

**PYCNOPLINTHOPSIS Jafri, A NEW GENUS OF CRUCIFERAE, WITH TWO
NEW SPECIES, FROM BHUTAN**

S.M.H. JAFRI

Herbarium, Department of Botany, University of Karachi, Karachi-32.

PYCNOPLINTHOPSIS Jafri, gen. nov. (*Cruciferae—Hesperideae*) Perennis, caespitosa, rhizomate usque ad 1 cm crasso. Folia omnia basalia dense rosulata. spathulata vel oblanceolata, in parte superiore dentibus (5—) 9—10 (—15) provisa, glabra usque pilosa, pilis parvis ramosis scabriusculis, costa mediana distincta. Scapi uniflori. quam folia plerumque multo breviora. Flores albi, interdum exsiccatione rosaci, Sepala exteriora saccata vel subsaccata. Petala quam sepala duplo ad minimum longiora, spathulata. Stamina 6, erecta non appendiculata; antherae quartam circiter partem longitudinis filamentorum attingentes, nigrescentes. Glandulae nectariferae ad basin staminorum exteriorum (laterales) semi annulares, superene torosae vel triangulariter dilatatae: glandulae medianae deficientes vel cum lateralibus complete connatae. Ovarium ellipsoideum, 8-20-ovulatum, sessile; stylus circiter dimidium longitudinis ovarii aequans; stigma subcapitatum indistincte lobatum. Siliquae breves, lineari-oblongae vel elliptico—oblongae, subcontorto-compressae, biloculariter dehiscentes, apice et stylo saepe curvatae; septum completum, membranaceum, nervo mediano distinct; semina uni vel subbiseriata, circiter 1 mm. longa, oblonga; radícula incumbens. Typus generis: *P. bhutanica* Jafri.

Valde similis *Pycnoplinthae* O.E. SCHULZ sed distincte differt foliis spathulatis in parte superiore 9-10-dentatis, scapis plerumque quam folia multo brevioribus, glandulis nectariferis aliquantum diversis. siliquis proportione maioribus, subcontorto—compressus et septum completum.

Perennial, caespitose with a rootstock up to 1 cm. thick. Leaves all radical in a dense rosette, spathulate or oblanceolate with (5—) 9—10 (—15) teeth towards the proximal end, glabrous to hairy with small branched slightly rough hairs, mid vein distinct. Scapes one flowered, usually much shorter than the leaves. Flowers white, sometimes turning to pinkish with age or drying. Outer sepals saccate or subsaccate at the base. Petals twice or more as long as the sepals, spathulate. Stamens six, erect, not appendaged; anthers about 1/4 as long as the filaments, blackish, Nectariferous glands at the base of the outer stamens (lateral) semi-annular with torose or enlarged triangular ends, median glands absent or completely fused with the laterals forming their much enlarged ends. Ovary ellipsoid, 8-20-ovuled, sessile; style about half as long as the ovary; stigma subcapitate and faintly lobed. Siliquae short, linear-oblong of elliptic—oblong, subcontorted compressed, bilocular dehiscent, often with curved

apex and style; septum complete, membranous with a distinct mid-vein; seeds uni-to sub-biseriate, about 1 mm. long, oblong; radicle incumbent.

Very similar to *Pycnolanthus* O.E. Schulz, but markedly differing by having spatulate leaves with usually 9-10 teeth towards the proximal end, scapes usually much shorter than the leaves, somewhat different nectariferous glands, siliquae comparatively larger subcontorted-compressed with complete septum.

Type species: *Pycnolinthopsis bhutanica* Jafri (described below)

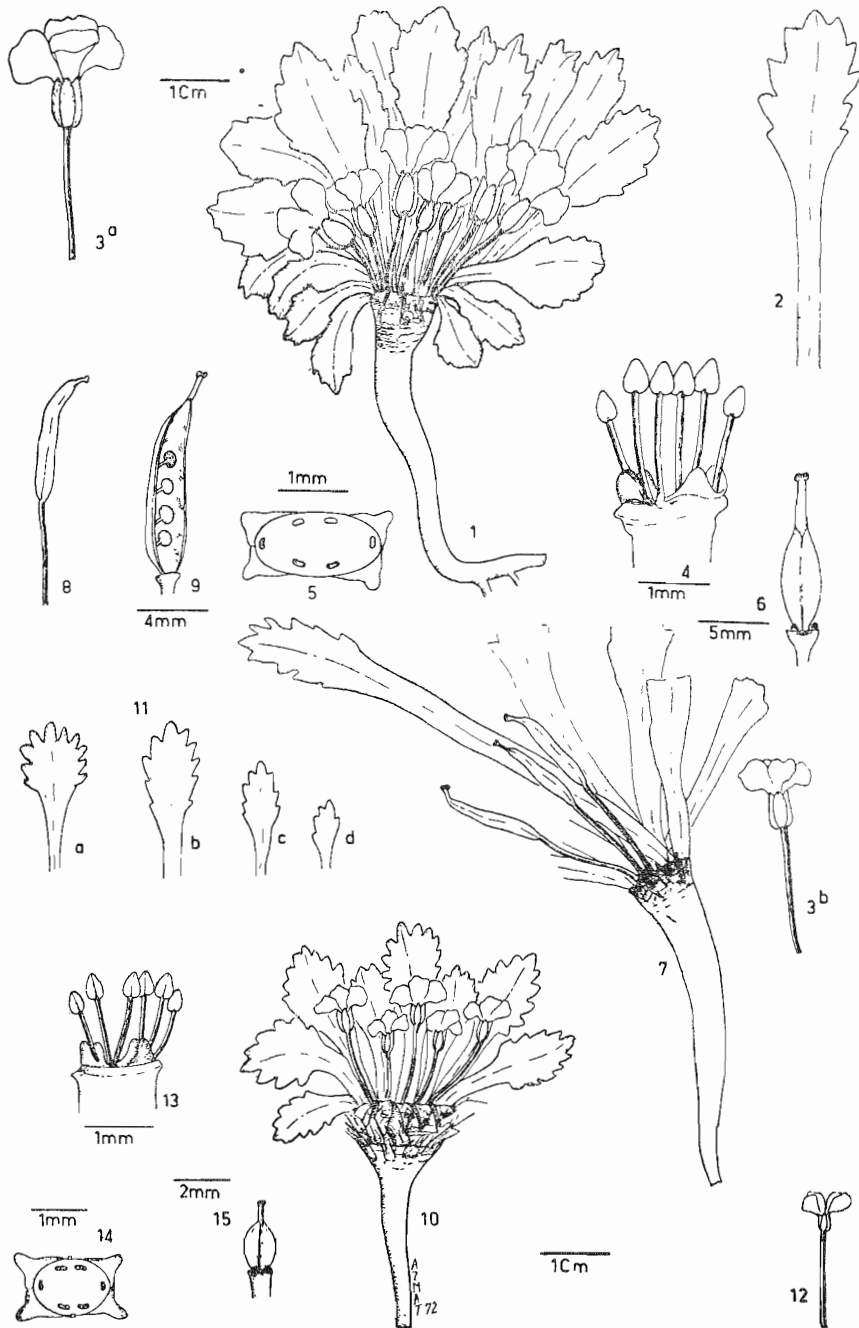
Distribution: Two species in Bhutan, occurring at an elevation of 10,500' to 15,000' near water falls.

Pycnolinthopsis bhutanica Jafri, sp. nov.

Perennis, caespitosa, rhizomate ramoso vel simplici usque ad 1 cm crasso. Folia omnia radicalia, dense rosulata; rosula foliorum basaliu 7-15 cm diametro, folia spatulata vel oblanceolata, dentibus (5—)9 (—15) apicem folii versus sitis, 3-6 x 0.7—1.5 cm., basi integra, quasi in petiolu attenuata, glabra vel sparse (rarodense) apicem versus pilosa; pili minuti, ramosi, scabriusculi; costa mediana ± distincta. Scapi usque ad 3 cm longi, glabri, plerumque quam folia multo breviores. Flores (8—) 10-15 (—18) mm diametro, albi, interdum demum exsiccatione rosacei. Sepala 4, virescentia, 4-7 x 2-3.5 mm, due exterica basi ± saccata, inferne glabra superne ± pilosa, pilis brevibus ramosis albidis. Petala 4, quam sepala ad minimum duplo longiora, alba vel pallide rosacea, 10-15 x 5-8 mm, spatulata vel subrotundata. Glandulae nectariferae prominentes, ad basin staminoru exterioru (laterales) semi-annulares, superne torosae vel triangulariter dilatatae, glandulae medianae deficientes vel cum lateralibus complete connatae. Stamina 6, duo exteriora quam quattuor interiora paulo breviora, 3:4 mm longa; antherae quartam circiter partem filamentoru attingentes, nigrescentes; filamenta albida linearia non appendiculata. Gynaeceum quam sepala paulo longius, glabrum; ovarium ellipsoideum; stylus circiter dimidium longitudinis ovarii attingens. Ovarium biloculare 16-20-ovulatum. Stigma subcapitatum leviter bilobum, glabrum. Siliquae lineares vel lineari-oblongae, usque ad 15 x 2-2.5 mm, glabrae, subcontorto-compressae, apice saepe curvatae, seminibus 10-16; septum completum, membranaceum, nervo mediano distincto. Stylus 1-1.5 mm longus. Semina 1 x 0.7 mm, oblonga, brunnea; radicula incumbens.

BHUTAN: Jiu la, Dhur chu, 14000 ft., on cliff faces, close to water falls, fls. over, seeds collected, 3.10.1949 *Ludlow & Sherriff* 19803 (Type in BM!).

Tang chu, Ritang (Central Bhutan), 13000-15000 ft., common on wet cliff faces and on open scree, 7.6. 1937 corolla white with a



Figs. 1-9 *Pycnoplinthopsis bhutanica* 1. Flowering plant 2. Leaf 3. Flowers size variation (a & b) nectar glands (ovary, petals and sepals removed) 5. Nectar glands/(diagrammatic) 6. Ovary 7. Fruiting plant 8. Fruit 9. Fruit with one valve removed, showing seeds & septum.

Figs. 10-15 *Pycnoplinthopsis minor* 10. Flowering plant 11. Leaf variation a-d 12. Flower 13. Stamens with nectar glands (sepals, petals & ovary removed) 14. Nectar glands (diagrammatic) 15. Ovary.

tinge of green at the base of petals, anthers almost black, leaves pale green, petioles nearly white, *Ludlow & Sherriff* 3209 (Cotype in BM!).

Naha, Thimbu chu, 11500 ft., in wet cliff faces, 24.5.1949, sepals green, petals white turning pinkish with age, *Ludlow & Sherriff* 16347 (BM!).

Sergong la, Kuru chu, 10500 ft. beside water fall, only one seen now, 9.5.1949, flowers white, *Ludlow & Sherriff* 18847 (BM!).

Perennial, caespitose with a branched or unbranched rootstock up to 1 cm. thick. Leaves all radical, in a dense rosette: rosette of radical leaves 7—15 cms. across; leaves spathulate or oblanceolate with (5—) 9 (—15) teeth towards the proximal end, 3-6 x 0.7—1.5 cm., base entire, elongated into a stalk like structure, glabrous or sparsely hairy (rarely densely) towards the apices; hairs small, branched, slightly rough; mid-vein more or less distinct. Scapes up to 3 cm. long, glabrous usually much shorter than the leaves. Flowers (8—) 10-15 (—18) mm. across, white sometimes turning to pinkish with age or drying. Sepals 4, greenish, 5-7 x 2.5-3.5 mm., outer two more or less saccate at the base, glabrous below and usually sparsely hairy above with short branched whitish hairs. Petals 4, twice or more as long as the sepals, white or pale pinkish, 10-15 x 5-8 mm., spathulate or subrounded. Nectariferous glands prominent, laterals semiannular with enlarged triangulate or torose ends; median glands probably absent or if present then completely fused with the laterals forming their so called broad triangulate or torose ends. Stamens 6, two outer slightly shorter than the inner four, 3:4 mm. long; anthers about 1/4 as long as the filaments, blackish; filaments whitish, linear, not appendaged. Gynoecium slightly longer than the sepals, glabrous; ovary ellipsoid; style about half as long as the ovary; ovary bilocular, 16-20 ovuled; stigma subcapitate slightly bilobed glabrous. Siliquae linear or linearoblong, up to 15 mm. long and 2-2.5 mm. broad, glabrous, subcontorted compressed, usually curved at the apex, 10-16-seeded; septum complete, membranous with a distinct mid-vein; style 1-1.5 mm. long; seeds about 1 x 0.7 mm., oblong, brown; radicle incumbent.

Pycnolinthopsis minor Jafri, sp. nov.

Differt a *P. bhutanica* habitu, foliis floribusque minoribus, foliorum lamina magis rotundata, dentibus \pm aequalibus symmetricis plerumque 10, ovario subrotundato vel late ellipsoideo, ovulis minus numerosis. Perennis, caespitosa, rhizomate plerumque ramoso collum versus incrassato. Folia omnia radicalia, rosula 3-5 cm diametro; folia spathulato, apicem versus plerumque 10-dentata, l. 2-2.5 x 0.4-1 cm diametro. Scapi quam folia breviores, usque ad 2 cm longi, uniflori. Flores 5-9 mm diametro, albi; sepala 2-3 x 1.8-2 mm; petala sepalis circiter duplo longiora, spathulata, albida, glandulae nectariferae eis speciei praecedentis \pm similes. Stamina 2:2.5 mm

longa, antherae nigrescentes; filamenta virescenti-albida; ovarium late ellipsoideum vel subrotundatum, 10-14-ovulatum; stylus longitudine circiter dimidium ovarium aequans. Fructus maturi non visi.

BHUTAN: N.E. Bhutan, Shingbe (Me la), 13000 ft., cliff, in the spray of a water fall, fls. white, 2.6.1949, *Ludlow & Sherriff* 20312 (Type in BM!).

Waitang, Tsampa, 13500 ft., on sheer wet cliff faces, corolla white, 22.6.1949, *Ludlow & Sherriff* 19215 (BM!) Waitang, Tsampa, 14500 ft., on wet cliff faces, little seen, corolla white, 18.6.1949, *Ludlow & Sherriff* 19184 (BM!).

Differs from *P. bhutanica* Jafri by its smaller plants, leaves and flowers; leaf blade more rounded and with more or less uniform symmetrical teeth, usually 10 in number; subrounded or broadly ellipsoid ovary with less number of ovules.

Perennial, caespitose with an usually branched rootstock becoming apparently much broader towards the leafy point. Leaves all radical, rosette 3-5 cm. across; leaves spatulate, with usually 10 teeth towards the proximal end, 1.2—2.5 x 0.4—1 cm. Scapes shorter than the leaves, up to 2 cm. long, one flowered. Flowers 5-9 mm. across, white; sepals 2-3 x 1.8-2 mm.; petals about twice as long as the sepals, spatulate to whitish. Nectariferous glands more or less similar as in the preceding species. Stamens 2: 2.5 mm. long, anthers blackish, filaments greenish-white. Ovary broadly ellipsoidal, or subrounded, 10-14-ovuled, style about half as long as the ovary. Mature fruits not seen.

Discussion

Genera with single-flowered scapes are very few in Cruciferae. *Pegaeophyton* Hayek et Handel-Mazetti (in *Akad. Anzeiger Wien*, n. 26-27: 2, 1922) of Cruciferae-Arabideae, apparently resemble closely to this new genus *Pycnoplinthopsis* Jafri, but has open sepals, different nectariferous glands and fruits ovoid, without a septum, i.e. unilocular indehiscent with almost sessile stigma. The other genus, *Pycnoplinthus* O.E. Schulz (in *Das Pflanzenreich*, 86: 198, 1924) of Cruciferae-Hesperideae is nearest to this new genus but has very linear almost entire leaves, shorter than the single-flowered scapes, different nectariferous glands, and fruit short straight-compressed with inconspicuous stigma. *Pycnoplinthopsis*, although resembles very closely to *Pegaeophyton* in leaf and general habit but has fruits very much like those in *Pycnoplinthus* or *Braya* Sternb. & Hoppe (*Denkschr. Bayer. Bot. Ges. Regensb.* 1, 1:65, 1815) of Cruciferae-Sisymbrieae. *Pycnoplinthus*, with a single species, *P. uniflorus* (Hk. f. et Th.) O.E. Schulz was based on *Braya uniflora* Hk. f. et Th., by O.E. Schulz—which is also endemic to Tibetan area of Himalayas. Actually it was the only species of *Braya*

which had single-fl'd. scapes and fruits linear, straight and compressed and did deserve its transfer from Cruciferae-Sisymhrieae to Cruciferae-Hesperideae under a separate genus. The new genus—*Pycnolinthopsis*, has fruits more similar to *Pycnolinthus* with its single-fl'd. scapes which compels me to place it with *Pycnolinthus* in the tribe Hesperideae. Both the genera have \pm linear compressed fruits which are bilocular dehiscent with distinct membranous septa. They occur at higher altitude in the Himalayas, *Pycnolinthus* in the Tibetan area and *Pucnolinthopsis* in Bhutan.

The two species of *Pycnolinthopsis*, described here, differ primarily in their leaf shape and to some extent in their ovary shape.

Acknowledgement

I am thankful to Dr. K.H. Rechinger for helping me in the preparation of Latin translation of the new taxa and to Mr. S. Azmat Ali for the drawings. I am also obliged to the keeper of the Herbarium, British Museum, London for sending me the material.