

## New species and new combinations in the genus *Stauroneis*

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KOBAYASI, H. and K. Ando 1978. New species and new combinations in the genus *Stauroneis*. Jap. J. Phycol. 26 : 13-18.

In this paper, 1 new species, 3 new varieties, 2 new forms and 2 new combinations in the genus *Stauroneis* are described and illustrated. They are *Stauroneis agrestis* Petersen var. *inflata* var. nov., *S. kriegei* Patr. form. *lanceolata* form. nov., *S. legumen* (Ehr.) Kütz. var. *elliptica* var. nov., *S. legumen* var. *nipponica* (Skv.) comb. nov., *S. nobilis* Schum. form. *densestriata* form. nov., *S. pseudotenera* sp. nov., *S. smithii* Grun. var. *balatonis* (Pant.) comb. nov. and *S. staurolineata* Reim. var. *japonica* var. nov.

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In the course of the taxonomical and ecological studies on the diatoms found from various parts of Japan, about fifty forms belonging to the genus *Stauroneis* were distinguished. Among these forms, a review of the literature has failed to reveal the names for six ones. Accordingly, they are presented here as new entities together with two new combinations.

### 1. *Stauroneis agrestis* Petersen var. *inflata* var. nov.—(Pl. 1. Fig. 1-3)

Valvae lanceolatae vel lineari-lanceolatae, apicibus protractis, rostratis vel capitatis, 26-30  $\mu\text{m}$  longae, 6-7  $\mu\text{m}$  latae. Raphe recta, filiformis, fissuris terminalibus curvatis in idem directiones. Area axialis angusta, linearis, area centrali anguste dilatata versus duo margines valvae. Striae transapicales radiantes, circiter 25-30 in 10  $\mu\text{m}$ , delicatissime punctatae.

Valves lanceolate to linear-lanceolate with protracted, rostrate to capitate ends, 26-30  $\mu\text{m}$  long, 6-7  $\mu\text{m}$  wide. Raphe straight

filiform, terminal fissures curved in the same directions. Axial area narrow, linear, central area narrowly widened to the both margins of the valve. Transapical striae radiate and delicately punctate, about 25-30 in 10  $\mu\text{m}$ .

This variety is distinguished from the nominate variety by the convex margins and the narrow and linear fascia bordered by a row of coarse puncta. This taxon has been found on mosses, *Pallavicinia longispina* Steph. and *Reboulia hemi-aphaerica* (L.) Raddi in the Onagara Lime-stone Cave in Ooita Prefecture. Similar to the nominate variety (HUSTEDT 1943, p. 153, 1959 p. 783), this taxon also seems to be an aerophile and moss form.

Holotype: H. K. T-65 in coll. H. KOBAYASI  
Iconotype: Pl. 1. Fig. 1 & 2, photomicro-graph and figure of the same specimen.

Type locality: Yaku-shima, Kagoshima Prefecture.

2. ***Stauroneis kriegeri*** Patr. forma **lanceolata** forma nov.—(Pl. 1. Fig. 4-6)

Valvae lanceolatae, apicibus rotundatis vel leviter rostratis, 29-32.5  $\mu\text{m}$  longae, 5-6.5  $\mu\text{m}$  latae. Raphe recta filiformis. Area axialis linearis, leviter dilatata in media parte valvae, area centrali anguste dilatata versus duo margines valvae. Striae transapicales penitus radiantes, circiter 26-30 in 10  $\mu\text{m}$ . Puncta tenuia sed distincta.

Valves lanceolate with rounded to slightly rostrate ends, 29-32.5  $\mu\text{m}$  long, 5-6.5  $\mu\text{m}$  wide. Raphe straight filiform. Axial area linear, slightly widened at the center of the valve, central area narrowly widened to the both margins of the valve. Transapical striae radiate throughout, about 26-30 in 10  $\mu\text{m}$ . Puncta fine but distinct.

This forma is distinguished from the nominate variety by the rounded to slightly rostrate and not capitate apices of the valve and somewhat larger size. This taxon has been found from Arima-dani Gorge attached on *Conocephalum conicum* (L.) Dum. and *Bryonoguchia molkenboeri* (Lac.) Iwats. et Inoue.

Holotype: H. K. T-66 in coll. H. KOBAYASI  
Iconotype: Pl. I. Fig. 4 & 5, photomicrograph and figure of the same specimen.

Type locality: Arima-dani Gorge, Saitama Prefecture.

3. ***Stauroneis legumen*** (Ehr.) Kuetz. var. **elliptica** var. nov.—(Pl. 1 Fig. 11-13)

Valvae ellipticae vel elliptico-lanceolatae, apicibus leviter rostratis, 20-31  $\mu\text{m}$  longae, 7-8  $\mu\text{m}$  latae. Pseudosepta conspicua in valvam dilatata usque ad circa longitudines apicum. Raphe recta et filiformis. Area axialis angusta et linearis, area centrali anguste dilatata versus duo margines valvae. Striae transapicales penitus radiantes, 28-29 in 10  $\mu\text{m}$ . Puncta circiter 25-30 in 10  $\mu\text{m}$ .

Valves elliptical to elliptical-lanceolate with slightly rostrate ends, 20-31  $\mu\text{m}$  long, 7-8  $\mu\text{m}$  wide. Pseudosepta present extending into the valve about the length of the ends. Raphe straight filiform. Axial area narrow, linear, central area narrowly widened to the both margins of the valve. Transapical striae radiate throughout, 28-

29 in 10  $\mu\text{m}$ . Puncta about 25-30 in 10  $\mu\text{m}$ .

This variety is distinguished from the nominate variety by its not undulate margins. This taxon has been found from Toyako Lake in Hokkaido, Kizakiko Lake in Nagano Pref. and ponds in Musashikyuryoshinrin Park in Saitama Pref..

Holotype: H. K. T-67 in coll. H. KOBAYASI  
Iconotype: Pl. 1. Fig. 11 & 12, photomicrograph and figure of the same specimen.

Type locality: Toyako Lake, Hokkaido.

4. ***Stauroneis legumen*** var. **nipponica** (Skv.) comb. nov.—(Pl. 1. Fig. 7-10)

*Stauroneis smithii* Grun. var. *nipponica* Skv. Philippine J. Sci. 61(1): 33. pl.10. f. 23. 1936.

Valves linear-lanceolate with slightly triundulate margins and long rostrate ends, 30-50.5  $\mu\text{m}$  long, 7.5-10  $\mu\text{m}$  wide (Skvortzow gives 34  $\mu\text{m}$  long and 6.8  $\mu\text{m}$  wide, however the measurement on his figure being 8  $\mu\text{m}$  wide). Pseudosepta present extending into the valve about the length of the ends. Raphe straight and filiform. Axial area very narrow, linear, central area narrowly widened to the both margins of the valve. Transapical striae radiate throughout, 24-29 in 10  $\mu\text{m}$ .

This variety is distinguished from the nominate variety by the shape of the valve. Skvortzow treated this taxon as a variety of *Stauroneis smithii*, whereas the authors consider it as distinct from *S. smithii* because the structure of stauros and the arrangement of striae is more closely related to *Stauroneis legumen*. This taxon has been found from Toyako Lake in Hokkaido, Kizakiko Lake and Shinsyuryu-ike Pond in Nagano Prefecture, Sanpoji-ike Pond in Tokyo, Senjoga-ike Pond, ponds in Musashi-kyuryoshinrin Park in Saitama Prefecture and Otoko-ike Pond, Usi-ike Pond, Koridono-ike Pond in Niigata Prefecture.

5. ***Stauroneis nobilis*** Schum. forma **densistriata** forma nov.—(Pl. 1 Fig. 14, 15)

Valvae lanceolatae, apicibus protractis et capitatis, 72.5-77  $\mu\text{m}$  longae, 13.5-15  $\mu\text{m}$  latae. Raphe linearis, leviter dilatata in

media parte, fissuris terminalibus quaestio-signi-formibus. Area axialis linearis, area centrali anguste dilatata versus duo margines valvae. Striae transapicales penitus radiantes, circiter 22-26 in 10  $\mu\text{m}$ , puncta irregulariter disposita apprime in media parte valvae.

Valves lanceolate with protracted capitate ends, 72.5-77  $\mu\text{m}$  long, 13.5-15  $\mu\text{m}$  wide. Raphe linear and slightly broadened between valve center and ends, terminal fissures question mark shaped. Axial area linear, central area narrowly widened to the both margins of the valve. Transapical striae radiate throughout, about 22-26 in 10  $\mu\text{m}$ , puncta irregularly arranged especially in the middle part of the valve.

This taxon is distinguished from the nominate variety by the fineness of the striae and from form. *capitata* by the smaller size and fineness of the striae. This taxon has been found rarely from Shibayama-numa Pond and Okushin-numa Pond in Saitama Prefecture and Ikedako Lake in Kagoshima Prefecture.

Holotype: H. K. T-68 in coll. H. KOBAYASI  
Iconotype: Pl. 1. Fig. 14 & 15, photomicrograph and figure of the same specimen.

Type locality: Shibayama-numa, Saitama Prefecture.

6. *Stauroneis pseudotenera* sp. nov.—  
(Pl. 2. Fig. 26-28)

Valvae lineares vel lineari-lanceolate, apicibus anguste rostratis, circiter 29  $\mu\text{m}$  longae, circiter 4.5  $\mu\text{m}$  latae. Pseudosepta conspicua in valvam dilatata usque ad circa longitudines apicum. Raphe recta et filiformis. Area axialis valde angusta et linearis, area centrali anguste dilatata versus duo margines valvae. Striae transapicales penitus convergentes et valde tenuis, circiter 38 in 10  $\mu\text{m}$ .

Valves linear to linear-lanceolate with narrow, rostrate ends, about 29  $\mu\text{m}$  long, about 4.5  $\mu\text{m}$  wide. Pseudosepta present extending into the valve about the length of the ends. Raphe straight and filiform. Axial area very narrow and linear, central area narrowly widened to the both margins

of the valve. Transapical striae convergent throughout, very fine, about 38 in 10  $\mu\text{m}$ .

This taxon is similar to *Stauroneis tenera*, but distinguished by the convergent striation. This species is also similar in the structure of central nodule and pseudosepta to *Stauroneis smithii* and its allies and *Stauroneis ignorata* var. *rupestris*, but is distinguished by the dense and convergent striation. This taxon has been found rarely on the moss *Eurhynchium polystictum* Par., collected from Mt. Gozaisyozan in Mie Prefecture.

Holotype: H. K. T-69 in coll. H. KOBAYASI  
Iconotype: Pl. 2. Fig. 26 & 27, photomicrograph and figure of the same specimen.

Type locality: Mt. Gozaisyozan, Mie Prefecture.

7. *Stauroneis smithii* var. *balatonis*  
(Pant.) comb. nov.—(Pl. 2. Fig. 21-25)

*Stauroneis balatonis* Pant. Kies. order Bacill. Balaton 27. pl. 2 f. 39, 40. 1901.

Valves protract-lanceolate to rhombic-lanceolate with acute ends, 27-46.5  $\mu\text{m}$  long, 7-9.5  $\mu\text{m}$  wide. Conspicuous pseudosepta present. Raphe straight and filiform. Axial area narrow and linear, central area narrowly widened to the both margins of the valve. Transapical striae slightly radiate throughout and finely punctate, 22-30 in 10  $\mu\text{m}$ .

This taxon is distinguished from the nominate variety by the smooth and not undulate margins. HUSTEDT (1959 p. 810) treated this taxon as a synonymy of *Stauroneis smithii* var. *incisa*. However, as seen in the original illustration by Pantocsek, var. *incisa* (cf. Pl. 1. Fig. 16) has broad lanceolate valve with conspicuously constricted sides and these two taxa is not the same. This taxon has been found from Aokiko Lake in Nagano Prefecture.

8. *Stauroneis staurolineata* Reim. var. *japonica* var. nov.

Valvae lanceolate, apicibus acutis subrostratis, 95-128  $\mu\text{m}$  longae, 17-20.5  $\mu\text{m}$  latae. Raphe linearis, dilatata leniter mediam partem valvae et apices, fissuris terminalibus quaestio-signi-formibus et bifurcatis circa

3  $\mu\text{m}$  ab apicibus valvae. Area axialis linearis, aliquantum latae, area centrali anguste dilatata versus duo marginis valvae et sine costis pellucidis longitudinalibus. Striae transapicales leviter radiantes, circiter 16-17 in 10  $\mu\text{m}$ . Costae longitudinales parallelae, non undulatae et interruptae ad faciam transversalem, circiter 16-20 in 10  $\mu\text{m}$ .

Valve lanceolate with acute subrostrate ends, 95-128  $\mu\text{m}$  long, 17-20.5  $\mu\text{m}$  wide. Raphe linear, slightly broadened between valve center and ends, terminal fissures question mark shaped and forking about 3  $\mu\text{m}$  from the valve ends. Axial area linear and somewhat broad. Central area narrowly widened to the both margins of the valve and without crossing longitudinal ribs. Transapical striae slightly radiate, about 16-17 in 10  $\mu\text{m}$ . Longitudinal ribs parallel, not undulate and interrupted at the transapical facia, about 16-20 in 10  $\mu\text{m}$ .

Though this taxon was invalidly described by H. KOBAYASHI (In ANDO *et al.* 1971) under the name of *Stauroneis stodderi* Lewis var. *japonica*, it seems better to combine with *S. taurolineata* by having large terminal fissures. This variety is distinguished from the nominate variety by the absence of longitudinal ribs passing through the stauros and denser longitudinal ribs and also distinguished from *S. stodderi* by the large terminal fissures, the coarser transapical striae and the denser longitudinal ribs. This taxon has been found from Senjoga-ike Pond in Saitama Prefecture, Shinsyuryu-ike Pond and Biwa-ike Pond in Nagano Prefecture,

Ko-numa Pond and Oomine-numa Pond in Gumma Prefecture (YAMAGISHI and KOBAYASHI 1971 as *S. stodderi* var. *japonica*).

Holotype: H. K. T-70 in coll. H. KOBAYASHI  
Iconotype: Pl. 2. Fig. 18 & 19, photograph and figure of the same specimen.

Type locality: Senjoga-ike Pond, Saitama Prefecture.

### Acknowledgements

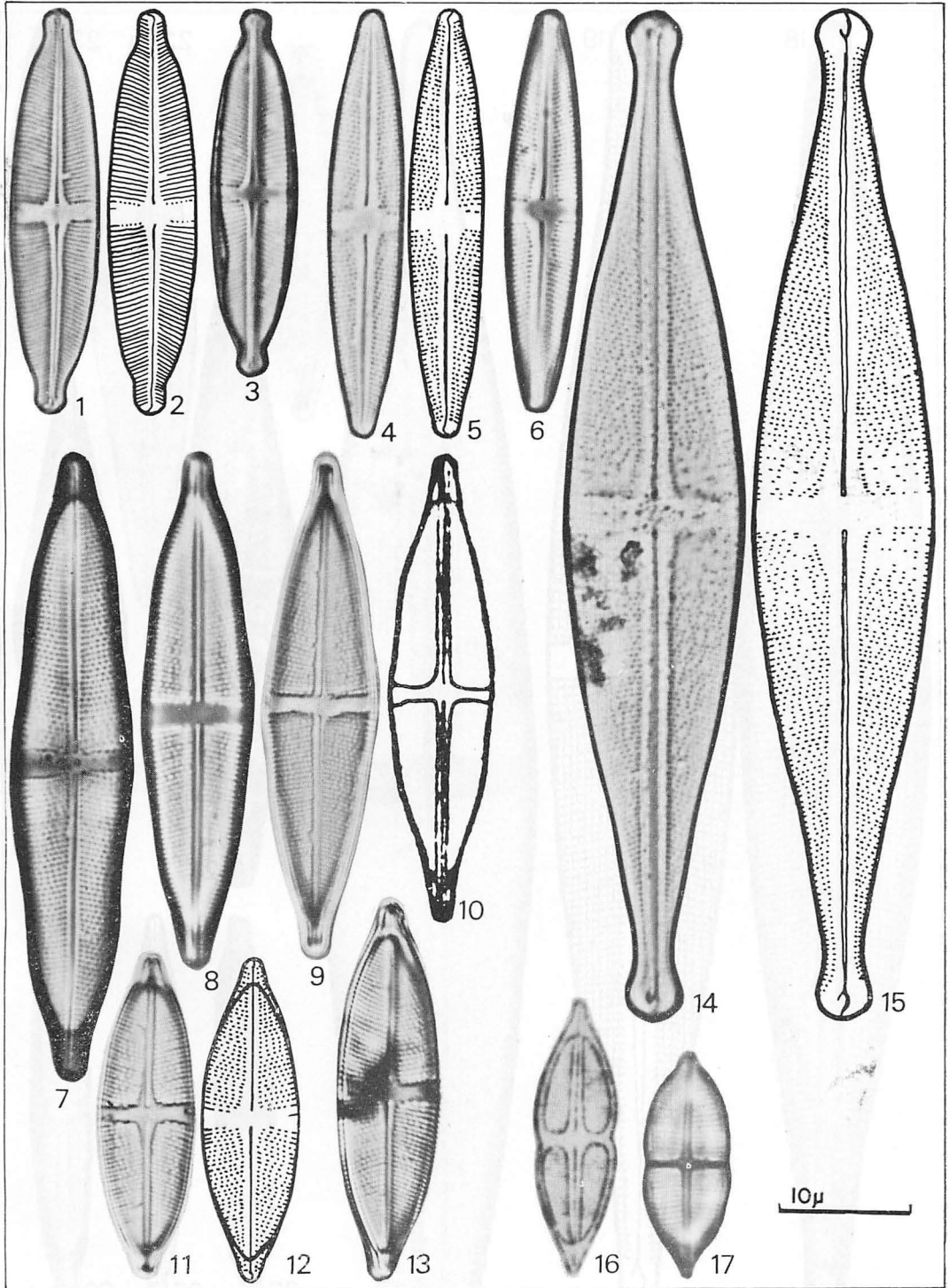
The authors wish to express our hearty thanks to Dr. M. NAKANISHI of Otsu Hydrobiological Station, Kyoto University who kindly offers us the valuable specimens. The authors are also grateful to Mr. T. NAGUMO of Tokyo Gakugei University for his generous support in the field collection.

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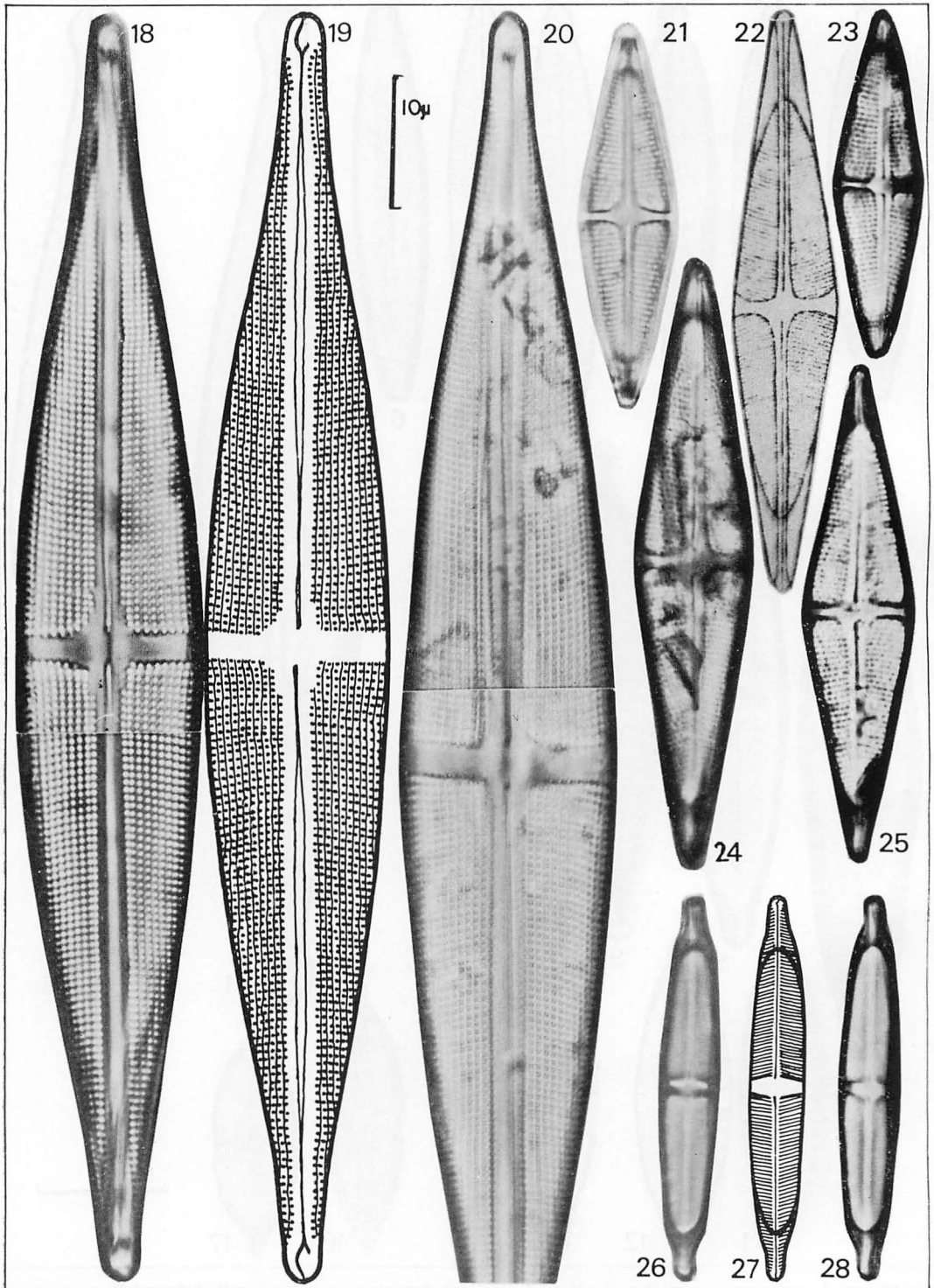
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### 小林弘\*, 安藤一男\*\*: スタウロナイス属の新種と新組合せについて

著者らは本邦産の試料から得た *Stauroneis* 属ケイソウについて検討した結果、現在のところ、約 50 分類群を識別している。これらについては稿を改めて報告する予定であるが、取り敢えず、今回は、その中の新分類群と思われる 1 新種、3 新変種、2 新品種および新組合せを行った 2 変種について報告した。(\*184 東京都小金井市貫井北町 4-1-1. 東京学芸大学生物学教室; \*\*埼玉県入間市豊岡町. 県立豊岡高校)



Pl. 1. 1-3. *Stauroneis agrestis* Petersen var. *inflata* var. nov. 4-6. *S. kriegeri* Patr. forma *lanceolata* forma nov. 7-10. *S. legumen* (Ehr.) Kütz. var. *nipponica* (Skv.) comb. nov. (10: after Skvortzow, 1936) 11-13. *S. legumen* var. *elliptica* var. nov. 14, 15. *S. nobilis* Schum. forma *densestriata* forma nov. 16, 17. *S. smithii* Grun. var. *incisa* Pant. (16: after Pantocsek)



Pl. 2. 18-20. *Stauroneis staurolineata* Reim var. *japonica* var. nov. 21-25. *S. smithii* var. *balatonis* (Pant.) comb. nov. (22: after Pantocsek) 26-28. *S. pseudotenera* sp. nov.