

Examination of Type Material for Two Japanese Diatoms Described by C. G. Ehrenberg (1854)

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Abstract Two diatom species (*Eunotia amphilepta* and *Navicula trigonocephalum*) described from Japan by Christian Gottfried Ehrenberg (1854) were examined using material in the Ehrenberg Collection (EC) in BHUPM (Museum für Naturkunde in Berlin). Lectotypes are designated for the taxa, and a new combination, *Neidium trigonocephalum* (Ehrenb.) Tuji et Tanimura, is proposed.

Key words: *Eunotia amphilepta*, *Hantzschia amphilepta*, *Hantzschia distinctepunctata*, *Hantzschia hermannii*, *Pinnularia trigonocephala*, *Neidium trigonocephalum* (Ehrenb.) Tuji et Tanimura comb. nov., *Neidium gracile* Hustedt, lectotype.

Introduction

Taxonomic studies on diatoms from Japanese Islands have a short history, beginning with European diatomists (Ehrenberg 1854, Brun and Tempère 1889, Pantocsek 1892, Meister 1913–4). Ehrenberg (1854) studied the Japanese diatom flora using nineteen samples from Philipp Franz von Siebold, and described two new taxa, *Eunotia amphilepta* Ehrenb. and *Pinnularia trigonocephala* Ehrenb.

In this paper we describe the results of our examination of the original material used by Ehrenberg (1854).

Material & Methods

We examined material from Ehrenberg's collection (EC) in BHUPM (Museum für Naturkunde in Berlin; Lazarus & Jahn 1998), which consisted of:

1. Ehrenberg's original material (EC sample) numbered 457–475 (Japan 1–19) (Fig. 1).
2. Ehrenberg's original mica preparations (EC mica) 7–5 and 7–6.

Several sub-samples from Ehrenberg's original material were incinerated or oxidized with H₂O₂,

following the procedure of van der Werff (1955). For light microscopy (LM), cleaned specimens were mounted onto glass slides, embedded in Pleurax and observed under an AX80 (Olympus, Tokyo, Japan) and Axiophoto (Zeiss, Germany).

Results & Discussion

1. *Eunotia amphilepta* Ehrenb. Ber. K. Akad. Wiss. Berlin 1845: 363. 1846.; Ehrenb. Mikrogeol. pl. 34/8. f. 4. 1854.

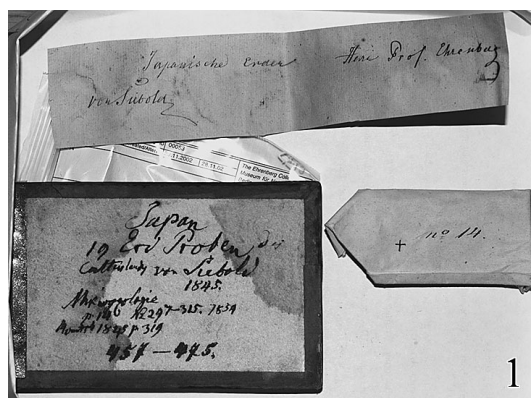


Fig. 1. Ehrenberg's original materials (EC sample) numbered 457–475 (Japan 1–19).

Type locality: Japan (PFLANZEN-CULTUR-ERDEN).

Lectotype (here designated): EC Mica 070509-1bl in BHUPM (Fig. 3).

Isolectotype: EC sample number 460 (Japan No. 4) in BHUPM.

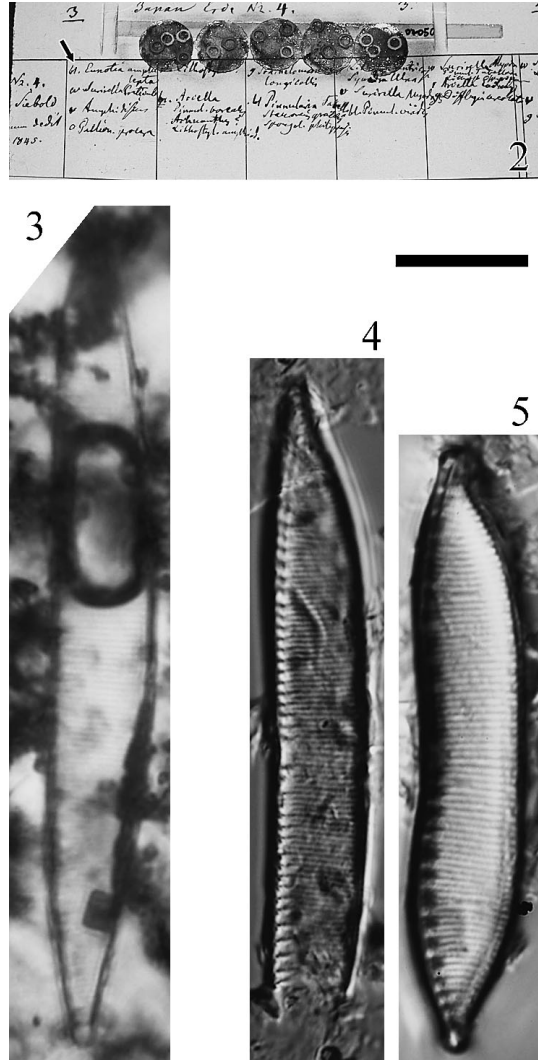
Synonym: *Hantzschia amphioxys* var. *amphilepta* (Ehrenb.) Grunow, J. Roy. Microscop. Soc. 3: 397. 1880

Non: *Hantzschia amphilepta* sensu Lange-Bert. Biblioth. Diatomol. 27: 76. pl. 103. f. 7–8. 1993.

Ehrenberg (1846) described this taxon from Japan but provided no figure. He only stated the length (1/30 lines=about 75 μm , 1 Paris line=2256 μm) of the specimens and the differences between it and *E. amphioxys* (“*apicibus subito attenuatis*”). Later, Ehrenberg (1854) reported this taxon from the Station 300 (IV) and 308 (XII) (Ehrenberg 1854: Table PFLANZEN-CULTUR-ERDEN aus NIPON UND KIUSIU: p. 152) and presented a figure. This taxonomic name was also found on the label of EC Mica (070509-1bl) (Fig. 2), which came from Station 300. An individual specimen agreeing with the published figure of Ehrenberg (1854) was found on the EC Mica (070509-1bl; Fig. 3) sample and is here designated the lectotype for *Eunotia amphilepta*. We also made several glass slides from EC sample number 460 (Japan No. 4), from Station 300. *Eunotia amphioxys* was reported from this station as well. Ehrenberg (1846) separated *E. amphilepta* from *E. amphioxys* by a comparison of the form of valve ends, of which our current observations concur (Figs 4, 5). Although specimens of *E. amphioxys* sensu Ehrenberg 1854 (Fig. 5) were common in this material, *E. amphilepta* was also encountered, albeit rarely. The individual illustrated in Fig. 4 is here designated as isolectotype for this taxon.

Grunow (1880) provided description and figures for *Hantzschia amphioxys* var. *amphilepta*, (“*H. amphioxys* var. *amphilepta* Grun. l. c. (*Eunotia amphilepta* Ehr.?)”), and should be recognized as new and valid combination.

The current and correct name for Ehrenberg’s



Figs 2–4. *Hantzschia amphilepta* (Ehrenb.) Lange-Bert., 2. the label of the EC mica, 3. lectotype. an individual on the EC mica, 4. isolectotype. an individual on EC sample number 460 (Japan No. 4). Fig. 5. *Hantzschia amphioxys* sensu Ehrenberg 1854, an individual in EC sample number 460 (Japan No. 4). 3–5. Bar=10 μm .

Eunotia amphilepta should be *Hantzschia amphilepta* (Ehrenb.) Lange-Bert. Lange-Bertalot (1993) improperly based his new combination *Hantzschia amphilepta* on the basionym, *H. amphioxys* var. *amphilepta* Grunow 1880 rather than *Eunotia amphilepta* Ehrenberg 1846. Under

ICBN article 33.2 and 33.6, this does not affect the valid publication of the combination; it is only to be treated as an error to be corrected. Unfortunately, Lange-Bertalot's (1993) taxonomic concept of *Hantzschia amphilepta* does not correspond to Ehrenberg's *Eunotia amphilepta*, such that specimens illustrated as *H. amphilepta* from Australia, Sumatra, and Easter Island by Lange-Bertalot (1993; p. 76, Figs 103, 7–11) are better identified as *Hantzschia distinctepunctata* (Hust.) Hust, a taxon that Lange-Bertalot treated as a synonym of *H. amphilepta* (Lange-Bertalot 1993, see also Krammer and Lange-Bertalot 1997, p. 589).

2. *Pinnularia trigonocephala* Ehrenb. Mikrogeol. pl. 34/8. f. 11. 1854.

Type locality: Japan (PFLANZEN-CULTUR-ERDEN).

Lectotype (here designated): EC Mica 070503-2r in BHUPM (Fig. 7).

Isolectotype: EC sample number 458 (Japan No. 2) in BHUPM.

Neidium trigonocephalum (Ehrenb.) Tuji et Tanimura comb. nov.

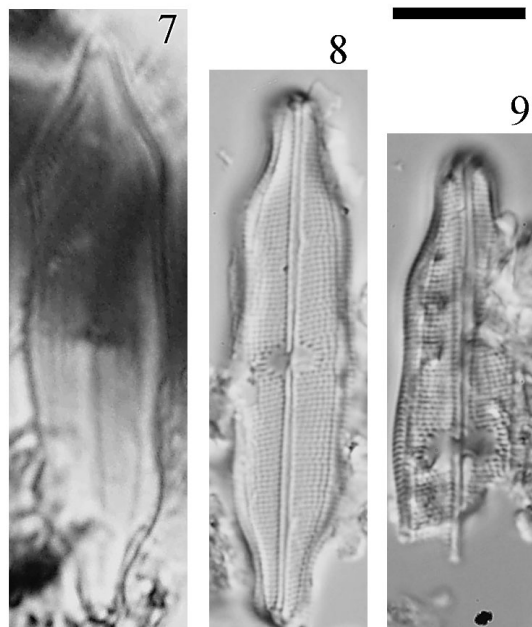
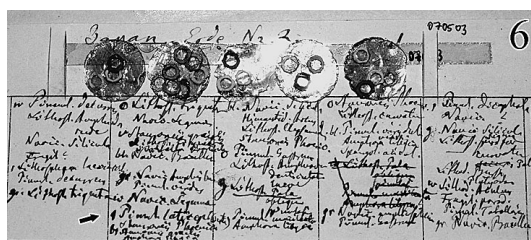
Basionym: *Pinnularia trigonocephala* Ehrenb. Mikrogeol. pl. 34-8. f. 11. 1854.

Synonym: *Navicula trigonocephala* (Ehrenb.) Ralfs in Pritchard Hist. Inf. ed. 4: 909. 1861.

non: *Navicula trigonocephala* Cleve, Vega-expeditionen vetenskapliga iakttagelser. Stockholm. 3: 468. pl 36. f. 29a-b. 1883.

Pinnularia trigonocephala Cleve, Kongliga Svenska Vetensk. Handl. 27: 88. pl. 1 f. 21. 1895.

Ehrenberg (1854) reported this taxon from Station 298 (II) (Ehrenberg 1854: Table PFLANZEN-CULTUR-ERDEN aus NIPON UND KIUSIU: p. 152). This taxonomic name was also found on the label of EC Mica (070503-2r) (Fig. 6), which came from Station 298. An individual which is thought to agree with the published figure in Ehrenberg (1854) was found from EC Mica (Fig. 7) and is designated as lectotype for *Pinnularia trigonocephala* Ehrenb. No other suitable indi-



Figs 6–9. *Neidium trigonocephalum* (Ehrenb.) Tuji et Tanimura comb. nov., 6. the label of the EC mica, 7. lectotype. an individual on the EC mica, 8–9. isolectotype. two individuals in EC sample number 458 (Japan No. 2). Bar = 10 μ m.

vidual was found from EC mica. We also made ten slides using EC sample number 458 (Japan No. 2), from Station 298. Though the individual of lectotype has slightly different outline with published original figure in the central area, no other suitable taxon was found from these slides. This lectotype should be a individual which Ehrenberg examined.

Examination of Ehrenberg's specimens of *Pinnularia trigonecephala* suggests that it has bifurcate terminal raphe endings at the poles and longitudinal lines (Figs 8, 9), and is better accommodated in the genus *Neidium* (Round *et al.*

1990), hence a new combination is proposed.

The name *trigonocephala* appears as a combination in the genus *Navicula* by Ralfs in Pritchard (1861, p. 909). Neither *Navicula trigonocephala* Cleve nor *Pinnularia trigonocephala* Cleve is representatives of this taxon.

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