Taketoshi HINODE*: **The desmid-flora of Akai-yachi (3)**

日 出 武 敏*: 赤井谷地のチリモ植物相 (3)

66. *Cosmarium cyclicum* Lund. var. *Nordstedtianum* (Reinsch) West and G. S. West—Length 47 μ; breadth 52 μ; breadth of isthmus 18 μ; thickness 25 μ. (Pl. V, figs. 16-17)

67. *C. zonatum* Lund.—Length 43 μ; breadth 22 μ; breadth of isthmus 7 μ; thickness 17 μ. (Pl. V, fig. 8)

68. *C. monomazum* Lund. var. *glabrum* Hinode, Hikobia **1**: 149, t. 1, f. 18-22, (1952)—Length 30 μ; breadth 32 μ; breadth of isthmus 9 μ; thickness 16 μ. (Pl. V, fig. 20-21)

69. *C. reniforme* (Ralfs) Arch. var. *elevatum* West and G.S. West—Length 50 μ; breadth 32 μ; breadth of isthmus 10 μ; thickness 22 μ. (Pl. V, figs. 29-30)

70. *C. quadrifarium* Lund. f. *hexasticha* (Lund.) Nordst.—Length 48-52 μ; breadth 37-43 μ; breadth of isthmus 14-17 μ; thickness 30 μ. (Pl. V, figs. 25-26).

71. *C. Portianum* Arch. var. *nephroidum* Wittr.—Length 22 μ; breadth 17 μ; breadth of isthmus 7 μ. (Pl. V, fig. 22)

72. *C. decoratum* West and G. S. West—Length 68 μ; breadth 54 μ; breadth of isthmus 24 μ; thickness 35 μ. (Pl. V, figs. 23-24)

The characters of the forms in the district are similar to those of Krieger's specimen recorded from Sumatra. It is not rare in this moor.

73. *C. Blyttii* Wille—Length 19 μ; breadth 16 μ; breadth of isthmus 7 μ. (Pl. V, fig. 33)

74. *C. binum* Nordst.—Length 41 μ; breadth 30 μ; breadth of isthmus 9 μ. (Pl. V, fig. 19)

75. *C. puncturatum* Bréb. var. *subpunctulatum* (Nordst.) Börges. f. **minor** Hinode f. nov. (Pl. V, figs. 34-35)

Forma minor, granulis centralis paucioribus.

Long. 20 μ; lat. 19 μ; lat. isthm. 6 μ; crass. 12 μ.

76. *C. Pseudobroomei* Wolle—Length 38 μ; breadth 35 μ; breadth of isthmus 11 μ; thickness 19 μ. (Pl. V, figs. 31-32)

77. *C. pseudoamoenum* Wille (Pl. V, fig. 27)

The specimens seen here usually have two pyrenoids in each semicell, but by

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its form of semicells and the constructions they can be identified to this species.

—— var. **reductum** Hinode var. nov. (Pl. V, fig. 28)

Var. minor, granulis reductioribus et paucioribus, in ambitu toto semicellularum cum granulis 11; pyrenoidibus bini in semicellulis unoquoque.

Long. 35 μ; lat. 19 μ; lat. isthm. 15 μ.

78. *Xanthidium acanthophorum* Nordst.—Length with spines 54 μ, without spines 21 μ; breadth with spines 44 μ, wtihout spines 35 μ; breadth of isthmus 9 μ. (Pl. V, fig. 36)

79. *Arthsodesmus gibberulus* Joshua—Length 23 μ; breadth with spines 49 μ, without spines 31 μ; breadth of isthmus 9 μ; thickness 20 μ. (Pl. VI. figs. 1-4)

At the vertical view semicells are rhomboid-elliptical, at the middle on each side slightly tumid and the membrane thickened, cell-wall is punctate; two pyrenoids are contained in each semicell.

80. **A. japonicus** Hinode sp. nov. (Pl. VI, figs. 5-7)

A. mediocris, sine spinis paulo longior quam latus, profunde constrictus, sinu interiori parte lineari deinde mox ampliato; semicellulae ellipticae angulis basalibus obtuse rotundatis, latelaribus sursum paulo divergentibus, angulis superioribus cum spina longa paulo divergens utrobique, apicibus late convexis in medio subtruncatis vel levissime retusis; e vertice visae ellipticae; e latere visae rotundatae; membrana juxta apicem scrobiculis spagentibus.

Long. 24 μ; lat. sine spin. 22 μ, cum spin. 35 μ; lat. isthm. 5.5 μ; crass. 12 μ; long. spin. 7-12 μ.

The present species is nearest to *A. Bulnheimii* Racib., but differs from the latter in its more elliptical semicell, convexo-truncate apices, and the scrobiculations of the apical portion of the semicell. In 1951, I found this species in the materials collected from Ozegahara, but the specimens collected at that place were somewhat larger (length 34-35 μ; breadth without spines 29-30 μ, with spines 53-62 μ; breadth of isthmus 6-8 μ; thickness 16 μ).

81. *Staurastrum apiculatum* Bréb.—Length without spines 21 μ, with spines 26 μ; breadth without spines 20 μ, with spines 22 μ; breadth of isthmus 5.5 μ. length of spines 5 μ (Pl. V, figs. 37-38).

82. *St. umicorne* Turn. var. **longicorne** Hinode var. nov. (Pl. VI, figs. 18-19)

Var. semicellulis triangularibus, marginibus ventralibus late convexis, spinis longissimis et robustis curvato-recurvatis.

Long. 22-23 μ; lat. sine spin. 17-19 μ, cum spin. 35-44 μ; lat. isthm. 9 μ; long. spin. 11-14 μ.

83. *St. contectum* Turn. var. inevolutum Turn.—Length without spines 24 μ, with spines 32 μ; breadth without spines 30 μ, with spines 34 μ; breadth of isthmus 11 μ. (Pl. VI, figs. 14-15)

84. *St. bifidum* (Ehrenb.) Bréb. var. *tortum* Turn.—Length 44 μ; breadth without spines 30 μ, with spines 42 μ; breadth of isthmus 14 μ. (Pl. VI, figs. 8-9)

85. *St. simonyi* Heimerl—Length 22 μ; breadth 22 μ; breadth of isthmus 7 μ. (Pl. VI, figs. 10-11)

86. *St. subscabrum* Nordst.—Length 35 μ; breadth 39 μ; breadth of isthmus 11 μ. (Pl. VI, figs. 12-13)

The observed specimens were quadrangular, and I once met the same form among the materials from Oze.

87. *St. inconspicuum* Nordst.—Length 16 μ; breadth 19 μ; breadth of isthmus 7 μ. (Pl. V, figs. 39-40)

88. *St. brachiatum* Ralfs—Length 24 μ; breadth 25 μ; breadth of isthmus 8 μ. (Pl. VI, figs. 16-17)

89. *St. subnudibrachiatum* West and G.S. West—Length without processes 19 μ, with processes 28 μ; breadth without processes 12 μ, with processes 39 μ; breadth of isthmus 9 μ. (Pl. VI, figs. 20-22)

Cells are all 4-radiate, the cell-bodies are rather small.

90. *St. proboscideum* Perty—Length 32 μ; breadth 34 μ; breadth of isthmus 11 μ. (Pl. VI, figs. 23-25)

This is the commonest *Staurastrum* in this district.

91. *St. margaritaceum* (Ehrenb.) Menegh.—Length 27 μ; breadth 24 μ; breadth of isthmus 8 μ. (Pl. VI, figs. 28-29)

92. *St. polymorphum* Bréb.—Length 16 μ; breadth 22 μ; breadth of isthmus 5.5 μ. (Pl. VI, figs. 26-27)

93. *St. arachne* Ralfs var. *arachnoides* West—Length 24 μ; breadth without processes 14 μ, with processes 45 μ; breadth of isthmus 9 μ. (Pl. VI, figs. 30-31)

94. *St. Pseudosebaldii* Wille—Length 48 μ; breadth with processes 71 μ; breadth with processes 71 μ; breadth of isthmus 14 μ. (Pl. VI, figs. 32-34)

95. *St. cyclacanthum* West and G.S. West var. **elegans** Hinode var. nov. (Pl. VI, figs. 39-41)

Var. minor, processibus tenuibus marginibus superioribus inferioribusque minute granulatis, apicibus processuum 4-spinatis, ad basin semicellularum sub processu unoquoque spina singula praeditis.

Long. 24 μ; lat. cum proc. 40 μ; lat. isthm. 6 μ.

96. *St. pinnatum* Turn. var. *subpinnatum* (Schmidle) West and G. S. West—Length 38 μ; breadth without processes 16 μ, with processes 38 μ; breadth of isthmus 9 μ. (Pl. VI, figs. 37-38)

I met in the material single specimen of this species, whose cell is small and somewhat delicate, and the basal ring of granules is invisible.

97. *St. indentatum* West and G.S. West—Length 35 μ; breadth 51 μ; breadth of isthmus 7 μ; thickness 14 μ. (Pl. VI, figs. 35-36)

98. *Desmidium coarctatum* Nordts.—Length 19 μ; breadth 22 μ; thickness 18 μ. (Pl. VI, fig. 45)

99. *Hyalotheca indica* Turn.—Length 15 μ; breadth 16 μ; breadth of isthmus 14 μ; breadth of apices 14 μ. (Pl. VI, fig. 42)

100. *H. neglecta* Racib.—Length 19-25 μ; breadth 11 μ. (Pl. VI, figs. 43-44)

Rather smaller and shorter forms were rarely observed.

101. *Gymnozyga moniliformis* Ehrenb.—Length 28 μ; breadth 18 μ; breadth of isthmus 16 μ; breadth of apices 13 μ.

This is the most dominant species in this district. (Pl. VI, figs. 46-48)

Plate V. (all figures, ×440): 1-3. *Cosmarium pyramidatum* Bréb. 4-6. *C. pachydermum* Lund. 7. *C. auriculatum* Reinsch var. *reductum* Hinode var. nov. 8, 9. *Cosmarium ocellatum* Eichl and Gutw. var. *glabrum* Hinode var. nov. 10. *C. quardratum* Ralfs. 11, 12. *C. pseudopyramidatum* Lund. 13. *C. obsoletum* (Hantzsch) Reinsch. 14.—— var. *sitvense* Gutw. 15. *C. pseudoscenedesmus* West and G.S. West. 16, 17. *C. cyclicum* Lund. var. *Nordstedtianum* (Reinsch) West and G. S. West. 18. *C. zonatum* Lund. 19. *C. binum* Nordst. 20, 21. *C. monomazum* Lund. var. *glabrum* Hinode. 22. *C. Portianum* Arch. var. *nephroidenum* Witter. 23, 24. *C. decoratum* West and G.S. West. 25, 26. *C. quadrifarium* Lund. forma *hexasticha* (Lund.) Nordts. 27. *C. pseudoamoenum* Wille. 28. —— var. *reductum* Hinode. 29, 30. *C. reniforme* (Ralfs) Arch. var. *elevatum* West and G.S. West. 31, 32. *C. pseudobroomei* Wolle. 33. *C. Blyttii* Wille. 34, 35. *C. punctulatum* Bréb. var. *subpunctulatum* (Nordst.) Börges. forma *minor* Hinode forma nov. 36. *Xanthidium acanthophorum* Nordst. 37, 38. *Staurastrum apiculatum* Bréb. 39, 40. *St. inconspicuum* Nordst.

Plate VI (all figures, ×440): 1-4. *Arthrodesmus giblerulus* Joshua. 5-7. *Arthrodesmus japonicus* Hinode sp. nov. 8, 9. *Staurastrum bifidum* (Ehrenb.) Bréb. var. *tortum* Turn. 10, 11. *St. Simonyi* Heimerl. 12, 13. *St. subscabrum* Nordst. 14, 15. *St. contectum* Turn. var. *inevolutum* Turn. 16, 17. *St. brachiatum* Ralfs. 18, 19. *St. unicorne* Turn. var. *longicorne* Hinode var. nov. 20-22. *St. subnudibrachiatum* West and G.S. West. 23-25. *St. proboscideum* Perty. 26, 27. *St. polymorphum* Bréb. 28, 29. *St. margaritaceum* (Ehrenb.) Menegh. 30, 31. *St. arachne* Ralfs var. *arachnoides* West. 32-34. *St. Pseudosebaldii* Wille. 35, 36. *St. indentatum* West and G. S. West. 37, 38. *St. pinnatum* Turn. var. *subpinnatum* (Schmidle) West and G.S. West. 39-41. *St. cyclacanthum* West and G.S. West var. *elegans* Hinode var. nov. 42. *Hyalotheca indica* Turn. 43, 44. *H. neglecta* Racib. 45. *Desmidium coarctatum* Nordst. 46-48. *Gymnozyga moniliformis* Ehrenb.

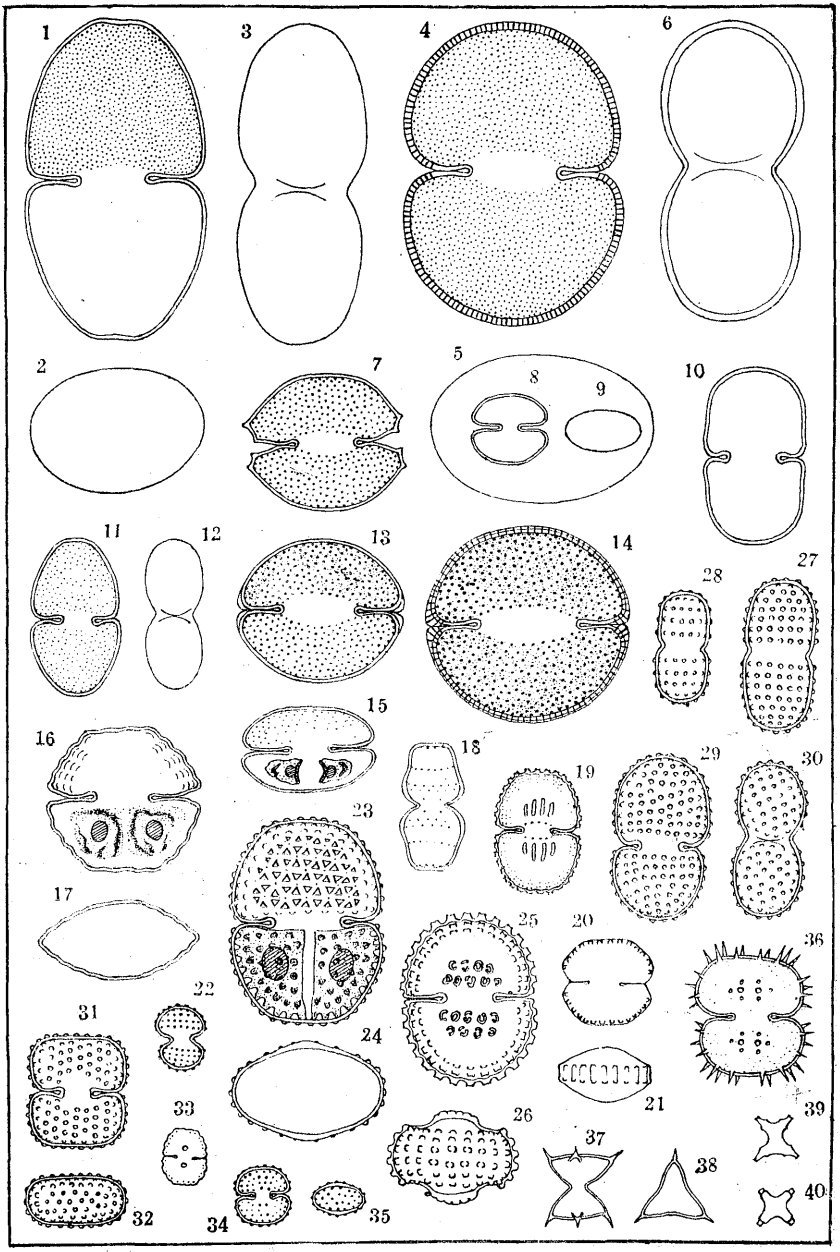

Plate V. Hinode, The desmid-flora of Akai-yachi

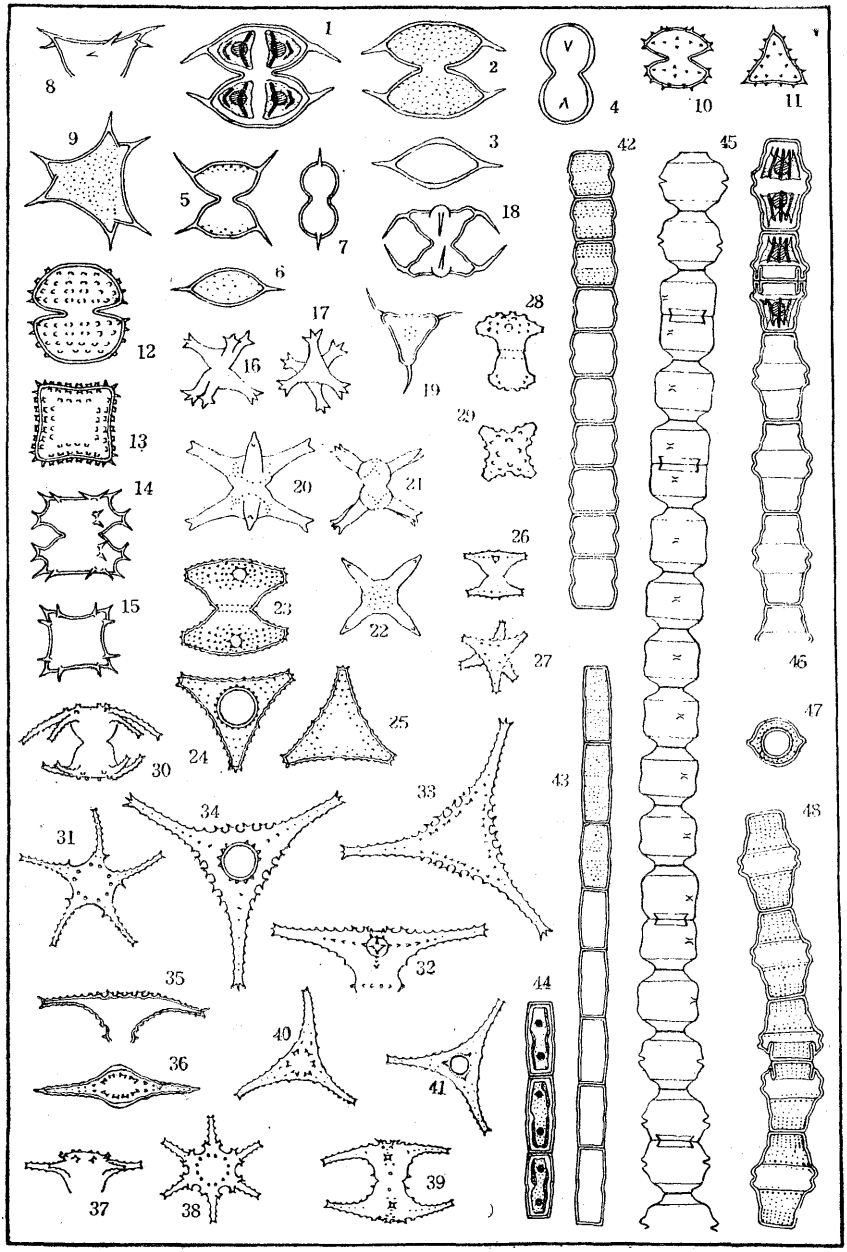

Plate VI. Hinode, The desmid-flora of Akai-yachi