INTRODUCTION

The chiefly Asiatic genus *Pseudostellaria* Pax (formerly known as *Krascheninnikovia* Turczaninow) was revised by Takeds in 1912, '13 and '15. 5 out of 7 species were recognized by him for Japan. Ohwi in 1937, admitting for the genus 13 species, divided it in 2 series, 5 of them being Japanese. The genus stands between the genera *Stellaria* and *Arenaria* in the sculpture of seed and the capitellate stigmatic surface of the style. Though it has been accepted generically or reduced to *Stellaria*, *Pseudostellaria* may be marked by the tubercle of seed-coat terminated in a simple spinule or glochid, the naphiform or fusiform root, and also by the presence of cleistogamic flowers, in most of the species, borne usually at the lower axes of leaves. But the fascicled thick roots of *Stellaria monosperma* are quite like the slender fusiform roots of *Pseudostellaria palibiniana* (Pl. II-b), and the presence of European *Stellaria bulbosa* have been the strongest clue of reducing the genus under *Stellaria*. *S. bulbosa* is somewhat alike Sino-Japanese *P. heterantha*, but lacks usually the basal cleistogamic flower. In any respect it should be called *Pseudostellaria europaee* Schaeftlein, although the last mentioned point is exceptional for the genus. Then *Stellaria bulbosa* is no longer a connecting link between *Pseudostellaria* and *Stellaria* (Pl. I-a). The presence of the cleistogamic flower is common to, in the family Caryophyllaceae, *Stellaria* and *Sagina*, or to many genera of other families. To mention a few, *Cometina* and *Murdannia* of Compositae, *Chloranthus* of Chloranthaceae, *Polygonum* of Polygonaceae, *Viola* of Violaceae, *Lamium* of Labiatae, or *Leibritzia* of Compositae, and so on are examples. It is in these genera no more than a specific character. Yet it is noteworthy that the cleistogamic flowers of *Pseudostellaria* are born at the lower leaf-axes against their position at the upper axes in *Stellaria* and other genera (Pl. III-b). The appenedged tubercles of the seed are strictly *Pseudostellaria*, but the shape of cells is similar to that of *Stellaria* (Pl. 1-b, c). Coupled with the fact that the petals are entire or emarginate, the capitellate stigmatic surface strongly suggests the affinity to *Arenaria* (Pl. 1-d). But the petals are cleft as deep as 1/4 in *P. silvatica* like those of *Stellaria diversiflora*. The styles are 3 or 2 in the chasmogamic flower and rarely 1 in the cleistogamic one. When the styles are 3 the flower is otherwise 5-merous, but when 2- or 1-styled it is often 4-merous showing the opposite petaloid styles and alter-nipetalus valves of the capsule ultimately splitting into 4. The number of valves agrees with that of *Stellaria* proper notwithstanding the thin leathery texture of *Myosoton* (= *Malachium*). It should be added that in the cleistogamic flower of *Stellaria*, the number of style never reduces. Although with much confluent characters with the genera *Stellaria* and *Arenaria*, the appended tubercles of the seed in *Pseudostellaria* are, as mentioned above, never the case with *Stellaria* or *Arenaria*. Since it is hard to unite with one of these genera, *Pseudostellaria* is believed to be placed at the generic rank between both genera. Besides several species with naphiform roots have been described from south-western China as *Arenaria*. They are, however, quite insufficiently known taxonomically, and a further confirmation about the accuracy of generic identification is still needed.

The genus *Pseudostellaria* is definable by the combination of the following characters: the tubercles of seed terminated in simple spinules or glochids; the always oligomorous styles of the cleistogamic flower compared with those of the chasmogamic one; the presence of the cleistogamic flowers born fundamentally at lower axils in most of the species; the long styles with a capitellate stigmatic surface often protruding beyond the entire or bilobed petals (Pl. I-d); the thick root naphiform or rarely slender fusiform; the anther wine-purple in all the species. Moreover the fact that the seed turns from immature whitish color to wine-purple just before maturing in *P. heterantha*, *P. heterophylla*, and *P. palibiniana* may be allowed to add to the generic characteristics. In *Arenaria* and *Stellaria* the seed is merely pale brown at that time.
Plate I

a: *Pseudostellaria eurypa*ua, whole plant and rhizome with tuberous roots enlarged. 
b: *P. eurypa*ua showing spinulose tubercles of seed. 
c: *P. eurypa*ua showing grooved tubercles. 
d: *P. heterantha*, portion of flower showing capitellate stigmatic surface.
Plate II

Plate III
*Pseudostellaria heterantha*, a: in flower; b: in fruit, note capsules at lower nodes.
Plate IV
Pseudostellaria heterantha. a: in flower; b: linear-leaved form.

Plate V
a: Pseudostellaria japonica in flower. b: P. silvatica just after flower.
CLASSIFICATION


Krascheninnikovia Turczaninow ex Besser in Flora 17, Beibl. 1, 9 (1834) nom. nud., ut Krascheninnikovia —Fenzl in Enll., Gen. Pl. 968 (1840) cum descr. et ut Krascheninnikovia—Turcz. in Bull. Soc. Nat. Moscow 15: 609 (1842)—Maximowicz in Bull. Acad. Imp. Sci. St.-Pet. 18: 374 (1873) ut Krascheninnikovia—Pax in Engl. et P., Nat. Pfl.-fam. III, 1b, 80 (1889) in nota sub Stellaria—emend. Korshinsky in Bull. Acad. Fenzl in Endl., Gen. Pl. 968 (1840) cum descr. et Glkhidiatae Ohwi) and the sect. 2. Mamillatae (Ohwi character of seed. The resultant subdivision, based on flowered dichasium. The generic type, P. rupestris, belongs to the latter group. Thus the character of seed and the disposition of leaves cross each other. In the one group, the uppermost two pairs of leaves are approximate, therefore the 4 leaves are falsely whorled and surrounding the flower-cluster (Pl. II-a, b). In the other group, the leaves are solely opposite, and the terminal flower becomes later lateral by an elongation of lateral shoot ending in a single flower or a few-flowered dichasium. The generic type, P. rupestris, belongs to the latter group. Thus the character of seed and the disposition of leaves cross each other. In general, the habit is more variable, being therefore less workable in the subgeneric segregation than the character of seed. The resultant subdivision, based on the glochidiate seeds and simply spinulose ones, is preferably called the sect. 1. Pseudostellaria (= ser. 1. Glochidiatae Ohwi) and the sect. 2. Mamillatae (Ohwi subser.). In the latter section, there are habitually distinguishable two series, viz. the ser. 1. Mamillatae (= subser. 1. Verticillatae Ohwi) with falsely whorled uppermost leaves, and the ser. 2. Distantes (Ohwi subser.) with distantly opposite leaf-pairs. To the sect. Mamillatae belongs P. heterophylla with the widest area in the Sino-Japanese region. Therefore it is the most well known entity in the section, and is reasonably chosen as the type species of the section as well as the series. Among the species of the ser. Distantes, P. heterantha is most widely distributed in the same region, and, on the same ground, it becomes preferably the type of the series. Out of 15 species recorded (13 spp. plus P. cashmiriana & P. europaea Schaeftl.), 5 are known in Japan.

KEY TO SECTIONS, SERIES, AND JAPANESE SPECIES

1. Tubercles of seeds subcylindric, each terminated in 1 persistent glochid with 3-5 patent arms. (Sect. 1. Pseudostellaria)

2. Tubercles of seeds conical, each terminated in 1 deciduous simple spinule (Sect. 2. Mamillatae)

3. Apical 2 pairs of leaves falsely whorled; chasmogamic flowers terminal (Ser. 1. Mamillatae)

4. Leaves all solely opposite; chasmogamic flowers either terminal or lateral. (Ser. 2. Distantes)

5. Pedicels pubescent on 1 side; petals obovate to obovate-lanceolate, usually bilobed at the apex sometimes truncate to rounded and denticulate. (Sect. 1. Pseudostellaria)

6. Pedicels glabrous; petals linear-spathulate or -oblong, acuminate at the apex. (Sect. 2. Mamillatae)

7. Leaves linear-lanceolate and homomorphic; bracts abruptly smaller than foliage leaves... 5. P. silvicola

8. Leaves usually much broader and more or less dimorphic; bracts as large as foliage leaves... 5.

9. Upper leaves ovate, strongly ciliate throughout margins; petals bilobed... 4. P. japonica

10. Upper leaves ovate, rhombic-elliptical to linear, ciliate usually on basal margins seldom extending about the middle; petals never lobed... 3. P. heterantha

Sect. 1. Pseudostellaria.


A single species, P. rupestris (Turcz.) Pax of southeastern Siberia, belongs here and is automatically the type of this section.

Sect. 2. Mamillatae (Ohwi) Mizushima, stat. nov.


Ser. 1. Mamillatae.

Subser. Verticillatae Ohwi, l.c. (1937).

Type species: P. heterophylla (Miq.) Pax.


*P. heterophylla* var. *stenopetala* Kitag., l.c. (1935); l.c. (1939).


*K. raphanorrhiza* Komarov apud Yane, Emm. Pl. S. Manch. 48 (1912).

*Pseudostellaria raphanorhiza* (Korsh.) Pax in Engl., Nat. Pfl.-fam. 2 Aufl. 16c: 318 (1934).

‘*Stellaria rupetris* Hems.’: Yatabe, Nipponshokuhitsu-hen 228, fig. 241 (1900) excl. syn.


*Krascheninikowia japonica* Makino in Iinuma, Somokudzusetsu rev. ed. 1: 396, pl. 291 (1907)—non Korshinsky, 1898.


Perennial with usually solitary napiform root; stems solitary to few, erect or ascending, seldom branched at lower axils, pubescent usually in 2 lines, 3.5-18 cm long. Leaves heteromorphic; lower 2-4 pairs linear-spathulate to oblong, broadest above the middle, narrowed to winged petioles, obtuse to acute at the tip, glabrous above, glabrous or pilose on midribs beneath, ciliate on lower margins; upper becoming broader and uppermost 2 pairs falsely whorled, after anthesis ovate, elliptical to oval, sessile to oblongately petiolate, acute to acuminate at the apex, rounded to acutely narrowed to the base, pilosity as in lower ones. Chasmogamous flowers solitary and terminal or falsely umbellate to 10; pedicels pubescent in 2 (—1) lines, equalling or shorter than hraets in anthesis; sepals 5, elliptical to lanceolate, rounded dorsally and often contiguous at the base, weakly scarious-margined, usually pubescent on midribs, ciliate at the base to beyond the middle seldom glabrous, obtuse to acuminate at the apex, (4 — 5)8 mm long; petals white, obovate to obovate-cuneate, usually bilobed at the apex sometimes truncate to rounded and denticulate, equalling to twice as long as the calyx stamens 10, with wine-purple anthers and white fila-
ments, a little shorter or longer than the calyx seldom reduced to 1/2; styles 3-2, equalling to exceeding the calyx seldom very short and included. Cleistogamous flowers usually at lower sometimes up to apical axis. Capsules about double the length of sepals, dehiscing in twice as many valves as minute styles; valves leathery and semitransparent, widely open and nearly straight (i.e. not recurved). Seeds few to several, grayish- or dark-brown, reniform-globular, covered by broad conical tubercles apiculated with 1 spine, 2 mm across. (Pl. II-a).

Distr. Japan from northern Honshu (39°21′N & 141°34′E) to Shikoku (Tokushima Pref. at 33°57′30″N & 133°57′E) and Kyushu (southwards to n. Kagoshima Pref. at 31°35′N) ; south-eastern Manchuria (Kirin & Mukden Provs. south to Liaoning Peninsula at about 39°N), Korea southwards to Quelpaert (33°20′N), China (Provs. Shantung, Chekiang, Kiangsi & ? Anhwei).

The shape and size of petals vary a good deal, and the segregation by Kitagawa on these characters represents merely an individual variation. The var. *puberula* Ohwi from south-east Korea is said to be different from the typical form in leaves puberulous on the upper surface, margins, and on the midrib beneath. It is known only from one locality in the general range of the species and lacks its own distributio-

nal area, moreover the pilosity varies a good deal in this species. It is, therefore, considered to be a form, *P. heterophylla f. puberula* (Ohwi) m., stat. nov. (— *P. heterophylla* var. *puberula* Ohwi in

The chasmogamic flowers are in general hermaphrodite having styles often protruding beyond the calyx, but are not rarely heterostylos. It is also true in *P. palibiniana* from which the present species is distinguishable in the pubescent pedicels and frequently bilobed obovate petals.

*P. heterophylla* reaches to the north to Otsuchi-machi, Kamihéi-gun, Iwate Prefecture (39°21'N & 141°54'E) and to the south to Mt. Kirishima, Airagun, Kagoshima Prefecture in Kyushu (31°55'N). In the far eastern part of the continent, although less common than *P. palibiniana*, the species in discussion reaches as north to south-eastern Manchuria (the north-east region of China).


Perennial with 1 to a few fascicled slender fusiform roots: stems often solitary or weakly tufted, somewhat quadrangular, simple, erect or sometimes procumbent and rooting at nodes, retrorsely pubescent usually in 2 lines, 8-13-20 cm long. Leaves heteromorphic; 1-4 pairs of lower ones linear-spathulate, mucronulate and acute to obtusish at the tip, gradually narrowed towards the base, ciliate on lower margins, glabrous on both surfaces; upper becoming broader and the uppermost 2 pairs falsely whorled, often nearly sessile, elliptical, ovate to lance-ovate after anthesis, acute to acuminate at the apex, acute to obtuse at the base, ciliate usually at basal margins seldom throughout, glabrous on both surfaces. Chasmogamic flowers solitary and terminal, with glabrous peduncles not surpassing bracts seldom 1.5 times as long; sepals 5 (7), linear-lanceolate to obtlong-lanceolate, when fresh weakly keeled dorsally and not contiguous each other at the base, weakly scarious on margins, glabrous throughout or ciliate on lower margins, 4-6 mm long in flower and slightly accrescent later; petals linear-spathulate or -oblong, about 1.3 times as long as sepals seldom equaling, acutish at the apex, white; stamens 10 (-14) with wine-purple anthers and white filaments, a little shorter or longer than sepals; styles 3 (-2), equalling to exceeding sepals. Cleistogamic flowers in lower axes seldom up to falsely terminal, dark purple, with pubescent pedicels; sepals usually more strongly ciliate than chasmogamic flowers. Capsules and seeds as in *P. heterophylla*. (Pl. II-b).

Distr. Japan: Honshu from Fukushima Pref. (at 37°-10°5"N) south to n. Shidzuoka Pref., and distantly to Shikoku (isolated locality in Kochi Pref. at about 33°45'N); in Korea north to 40°10'N and west to 125°39'E.

This species comes near to *P heterophylla* in general appearance, but is distinguished therefrom in very narrow acutish petals and glabrous peduncles of chasmogamic flowers. Above all the slender fusiform roots are the strongest characteristic of the species.

It goes as north in Honshu as a locality between Kassi hot spring and Kenkatsura, Nishigo-mura, Nishishirakawa-gun, Fukushima Prefecture, and reaches in the south to Hongawa-mura, Tosa-gun, Kochi Prefecture in Shikoku. In Korea it is distributed from Quelpaert north to Mt. Rorin in Heihoku (Pyongan-pukto). Thus at present *P. palibiniana* is known to be a narrow endemic in the Japono-Korean region, but an intensive survey may prove its occurrence in central to northern China.


*Stellaria subgen. Pawlowskya Regel, Pl. Radile. 1 (2) : 385, 422 (1862).

Type species: *P. heterantha* (Maxim.) Pax.

The epithet, Distantes, is preferably chosen for the new rank, because it well designates the feature of this group.

3. *Pseudostellaria heterantha* (Maxim.) Pax in Eng., Nat. Plf-fam. 2 Aufl. 16c:318 (1934)


Stellaria heterantha (Maxim.) Franchet, Pl. Delav. 101 (1889) in clave et comb. nud.

S. heterantha (Maxim.) Yatabe, Nippon-shokubutsu-hen 228, fig. 242 (1900) comb. seminud.


Arenaria vulcanorum Maxim. ex Franch. et Savat., ibid. 1: 52 (1875) nom. nud.


Stellaria maomovicziana (Fr. et Sav.) Franch., Lc. (1899) in nota sub S. davidii et comb. nud.

S. maomovicziana (Fr. et Sav.) Yatabe in Bot. Mag. Tokyo 56: 133 (1892); Nippon-shokubutsu-hen 229 (1900).

Pseudostellaria maomovicziana (Fr. et Sav.) Pax, Lc. (1934) comb. nud.


Pseudostellaria himalaica (Franch.) Pax, Lc. (1934) comb. nud.


Perennial with 1-2 napiform roots: stems simple or branched at lower nodes, arcuate-ascending later procumbent and rooting at nodes, retrorsely pubescent in 1 or 2 lines. Leaves homomorphic or rather heteromorphic, all pairs distant and winged-petioled, linear, linear-spathulate to rhombic-elliptical or oval, acuminate to obtuse and mucronulate at the tip, gradually or abruptly narrowed to the base, glabrous on both surfaces seldom sparingly pilose above, ciliate near the base sometimes beyond the middle. Chasmogamic flowers axillary and falsely so (terminal one becoming lateral by elongation of lateral branch) with 1 or 2 lined-pubescent peduncles shorter than to 2 (—3) times as long as bracts, 5-10-merous; sepals linear-lanceolate or oblong, acuminate to obtusish at the tip, narrowly scariosus on ciliate margins seldom glabrous, pilose or glabrescent on the back, 3-5-6 mm long; petals white, obovate to obovate-cuneate seldom lanceolate, rounded to acute sometimes irregularly denticate at the tip, about equaling to 1.7 times as long as sepal's; stamens 10 with wine-purple anthers and white fila, a little longer (1.3 times) or shorter than sepals; styles 3-5, protruding beyond sepal's to markedly shorter. Few seeded capsules as in others; seeds rusty brown, 2-2.5 mm across. (Pl. III, IV).

Distr. Japan: from Honshu (39°42'N & 140°53'E) southwards, Shikoku, Kansu to Isl. Yakuushima (30°20') doubtfully in the southern half of Korean Peninsula; China (Provs. Hopei, Shansi, Kansu, Szechuan, and reaches in Yunnan to about 26°30'N & 100°10'E).

The species reaches in Japan to the north to Hashiha, Iwate-gun, Iwate Prefecture, and as south as Ile Yakuushima in high elevations. The report from the middle of the Korean Peninsula is doubtful, since Nakai did not cite the species in his '1952 article"("A synoptical sketch of Korean flora"). Then distributed in China on highlands from Shansi to Yunnan.

The linear-leaved P. musashiensis Hiyama does not differ from P. heterantha var. linearifolia, since the shape of petals and the number of styles vary to some extent. The lanceolate acute petals come near to those of P. palibiniana, but the thick tuberous roots are of P. heterantha and not the slender fusiform of...
P. palibiniana. The shorter peduncles less than the length of bracts cannot be workable owing to its presence in the usual form of P. heteranthera. The always green stems are not strong enough to characterize P. musashiensis, because the individuals grown in a deep shade are never flushed with dark purple. The description of seeds by Hiyama is excellent, but it appears to be, as he has already known, common to other congeners.


A tufted to solitary perennial with napiform roots; stems ascending to erect, rather retusely villous-pubescent in 2 or 1 lines, 7-20 (-40) cm long, simple excepting few-flowered dichasia. Leaves all distant; lower 1-3 pairs narrowly spathulate and gradually narrowed towards the base, acute to obtuse and mucronulate at the apex, pilose as in the upper ones but becoming glabrous later; upper (1 -) 2-4 pairs sessile or nearly so, ovate to oblong, often broadest below the middle, obtuse to acute and mucronate at the apex, obtuse to rounded at the base, ciliate throughout margins, sparingly pubescent to glabrous above, same beneath but always villous-pubescent on midrib, 15-33-50 mm long 8-13-20 mm wide and 1.7-2.5-4 times as long as the width. Glaucosomatic flowers often 5-merous, solitary to 4-flowered leafy-bracted dichasm, sometimes laterally solitary; bracts similar to foliage leaves but gradually smaller; pedicels retrorsely pubescent in 2 (-1) lines, usually shorter than bracts to as long; sepals lanceolate to ovate, acute or obtuse at the apex, narrowly scarious and almost always strongly ciliate throughout margins, usually sparingly pubescent or villous on midrib seldom glabrous dorsally, 2.5-4 (-6) mm long; petals obovate and white, shallowly cleft to 1/5, about 1.5 (-2) times as long as sepals; stamens 10 with wine-purple anthers and white filaments, equaling to a little longer than sepals; styles usually 3 and surpassing stamens. Cleistogamous flowers dark purple, 4-merous with minute styles and few stamens, well yielding fruits. Capsules as in others; seeds 2-6, reniform-globular, cinnamon-brown, covered by conical tubercles and each terminated by 1 simple spinule as in congeners, 1.8-2 mm across. (Pl. V-a).

Distr. South-eastern Manchuria (n. to about 44°35’N, w. to about 128°30’E), south Ussuri, Japan in u. Honshu (1wate) (39°44’N, e. to 141°47’E), Miyagi, Fukushima (s. to 37°21’N) Prefs.

This species is very characteristic in having densely ciliate leaves. When young it is sometimes creeping and rooting at nodes bearing also cleistogamous flowers, but elongate lateral shoots seen in P. davidi (Franch.) Pax or P. euritrichioides (Diels) Ohwi never appear. P. japonica is doubtlessly a narrow east Asiatic endemic.


Stellaria silvatica (Maxim.) Regel, Pl. Radde. 1 (2) : 421, t. 9, fig. 12-16 (1862).

S. silvatica (Maxim.) Yatabe in Bot. Mag. Tokyo
6:133 (1892); Nippom-shokubutsu-hen 229, fig. 243 (1900).


A slender perennial with usually napiform roots: stems 5-25 cm long, simple or once branched with 1-3 branches seldom twice, nearly straight and quadrangular, minutely pubescent on 1 or 2 angles with recurved hairs. Leaves sessile, (3-)4-5 (-7) paired, linear to linear-lanceolate, very gradually narrowed towards the tip and cuneate to rounded at the base, glabrous on both surfaces, only midribs prominent, ciliate usually about the base, principal ones (1.5-)3-8 (-11) cm long (1.5-)3-7 (-12) mm wide. Chasmogamic flowers 5-merous, solitary to 8 in terminal and lateral dichasia: peduncles and pedicels filiform, puberulent in 1 or 2 lines, often shorter than leafy bracts with usually ciliate basal margins; sepals narrowly lanceolate to ovate-lanceolate, acuminate to acute, weakly serrate-margined, glabrous or ciliate on basal margins, 3-5 mm long; petals obovate-cuneate, cleft as deep as 1/4 with obtuse- to round-tipped lobes, 1.3-1.7 times as long as sepals; stamens 10 (-8) with wine-purple anthers and white filaments; styles 3 (-2), often protruding beyond sepals. Gleistogamous flowers at lower axils, 4- or 5-merous, dark purple; 4- or 5-valved capsules few-seeded; seeds reniform-globular, chestnut-brown, covered by conical tubercles and each apiculated by 1 simple spine, 2 mm across. (Pl. V-b).

Distr. East Siberia in Ussk (51°35'N), Bururu Mts., Usuri, south-east Manchuria (the north-west region of China), north Korea (s. to 40°10'N). China [north-west Yunnan (27°40'N & 100°12'E), northern Szechwan, Kansu (about 34°30'N & 108°E)]; Japan in southern half of Hokkaido [n. to Kitami (43°48'N), e. to Tokachi, Kushiro. Nemuro (145°40'E), w. to Ishikari Provs.] and in north to central Honshu [south-east Aomori, Iwate, Yamagata, Fukushima, Tochigi (s. to 36°42'26"N), Ibaraki Prefs.].

This species is very rare in Japan, and it grows northerly to the neighbourhood of Kitami City in Kitami Prov. and to the east to Tomoshiri in Nemuro Prov. The southern extremity is known to be Mt. Haguro, north of Utsunomiya City in Tochigi Prefecture. In China it shows a remarkable disjunctive distribution between south-eastern Manchuria and Kansu-Szechwan-Yunnan Provinces. Although its migration to Manchuria may have been very probably through Amur and Usuri, the occurrence in south-western China is not clear. Since the seeds certainly drop around the mother plant and cannot spread so far, the disjunction of the range suggests an old age of this species which had once occupied a far more, wide area now known as temperate eastern Asia. The principal area in China is supposed to have been suppressed during the Pleistocene glaciation, since then the present gap between the north-eastern and the south-western areas has not yet been filled.

The marginal ciliation is usually confined to the base in all the leaves of the Japanese and Manchurian populations, but it extends upwards especially in the upper leaves in the plants of south-western China. This is rarely the case with the Japanese plants, viz. a specimen from Hokkaido has the uppermost pair of leaves ciliate up to 1/7 from the base. This may warrant an interconnecting degree between the Chinese. In the higher degree of ciliation and probably in the more slowly cleft petals, the Kansu-Szechwan-Yunnan plants have been differentiated from the plants of Amur-Ussuri-Manchuria-Japan under the isolated condition. Then the isolated localities in south-western China are assumed to be fossil areas of the old range of this fairly old species. The Chinese form is segregated as var. retusa Ohwi based on the north Szechwan plant.

**Final remarks**

There are 15 species known in the genus *Pseudo-stellata*, among which the sect. *Pseudostellaria* (= Ser. Glochidiatae Ohwi) is monotypic containing *F. rupestris*. Others form the sect. *Mamillatae*; 4 are attributed to the sect. *Mamillatae* (Subser. Verticillatae Ohwi) and 10 are the sect. *Distantes* (= Subser. Distantes Ohwi). The morphological diversity is greater in the latter series than the former.

"Among the aforementioned 5 species of Japan, *P. heterophylla* and *P. Palibininiana* belong to the *Mamillatae*, and *P. heterantha*, *P. japonica*, and *P. sylvatica* to the *Distantes*. These entities are morphologically well marked species. In the continental eastern Asia, all the entities appear to fall into 4 groups centering in *P. heterophylla*, *P. heterantha*, *P. sylvatica*, and *P. Davidii* respectively. On the morphological and chorological ground, these species would seem to be older than others in age, and they would have survived the Pleistocene glaciation. The degree of variation within the 5 species in Japan is not great. Considering the whole range of distribution of each species, *P. heterophylla* and *P. Palibininiana* are doubtlessly temperate east Asiatic
endemics with relatively narrow areas. While *P. heterantha*, *P. japonica*, and *P. silvatica* show disjunctive areas, and *P. japonica* is a very narrow endemic being distributed within south-eastern Manchuria-south Ussuri-northern Honshu. In Japan the localities of the last mentioned 2 species are rather isolated. On these bases, the genus *Pseudostellaria* is centered in the south-easternmost Siberia to China, and it would have been differentiated from a prototype which have been morphologically intermediate between the genera *Arenaria* and *Stellaria*. Moreover the fact that the sculpture of seed-coat strongly resembles that of *Stellaria* is suggestive. Besides it would seem probable that the species of the genus in discussion have lost a placticity during at least the Pleistocene glacial ages and have come to be relics now.