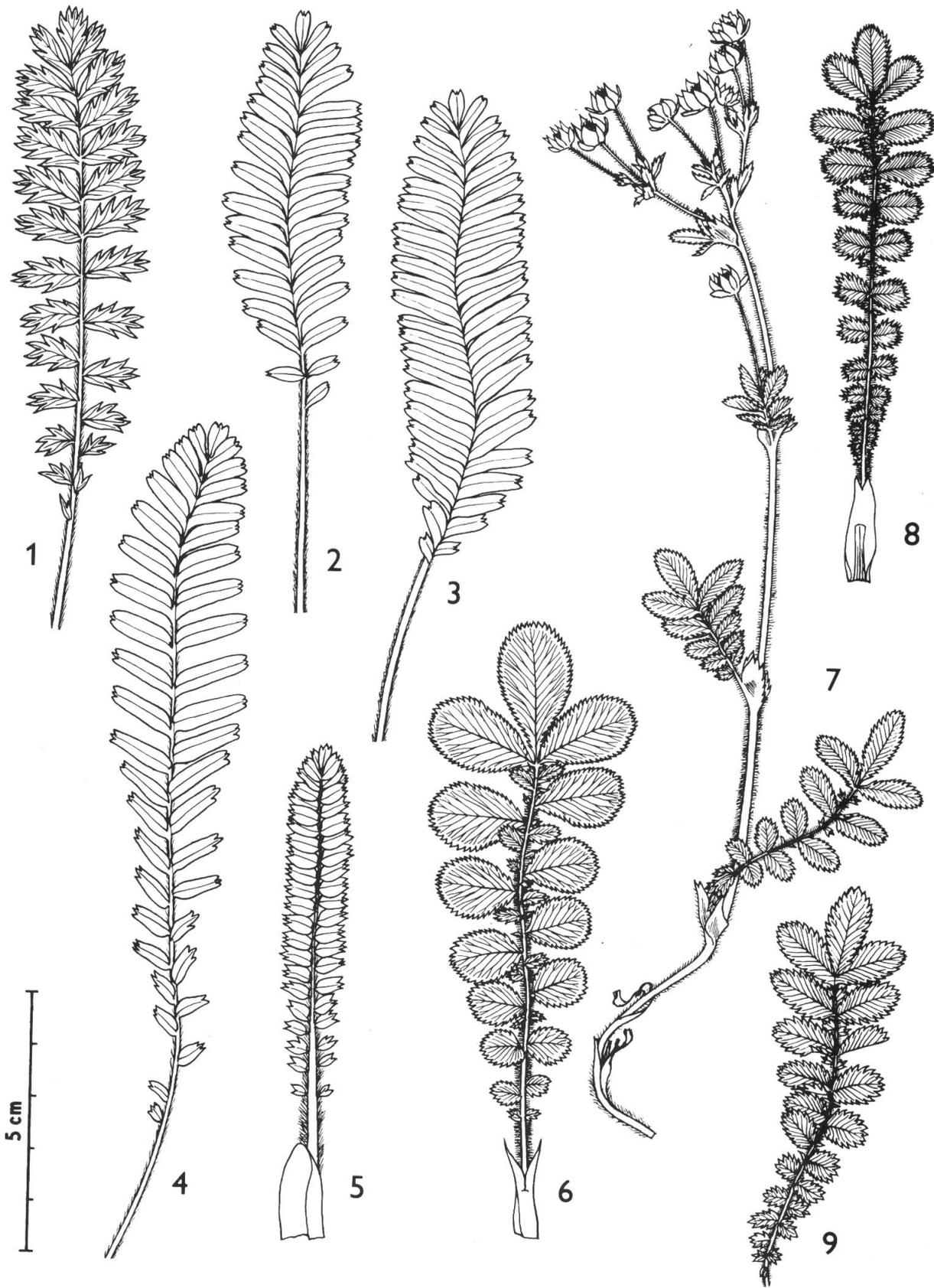


Fig. 4. — Basal leaves: 1, *Potentilla oxyodonta*; 2-4, *P. vittata*; 5, *P. stenophylla*; 6, *P. lineata*; 8-9, *P. festiva*; 7, *P. festiva*, stem.

(Franch.) Diels, has short, non-decurrent, half-embracing leaflets. All specimens studied by the present author have leaflets of the same shape but with different indumentum. Thus it is possible to delimit the following two varieties.

Key

1. Foliola subtus cana, etomentosa; inflorescentia 1-7-flora var. **vittata**
2. Foliola subtus argenteo-tomentosa; inflorescentia 20-30-flora . . var. **pluriflora** Soják
var. nov. (Typus: SE. Tibet, Pome: Showa La, 9500',
Ludlow, Sherriff & Elliot 13159, 1947, BM).

Potentilla festiva Soják, spec. nov.

Caudex eramosus, crassus, superne residuis stipularum paucis praeditus. *Caules* 12-25 cm alti, e basi sigmoidea ascendentes, \pm 1-2 mm crassi, virides vel rubroviolaceo-suffusi, bene foliati, superne ramosi, pilis horizontaliter patentibus longis \pm rectis et saepe item brevibus \pm curvatis (interdum glandulis minimis sessilibus) tecta. *Folia radicalia* pinnata, in (2/3-)1/2 superiore interrupte pinnata (ad apicem rhacheos saepe dupliciter interrupta), juga 10-14 primaria et 3-7(-9) interposita ferentia. Stipulae appresse pilosae; auriculae mutuo aut longe aut breviter connatae. Rhaches pilis horizontaliter patentibus rectis (0.7-)1-2(-2.5) mm longis (interdum etiam pilis brevibus dispersis admixtis) densiuscule vestitae. *Foliola* omnia sessilia (non decurrentia), ambitu elliptica vel late oblonga (raro late cuneata), in medio latissima, apice rotundata, basi aut late cuneata (in jugis 1-2 summis) aut rotundata (in jugis ceteris), circumcirca dense serrulata, supra vivide viridia, opaca, pilis rectis (vel leviter curvatis) patentibus (interdum subappressis) densiusculis tecta, subtus argentea, nitidula, pilis omnibus mollibus tenerrimis densissimis albis rectis (inter nervos interdum etiam pilis \pm subflexuosis) tomentosa, nervis concoloribus. Foliola lateralia superiora primaria 0.8-1.7 \times 0.4-0.9 cm magna, serraturis utrinque 12-16 insigniter acutis parvis (i.e. 0.7-1.8 \times 0.6-1.2 mm). Foliola interjecta minora, ca. (1.5-)3-5 \times (0.6-)2-3.5 mm magna, dentibus utrinque (0-)2-5; foliola tertii ordinis minuta, \pm 1-2.5 \times 0.3-1.5 mm magna, integra vel bidentata. *Folia caulina* 4-6, inferiora 5-10-jugo-pinnata (ad apicem rhacheos simpliciter interrupta), suprema 2-4-juga, omnia stipulis magnis viridulo-argenteis dentatis instructa. *Inflorescentia* modice laxiuscula, \pm 5-8(-18)-flora, non umbellata (sed inflorescentiae rami 1-2 superiores saepe umbellatim \pm 3-flori). Flores \pm 1.2-1.4 cm in diam. Sepala \pm triangularia, (3.5-)4.5-6 \times (1.8-)3-4 mm magna, dense pilosa. Episepala \pm lanceolata, (2-)3-4.5 \times 1-2 mm magna, sepalis breviora vel longiora, pilis longis rectis appressis \pm subsericeo-tomentosa. Petala lutea, apice rotundata, \pm 5 mm longa, calycem superantia. Stamina 20; antherae 0.5-0.7 mm longae. Stylus lateralis, basi non intumescens, 0.8-1 mm longus, stigmatem non dilatato. Nuculae maturae brunneae, marmoratae (sculptura pallidiorae parum vel non elevata praeditae), 1.2-1.4 mm longae.

A *P. lineata*, quam habitu admonet, auriculis stipularum (saltem ad basin) connatis, hypanthiis pedicellisque eglandulosis, caulibus brevioribus et tenuioribus, calycibus sicut petalis antherisque distincte minoribus, inflorescentiae ramis 1-2 umbellatis, foliolis (summis exceptis) basi rotundatis (non cuneatis) et ad margines \pm parallelis, pilis brevibus rhachium dispersis (non densis) etc. differt. A *P. leuconota* floris partibus omnibus \pm duplo majoribus, forma inflorescentiae diversa, vestitu rhachium patente, foliolis lateralibus summis sessilibus (non longe decurrentibus), serraturis foliolorum magis numerosis, foliis superne dupliciter interrupte pinnatis, foliolis interjectis majoribus et magis numerosis et notis aliis diversa. A *P. pedunculari* inter alia foliolis \pm ellipticis, crebre serrulatis, omnibus sessilibus, foliis interrupte pinnatis, petalis minoribus etc. longe recedit.

Typus: Nepal: Palpa, mittleres Langtang-Tal, *Andropogon-Drosera*-Weide, N-exponiert, 3500 m, G. & S. Miede 11013, 1986 (PR).

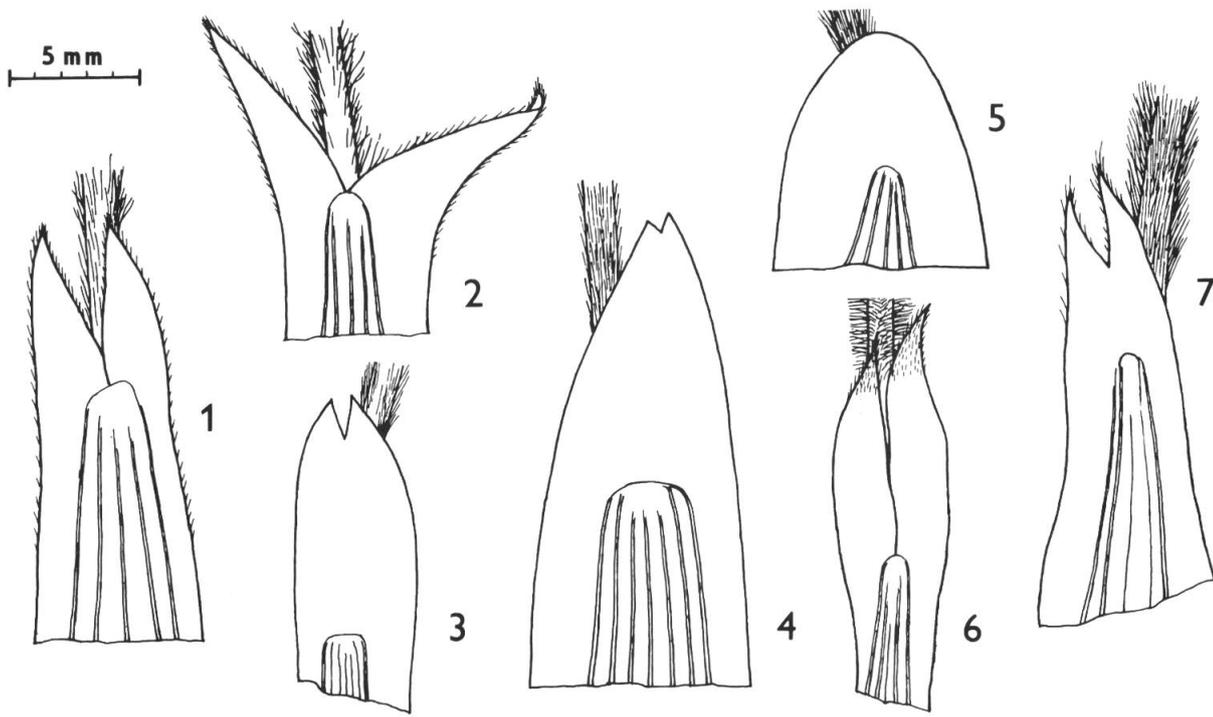


Fig. 5. — Stipules with auricles: 1-2, *Potentilla contigua*; 3, *P. leuconota*; 4, *P. peduncularis*; 5, *P. oxyodonta*; 6, *P. lineata*; 7, *P. festiva*.

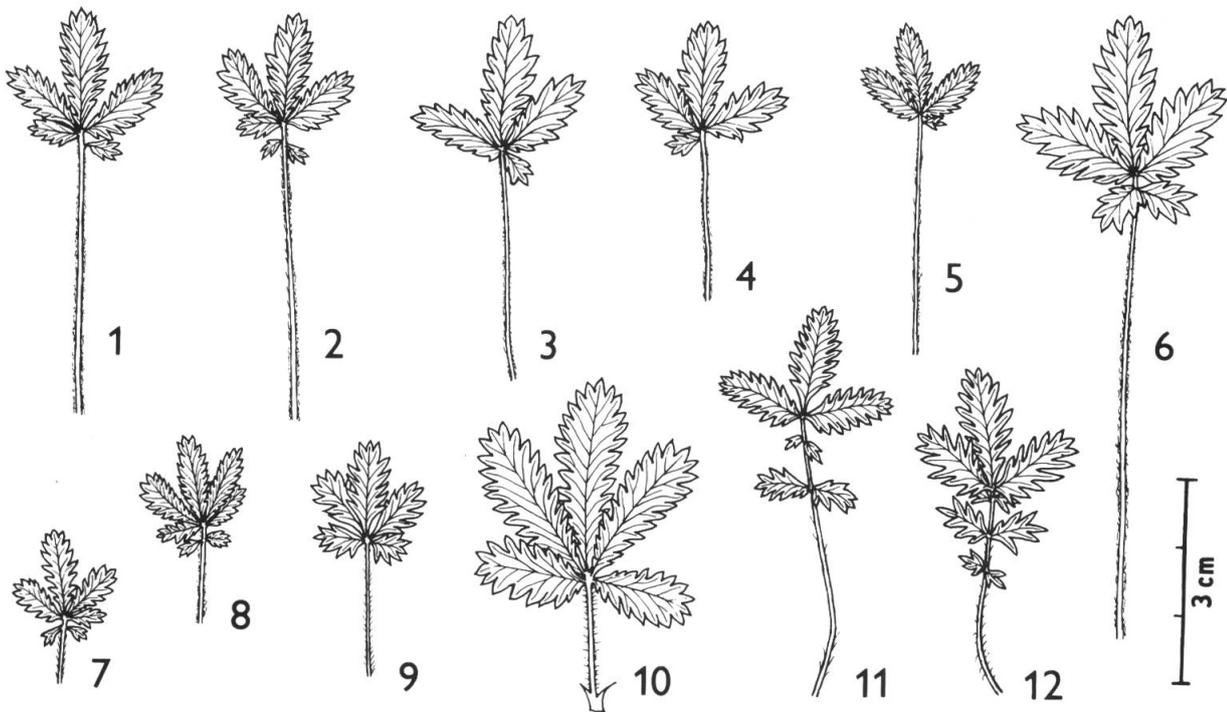


Fig. 6. — Basal leaves: 1-8, *Potentilla illudens*; 9, *P. saundersiana*; 10, *P. thibetica*; 11-12, *P. potaninii*.

Specimina examinata

Nepal. Langtang Himalaya: Palpa S. of Langtang khola, 3500 m, *Poelt 1986* (GZU); Palpa, 3560 m & Schingdum, 3910 m, *G. & S. Miehe 11035 & 14120*, 1986 (BM & GOET). **China.** SE. Tibet: Kongbo, Sang La, 29°29'N, 94°30'E, 12000', *Ludlow, Sherriff & Taylor 6252*, 1938 (BM). Sichuan (Sikang): Kangting (Tachienlu), Yülingkong, ca. 2900 m, *H. Smith 10762*, 1934 (BM).

Potentilla festiva resembles *P. lineata* Trev. by its habit but differs in having coalesced auricles of stipules, eglandular peduncles and calyces and another shape of leaflets and inflorescences. By the coalesced auricles *P. festiva* agrees with *P. leuconota* D. Don and *P. peduncularis* D. Don but is easily recognized by its doubly interruptedly pinnate leaves (in their upper parts), sessile leaflets of the upper pairs, different shape of leaflets and inflorescence, size of flowers and other characters.

Potentilla illudens Soják, *spec. nov.*

Caudex simplex, rarius 2-3-ceps, superne residuis stipularum atrofusis tectus. *Caules* (1.5-)3-14(-18) cm alti, ascendentes, viriduli vel saepe rubroviolacei, in 1/3 inferiore 0.8-1.2 mm crassissimi, apice vel iam a basi ramosi, pilis floccosis (interdum item pilis rectis raris) vestiti. *Folia* approximativim 2-jugo-pinnata (jugis 0.5-3 mm a sese remotis), interdum nonnulla digitata, interdum ternatis vel irregulariter digitato-subpinnatis (i.e. e foliolis 4-5 terminalibus digitatis et jugo uno ± remoto consistentibus) immixtis; foliola jugi inferioris conspicue parva (3-8 mm), vix dimidiam longitudinem foliorum superiorum attingentia, dentibus utrinque 1-3 instructa. Stipulae appresse pilosae; auriculae liberae, angustae, 1.5-6 mm longae. Petioli praeter pilos floccosos etiam pilis rectis ± 0.5-1 (raro ad 1.5) mm longis appressis vel partim arrecte oblique (i.e. non horizontaliter) patentibus induti. *Foliola* sessilia, angusta, oblonga, rarius cuneato-obovata, ad (1/3-)1/2(-2/3) crenato-dentata crenis in foliolo terminali utrinque (5-)7-11 approximatis brevibus latis, supra viridia, opaca, pilis rectis ± brevibus ± subappressis modice densiusculis praedita, subtus nivea, tomento albo denso crasso tecta, nervatura concolori (interdum discolori) tomento vel saepius pilis rectis brevibus appressis vestita. Foliolum terminale 0.8-2.2 × 0.45-0.9 cm magnum; crenae eius ± 1-3 × 0.7-2 mm magnae; pars folioli media indivisa ± 2-4 mm lata. Folia caulina 1-2, saepe subquinata. *Inflorescentia* initio subcontracta, dein laxa, 3-18-flora. Flores parvi, 1-1.4 cm in diam. Sepala 3-4.5 × 1.5-2.2 mm, pilis rectis subappressis longis et item brevibus pilosa; episepala oblonga vel lanceolata, albotomentosa, 2.7-4 × 0.8-1.4 mm, sepalis breviora. Petala lutea, 5-6 mm longa, sepalis longiora. Antherae 0.4-0.7 mm longae. Stylus subterminalis, aequicrassus, 1.1-1.3 mm longus, stigmatibus dilatato. Nuculae maturae ± dilute fuscae, sculptura parum prominenti ornatae vel pallidius marmoratae, 1.1-1.2 mm longae.

A *P. potaninii* foliis nonnullis approximativim (0.5-3 mm) bijugis et nonnullis ± digitatis praesentibus et foliis interrupte pinnatis deficientibus distincta. A speciminibus *P. thibeticae* et *P. saundersianae* atypicis (i.e. foliis subpinnatis praeditis), quibus habitu simillima, foliolis jugi inferioris minoribus magis remotis (usque ad 2-3 mm, non ad 0.5-1.5 mm) et foliis irregulariter digitato-subpinnatis (interdum item ternatis) immixtis differt. A *P. thibetica* praeterea pilis petiolorum rectis ± appressis diversa.

Typus: Nepal: Langtang Himalaya, Kiangjing, 4050 m, *Cotoneaster* — *Juniperus squamata* — *Spiraea arcuata* Zwergstrauchflur, SE-exponiert, *G. & S. Miehe 11288*, 1986 (PR).

Specimina examinata

Nepal. Langtang Himalaya: Langtang valley, *Schilling & al. 361*, 1965 (K); Tangsep, 3840 m, *G. & S. Miehe 10898*, 1986; ibid. 4000 m, *G. & S. Miehe 2926 & 2952*, 1986; Palpa, 3500 m, *G. & S. Miehe 3478 & 10896*, 1986; Tsona, 4050 m, *G. & S. Miehe 3653*, 1986; Kiangjing, 3720 m, *G. & S. Miehe 11442 & 11471*, 1986; ibid. 4270 m, *G. & S. Miehe 3979*, 1986; Kiangjing — Nubanea Dhang, 3800 m, *Poelt 1986* (GZU); Tikeapsa, 4260-4300 m, *G. & S. Miehe 4105, 4154 & 4182*, 1986; Kijung Phugba, 4400 m, *G. & S. Miehe 13699 & 13738*, 1986 (the gatherings by *G. & S. Miehe* will be deposited in BM and GOET). **E. Nepal:** Tamur Valley, Walunschung Gola, *Stainton 1080*, 1956 (E); Tamur Valley, Mewa Khola, Topke Gola, *Stainton 282*, 1956 (E). **Bhutan.** Laya, Upper

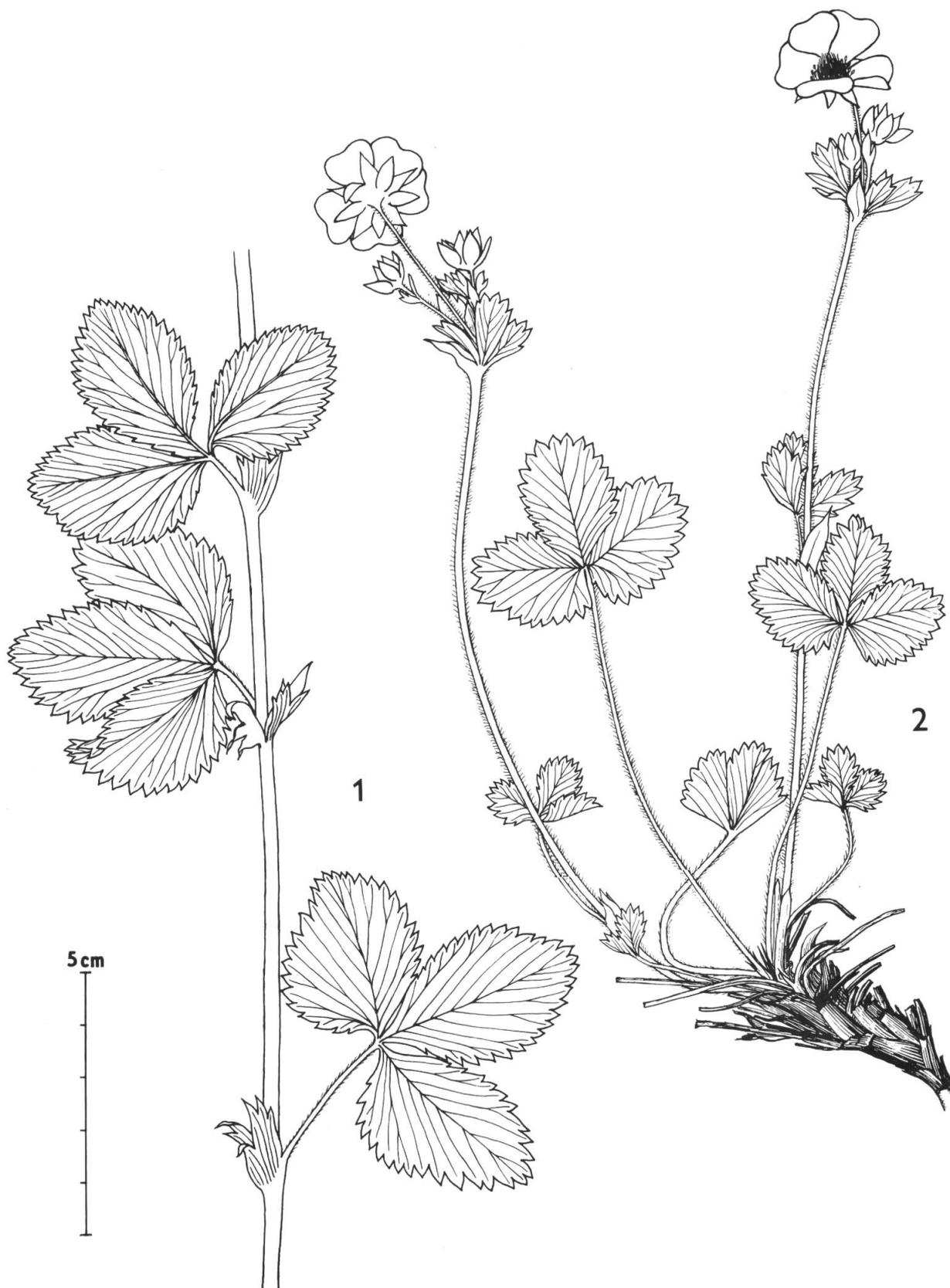


Fig. 7. — 1, *Potentilla argyrophylla*, middle part of stem. 2, *P. venusta*, habit.

Mo Chu, *Ludlow, Sherriff & Hicks 16438*, 1949 (BM). **China.** S. Tibet: Yatung, 27°51'N, 88°35'E, *Hobson s.n.*, 1897 (K). SE. Tibet: Kongbo, Lotu, Shoga Chu, *Ludlow, Sherriff & Elliot 13910*, 1947 (BM, E).

Potentilla illudens is a critical transitional microspecies of uncertain position and relationships, very likely of hybrid origin. By its characters it is intermediate between *P. saundersiana* Royle and *P. potaninii* Wolf or between *P. thibetica* Cardot and *P. potaninii*. It is difficult to distinguish from atypical forms of *P. saundersiana* and *P. thibetica* with subpinnate leaves. These atypical forms of both species have leaflets of the lower pair 0.5-1.5 mm distant, opposite, reaching about half the length of leaflets of the upper pair. *P. illudens*, characteristic by the different shape of leaves within one individual, has some leaves with leaflets of the lower pair 2-3 mm distant, not reaching half the length of upper leaflets; the leaves are often irregular, e.g. leaflets of the lower pair are not opposite, or one of them is missing, or there are ternate leaves present or leaves quinately digitate at the apex and below with one distant pair of leaflets. From *P. thibetica*, *P. illudens* differs also in the indumentum of the petioles: straight hairs are patent in *P. thibetica* but subappressed in *P. illudens*. Following is a synopsis of the group of similar species.

Key

1. Leaves interruptedly pinnate or with two distant (more than 3 mm) pairs of leaflets
P. potaninii
- Leaves digitate or subpinnate with two approximate (0.5-3 mm) pairs of leaflets 2
2. Caudex ± branched, flowers ± 1.5-2.5 cm in diameter, styles 1.5-1.7(-2) mm long
P. jacquemontii
- Caudex ± unbranched, flowers smaller, styles 0.7-1.5 mm long 3
3. Some leaves subpinnate, with the lower pair of leaflets up to 2-3 mm distant, lower leaflets distinctly shorter than half the length of the upper leaflets, terminal leaflet with 5-11 pairs of teeth, petioles with subappressed hairs **P. illudens**
- All leaves digitate or some leaves subpinnate with leaflets of the lower pair 0.5-1.5 mm distant, reaching about half the length of the leaflets of the upper pair 4
4. Middle leaflet with 6-14 pairs of teeth, petioles with ± horizontally patent hairs, styles 0.7-1.2 mm long **P. thibetica**
- Middle leaflet with 4-7 pairs of teeth, petioles with subappressed or erecto-patent hairs, styles (0.9-)1.2-1.5 mm long **P. saundersiana**

The boundary between *P. illudens* and *P. potaninii* is unclear, even though, in typical forms, the two species are not at all similar. Typical *P. potaninii* has leaves interruptedly pinnate, with distant pairs of leaflets whereas *P. illudens* has leaves subdigitate. The problem is that some specimens of Chinese populations of the true *P. potaninii* have leaves with only two distant pairs of leaflets not markedly different in their size and similar convergent plants may occur in populations of the typical *P. illudens*. Because in the plentiful collections of *P. potaninii* from China, accumulated by European collectors (e.g. H. Smith) no specimens with subdigitate leaves (i.e. convergent to *P. illudens*) could be found, *P. illudens* is undoubtedly a separate species.

The existence of *P. illudens* probably made Handel-Mazzetti classify (*Acta Horti Gothob.* 13: 314, 1939), surprisingly, *P. potaninii* as a variety of *P. saundersiana*. The existence of *P. illudens* also makes my earlier report of *P. potaninii* from the Himalaya (*Bot. Jahrb. Syst.* 106: 168, 1986) somewhat doubtful. Himalayan plants, referred by me to *P. potaninii*, have two separate pairs of leaflets and may be an atypical form of *P. potaninii* or a convergent form of *P. illudens*. The fact that interruptedly pinnate leaves are missing in the Himalayan plants of this aggregate suggests that these plants belong to *P. illudens* and that the true *P. potaninii* is absent from the Himalaya.

Potentilla argyrophylla agg.

Hooker (Fl. Brit. Ind. 2: 356, 1879) and many subsequent authors adopt a very broad concept of *P. argyrophylla* Wall. ex Lehm., referring to this species (as varieties) plants with red and yellow flowers as well as plants with many dull leaves on tall stems and those with a small number of shiny leaves on low stems. The majority of contemporary botanists classify the red-flowered plants as a separate species *P. atrosanguinea* Lodd. but yellow-flowered plants are treated as a single species regardless of the differences in the leafiness of stem and indumentum of leaves. The material accumulated in British herbaria indicates that *P. argyrophylla* complex consists of the following three separate species.

Potentilla atrosanguinea has purple or red petals. *P. argyrophylla* s.str. has yellow petals, tall stems with \pm 4-6 well developed large stem leaves, dentate stipules, leaflets that are dull on both sides and have short hairs on underside veins, hairs overtopping the tip of the teeth by about 0.3-0.5 mm, and epicalyx-segments with tomentum that is not covered by straight hairs. *P. venusta* has yellow petals, short stems with (0-)1-3 small stem leaves, all or at least some leaves shiny and tomentose on both sides, with long straight hairs on underside veins (and sometimes on the whole surface), hairs overtopping the teeth by about 1 mm, and epicalyx-segments covered with straight hairs.

Intermediate plants exist between the species of the *P. argyrophylla* complex. They are more likely secondary hybrids of well differentiated species, rather than primary intermediates.

Hooker (l.c.), Wolf (Biblioth. Bot. 71: 230, 1908) and other authors used the name *P. argyrophylla* var. *leucochroa* (Lindl. ex Wall. nom. nudum) J. D. Hook. for specimens belonging to *P. venusta*. The original plant of *P. leucochroa* Wall. in Lehmann's herbarium (PR) lacks petals and anthers, but the sepals are purple on the inside. This is a typical character of the hybrids *P. atrosanguinea* \times *P. argyrophylla* s.l. Hooker (l.c.) intentionally included all the small plants of this aggregate in his *P. a.* var. *leucochroa*, disregarding the colour of the petals. Since there is no name one could use for the yellow flowered species with shiny leaves (all names within the *P. argyrophylla* complex refer to *P. argyrophylla* s.str., *P. atrosanguinea*, or to the hybrids of *P. atrosanguinea*) I describe it as a new species.

Potentilla venusta Soják, spec. nov.

Ab affini *P. argyrophylla* differt caulibus brevioribus (\pm 3-30 cm), foliis caulinis paucis (0-3, non 4-6) parvis, stipulis eorum integerrimis, foliolis omnibus supra densissime pilosis (tomento falso tectis) saltem nonnullis nitidis, subtus ad nervos (interdum tota facie) pilis longis rectis vestitis [pili recti apices dentium distincte (i.e. 1 mm, non 0.3-0.5 mm) excedunt] et tomento episepalorum vero sub pilis rectis occulto; planta petalis luteis, sepalis intus sicut staminis et stylis non rubroviolaceo-suffusis a hybridis distincta.

Typus: India. Punjab: Kulu Distr., Dibibokvi, 12800', *Schelte* 3364, 1952 (BM).

Specimens examined

About a half of the material deposited under the name *P. argyrophylla* in BM and K belongs to *P. venusta*. The latter occurs from Kashmir to Sikkim.

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