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Taketoshi HINODE*: **The desmid-flora of Akai-Yachi (1)**

日 出 武 敏*: 赤井谷地のチリモ植物相 (1)

In the summer of 1953, Mr. Y. Ikegami, one of botanists in my friends, collected some materials of freshwater algae which contain many desmids from Akai-Yachi and kindly sent me all of them. Having examined these materials, I found that the desmid-flora of that place was very interesting, with several species known hitherto only in tropical or subtropical regions.

Now, from the view-point of phytogeography, it seems to be necessary to make further detailed survey of the algal flora in that district.

Akai-Yachi is a low-lying peaty moor, situated on the western side of Lake Inawashiro in the province of Iwashiro, Fukushima Prefecture.

To the north, having a grand view of Mt. Bandai and Mt. Nekoma, and on the west, with low hills bounding Aizu Basin, this moor occupies the northern part of the narrow plane, almost elliptic in its form, about 940 m long from north to south and about 710 m broad from east to west.

The moor is covered thickly with *Sphagnum*, the depth of which is about 2-3 m, and has many bog-plants, such as *Lycopodium inundatum*, *Eriophorum gracile*, *E. vaginatum*, *Oxycoccus quadripetalus*, *Drocera rotundifolia*, *Rhynchospora Fauriae*, *Rubus chamaemorus* etc. On the *Sphagnum*, there are *Oxycoccus quadripetalus*, *Rubus chamaemorus*, *Empetrum nigrum* var. *japonicum* etc., and are also the conspicuous communities of *Hydrangea paniculata*, *Lilium Leichtlinii* var. *tigrinum*, *Phragmites communis*, *Moliniopsis japonica*, *Osmunda cinnamomea* etc.; in the swampy part, we can find *Lobelia sessilifolia*, *Lysichiton camtschatcense*,

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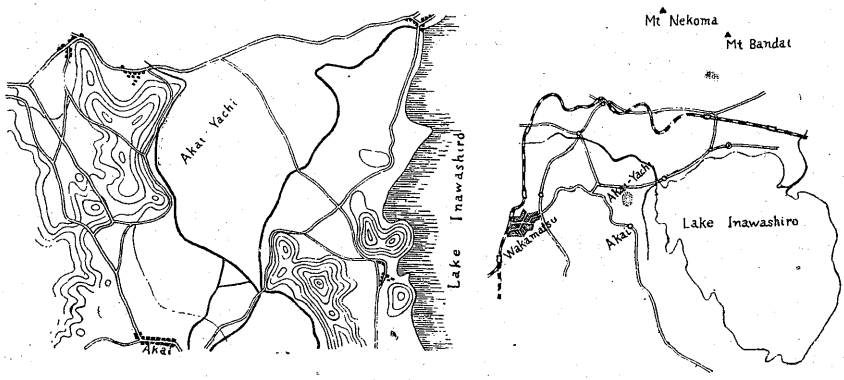
Symplocarpus renifolius, Lythrum anceps, Menyanthes trifoliata etc.

It is said that the flora of this moorland is rich in northern elements, for example, *Oxycoccus quadripetalus, Scheuchzeria palustris, Rubus chamaemorus, Menyanthes trifoliata, Lycopodium inundatum* etc., and on account of its precious rarity, it is kept as one of the Natural Monuments.

In the desmid-flora, *Gymnozyga moniliformis* and *Netrium digitus* are remarkably dominant. Of course, acording its conditions, bog-species such as *Netrium oblongum, Penium silvae, P. polymorphum, Pleurotaenium, minutum,*



Map of Akai-Yachi

Euastrum ampullaceum, Micrasterias truncata, Tetmemorus Brébissonii var. *minor, Cosmarium quadrifarium* forma *hexasticha, C. curcurbita, C. subcucumis, Staurastrum margaritaceum, St. subscabrum* etc. are conspicuous and fairly abundant. But mingled with these bog-loving species, many other desmids are to be seen, and some of them are those known as tropical or subtropical, such as *Closterium setaceum* var. *minus, Pleurotaenium ovatum* var. *inermius, Euastrum octogibbosum, Cosmarium Westii, C. obsoletum* var. *sitoense, C. sublateriundatum, C. pseudoscenedesmus, C. decoratum, Arthrodesmus gibberulus, Staurastrum unicorne* (var.), *St. bifidum* var. *tortum, St. cyclacanthum* (var.), *St. pinnatum* var. *subpinnatum, St. indentatum*, etc.

It is an interesting fact that, though in higher plants northern elements are rich, yet in the desmids, such southern elements are to be found rather in plenty. These so-called southern elements seem to be not rare in Japan, and so I think that this '*southern*' elements must be reexamined whether they are truely tropical or not, but it will be thoroughly done after the accomplishment

of the floral survey of Japanese desmids.

There are over 100 species and varieties in this district. The summary of the species is following:

Genera	16				
Species	69	(include	3	new	ones)
Varieties	37	(〃	7	〃	)
Formae	3	(〃	1	〃	)
	109	(〃	11	〃	)

The writer wishes to express his hearty thanks to Mr. Y. Ikegami who collected the materials and gave him many useful informations on the ecological conditions of Akai-Yachi, and also to Prof. Y. Horikawa, who is constantly offering him many instructive advices during the couse of the study.

1. *Cylindrocystis Brêbissonii* Menegh.—Length 45 μ; breadth 14 μ. (Pl. I, fig. 1)

——— var. minor West and G. S. West—Length 20 μ; breadth 9 μ. (Pl. I, fig. 2)

This desmid is rarer than the typical form, but from its smaller size is easily distinguished.

2. *Netrium digitus* (Ehrenb.) Itzigs. and Rothe—Length 109-190 μ; breadth 34-58 μ. (Pl. I, figs. 3, 4)

This is one of the commonest desmids, and fairly variable in the size and the form. This is most dominat in this district.

——— var. *latum* Hustedt—Length 154-185 μ; breadth 58-62 μ. (Pl. I, fig. 5)

This desmide is confined to the Sphagnum-moors, and in Japan rather widely distributed. This is charecterized by its broader form (2-3 times longer than broad) and the widely rounded apices.

3. *N. oblongum* (De Bary) Lütkem.—Length 135 μ; breadth 34 μ. (Pl. I, fig. 6)

——— var. *cylindricum* West and G. S. West—Length 96-143 μ; breadth 30-31 μ. (Pl. I, fig. 7)

The specimens in this district are not so small as the type, but by their rather slender form and the parallel sides are easily identified.

4. *Penium spirostriolatum* Barker—Length 76-85 μ; breadth 24-25 μ. (Pl. I, fig. 10)

Much shorter forms were rarely observed, but I have found many similar specimens in the collection at Genshigahara in Hokkaido, and they seem confined to the bog; so they may be distinguished from the type-form as var. **brevius** var. nov.

5. *P. silvae nigrae* Rabanus var. *parallelum* Krieg.—Length 54 μ; breadth 20 μ. (Pl. I, figs. 11, 12)

6. *P. polymorphum* Perty—Length 56-63 μ; breadth 24 μ. (Pl. I, figs. 13, 14)

7. *Closterium libellula* Focke var. *intermedium* (Roy and Biss.) G. S. West.—Length 119 μ; breadth 25 μ. (Pl. I, fig. 15)

——— var. *interruptum* (West and G. S. West) Donat—Length 139 μ; breadth 27 μ. (Pl. I, fig. 16)

8. *Cl. navicula* (Baéb.) Dütkem.—Length 85 μ; breadth 19 μ. (Pl. I, fig. 17)

Very rare.

9. *Cl. lunula* (Müll.) Nitzsch var. *biconvexum* Schmidle—Length 398 μ; breadth 76 μ. (Pl. I, figs. 8, 9)

Rather smaller form and very rare.

10. *Cl. parvulum* Näg.—Length 95-120 μ; breadth 8-9 μ. (Pl. I, fig. 18)

11. *Cl. calosporum* Wittr.—Length 104 μ; breadth 12 μ. (Pl. I, fig. 19)

Very rare.

12. *Cl. cynthia* De Not.—Leagth 83-97 μ; breadth 11-12 μ. (Pl. I, figs. 20-22)

Striations of the membrane are much delicate, and striae are composed of finest punctae.

13. *Cl. ulna* Focke—Length 234-280 μ; breadth 20-21 μ; breadth of apices 11 μ. (Pl. II, figs. 1-3)

14. *Cl. intermedium* Ralfs var. **delicatulum** Hinode var. nov. (Pl. II, figs. 7-9)

Var. subminor, membrana flavo-fuscescens vel fere achroa, delicatissime punctato striata; striis 8-9 in 10 μ, saepe inconspicuis.—Long. 177-280 μ; lat. 17-20 μ; lat. apic. 8 μ.

The present variety is somewhat variable in form; in the smaller form the median portion of the inner margin is slightly tumid and shows the resembrance to *Cl. tumidum* Johns. The ornamentation of the membrane is almost alike that of *Cl. subscoticum* Gutw. Abundant.

15. **Cl. concinnum** Hinode sp. nov. (Pl. II, figs. 4-6)

Cl. mediocre, circiter 9-11-plo longius quam latum, modice curvatum, polos versum sensim attenuatum, marginibus ventralibus non tumidis, polis subtruncato-rotundatis; membrana luteola striis visis 17-20; pyrenoidibus circiter 5 in semicellula unaquoque; locelli apicalibus terminalibus corpsula nonnulis inclusis.—Long. 240-301 μ; lat. 24-27 μ; lat. apic. 8 μ.

This species is nearest to *Cl. regulare* Bréb., but differs from the latter in its more delicate striations and lacking of the median girdle. This is also comparable with *Cl. striolatum* Ehrenb. It is rather abundant and also seems widely distributed in our peaty moors.

16. *Cl. striolatum* Ehrenb.—Length 230-330 μ; breadth 24-27 μ. (Pl. II, figs. 10-12)

——— var. *subpunctatum* Hirano in Acta Phytotax. et Geobot. **12**: 157, et 160, fig. 21 (1943).—Length 277-330 μ; breadth 27-31 μ; breadth of apices 10-14 μ. (Pl. II, figs. 13, 14)

17. *Cl. gracile* Bréb., West and G. S. West—Length 220 μ; breadth 6 μ; breadth of apices 3 μ. (Pl. I, fig. 23)

18. *Cl. Ralfsii* Bréb. var. *hybridum* Rabenh.—Length 403 μ; breadth 27 μ; breadth of apices 6 μ. (Pl. II, figs. 15, 16)

19. *Cl. Kützingii* Bréb.—Length 214-260 μ; breadth 11-12 μ; breadth of apices 3 μ. (Pl. II, figs. 17-18)

All the specimens were small, striations not seen, but being delicately punctate. It may be properly distinguished as var. **glacile** var. nov.

20. *Cl. setaceum* Ehrenb. var. *minus* Krieger—Length 150 μ; breadth 6 μ; (Pl. I, fig. 24)

21. *Pleurotaenium minutum* (Ralfs) Delp.—Length 127 μ; breadth 13 μ; breadth of apices 9 μ. (Pl. II, fig. 19)

22. *Pl. trabecula* (Ehrenb.) Näg. forma *clavata* (Kütz.) West and G. S. West.—Length 240 μ; breadth at the base 27 μ; maximum breadth 30 μ. (Pl. II, figs. 20-21)

——— var. *rectum* (Delp.) West and G. S. West.—Length 430 μ; breadth at the bases 27 μ, at the apices 20 μ. (Pl. II, fig. 22-24)

23. *Pl. excelsum* (Turn.) Gutw.—Length 367 μ; breadth at the bases 16 μ, at the apices 12 μ. (Pl. II, figs. 25-27)

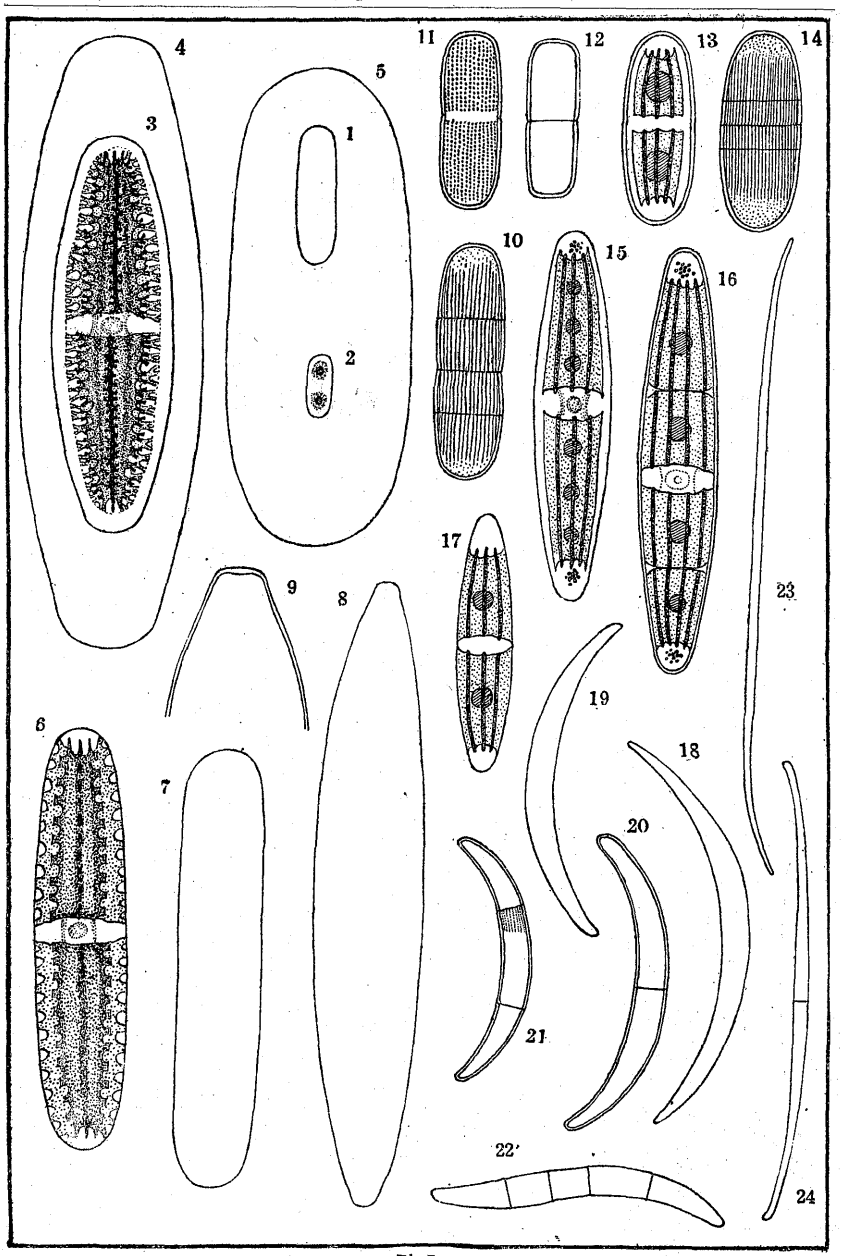
Explanation of Plates I, II

Plate I: 1. *Cylindrocystis Brébissonii* Menegh. ×440. 2. —— var. *minor* West and G. S. West ×440. 3, 4. *Netrium digitus* (Ehrenb.) Itzigs. and Rothe ×440. 5. —— var. *latum* Hustedt ×440. 6. *N. oblongum* (De Bary) Lütkem. ×440. 7. —— var. *cylindricum* West and G. S. West ×440. 8, 9. *Closterium lunula* (Müll.) Nitzsch var. *biconvexum* Schmidle 8, ×225; 9, ×440. 10. *Penium spirostriolatum* Barker ×440. 11, 12. *P. silvae nigrae* Rabanus var. *parallelum* Krieger ×440. 13, 14. *P. polymorphum* Perty ×440. 15. *Closterium libellula* Focke var. *intermedium* (Roy and Biss.) G. S. West ×440. 16. —— var. *interruptum* (West and G. S. West) Donat ×440. 17. *Cl. navicula* (Bréb.) Lütkem. ×440. 18. *Cl. parvulum* Näg. ×440. 19. *Cl. calosporum* Wittr. ×440. 20–22. *Cl. cynthia* De Not all ×400; 22, a monstrous form. 23. *Cl. gracile* Bréb. ×440. 24. *Cl. setaceum* Ehrenb. var. *minus* Krieger ×440.

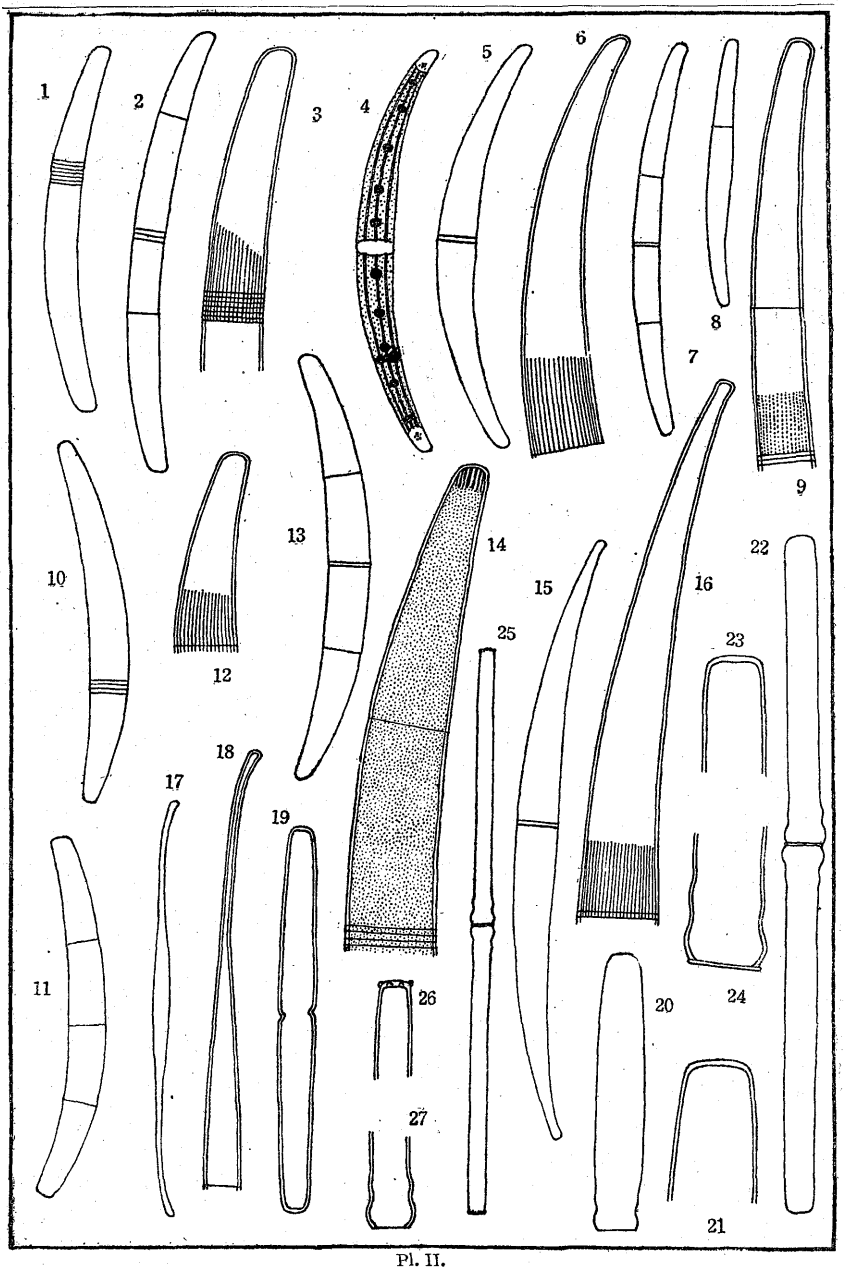
Plate II: 1–3. *Closterium ulna* Focke 1, 2, ×225; 3, ×440. 4–6. *Cl. concinnum* Hinode sp. nov. 4, 5, ×225; 6, ×440. 7–9. *Cl. intermedium* Ralfs var. *delicatulum* Hinode var. nov. 7, 8, ×225; 9, ×440. 10–12. *Closterium striolatum* Ehrenb. 10, 11, ×225; 12, ×440. 13, 14. —— var. *subpunctulatum* Hirano. 13, ×225; 14, ×440. 15, 16. *Cl. Ralfsii* Bréb. var. *hybridum* Rabenh. 15, ×225; 16, ×440. 17, 18. *Cl. Kützingii* Bréb. forma. 17, ×225; 18, ×440. 19. *Pleurotaenium minutum* (Ralfs) Delp ×440. 20, 21. *P. trabecula* (Ehrenb.) Näg. forma *clavata* (Kütz.) West and G. S. West 20, ×225; 21, ×440. 22–24. —— var. *rectum* (Delp) West and G. S. West 22, ×225; 23, 24, ×440. 25–27. *P. excelsum* (Turn.) Gutw. 25, ×225; 26, 27, ×440.

□ 小林新著 佐竹義輔序: **秋田県の植物** アート図版 40. 挿図 138. 本文 122頁. 限定 500 部. 秋田県大館市立第三中学校著者出版。

本書は全5部よりなる計画の第2部をなすもので (1) 秋田県の自然のあらまし (2) 同県の諸高山と植物採集 (3) 森林地域の採集と秋田杉の美林 (4) 低地の湿地及水中植物採集 (5) 風穴地帯の植物採集案内 (6) 海岸の植物採集案内 (7) 原野の植物及び路傍の植物の8項目を設け各項を更に細分して秋田県下主として高山及び海岸植物採集案内として書かれ，特に生態的考慮が払われている。また余白は同県の植物方言集其他として利用されている。(K. H.)



Pl. I.



Pl. II.