

Remarks on Algal Nomenclature VI

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Source: *Taxon*, Vol. 29, No. 1 (Feb., 1980), pp. 121-145

Published by: Wiley

Stable URL: <https://www.jstor.org/stable/1219605>

Accessed: 12-02-2019 17:57 UTC

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## REMARKS ON ALGAL NOMENCLATURE VI<sup>1</sup>

Paul C. Silva<sup>2</sup>

### Summary

Thirty-nine generic names of living algae are formally proposed for conservation. Two new combinations are made, *Hormiscia gregaria* (Braun) P. C. Silva, replacing *H. neglecta* Kornmann in connection with the proposal to conserve *Urospora*, and *Desmococcus viridis* (C. Agardh) P. C. Silva, replacing *D. vulgaris* Brand in connection with the proposal to conserve *Chlamydomonas*.

### XIX. Proposals for Conservation of Generic Names of Living Algae

Information assembled for the *Index Nominum Genericorum* has revealed that many genera of living algae currently bear names that are illegitimate, either because they are later homonyms or because they were initially superfluous. Certain of these names seem worthy of being conserved, and proposals are made herein. Other names are proposed for conservation to retain a particular orthography, to bring botanical nomenclature into agreement with zoological nomenclature, or to reject earlier taxonomic synonyms. The names proposed for conservation are treated alphabetically, except that *Schizogonium* follows *Prasiola*. They are distributed taxonomically as follows:

Bacillariophyceae: *Charcotia*

Bodonophyceae: *Karotomorpha*

Chlorophyceae: *Anadyomene*, *Chlamydomonas*, *Cladophora*, *Debarya*, *Gloeococcus*, *Prasiola*, *Schizogonium*, *Trentepohlia*, *Urospora*

Chrysophyceae: *Anthophysa*

Cyanophyceae: *Anabaena*, *Rivularia*

Dinophyceae: *Abedinium*, *Amphilothus*, *Dinamoebidium*, *Dogelodinium*, *Gyrodinium*, *Keppenodinium*, *Latifascia*, *Sphaeripara*

Phaeophyceae: *Leptonematella*, *Sphacelaria*

Rhodophyceae: *Audouinella*, *Botryocladia*, *Corynomorpha*, *Falklandiella*, *Grateloupia*, *Griffithsia*, *Halymenia*, *Hildenbrandia*, *Nemastoma*, *Neurocaulon*, *Schizymenia*

Trichomonadophyceae: *Chilomastix*

Xanthophyceae: *Botrydiopsis*, *Centritractus*, *Monodus*

(477) **Abedinium** Loeblich Jr. et Loeblich III, Stud. Trop. Oceanogr. 3: 1, 14. 1966 (*nom. cons. prop.*). Type species: *A. dasypus* (Cachon et Cachon-Enjumet) Loeblich Jr. et Loeblich III (*Leptophyllus dasypus* Cachon et Cachon-Enjumet, Bull. Inst. Océanogr. Monaco 62(1292): 7, t. 1: f. 3, 4; t. 2: f. 1-4. 1964). Dinophyceae: Noctilucaeae.

*Leptophyllus* Cachon et Cachon-Enjumet, Bull. Inst. Océanogr. Monaco 62(1292): 7. 1964

<sup>1</sup> Part V, *Taxon* 21: 199–205. 1972.

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(*nom. rejic. prop.*). Type species: *L. dasypus* Cachon et Cachon-Enjumet, op. cit. 7, t. 1: f. 3, 4; t. 2: f. 1-4. Dinophyceae: Noctilucaeae.

Because *Leptophyllus* is preoccupied in zoological but not botanical nomenclature, *Abedinium* is the correct name for this genus under the ICZN but illegitimate under the ICBN. Conservation would bring the two nomenclatures into agreement.

(478) **Amphilothus** Poche, Arch. Protistenk. 30: 164. 1913 (*nom. cons. prop.*). Type species: *A. elegans* (Schütt) Lindemann in Engler & Prantl, Nat. Pflanzenfam. ed. 2. 2: 69. 1928 (*Amphitholus elegans* Schütt, Ergebn. Plankt.-Exped. Humboldt-Stiftung IV.M.a.A: 34, t. 27: f. 102. 1895). Dinophyceae: Actiniscaceae.

*Amphitholus* Schütt, Ergebn. Plankt.-Exped. Humboldt-Stiftung IV.M.a.A: 34. 1895 (*nom. rejic. prop.*). Type species: *A. elegans* Schütt, op. cit. t. 27: f. 102. Dinophyceae: Actiniscaceae.

*Amphilothus* was introduced as a *lapsus* by Kofoed (Bull. Mus. Comp. Zool. Harvard Coll. 50: 165, 206. 1907). Realizing that *Amphitholus* was preoccupied in zoological nomenclature, Poche adopted *Amphilothus* as a substitute name. *Amphitholus* is not preoccupied in botanical nomenclature, however, in which it is thus a legitimate name. Conservation of *Amphilothus*, the name under which the genus is usually known, would bring botanical nomenclature into agreement with zoological nomenclature.

Loeblich Jr. and Loeblich III (Stud. Trop. Oceanogr. 3: 16. 1966) state that *Amphilothus* has commonly been employed invalidly as a substitute for *Amphitholus* Schütt, citing ICZN Art. 33(b), which specifies that “Any change in the spelling of a name, other than an emendation, is an ‘incorrect subsequent spelling’ . . . and cannot be used as a replacement name.” I would interpret this article differently. The use of *Amphilothus* Kofoed 1907 as a substitute name is clearly invalid, since it was unequivocally an ‘incorrect subsequent spelling’. *Amphilothus* Poche 1913, on the other hand, was an explicit rectification of generic homonymy and thus can scarcely be considered an ‘incorrect subsequent spelling’.

(479) **Anabaena** Bory ex Bornet et Flahault, Ann. Sci. Nat. Bot. sér. 7. 7: 180, 224. 1886 (*nom. cons. prop.*). Lectotype species: *A. oscillarioides* Bory ex Bornet et Flahault, op. cit. 233 (vide Gardner, New York Acad. Sci., Sci. Surv. Porto Rico 8: 290. 1932; Geitler in Engler & Prantl, Nat. Pflanzenfam. ed. 2. lb.: 185. 1942). Cyanophyceae: Nostocaceae.

*Anabaena* A. H. L. de Jussieu, Euphorb. Gen. Tent. 46, t. 15: f. 48. 1824 (*nom. rejic. prop.*). Type species: *A. tamnoides* A. H. L. de Jussieu. Angiospermae: Euphorbiaceae.

Inversion of the normal homonymic relationship between these two names by the adoption of later starting points was discussed previously (Silva, Taxon 7: 183. 1958), but a proposal to conserve the cyanophycean *Anabaena* was not made. Ignoring later starting points, flowering-plant taxonomists have incorrectly considered *Anabaena* Jussieu 1824 a later homonym of the devalidated *Anabaena* Bory 1822 (*Anabaina*, orth. mut. E. M. Fries 1836) and have used a substitute name, *Romanoa* Trevisan 1848 or *Anabaenella* Pax et Hoffmann 1919. Conservation of *Anabaena* Bory ex Bornet et Flahault would legitimize the use of *Romanoa* for the monotypic Brazilian genus of Euphorbiaceae.

The real date of publication of *Anabaena* Bory ex Bornet et Flahault—1888—has been artificially changed to 1 Jan. 1886 (cf. ICBN, Art. 13.1 (g)). The validity of Gardner’s lectotypification may be questioned because he did not follow the rule of later starting points. Geitler’s choice of the same lectotype, however, makes the question academic.

(480) **Anadyomene** Lamouroux, Nouv. Bull. Sci. Soc. Philom. Paris 3: 187. 1812 ('*Anadyomena*'); orth. mut. C. Agardh, Aphor. Bot. 99. 1821 (*orth. cons. prop.*). Type species: *A. flabellata* Lamouroux, Hist. Polyp. Corall. Flex. 366, t. 14: f. 3. 1816; syn. tax. *A. stellata* (Wulfen) C. Agardh (*Ulva stellata* Wulfen). Chlorophyceae: Anadyomenaceae.

According to its founder, this genus bears the 'surnom de Vénus marine'. All subsequent authors have either overlooked or ignored the original spelling, probably being misled by the French spelling 'Anadyomène'.

(481) **Anthophysa** Bory, Dict. Class. Hist. Nat. 1: 427. 1822 ('*Anthophysis*'); orth. mut. Dujardin, Hist. Nat. Zooph. 278, 302. 1841 (*orth. cons. prop.*). Lectotype species: *Anthophysa vegetans* (O. F. Müller) F. Stein, Organismus Infusionsthiere 3(1): 36, explic. t. 5: f. 1-17. 1878 (*Volvax vegetans* O. F. Müller, Anim. Infus. 22, t. 3: f. 22-25. 1786; *Anthophysis muelleri* Bory, nom. illeg.) (vide Bourrelly, Rev. Algol., Mém. Hors-Sér. 1: 158. 1957). Chrysophyceae: Ochromonadaceae.

The original spelling has rarely been used.

(482) **Audouinella** Bory, Dict. Class. Hist. Nat. 3: 340. 1823 ('*Auduinella*'); orth. mut. Bonnemaison, Mém. Mus. Hist. Nat. 16: 146. 1828 (*orth. cons. prop.*). Lectotype species: *A. miniata* Bory (vide Papenfuss, Univ. Calif. Publ. Bot. 18: 299. 1945); syn. tax. *A. hermannii* (Roth) Duby (*Conferva hermannii* Roth). Rhodophyceae: Acrochaetiaceae.

This generic name commemorates Jean-Victor Audouin (1797-1841), a distinguished entomologist who was entrusted with preparing explanations of plates designed by Jules-César Savigny for the monumental *Description de l'Égypte*. Although Delile was responsible for collecting algae during Bonaparte's Egyptian campaign, Savigny's catholic interests led to his obtaining and illustrating a handful of seaweeds, for which Audouin, in consultation with Bory, supplied names and descriptions.

Roth (Catalecta Bot. 1: 164. 1797) based his *Conferva hermannii* on an alga growing on *Lemanea* collected in Alsace by Hermann and sent to Roth by way of Schreber. Bory indicated that his *A. miniata* was the alga found in various herbaria under the name '*Conferva Hermannii* de Draparnaud'. While *Conferva hermannii* Roth and *Audouinella miniata* Bory probably were based on the same collection, their respective authors had different material in hand so that the two names should be considered taxonomic rather than nomenclatural synonyms.

Elsewhere, I shall propose Acrochaetiaceae Fritsch ex W. R. Taylor 1957 for conservation against an earlier taxonomic synonym, Rhodochortaceae Nasr 1947.

(483) **Botrydiopsis** Borzi, Boll. Soc. Ital. Microscop. 1: 69. 1889 (*nom. cons. prop.*). Type species: *B. arhiza* Borzi. Xanthophyceae: Pleurochloridaceae.

*Botrydiopsis* Trevisan, Nomencl. Alg. 70. 1845 (*nom. rejic. prop.*). Type species: *B. vulgaris* (Brébisson) Trevisan (*Botrydina vulgaris* Brébisson, Mém. Soc. Acad. Agric. Industr. Instruct. Arrondissement Falaise 1839: 36, f. 3. 1839). Plantae incertae sedis.

This is a small but well-known and widespread genus. *Botrydiopsis* Trevisan is a superfluous name for *Botrydina* Brébisson (loc. cit.), a generic name of uncertain application. The single original species, *B. vulgaris*, was described by Brébisson on the basis of globular gelatinous masses of minute green cells growing on moist earth. As a synonym, Brébisson cited *Palmella botryoides* C. Agardh, a binomial that does not exist and hence a citation that should be interpreted as *P. botryoides* (L.) Lyngbye sensu C. Agardh. *Botrydina vulgaris* was interpreted by Acton (Ann. Bot.

23: 579–585. 1909) as a primitive lichen composed of cells of the green alga *Coccomyxa subellipsoidea* Acton living in a matrix of sterile mycelia of a member of the Mucedinaceae (= Moniliaceae). Jaag (Ber. Schweiz. Bot. Ges. 42: 169–185. 1933) rejected this interpretation, concluding that *B. vulgaris* was a symbiosis between *Coccomyxa* and moss protonemata. Geitler (Österr. Bot. Z. 103: 469–474. 1956) disagreed with Jaag, his studies leading to a conclusion similar to Acton's.

The possibility that Pleurochloridaceae should be referred to the Eustigmatophyceae rather than the Xanthophyceae was discussed by Silva (Arch. Protistenk. 121: 23. 1979). Should this prove to be the case, Asterogloeaceae would be available to receive those xanthophycean genera currently placed in the Pleurochloridaceae.

(484) **Botryocladia** (J. Agardh) Kylin, Lunds Univ. Årsskr. N. F. Avd. 2. 27 (11): 17. 1931 (*nom. cons. prop.*). Type species: *B. uvaria* Kylin (*Chondria uvaria* C. Agardh, Sp. Alg. 1: 347. 1822, *nom. superfl.*); *syn. nomencl. B. botryoides* (Wulfen) J. Feldmann, Rev. Algol. 10: 274. 1937 (*Fucus botryoides* Wulfen in N. J. Jacquin, Collect. Bot. 3: 146, t. 13: f. 1. 1791 ('1789')). Rhodophyceae: Rhodymeniaceae.

*Gloiosaccion* W. H. Harvey, Phycol. Austral. t. 83. 1859 (*nom. rejic. prop.*). Type species: *G. brownii* W. H. Harvey. Rhodophyceae: Rhodymeniaceae.

This proposal was made informally by G. Feldmann & Bodard (Bull. Inst. Océanogr. Monaco 65(1342): 9. 1965). According to those authors, *Gloiosaccion* can be considered an extreme form of *Botryocladia* in which the development of the vesicle is especially great in relation to that of the axis. *Botryocladia* has already been conserved (against *Myriophylla* Holmes 1894). Failure to conserve it against *Gloiosaccion* would necessitate making more than twenty new combinations.

Harvey (Ner. Bor.-Amer. 2: 191. 1853), adopting the treatment proposed by J. Agardh (Sp. Alg. 2: 214. 1851), recognized *Botryocladia* as a section of *Chrysomenia*, with the single species *C. uvaria* J. Agardh. In the index of the same work, however, *Botryocladia* is treated as a genus, as indicated by the binomial *B. uvaria*. There is no entry for *Chrysomenia uvaria*. A parallel situation is found in *Chrysomenia* sect. *Cryptarachne* Harvey (op. cit. 189), but in this instance the three species of the section are listed in the index both under *Chrysomenia* and under *Cryptarachne*. The omission of both *Botryocladia* and *Cryptarachne* from Harvey's 'Index Generum Algarum' (1860) could mean either that their previous treatment as genera was unintentional or that Harvey had changed his mind.

The authorship of *Botryocladia uvaria*, the type species of its genus, is troublesome. The epithet has been used in combination with eight generic names, the basionym being cited variously as *Fucus uvarius* Esper (Icon. Fuc. 1: 153, t. 78. 1799), *F. uvarius* Wulfen (Crypt. Aquat. 32. 1803), or *Chondria uvaria* C. Agardh (Sp. Alg. 1: 347. 1822). The epithet *uvarius* originated with J. A. Murray (Syst. Veg. ed. 13. 811. 1774), who presumably intended to correct *Fucus ovarius* Linnaeus (Syst. Nat. ed. 12. 2: 714. 1767), for which the provenance is given as 'O. Asiatico.' While the description of *F. ovarius* sheds no light on the question whether Linnaeus had eggs (*ova*) or a bunch of grapes (*uva*) in mind, the sheets in his herbarium are inscribed *uvarius* (cf. Savage, Cat. Linn. Herb. 1945). Turner (Syn. Brit. Fuci 34. 1802) examined 'authentic specimens' and concluded that Linnaeus had a zoophyte in hand. C. Agardh (loc. cit.) accepted Turner's opinion and thus his *Chondria uvaria* may be considered a new species based on *Fucus uvarius* sensu Wulfen (loc. cit.). Agardh cited *F. botryoides* Wulfen (in N. J. Jacquin, Collect. Bot. 3: 146, t. 13: f. 1. 1791) as a synonym, so that *Chondria uvaria* was superfluous and has the same type as *F. botryoides*. Kylin (loc. cit.) excluded *F. ovarius* Linnaeus on geographical grounds, but included *F. uvarius* sensu Wulfen and *Chondria uvaria* C. Agardh as synonyms. Therefore, the type species of *Botryocladia* should be cited as *B. uvaria* Kylin (*Chondria uvaria* C. Agardh, *nom. superfl.*); *syn. nomencl. B. botryoides*

(Wulfen) J. Feldmann (*Fucus botryoides* Wulfen).

The presence and identity of authentic specimens of *Fucus ovarius* in the Linnaean Herbarium needs to be established. Although it appears to me from microfilm that no specimen inscribed *uvarius* is representative of *Botryocladia*, it is possible that the epithet *ovarius* will be found to have priority in some other genus of algae.

(485) **Centrtractus** Lemmermann, Ber. Deutsch. Bot. Ges. 18: 274. 1900 ('*Centrtractus*'); orth. mut. Schmidle, Allg. Bot. Z. Syst. 6: 234. 1900 (orth. cons. prop.). Type species: *C. belonophora* (Schmidle) Lemmermann (*Schroederia belonophora* Schmidle, Ber. Deutsch. Bot. Ges. 18: 149, t. 6: f. 6, 7. 1900). Xanthophyceae: Centrtractaceae.

The original spelling has not been used subsequent to its publication.

(486) **Charcotia** M. Peragallo, Deux. Expéd. Antarct. Franç., Diatomées 76. 1921 (nom. cons. prop.). Lectotype species: to be selected by Committee for Algae. Bacillariophyceae: Coscinodiscaceae.

*Charcotia* Hue, Bull. Soc. Bot. France 62: 16, 17, 1915 (nom. rejic. prop.). Type species: *C. rufidula* (Hue) Hue (*Umbilicaria rufidula* Hue, Deux. Expéd. Antarct. Franç., Lichens 52. 1915). Lichenes: Umbilicariaceae.

Both of these generic names commemorate Dr. Jean Charcot, commander of two French Antarctic expeditions (1903–1905, 1908–1910). *Charcotia rufidula* Hue has been shown by Lamb (Lilloa 14: 225–228. 1948) to be based on an *Umbilicaria* parasitized by a fungus of the genus *Scutula* Tulasne 1852 (non Loureiro 1790). Because *C. rufidula* was originally described as a species of *Umbilicaria*, it seems reasonable to typify it and its generic name with the *Umbilicaria* element, which according to Lamb is conspecific with *U. antarctica* Frey et Lamb (Trans. Brit. Mycol. Soc. 22: 270. 1939). The *Scutula* element, according to Lamb, probably represents an undescribed species. *Charcotia* M. Peragallo comprises about 15 species.

(487) **Chilomastix** Alexeieff, Arch. Zool. Exp. Gén. 46 (Notes et Rev.): xi. 1910 (nom. cons. prop.). Type species: *C. caulleryi* (Alexeieff) Alexeieff (*Macrostoma caulleryi* Alexeieff, Compt.-Rend. Hebd. Séances Mém. Soc. Biol. 67: 200. 1909). Trichomonadophyceae: Retortamonadaceae.

*Macrostoma* Alexeieff, Compt.-Rend. Hebd. Séances Mém. Soc. Biol. 67: 200. 1909. Type species: *M. caulleryi* Alexeieff. Trichomonadophyceae: Retortamonadaceae.

Because *Macrostoma* is preoccupied in zoological but not botanical nomenclature, *Chilomastix* is the correct name for this genus under the ICZN but illegitimate under the ICBN. Conservation would make both *Chilomastix* and Chilomastigaceae available, thus bringing the two nomenclatures into agreement. Retortamonadaceae, a later taxonomic synonym of Chilomastigaceae, has been used preferentially, however, and will be proposed for conservation elsewhere. It should be noted that the original proposal of *Chilomastix*, although provisional, is acceptable according to the ICZN, Art. 17 (8). The entry in the ING should thus be revised.

(488) **Chlamydomonas** Ehrenberg, Abh. Königl. Akad. Wiss. Berlin, Phys. Kl. 1833: 288. 1834 ('*Chlamidomonas*'); orth. mut. L. Agassiz, Nomencl. Zool. Index Universalis 82. 1846 (orth. et nom. cons. prop.). Type species: *C. pulvisculus* (O. F. Müller) Ehrenberg (*Monas pulvisculus*

O. F. Müller, *Anim. Infus.* 7, t. 1: f. 5, 6. 1786). Chlorophyceae: Chlamydomonadaceae.

*Protococcus* C. Agardh, *Syst. Alg.* xvii, 13. 1824 (*nom. rejic. prop.*). Lectotype species: *P. nivalis* (Bauer) C. Agardh (*Uredo nivalis* Bauer, *Quart. J. Lit. Sci. Arts* 7: 225, t. 6: f. 1-7. 1819) (vide Greville, *Scott. Crypt. Fl.* t. 231. 1826; *ibid.* t. 325. 1827). Chlorophyceae: Chlamydomonadaceae.

*Sphaerella* Sommerfelt, *Mag. Naturvidensk.* 4: 252. 1824 (*nom. rejic. prop.*). Lectotype species: *S. nivalis* (Bauer) Sommerfelt (*Uredo nivalis* Bauer, *loc. cit.*) (vide Hazen, *Mem. Torrey Bot. Club* 6: 238. 1899). Chlorophyceae: Chlamydomonadaceae.

*Protococcus*, *Sphaerella*, and *Chlorococcum* lie at the center of a gigantic complex sphere of confusion that ultimately entangles *Chlamydomonas*, *Desmococcus*, *Dunaliella*, *Euglena*, *Haematococcus*, *Pleurococcus*, *Porphyridium*, and several other genera encompassing four classes of algae. The intention of phycologists in the first quarter of the 19th century seemed straightforward: to give generic recognition to those algae that were in the form of aggregations of minute globules. A century of taxonomic investigation, often leading to retrogressive conclusions, was required to establish the extremely diverse nature of these supposedly simple algae. By now, most of the constituents have been fixed conceptually, but a fleet of generic names continues in orbit. Only the outlines of the task of disentanglement will be drawn.

In the beginning, color did not matter: both green and red globules were placed in the same genus. Hesitation to make a generic distinction was based upon the fact, appreciated even at that time, that certain algae may be green at one stage of their development, orange or red at another. Eventually, those algae that never appeared orange or red were separated from those that did. The next step was the assessment of the taxonomic significance of motility. Although it was known from an early date that when certain coccoid algae were kept in culture, the individual cells became motile or divided to produce motile offspring, the meaning of this phenomenon was obscured by the doctrine of metamorphosis, prevalent at the time, by which one alga was thought to change into another alga or into a sperm-like animalcule. Thus, C. Agardh (*Syst. Alg.* xvii. 1824), referring to the red-snow alga now known as *Chlamydomonas nivalis*, stated: 'Inde vacillans locus inter animalcula infusoria & Algas.' Then, when it was realized that the motile cells and coccoid cells were phases in a single life history, there was reluctance to assign these organisms to the plant kingdom, and it was only after the close similarity of these monads to the motile reproductive cells of thalloid algae was demonstrated that they were accepted as algae. Finally, the different kinds of red globules and green globules had to be sorted out, a process that is essentially completed in the former group, but which continues amid controversy in the latter.

Among red coccoid algae, apparently the first to be described was *Byssus purpurea* Lamarck 1778, representative of *Porphyridium* Nägeli 1849 (cf. Drew & Ross, *Taxon* 14: 97. 1965). While this alga remained in obscurity, the discovery of the next one—considered at the time to be the sole cause of red snow—made an impact on the scientific world without precedent in phycology, the material being passed from scientist to scientist, their opinions from journal to journal. The sample of red snow was obtained in Greenland on the shore of Baffin Bay in 1818 by Sir John Ross while commanding a voyage of exploration in search of a northwest passage. As observed by C. Agardh (*Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 12: 739. 1825), considering that red snow had been observed in the Alps previously (but, surprisingly, apparently not reported until 1786), the greater part of the interest engendered by this discovery derived from the celebrity of the chemists and botanists who examined the material. Robert Brown, who identified the plants brought back by the expedition (in John Ross, *Voy. Explor. Baffin's Bay* cxliv. 1819), thought that it might be a new genus related to *Tremella cruenta* J. E. Smith (representative of *Porphyridium*). Franz (Francis) Bauer, an Austrian-born botanical artist employed by Sir Joseph Banks (as was Robert Brown), proceeded to describe it as a fungus, *Uredo nivalis*, but his opinion was challenged by W. J. Hooker, C. Agardh, Sommer-

felt, Nees von Esenbeck, and Greville, all of whom referred it to the algae. (It is interesting to note that a manuscript by Bauer on the diseases of cereals is at Kew.) The red-snow alga turned out not to be a member of the Rhodophyceae, however, but a species of *Chlamydomonas*, an opinion first expressed by Wille (Nyt Mag. Naturvidensk. 41: 103, 126. 1903) and still held today (Kol in Thienemann, Binnengewässer 24: 123. 1968; Ettl, Beih. Nova Hedwigia 49: 685. 1976). A third red coccoid organism, growing on limestone (as a crust and in rain-water pools) in Sweden, was described as a lichen, *Lepraria kermesina*, by Wrangel (Kongl. Vetensk. Acad. Handl. 1823: 52, t. 3: I-II. 1823). This organism, according to Wille (op. cit. 94, 104), is representative of *Haematococcus* in the sense of Flotow 1844 (as presently conserved).

E. M. Fries intended to place these three red coccoid algae, together with *Byssus botryoides* Linnaeus, in a new genus, *Chlorococcum*, but while that name appeared in the literature as early as 1821 (Syst. Mycol. 1: xxii), it remained a nomen nudum until 1825 (Syst. Orb. Veg. 356). By that time, two other genera with similar circumscriptions had been proposed, *Sphaerella* and *Protococcus*, both of which were placed in synonymy with *Chlorococcum* by Fries. Thus, *Chlorococcum* was initially superfluous. Sommerfelt (op. cit.) adopted the Friesian concept but abandoned the name *Chlorococcum*, which he thought was quite unsuitable, in favor of *Sphaerella*. The three original species were *S. nivalis* (Bauer) Sommerfelt, *S. wrangelii* Sommerfelt (*Lepraria kermesina* Wrangel), and *S. botryoides* (Linnaeus) Sommerfelt (*Byssus botryoides* Linnaeus, for which no authentic specimen can be found in the Linnaean Herbarium and which remains indeterminable; cf. Ross & Irvine, Taxon 16: 185. 1967). In the same year (priority has not been ascertained), C. Agardh (Syst. Alg. xvii, 13. 1824) established *Protococcus*, comprising two species: *P. nivalis* (Bauer) C. Agardh, under which *Lepraria kermesina* was listed as a synonym; and *P. viridis* C. Agardh, with *Palmella botryoides* [*Byssus botryoides*] listed as a possible synonym. The latter was characterized as green globules in a non-mucous aggregation, common on walls. From a study of authentic specimens in Herb. Agardh, Wille (Nyt Mag. Naturvidensk. 51: 7-11. 1913) concluded that *P. viridis* was conspecific with the alga described as *Pleurococcus naegelii* by Chodat (Beitr. Kryptogamenfl. Schweiz 1(3): 281, f. 195. 1902). I shall discuss the identity of this alga later.

An attempt to place the coccoid algae into better taxonomic order was made by Greville (Scott. Crypt. Fl.). He implicitly lectotypified *Protococcus* with *P. nivalis* (t. 231. 1826), transferring the other original species, *P. viridis*, to *Chlorococcum* (changing the epithet to *murorum*; t. 325. 1827). *Byssus botryoides* was placed in *Palmella* Lyngbye 1819 along with *P. hyalina* Lyngbye, the lectotype of its genus (cf. Chevalier, Fl. Paris, ed. 2. 1: 5. 1836), which, according to Drouet & Daily (Butler Univ. Bot. Stud. 12: 157. 1956), is representative of *Tetraspora* Link ex Desvieux 1818. Although the effect was to separate red from green organisms, the alleged generic distinction was the presence or absence of gelatin. Fries had specified 'absque gelatina' for *Chlorococcum*, while Agardh likewise had stated 'Globuli aggregati non mucosi' for *Protococcus*. The discrepancy is explained by Agardh's denial and Greville's acceptance of the presence of a 'subjacent gelatine' in *P. nivalis*. Sommerfelt's publication on *Sphaerella* apparently was unknown to Greville. Although Greville's lectotypification of *Protococcus* was accepted by Harvey (Man. Brit. Alg. 181. 1841), Meneghini (Mem. Reale Accad. Sci. Torino, ser. 2. 5: 10. 1842), and Hassall (Hist. Brit. Freshw. Alg. 335. 1845), the circumscription of the genus expanded greatly in several incompatible directions as diverse organisms were added to it, especially by Kützing. Later workers ignored Greville's lectotypification and either retained *Protococcus* for *P. viridis* or abandoned it as a nomen confusum, seeking other generic names to apply to that species. The alga traditionally associated with the name *P. viridis* forms a coating on walls, woodwork, and tree trunks, and has been termed 'perhaps, the commonest green alga in the world' (Smith, Freshw. Alg. U.S. 408. 1938). The cells, which occur singly or in packets of 2-4 or more, each have a parietal



laminate chloroplast, sometimes with a conspicuous pyrenoid, but more often apparently without one. Reproduction is by cell division.

The circumscription of *Chlorococcum*, the genus to which *Protococcus viridis* was referred by Greville (who, however, probably had *Stichococcus* in hand; cf. West & Fritsch, Treat. Brit. Freshw. Alg. 106. 1927), underwent significant changes and eventually was conserved as of Meneghini (op. cit. 24), applying to an alga that has a parietal chloroplast, lacks vegetative division, and reproduces by zoospores. *Pleurococcus* Meneghini (Coment. Med. [Spongia] 4: 337. 1837) was the next generic name associated with the 'commonest green alga.' This genus originally comprised three species, of which *P. communis* Meneghini was chosen as lectotype by Drouet & Daily (Butler Univ. Bot. Stud. 12: 34. 1956), who referred it to *Anacystis montana* (Lightfoot) Drouet & Daily in the Cyanophyceae. Later, Meneghini (Mem. Reale Accad. Sci. Torino, ser. 2. 5: 30. 1842) added several species and placed *P. communis* in synonymy with *P. vulgaris* (Greville) Meneghini, ostensibly based on *Chlorococcum vulgare* Greville (op. cit. t. 262. 1826). Although there is nothing in Greville's description or illustration that would eliminate *Protococcus viridis* from consideration, Meneghini's material is clearly a developmental stage of *Prasiola* (cf. Wille, op. cit. 10). Nägeli (Neue Denkschr. Allg. Schweiz. Ges. Gesamnten Naturwiss. 9[2]: 124–128. 1847; ibid. 10[7]: 64. 1849) emended *Pleurococcus* and typified it with '*P. vulgaris* Menegh. part.', an entity that was described as *P. naegelii* by Chodat (loc. cit.). As mentioned above, Wille (op. cit. 7–11) examined authentic specimens of *Protococcus viridis* in Herb. Agardh and concluded that they were conspecific with *Pleurococcus naegelii*. He saw no reason for not associating the amplified characterization provided by Chodat with the name *Protococcus viridis*, but most subsequent workers retained the name *Pleurococcus naegelii*. Brand (Arch. Protistenk. 52: 344. 1925), realizing that *Pleurococcus* as defined by Nägeli was effectively a homonym, proposed *Desmococcus* to accommodate it and redescribed *P. naegelii* as *D. vulgaris*. It is under this name that the alga was treated by Bourrelly (Alg. Eau Douce 1: 292. 1966), but according to the synonymy outlined in this account and accepted by Bourrelly, the correct name should be *Desmococcus viridis* (C. Agardh) comb. nov. (*Protococcus viridis* C. Agardh, Syst. Alg. 13. 1824).

The red coccoid algae were reconsidered by C. Agardh (Icon. Alg. Eur. t. xxi–xxiv. 1829). Three species were united in the genus *Haematococcus*, characterized by the compound nature of the cellular contents compared to the uniform appearance of *Protococcus nivalis*. *Haematococcus noltii* C. Agardh represents an encysted *Euglena*, probably *E. sanguinea* Ehrenberg (cf. Wille, op. cit. 6). *Haematococcus grevillii* C. Agardh, described from material collected by Carmichael on the shores of lakes in Scotland and previously identified as *Protococcus nivalis* by Greville (op. cit. t. 231. 1826), was believed by Wille (Nyt Mag. Naturvidensk. 41: 97. 1903) to represent the genus as presently defined, but Droop (Rev. Algol. sér. 2. 2: 185, 188. 1956) concluded that it was almost certainly something else. *Haematococcus sanguineus* (C. Agardh) C. Agardh (*Palmella* ? *sanguinea* C. Agardh, Syst. Alg. 15. 1824) was referred to *Anacystis montana* (Lightfoot) Drouet et Daily in the Cyanophyceae by Drouet & Daily (op. cit. 45). Kützing (Linnaea 8: 372. 1833) complicated the situation by completely absorbing *Haematococcus* in a new genus comprising a diverse assemblage of algae, including Cyanophyceae, to which he gave the name *Microcystis*. This initially superfluous and hence illegitimate name has been conserved as applying to a genus of coccoid Cyanophyceae in the sense of Lemmermann 1907. Authors other than Kützing, however, continued to use *Haematococcus*. Because *H. grevillii* was generally considered conspecific with *Protococcus nivalis* while the identity of *H. noltii* remained conjectural, most circumscriptions included only *H. sanguineus* of the original Agardhian species. The first implicit lectotypification of *Haematococcus* with *H. sanguineus* appears to have been made by C. Morren (Nouv. Mém. Acad. Roy. Sci. Bruxelles 14[7]: 9. 1841). He thought that *H. grevillii* was conspecific with *P. nivalis*, which he considered an animal very close to *Trachelomonas* (Euglenaceae) or perhaps to *Disceraea purpurea* A. Morren et C. Morren (Nouv. Mém.

Acad. Roy. Sci. Bruxelles 14[5]: 37. 1841), while *H. noltii* seemed to him to be an encysted trachelomonad. *Haematococcus sanguineus* was retained in the genus, to which he added two new species. This lectotypification antedates that by Trevisan (Saggio Monogr. Alge Coccotalle 38. 1848), who selected *H. noltii*. Meanwhile, Shuttleworth (Biblioth. Universelle Genève, sér. 2. 25: 405. 1840), making a generic distinction between the red-snow alga and *H. grevillii*, established *Gloiococcus* to receive the latter. Shortly thereafter, Auguste and Charles Morren (op. cit.) published the results of a remarkably thorough study of an organism that they had obtained from a rain-water pool in Belgium. They observed in culture an alternation of palmelloid and motile stages in the life history of an alga (which they considered an infusorian) clearly referable to *Haematococcus* as presently defined. Although they were aware of the close similarity between their organism and *Lepraria kermesina*, they considered the two entities generically and specifically distinct, naming theirs *Disceraea purpurea*. Independently, Flotow (Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 20: 411–606. 1844) made an elaborate study of an organism collected in a rain-water pool near Hirschberg, Schlesien (now Poland), which he considered an undescribed species of *Haematococcus*, naming it *H. pluvialis*. While writing his monograph, Flotow became aware of the work by the Morrens, and in a footnote (p. 414) he noted the close relationship between his organism and theirs. Flotow clearly illustrated (t. 25) the cytoplasmic strands connecting the protoplast to the cell wall, characteristic of the genus as presently defined. As circumscribed by Flotow, *Haematococcus* included *H. nivalis*, *H. kermesinus*, *H. grevillii*, *H. noltii*, *H. salinus* Dunal (Ann. Sci. Nat. Bot. sér. 2. 9: 174. 1838; type species of *Dunaliella* Teodoresco, Beih. Bot. Centralbl. 18(1): 230. 1904), and *H. pluvialis*. He briefly considered *Volvox lacustris* Girod-Chantrons (Rech. Chim. Microscop. 54, t.8: f. 17. 1802), a species that with considerable hesitation has become accepted as an earlier synonym of *H. pluvialis*.

Abandoning *Haematococcus* and objecting to *Disceraea* on etymological grounds, Perty (Mitt. Naturf. Ges. Bern 1850: 181 adn. 1850) proposed *Hysginum* as a substitute. Concomitantly, Braun (Betracht. Erscheinen. Verjüng. 147 etc. 1850), reserving *Haematococcus* for *H. nivalis* (cf. Cohn, Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 22: 608. 1850) and apparently unaware of either *Gloiococcus* or *Disceraea*, proposed *Chlamidococcus* for *H. pluvialis*. *Chlamidococcus* was adopted by most authors (as *Chlamydococcus*) from 1850 until 1883, often to include the red-snow alga as well as the rain-water alga. In 1883, Wittrock (Bot. Not. 1883: 76) resurrected *Sphaerella* for *Haematococcus*, and in this action he was followed by many authors as late as 1951. Hazen (Mem. Torrey Bot. Club 6: 238. 1899) lectotypified *Sphaerella* with *S. nivalis*. As long as this species and the rain-water alga were considered congeneric, *Sphaerella* was the correct name, but those authors who appreciated the nomenclatural consequence of Wille's conclusion that *S. nivalis* was a species of *Chlamydomonas* rejected *Sphaerella* in favor of *Haematococcus* (as suggested by Wille), not realizing that *Haematococcus* had long ago been lectotypified, first with *H. sanguineus* in the Cyanophyceae and later with *H. noltii* in the Euglenophyceae. Droop (Rev. Algol. sér. 2. 2: 189. 1956), realizing that *Haematococcus* as presently defined had nothing in common with C. Agardh's genus except the name, proposed it for conservation with the authorship of Flotow 1844. The proposal was accepted by the Montreal Congress in 1959, with *Disceraea* listed as a *nomen rejiciendum*.

A concordance of the pertinent generic names follows:

- Chlamydomonas* Ehrenberg 1834 ('*Chlamidomonas*'), *nom. cons. prop.*  
= *Sphaerella* Sommerfelt 1824 ≡ (by lectotypification) *Protococcus*
- C. Agardh 1824, *nomina rejic. prop.* ≡ *Chlorococcum* E. M. Fries  
1825, *nom. superfl. et nom. rejic. vs. Chlorococcum* Meneghini 1842
- Chlorococcum* Meneghini 1842, *nom. cons.*
- Desmococcus* Brand 1925, based on *Pleurococcus* sensu Nägeli 1847
- Gloiococcus* Shuttleworth 1840, identity of type species uncertain,

*nom. rejic. prop.* vs. *Gloeococcus* Braun 1850  
*Haematococcus* C. Agardh 1829, *nom. rejic.*  
 = *Anacystis* Meneghini 1837  
*Haematococcus* Flotow 1844, *nom. cons.*  
 = *Disceraea* A. Morren et C. Morren 1841, *nom. rejic.* = *Hysginum*  
 Perty 1850, *nom. superfl.*  
 = *Chlamydococcus* Braun 1850 ('*Chlamidococcus*')  
*Pleurococcus* Meneghini 1837  
 = *Anacystis* Meneghini 1837

Stating that the description and illustration of *Chlamydomonas pulvisculus* given by Ehrenberg could apply to most species of the genus, Ettl (Beih. Nova Hedwigia 49: 262. 1976) proposed a neotype, *C. reinhardtii* P. A. Dangeard (Ann. Sci. Nat. Bot. sér. 7. 7: 136, t. 12: f. 29-39. 1888). Because there apparently is no doubt as to the generic concept of *Chlamydomonas* set forth by Ehrenberg, the impossibility of ascertaining which modern species he had in hand does not call for conservation as of a later treatment. The usual rather than the original spelling of the generic name is incorporated in the present proposal.

(489) **Cladophora** Kützing, Phycol. Gen. 262. 1843 (*nom. cons. prop.*). Lectotype species: *C. oligoclona* (Kützing) Kützing (*Conferva oligoclona* Kützing, Alg. Aquae Dulcis German. 7: [3]. 1833) (vide Setchell & Gardner, Univ. Calif. Publ. Bot. 8: 207. 1920). Chlorophyceae: Cladophoraceae.

*Conferva* Linnaeus, Sp. Pl. 1164. 1753 (*nom. rejic. prop.*). Lectotype species: *C. rupestris* Linnaeus (vide Bonnemaison, J. Phys. Chim. Hist. Nat. Arts 94: 198. 1822). Chlorophyceae: Cladophoraceae.

In the simplistic Linnaean classification of algae, the genus *Conferva* accommodated all filamentous forms: 21 species, representing five currently recognized classes. Hundreds of additional species were described by subsequent authors. The heterogeneity of the genus was recognized early in the 19th century, and as numerous more precisely defined genera of filamentous algae were established, *Conferva* came to serve as a repository for residual poorly known species and newly described filamentous species of uncertain affinity. The association of *Conferva* with the xanthophycean genus now known as *Tribonema* Derbès et Solier (in Castagne, Suppl. Cat. Pl. Marseille 96. 1851), prevalent in the last quarter of the century, was largely the responsibility of Lagerheim (Flora 72: 209. 1889), who based his emendation of the genus on *Conferva bombycina* C. Agardh (Syn. Alg. Scand. 78. 1817), the type of *Tribonema*. Hazen (Mem. Torrey Bot. Club 11: 181. 1902) gave an excellent account of the history of *Conferva*. He considered *C. rivularis* L. the type of the genus, and regarding it as a species of *Rhizoclonium* Kützing (Phycol. Gen. 261. 1843), he abandoned *Conferva* as applied to *C. bombycina* in favor of *Tribonema*. *Conferva rivularis* was shown by van den Hoek (Rev. Eur. Sp. Cladophora 113. 1963) to be referable not to *Rhizoclonium*, but to *Cladophora* Kützing (Phycol. Gen. 262. 1843). *Conferva* had been lectotypified previously, however, by Bonnemaison (loc. cit.), who chose *C. rupestris* Linnaeus, which also has been shown by van den Hoek (op. cit. 64) to be referable to *Cladophora*.

Since *Cladophora* has already been conserved against *Annulina* Link 1820, the present proposal would add *Conferva* as a nomen rejiciendum and in so doing would put to rest a troublesome generic name.

(490) **Corynomorpha** J. Agardh, Lunds Univ. Årsskr. 8 (Afd. Math. Naturvitensk. 6): 3. 1872 (*nom. cons. prop.*). Lectotype species: *C. prismatica* (J. Agardh) J. Agardh (*Dumontia prismatica* J. Agardh, Linnaea 15: 19. 1841) (vide Schmitz, Flora 72: 452. 1889). Rhodophyceae: Corynomorphaceae.

*Prismatoma* (J. Agardh) Harvey, Index Gen. Alg. 11. 1860 (*nom. rejic. prop.*); *Acrotylus*

subgen. *Prismatoma* J. Agardh, Sp. Alg. 2: 193. 1851. Type species: *Dumontia prismatica* J. Agardh, Linnaea 15: 19. 1841. Rhodophyceae: Corynomorphaceae.

When establishing *Acrotylus* subgen. *Prismatoma*, J. Agardh discussed the possibility that it should be accorded generic status. Later, upon doing so, he passed over *Prismatoma* in favor of a new generic name, *Corynomorpha*. Meanwhile, *Prismatoma* was treated as a genus under that name by Harvey. Corynomorphaceae Balakrishnan (Proc. Symp. Alg. [New Delhi 1959] 91. 1960) is illegitimate since *Corynomorpha* is an illegitimate nomenclatural synonym of *Prismatoma*. Conservation of *Corynomorpha* would make Corynomorphaceae available.

(491) **Debarya** Wittrock, Bih. Kongl. Svenska Vetensk.-Akad. Handl. 1(1): 35 adnot. 1872 (*nom. cons. prop.*). Type species: *D. glyptosperma* (de Bary) Wittrock, Points-förteckn. Skand. Växt. 4: 24. 1880 (*Mougeotia glyptosperma* de Bary, Untersuch. Conjugaten 78, t. 8: f. 20-25. 1858). Chlorophyceae: Zygnemataceae.

*Debarya* Schulzer v. Müggenburg, Verh. K. K. Zool.-Bot. Ges. Wien 16(Abh.): 60. 1866 ('*De Barya*') (*nom. rejic. prop.*). Type species: *D. crustalina* Schulzer v. Müggenburg. Ascomycetes: Hypocreaceae.

De Bary (loc. cit.) distributed the species of *Mougeotia* C. Agardh 1824 (*nom. cons.*) among various genera in Zygnemataceae subfam. Mesocarpoideae ('Conjugatae Unterabtheilung Mesocarpeae') and reapplied the name to accommodate a new species in subfam. Zygnemoideae ('Zygnemeae'). *Mougeotia* de Bary was renamed *Debarya* by Wittrock. At present it is a recognized genus with about eight species. *Debarya* Schulzer v. Müggenburg has been placed in synonymy with *Hypocrea* E. M. Fries 1849 in the Hypocreaceae (Hypocreales or Sphaeriales, Ascomycetes).

(492) **Dinamoebidium** Pascher, Arch. Protistenk. 37: 31. 1916 (*nom. cons. prop.*). Type species: *D. varians* (Pascher) Pascher (*Dinamoeba varians* Pascher, Arch. Protistenk. 36: 118, t. 10, f. 4b. 1916). Dinophyceae:

*Dinamoeba* Pascher, Arch. Protistenk. 36: 118. 1916. (*nom. rejic. prop.*). Type species: *D. varians* Pascher, *op. cit.* 118, t. 10, f. 4b. Dinophyceae: Dinamoebidiaceae.

Because *Dinamoeba* is preoccupied in zoological but not botanical nomenclature, *Dinamoebidium* is the correct name for this genus under the ICZN but illegitimate under the ICBN. Conservation would make both *Dinamoebidium* and Dinamoebidiaceae available, thus bringing the two nomenclatures into agreement.

(493) **Dogelodinium** Loeblich Jr. et Loeblich III, Stud. Trop. Oceanogr. 3: 1, 27. 1966 (*nom. cons. prop.*). Type species: *D. ovoides* (Cachon) Loeblich Jr. et Loeblich III (*Collinella ovoides* Cachon, Ann. Sci. Nat. Zool. sér. 12. 6: 49, t. 14, 15, 16: f. 14. 1964). Dinophyceae: Duboscquellaceae.

*Collinella* Cachon, Ann. Sci. Nat. Zool. sér. 12. 6: 49. 1964 (*nom. rejic. prop.*). Type species: *C. ovoides* Cachon, *op. cit.* 49, t. 14, 15, 16: f. 14). Dinophyceae: Duboscquellaceae.

Because *Collinella* is preoccupied in zoological but not botanical nomenclature, *Dogelodinium* is the correct name for this genus under the ICZN but illegitimate under the ICBN. Conservation would bring the two nomenclatures into agreement.

(494) **Falklandiella** Kylin, Gatt. Rhodophyc. 391. 1956 (*nom. cons. prop.*). Type species: *F. harveyi* (J. D. Hooker) Kylin (*Ptilota harveyi* J. D. Hooker in J. D. Hooker et Harvey, London J. Bot. 4: 271. 1845). Rhodophyceae: Ceramiaeae.

*Falklandiella* was proposed by Kylin as a genus of Ceramiaceae, distinguished from other distichously branched members of the *Ptilota* group in that the determinate branches remain uncorticated. *Ptilota harveyi* was designated type, while *P. pellucida* W. H. Harvey (in J. D. Hooker, Fl. Nov.-Zel. 2: 257. 1855) was included as a second species. Papenfuss (Taxon 7: 105. 1958), noting that *P. pellucida* was the type of an earlier generic name, *Dasyptilon* G. Feldmann (Bull. Mus. Hist. Nat. [Paris], sér. 2. 21: 308. 1950), adopted that name in place of *Falklandiella*. As emphasized by Moe & Silva (Brit. Phycol. J. 14: in press. 1979), however, *P. pellucida* and *P. harveyi* are not congeneric. In *P. pellucida* the procarp is produced directly by the basal cell of a determinate branch, while in *P. harveyi* it is produced by a pericentral cell cut off from an axial cell near the apex of a determinate branch. In *P. pellucida* the supporting cell lies in the plane of thallus branching and the carpogonial branch bends upward around that cell, while in *P. harveyi* the supporting cell is perpendicular to the plane of thallus branching and the carpogonial branch bends horizontally around the axis bearing the supporting cell. Moreover, the tetrasporangia in *P. pellucida* are cruciately divided and are adaxial and sessile on branchlets of a determinate branch, while in *P. harveyi* they are tetrahedrally divided and terminal on the axis and on numerous branchlets of a determinate branch.

Unfortunately, Kylin's inclusion of the type of *Dasyptilon* in his initial circumscription of *Falklandiella* renders the latter name superfluous and illegitimate in accordance with Art. 63 of the ICBN. It can be legitimately retained for *F. harveyi* either by explicitly excluding from its circumscription the type of *Dasyptilon* (as was done by Moe and Silva) or by conservation. The former procedure entails a change in both author and date, a change certain to puzzle many taxonomists. It seems advisable, therefore, to propose *Falklandiella* for conservation with the original author and date. The effect of conservation is simply to make legitimate a name that was initially superfluous, but which at the present state of our knowledge fulfills a need. It has no synonyms.

(495) **Gloeococcus** Braun, Betracht. Ersch. Verjüng. 169. 1850 (*nom. cons. prop.*). Lectotype species: *G. minor* Braun (vide Fott, Algenkunde, ed. 2. 292. 1971). Chlorophyceae: Gloeococcaceae.

*Gloiococcus* Shuttleworth, Biblioth. Universelle Genève, sér. 2. 25: 405. 1840 (*nom. rejic. prop.*). Type species: *G. grevillii* (C. Agardh) Shuttleworth (*Haematococcus grevillii* C. Agardh, Icon. Alg. Eur. no. 23. 1829). Algae incertae sedis.

Braun established *Gloeococcus* primarily on *G. mucosus* Braun and only briefly characterized a second species, *G. minor* Braun. It was logical, therefore, for Janet Stein to indicate *G. mucosus* as the type when preparing the ING entry (card no. 07875), although this indication in fact constituted a lectotypification. Wille (Nyt Mag. Naturvidensk. 41: 163–166. 1903) pointed out the close affinities between *G. mucosus* and *Chlamydomonas*, but retained the genus because of the dominance of the palmelloid stage in its life history. Iyengar (Proc. Symp. Alg. [New Delhi 1959] 397. 1960) expressed a similar opinion, placing both genera in the Chlamydomonadaceae. Ettl (Österr. Bot. Z. 111: 364. 1964) established a family within the Tetrasporales to receive several genera of palmelloid algae, to which he applied the name Gloeococcaceae because *Gloeococcus* was the oldest generic name. Lacking a Latin diagnosis, however, the name remained invalid. Fott (Algenkunde, ed. 2. 292. 1971; Preslia 44: 194. 1972; in Huber-Pestalozzi, Phytoplankton Süßwassers 6: 20. 1972; Fott & Nováková, Arch. Protistenk. 114: 34–36. 1972) validated the family name and circumscribed *Gloeococcus* to exclude *G. mucosus*, which he considered merely a palmelloid stage of a species of *Chlamydomonas*. Fott's lectotypification of *Gloeococcus* with *G. minor* is incorporated in the present proposal for conservation.

*Gloiococcus* Shuttleworth was established on the basis of *Haematococcus grevillii* C. Agardh, which in turn was based on an alga collected by Carmichael on the shores of lakes in Scotland and described and figured by Greville (Scott. Crypt. Fl. t. 321 [pro parte]. 1826) as *Protococcus nivalis* (Bauer) C. Agardh. Both Agardh and Shuttleworth considered this alga generically distinct from *Uredo nivalis* Bauer (currently placed in *Chlamydomonas*). *Haematococcus grevillii* was thought by Wille (op. cit. 104) to be referable to the genus as presently defined (*Haematococcus* Flotow 1844, nom. cons.), but not *Haematococcus* C. Agardh 1829, which as lectotypified with *H. sanguineus* (C. Agardh) C. Agardh (by C. Morren, Nouv. Mém. Acad. Roy. Sci. Bruxelles 14[7]: 9. 1841) is a taxonomic synonym of *Anacystis* Meneghini 1837 (cf. Drouet & Daily, Butler Univ. Bot. Stud. 12: 45. 1956). Droop (Rev. Algol. sér. 2. 2: 185, 188. 1956), on the other hand, thought that it almost certainly was something other than *Haematococcus* in the present sense.

(cf. 466, Taxon 28: 605. 1979) **Grateloupia** C. Agardh, Sp. Alg. 1(2): 221. 1822 (probably Oct.) (nom. cons. prop.). Lectotype species: *G. filicina* (Lamouroux) C. Agardh (*Delesseria filicina* Lamouroux, Ann. Mus. Hist. Nat. 20: 125. 1813; *Fucus filicinus* Wulfen in N. J. Jacquin, Collect. Bot. 3: 157, t. 15: f. 2. 1791 ('1789'), non *F. filicinus* Hudson, Fl. Angl. 473. 1762) (vide Kützing, Sp. Alg. 730, 793. 1849). Rhodophyceae: Cryptonemiaceae.

*Grateloupia* Bonnemaison, J. Phys. Chim. Hist. Nat. Arts 94: 189. 1822 (Apr.) (nom. rejic. prop.). Type species: indicated as *Conferva arbuscula* Dillwyn but material at hand not congeneric with that species. Rhodophyceae: Ceramiales or Dasycarpaceae.

This proposal was initiated by Dixon & Irvine (Bot. Not. 123: 475. 1970) but was not assigned a number and was not considered by the Leningrad Congress. It entails some complications that require explanation.

*Grateloupia* C. Agardh originally comprised three species. Specimens from the Cape of Good Hope communicated by Desfontaines and Thunberg were considered to represent one species, which Agardh associated with *Fucus ornatus* Linnaeus 1771, making the combination *G. ornata*. He discussed the confusion that existed between *F. ornatus* and *F. vittatus* Linnaeus 1767, concluding that the former was indeed his plant and that the latter should be referred to *Sphaerococcus*. Kützing (Phycol. Gen. 392. 1843) established the genus *Chaetangium* for this South African alga, which he called *C. ornatum*, citing '*Grateloupia ornata* Ag.' as a synonym. The possibility that *C. ornatum* may be considered a new name rather than a new combination is eliminated by consulting Kützing's 'Species Algarum' (1849, p. 793), where *F. ornatus* Linnaeus is cited as the basionym. Papenfuss (J. S. African Bot. 17: 173. 1952) emphasized that the type material of *F. ornatus* is conspecific with *F. vittatus* (which is currently placed in the gelidiaceous genus *Suhria* J. Agardh ex Endlicher 1843) so that the name *Chaetangium ornatum* is untenable. Turner (Fuci 1: 55, 56, 143, 144. 1808) had come to the same conclusion regarding the two Linnaean names and had described the alga incorrectly called *F. ornatus* as *F. erinaceus*. Papenfuss (loc. cit.) made the combination *Chaetangium erinaceum*. Agardh added a variety *crispa* to his *Grateloupia ornata*, based on a collection made at an unspecified locality by Haenke during the Malaspina expedition. The locality probably was Monterey, California (cf. Papenfuss in Abbott & Hollenberg, Mar. Alg. Calif. 23. 1976), and the description suggests a member of the *Gigartina papillata* complex. The second species, *Grateloupia hystrix*, was newly described from another Haenke collection, with the Cape of Good Hope given as the questionable provenance. Again, the description suggests a member of the *Gigartina papillata* complex. Setchell & Gardner (Univ. Calif. Publ. Bot. 17: 295. 1933) made the combination *Gigartina hystrix*, but without associating it with a California alga (cf. Papenfuss, Farlowia 1: 342. 1944). The third species of *Grateloupia* was based on specimens sent to Agardh by Bonnemaison, Desvaux, de Bonnay, and Hooker, and was associated with *Fucus filicinus* Wulfen (in N. J. Jacquin 1791). Because this name is a homonym of *F.*

*filicinus* Hudson 1762, it cannot serve as the basionym of *G. filicina*, which must be based on the first legitimate use of the epithet (*Delesseria filicina* Lamouroux 1813). As a questionable synonym of *G. filicina*, Agardh cited *Phoracis filicina* Rafinesque (Caratt. Nuovi Gen. Sp. Sicilia 99. 1810), the type of its genus. Rafinesque, reciprocally, had cited *F. filicinus* Wulfen as a questionable synonym. Since the identity of *Phoracis* cannot be determined, proposing it as a nomen rejiciendum against *Grateloupia* seems unjustifiable.

*Grateloupia* C. Agardh was effectively lectotypified with *G. filicina* by Kützing (Sp. Alg. 730, 793. 1849), who placed the first two species in *Chaetangium*. Although it may be argued that Agardh's generic description fits *Chaetangium* better than *Grateloupia*, designating *G. filicina* as the type of the conserved name makes such a consideration immaterial.

The typification of *Grateloupia* Bonnemaison is subject to alternative interpretations. If the material-in-hand principle is followed, the type is a species of *Dasya* C. Agardh 1824 (*nom. cons.*) unnamed by Bonnemaison but currently considered conspecific with *D. hutchinsiae* Harvey (in Hooker 1833). If the citation principle is followed, the type is *Conferva arbuscula* Dillwyn, currently placed in *Callithamnion* Lyngbye 1819. The confusion in applying *Conferva arbuscula* was discussed by Dixon (Bot. Not. 113: 309. 1960). It was originally (Brit. Conf. t. 85. 1807) applied to a species of *Callithamnion*, but was later extended by its author (op. cit. t. G. 1809) to include a species of *Dasya*. Dixon & Irvine (op. cit. 477) cited *G. arbuscula* Bonnemaison as the type of its genus, but this binomial was not used by Bonnemaison, who merely listed '*Conferva arbuscula* Dilwin' as a member of his genus. Dixon & Irvine also proposed that *Grateloupia* Bonnemaison be added as a nomen rejiciendum against *Dasya*, but conservation of *Grateloupia* C. Agardh would obviate the need for such action.

Finally, it may be noted that *Chaetangium*, like *Grateloupia* Bonnemaison, is a generic name whose typification is subject to alternative interpretations. According to the material-in-hand principle, the type is a species of *Chaetangium* unnamed by Kützing but currently considered conspecific with *C. erinaceum* (Turner) Papenfuss. According to the citation principle, the type is *Fucus ornatus* Linnaeus, and *Chaetangium* is thus a taxonomic synonym of *Suhria*, antedating that name by a few days (14-16 Sep. vs. Oct.). It is hoped that this uncertainty in typification procedures will be settled at the Sydney Congress.

(496) **Griffithsia** C. Agardh, Syn. Alg. Scand. xxviii. 1817 ('*Griffitsia*'); orth. mut. W. J. Hooker, Fl. Scot. 2: 84. 1821 (*orth. cons. prop.*). Lectotype species: *G. corallina* (J. A. Murray) C. Agardh, *nom. illeg.* (*Conferva corallina* J. A. Murray, Syst. Veg. ed. 13. 818. 1774, *nom. illeg.*; *Conferva corallinoides* Linnaeus, Sp. Pl. 1166. 1753; *Griffithsia corallinoides* (Linnaeus) Trevisan, Nomencl. Alg. 23. 1845) (vide Leman in Levrault, Dict. Sc. Nat. 19: 443. 1821). Rhodophyceae: Ceramiales.

This well-known and widely distributed genus has several nomenclatural problems. It was established by C. Agardh to accommodate those articulated filamentous algae with 'semina' immersed in a gelatinous involucre. The name was not originally spelled *Griffithsia*, however, but '*Griffitsia*', the spelling that Agardh continued to use in his *Systema algarum* (1824) and *Species algarum* (1828). In the latter work (p. 127) Agardh made it clear that in forming the generic name he was latinizing the name of the person he was commemorating, Mrs. [Amelia W.] Griffiths of Torquay, Devonshire. Praise was lavished upon this remarkable observer and collector by various authors, including W. H. Harvey, who dedicated to her his book, *A manual of the British marine algae* (1849), characterizing her as 'a lady whose long-continued researches have, more than those of any other observer in Britain, contributed to the present advanced state of marine botany . . .' Elsewhere, Harvey (Memoir 158. 1869) stated that 'She is worth ten thousand other collectors . . .' Earlier, Agardh

had dedicated to her his book, *Algae maris mediterranei et adriatici* (1842), but without an encomium. The obviously incorrect spelling *Griffithia* was used by K. P. J. Sprengel (Syst. Veg. 4(1): 351. 1827). The current spelling was first used by W. J. Hooker in his *Flora scotica* (1821). It is thus clear that if the spelling *Griffithsia* is to be retained, conservation must be evoked.

Passing to the matter of typification, we find that Agardh included five previously described species in his original concept of the genus. Following a practice common at that time, he cited illustrated works but not necessarily the original place of publication of the basionyms. In this instance, he referred only to Dillwyn's *British Confervae* (1802-1809) and J. E. Smith's *English botany* (1790-1814). The five species were listed as follows: 1 *Setacea* D. t.82. 2 *Corallina* D. t.98. 3 *Barbata* E. B. t.1814. 4 *Multifida* E. B. t.1816. 5 *Equisetifolia* D. t.54. The correct citations are *Griffithsia setacea* (Hudson) C. Agardh (*Conferva setacea* Hudson, Fl. Angl. ed. 2. 599. 1778); *G. corallina* (J. A. Murray) C. Agardh (*Conferva corallina* J. A. Murray, Syst. Veg. ed. 13. 818, 1774, an illegitimate substitute for *C. corallinoides* Linnaeus, Sp. Pl. 1166. 1753); *G. barbata* C. Agardh (*Conferva barbata* J. E. Smith, Engl. Bot. t. 1814, 1808, non Zoega in Olafsen, Reise Island 2: 244. 1775); *G. multifida* (Hudson) C. Agardh (*Conferva multifida* Hudson, Fl. Angl. ed. 2. 596. 1778); and *G. equisetifolia* (Lightfoot) C. Agardh (*Conferva equisetifolia* Lightfoot, Fl. Scot. 984. 1777).

Schmitz, who systematically lectotypified the genera of red algae (but not always correctly) at a time when circumscriptions rather than types were of primary importance in determining the application of names, was influential in the renaissance of the type method. De Toni, for example, followed suit with a systematic lectotypification of the genera of brown algae (Flora 74: 171-182. 1891). Schmitz's choice of *Griffithsia corallina* as lectotype (Flora 72: 449. 1889) was adopted by Kylin (Gatt. Rhodophyc. 385. 1956). As discussed by Baldock (Austral. J. Bot. 24: 512. 1976), however, this lectotypification did not agree with the historical development of the concept of *Griffithsia*. Dismemberment of the genus began with the removal of *Conferva equisetifolia* to its own genus, *Halurus*, by Kützinger (Phycol. Gen. 374. 1843). Nägeli, in his extensive revision of the Ceramiales (Sitzungsber. Königl. Bayer. Akad. Wiss. München 1861(2): 297-415. 1862), much of which has only recently begun to be fully appreciated, established the genus *Sphondylothamnion* for *Conferva multifida*, while *Conferva barbata* was made the type of his new genus *Anotrichium*. *Conferva corallina* was placed with *Griffithsia schousboei* Montagne in his new genus *Heterosphondylium*. This treatment thus left *Griffithsia setacea* as the residual lectotype of the genus. According to Baldock (op. cit. 545), however, *G. setacea* bears cystocarps terminally on a 5-celled axis and its affinities lie with *Halurus* rather than with *Griffithsia*. A solution to the problem was found by searching the literature of the 1820's, a period when French workers espoused the type method. In Levrault's *Dictionnaire des Sciences naturelles* (19: 443. 1821), Leman referred to 'l'espèce principale, le *griffithsia corallina*, qui est le *conferva corallina*, Linn.' Whether 'principale' may be read as 'type' is an equivocation that is obviated by conservation. The present proposal for orthographic conservation carries with it the conservation of *G. corallina* as the type. It should be noted that the epithet *corallina*, which traditionally has been attributed to Lightfoot, was used in place of the Linnaean epithet *corallinoides* at least as early as 1774 (by J. A. Murray).

(497) **Gyrodinium** Kofoid et Swezy, Mem. Univ. Calif. 5: 273. 1921 (*nom. cons. prop.*). Type species: *G. spirale* (Bergh) Kofoid et Swezy (*Gymnodinium spirale* Bergh, Morphol. Jahrb. 7: 253, f. 70, 71. 1881). Dinophyceae: Gymnodiniaceae.

*Spirodinium* Schütt in Engler & Prantl, Nat. Pflanzenfam. 1(1b): 3, 5. 1896 (*nom. rejic. prop.*). Type species: *S. spirale* (Bergh) Schütt (*Gymnodinium spirale* Bergh, Morphol. Jahrb. 7: 253, f. 70, 71. 1881). Dinophyceae: Gymnodiniaceae.

Because *Spirodinium* is preoccupied in zoological but not botanical nomenclature,



*Gyrodinium* is the correct name for this genus under the ICZN but illegitimate under the ICBN. Conservation would bring the two nomenclatures into agreement and obviate the necessity of making at least 80 new combinations in *Spirodinium*.

(498) Proposal to change the listed type of **Haematococcus** C. Agardh 1829, *nom. rejic.* vs. *Haematococcus* Flotow 1844, *nom. cons.*

Presently listed type: *H. noltii* C. Agardh (vide Trevisan, Saggio Monogr. Alge Coccotalle 38. 1848) (Euglenaceae).

Proposed listed type: *H. sanguineus* (C. Agardh) C. Agardh (*Palmella? sanguinea* C. Agardh) (vide C. Morren, Nouv. Mém. Acad. Roy. Sci. Bruxelles 14[7]: 9. 1841) (Chroococcaceae).

This proposal is intended to bring the listed type in conformity with the historically correct lectotype. It has no nomenclatural effect other than transferring the rejected generic name from the synonymy of *Euglena* Ehrenberg 1834 to that of *Anacystis* Meneghini 1837 (cf. Drouet & Daily, Butler Univ. Bot. Stud. 12: 45. 1956).

(499) **Halymenia** C. Agardh, Syn. Alg. Scand. xix, 35. 1817 (*nom. cons. prop.*). Lectotype species: *H. floresia* (Clemente) C. Agardh (*Fucus floresius* Clemente, Ensayo 312. 1807) (vide Schmitz, Flora 72: 452. 1889). Rhodophyceae: Cryptonemiaceae.

*Halymenia* C. Agardh, Syn. Alg. Scand. xix, 35. 1817 (*nom. rejic. prop.*). Type species: *H. edulis* (Stackhouse) C. Agardh (*Ceramium edule* Stackhouse, Ner. Brit. 2: xxiv. 1797; *Fucus edulis* Stackhouse in Withering, Arr. Brit. Pl. ed. 3. 4: 101. 1796, non *F. edulis* S. G. Gmelin, Hist. Fuc. 113. 1768). Rhodophyceae: Dumontiaceae.

In treating the non-articulated red algae (Florideae), C. Agardh (Syn. Alg. Scand. 1817) was retrogressive compared to his immediate predecessor, Lamouroux (Ann. Mus. Hist. Nat. 20: 115–139. 1813). Of the eleven genera recognized by Lamouroux, one was adopted from Stackhouse (*Chondrus*) and one from Desvaux (*Champia*, a renaming of Thunberg's *Mertensia*) while nine were newly described. All are recognized today. Agardh scrambled Lamouroux's groups of species so that the emerging concepts of *Acanthophora*, *Dumontia*, *Gelidium*, *Gigartina*, *Hypnea*, and *Plocamium* (all proposed by Lamouroux) were suppressed. *Claudea* underwent a simple change of name to *Lamourouxia*, while *Laurencia* (with the addition of *Acanthophora*) became *Chondria* and *Chondrus* was merged into *Sphaerococcus* Stackhouse, an excessively large and heterogeneous genus as treated by Agardh. Of the seven genera of Florideae recognized by Agardh, only two offered constructive concepts—*Ptilota* and *Halymenia*. Like Lamouroux, Agardh was unaware of the work of Stackhouse (Mém. Soc. Imp. Naturalistes Moscou 2: 50–97. 1809) in which he established 22 new genera that would have been classified by his successors as Florideae. Agardh thus confined his comparisons to Stackhouse's *Nereis britannica* (first edition, 1797–1801) and to Lamouroux's *Essai* (op. cit.).

*Halymenia* was conceived to include those Florideae with membranous or coriaceous fronds that were plane or tubular, without nerves, and with reproductive bodies in the form of punctae immersed in the frond. Section 'Planae' included *H. floresia*, based on *Fucus floresius* Clemente, a species described from Sanlúcar de Barrameda (near Cádiz, Spain) and the only original species currently assigned to the genus; *H. edulis*, based on *Ceramium edule* Stackhouse, the type of *Dilsea* Stackhouse 1809; *H. palmata*, based on *Fucus palmatus* Linnaeus, the lectotype of *Palmaria* Stackhouse 1801; and *H. sobolifera*, based on *Fucus soboliferus* Vahl, also representative of *Palmaria*. Section 'Tubulosae' included representatives of *Dictyosiphon* Greville 1830 (*nom. cons.*), *Chrysomenia* J. Agardh 1842, and *Halosaccion* Kützinger 1843. By a process of elimination, the genus became implicitly lectotypified with *H. floresia*. This lectotypification was explicitly confirmed by Schmitz (Flora 72: 452. 1889). As just seen, however, *Halymenia* was initially superfluous and in

accordance with Art. 7.11 of the ICBN it must be typified with *H. edulis* since *Dilsea* is the name that Agardh should have adopted for his genus. *Halymenia* is thus proposed for conservation with its operational lectotype against the same name with its technical type. This complication is caused by Art. 63, which in my opinion is an ill-conceived rule. Life would be simpler if we could consider a superfluous name legitimate but incorrect until the offending elements have been removed from its circumscription.

Conservation of *Halymenia* would make Halymeniaceae Bory (in Duperrey, Voy. Coquille, Crypt. 158. 1828, 'Halymeniae') the correct name for the family currently called Cryptonemiaceae (J. Agardh) Decaisne 1842.

(500) **Hildenbrandia** Nardo, Isis (Oken) 1834: 676. 1834 ('*Hildbrandtia*'); orth. mut. Zanardini, Bibliot. Ital. (Milano) 96: 134. 1840 (orth. cons. prop.). Type species: *H. prototypus* Nardo. Rhodophyceae: Hildenbrandiaceae.

This genus was originally spelled *Hildbrandtia* by Nardo and was said to commemorate an illustrious Viennese physician (and very skilled botanist) named Hildbrandt, but most subsequent authors have used variants, including *Hildebrandtia*, *Hildenbrandia*, *Hildenbrandtia*, and *Hildenbrantia*. Following the clarification by Widder (Phyton [Horn] 7: 315–320. 1958) that the person commemorated was Franz Edler von Hildenbrand (1789–1849), a consensus evolved in favor of *Hildenbrandia*. Strict interpretation of the ICBN, however, calls for the retention of *Hildbrandtia*, since that spelling was intentional, involving neither an orthographic nor a typographic error (cf. Art. 73).

(501) **Karotomorpha** Travis, Trans. Amer. Microscop. Soc. 53: 277. 1934 (nom. cons. prop.). Type species: *K. bufonis* (Dobell) Travis (*Monocercomonas bufonis* Dobell, Quart. J. Microscop. Sci. ser. 2. 53: 242, t. 3: f. 49, 50. 1909). Bodonophyceae: Karotomorphaceae.

*Tetramastix* Alexeieff, Compt.-Rend. Hebd. Séances Mém. Soc. Biol. 79: 1076. 1916 (nom. rejic. prop.). Type species: *T. bufonis* (Dobell) Alexeieff (*Monocercomonas bufonis* Dobell, Quart. J. Microscop. Sci. ser. 2. 53: 242, t.3: f. 49, 50. 1909). Bodonophyceae: Karotomorphaceae.

Because *Tetramastix* is preoccupied in zoological but not botanical nomenclature, *Karotomorpha* is the correct name for this genus under the ICZN but illegitimate under the ICBN. Conservation would make both *Karotomorpha* and Karotomorphaceae available, thus bringing the two nomenclatures into agreement.

(502) **Keppenodinium** Loeblich Jr. et Loeblich III, Stud. Trop. Oceanogr. 3: 1, 38. 1966 (nom. cons. prop.). Type species: *K. mycetoides* (Cachon) Loeblich Jr. et Loeblich III (*Hollandella mycetoides* Cachon, Ann. Sci. Nat. Zool. sér. 12. 6: 53, t. 17-19. 1964). Dinophyceae: Dubosquellaceae.

*Hollandella* Cachon, Ann. Sci. Nat. Zool. sér. 12. 6: 53. 1964 (nom. rejic. prop.). Type species: *H. mycetoides* Cachon, op. cit. 53, t. 17-19). Dinophyceae: Dubosquellaceae.

Because *Hollandella* is preoccupied in zoological but not botanical nomenclature, *Keppenodinium* is the correct name for this genus under the ICZN but illegitimate under the ICBN. Conservation would bring the two nomenclatures into agreement.

(503) **Latifascia** Loeblich Jr. et Loeblich III, Stud. Trop. Oceanogr. 3: 1, 38. 1966 (nom. cons. prop.). Type species: *L. inaequalis* (Kofoid et Skogsberg) Loeblich Jr. et Loeblich III (*Heteroschisma inaequale* Kofoid et Skogsberg, Mem. Mus. Comp. Zool. Harvard Coll. 51: 38, t. 1: f. 1, 2; f. text. 1:3. 1928). Dinophyceae: Dinophysaceae.

*Heteroschisma* Kofoid et Skogsberg, Mem. Mus. Comp. Zool. Harvard Coll. 51: 36. 1928 (nom. rejic. prop.). Type species: *H. inaequale* Kofoid et Skogsberg, op. cit. 38, t. 1: f. 1, 2; f. text. 1:3). Dinophyceae: Dinophysaceae.

Because *Heteroschisma* is preoccupied in zoological but not botanical nomenclature, *Latifascia* is the correct name for this genus under the ICZN but illegitimate under the ICBN. Conservation would bring the two nomenclatures into agreement.

(504) **Leptonematella** P. C. Silva, Taxon 8: 63. 1959 (nom. cons. prop.). Type species: *L. fasciculata* (Reinke) P. C. Silva (*Leptonema fasciculatum* Reinsch, Ber. Deutsch. Bot. Ges. 6: 19. 1888). Phaeophyceae: Elachistaceae.

This name was proposed as a replacement for the later homonym *Leptonema* Reinke (loc. cit.). The inadvertent inclusion in *Leptonematella* of *Leptonema lucifugum* Kuckuck, which had previously been segregated as the type of *Waerniella* Kylin (Lunds Univ. Årsskr. N. F. Avd. 2. 43(4): 26. 1947), renders the name superfluous and illegitimate in accordance with Art. 63 of the ICBN. It can be legitimately retained by accrediting it to the first author who recognized both *Leptonematella* and *Waerniella*, but that procedure entails a change in both author and date, a change certain to puzzle many taxonomists. It seems advisable, therefore, to propose *Lep-tonematella* for conservation with the original author and date. It has no synonyms.

(505) **Monodus** R. Chodat, Monogr. Alg. Cult. Pure 185. 1913 (nom. cons. prop.). Type species: *M. acuminatus* (Gerneck) R. Chodat (*Chlorella acuminata* Gerneck, Beih. Bot. Centralbl. 21(Abt. 2): 249, t. 11: f. 37-44. 1907). Xanthophyceae: Pleurochloridaceae.

*Monodus* R. Chodat, Monogr. Alg. Cult. Pure 185. 1913 (nom. rejic. prop.). Type species: *M. ovalis* R. Chodat. Xanthophyceae: Characiopsidaceae.

This genus was established to accommodate a new species of free-living unicellular algae, *M. ovalis*, that appeared in culture. A second species was also included, *Chlorella acuminata* Gerneck, which Chodat thought differed from *M. ovalis* chiefly in its dimensions. Because the generic diagnosis was based entirely on *M. ovalis*, that species must be considered the holotype. When it was discovered that *M. ovalis* grew attached to filamentous algae and other aquatic organisms, Chodat (in Poulton, Étude Hétérokontes 32. 1925) transferred it into *Characiopsis* Borzi 1895, without indicating the fate of *M. acuminatus*. Printz (in Engler & Prantl, Nat. Pflanzenfam. ed. 2. 3: 393. 1927) followed Chodat in referring *M. ovalis* to *Characiopsis*, but continued to recognize *Monodus*, accrediting it to Chodat and giving a description which did not differ materially from the original diagnosis. Printz included three species in his treatment of *Monodus*: *M. acuminatus*, *M. amicimei* Pascher (Ber. Deutsch. Bot. Ges. 33: 492. 1915), and *M. chodatii* Pascher (Süssw.-Fl. Deutschl. 11: 52. 1925). In Printz's words, "Übrigens ist die ganze Gattung recht problematisch." Pascher (Rabenhorst's Krypt.-Fl. Deutschl. ed. 2. 11: 436-437. 1937) gave a lengthy discussion of the biological validity of the genus, based upon the erroneous premise that it was established by Chodat for *M. acuminatus*. He stressed the need for culture studies to determine whether certain forms assigned to *Monodus* were stages in the life histories of other algae and whether *M. ovalis* was truly representative of *Characiopsis*. He included 12 species in the genus. If the genus is to be retained, as it has by all present-day workers, either the name must be conserved with an altered type (i.e., *M. acuminatus* rather than *M. ovalis*) or the genus must be described anew. Considering that the original diagnosis of *Monodus* fits *M. acuminatus*, lacking any reference to an attachment structure, it seems reasonable to retain that generic name, accredited to Chodat, with *M. acuminatus* as type.

The possibility that Pleurochloridaceae should be referred to the Eustig-

matophyceae rather than the Xanthophyceae was discussed by Silva (Arch. Protistenk. 121: 23. 1979). Should this prove to be the case, Asterogloeaceae would be available to receive those xanthophycean genera currently placed in the Pleurochloridaceae.

(506) *Nemastoma* J. Agardh, Alg. Maris Medit. 89. 1842 ('*Nemostoma*'); orth. mut. Decaisne, Ann. Sci. Nat. Bot. sér. 2. 17: 361. 1842 (orth. cons. prop.). Lectotype species: *N. dichotomum* J. Agardh ('*dichotoma*') (vide J. Agardh, Sp. Alg. 2: 164, 171, 172. 1851). Rhodophyceae: Nemastomataceae.

The spelling *Nemastoma* has been used by all authors, including J. Agardh, subsequent to the original publication of the genus.

Elsewhere, I shall propose Nemastomataceae Schmitz 1892 for conservation against Gymnophlaeaceae Kützinger 1843, an earlier taxonomic synonym.

(507) *Neurocaulon* Zanardini ex Kützinger, Sp. Alg. 744. 1849 (nom. cons. prop.). Type species: *N. foliosum* (Meneghini) Zanardini ex Kützinger (*Iridaea foliosa* Meneghini, Atti Riunione Sci. Ital. 3: 427. 1841). Rhodophyceae: Furcellariaceae.

*Neurocaulon* Zanardini ex Kützinger, Sp. Alg. 744. 1849 (nom. rejic. prop.). Lectotype species: *N. rosa-marina* (S. G. Gmelin) Kützinger (*Fucus rosa-marina* S. G. Gmelin, Hist. Fuc. 102, t. 5: f.2, 2a. 1768) (vide Schmitz, Flora 72: 453. 1889). Rhodophyceae: Dumontiaceae.

The alga currently called *Neurocaulon reniforme* (Postels et Ruprecht) Zanardini is beset with numerous nomenclatural problems. It was first described by C. Agardh (Sp. Alg. 1: 201. 1822), to whom Mertens sent a specimen bearing two names: *Fucus reniformis* Turner (Fuci 2: 109, t. 113. 1809), based on several collections from southern England; and *F. acetabulum* Gouan, apparently a manuscript name based on a Mediterranean plant. Agardh, believing that the Atlantic and Mediterranean entities were conspecific, adopted Turner's name and placed it (with doubt) in *Halymenia*, a genus that he had recently established (Syn. Alg. Scand. xix, 35. 1817) to receive foliose red algae with immersed punctiform fructification. Whether Agardh's description of *H. reniformis* was based solely on the Mertens specimen or whether it incorporated information from Turner is not clear. Postels and Ruprecht (Ill. Alg. 17. 1840) established the genus *Constantinea* to accommodate three species with branched stipes bearing peltate blades: *C. rosa-marina* (S. G. Gmelin) Postels et Ruprecht (*Fucus rosa-marina* S. G. Gmelin, loc. cit.), originally described from the Kamchatka Peninsula of Siberia; *C. sitchensis* Postels et Ruprecht, a species described from Sitka, Alaska, that is currently considered conspecific with *C. rosa-marina*; and *C. reniformis*. The authorship of this third binomial is the crux of the present discussion. The protologue includes a short description, a locality ('In mare mediterraneo rara'), and a statement: 'Huc saltem pertinet *Halymenia reniformis* Agardh Species Algarum (1822) pag. 201 secundum descriptionem speciminis Herbarii Mertensiani.' The description includes elements not mentioned by Agardh (e.g., 'anulis obsoletis; ramis ultimis oppositis'). As synonyms of the generic name they cited 'Fucus spec. Gmelin Hist. Fucor. 1768. *Halymenia spec. Agardh Spec. Alg. 1822. Iridaea spec. Greville Alg. Brit. 1830.*' Both the Agardh reference (*Halymenia reniformis*) and the Greville reference (*Iridea reniformis*) lead to *Fucus reniformis* Turner, but this name is neither explicitly included nor explicitly excluded. The situation is thus ambiguous and *C. reniformis* may be interpreted as a new species or as a new combination. If the Atlantic and Mediterranean entities were conspecific, there would be no reason not to accept *C. reniformis* as a new combination, but because the two have been shown to be distinct, interpreting *C. reniformis* as a new species has seemed to most workers to be expedient if not fully justified.

Unaware of the work of Postels & Ruprecht, J. Agardh (Alg. Maris Medit. 98.

1842) established the genus *Kallymenia* as a segregate from *Halymenia*, including in it two species: *K. requienii* (J. Agardh) J. Agardh (*Rhodomenia requienii* J. Agardh, *Linnaea* 15: 12. 1841), based on collections from Marseille and Tangier; and *K. reniformis*, for which he cited *Halymenia reniformis* Agardh but which, in the absence of any indication that *Fucus reniformis* should be excluded, must be considered a new combination of Turner's epithet. Endlicher (Gen. Pl. Suppl. 3: 40. 1843), disregarding priority, reduced *Constantinea* to the rank of section or subgenus under *Kallymenia*. Curiously, he cited *Fucus reniformis* Turner as a synonym of *K. reniformis* but ignored the original English records, giving the distribution as 'Mare mediterraneum et adriaticum'. Harvey (Phycol. Brit. t. 13. 1846), upon examining a specimen in Herb. Hooker labeled *Fucus acetabulum* Gouan, found that it represented a species distinct from the British *Kallymenia reniformis* and that in fact it was identical with his *Cryptonemia? forbesii*, described from a plant dredged at 50 fathoms in the Aegean Sea (Harvey in W. J. Hooker, Icon. Pl. t. 679. 1844). As a synonym of the Aegean species, Harvey cited *Neurocaulon foliosum* Zanardini. This binomial (as *Nevrocaulon foliosum*) first appeared in Zanardini's *Saggio di classificazione naturale delle ficee* (1843). In his discussion of *Iridaea foliosa* Meneghini (p. 49), Zanardini noted that this magnificent and rare species could scarcely be retained in *Iridaea* nor could it be assigned to *Kallymenia* (to which it was closer). In his herbarium he had labeled it *Neurocaulon foliosum*, but until more complete ideas were obtained regarding fructification, he declined to take the risk of definitely establishing the new genus. Hence, whether or not the description was sufficient to validate the generic name, it was clearly provisional and invalid in accordance with Art. 34.1(a) and (b). Disregarding priority, Kützing (Sp. Alg. 744. 1849) adopted *Neurocaulon* in preference to *Constantinea*, assigning to it *N. foliosum* (Meneghini) Zanardini ex Kützing, *N. rosa-marina* (S. G. Gmelin) Kützing, and *N. sitchense* (Postels et Ruprecht) Kützing. *Constantinea reniformis* Postels et Ruprecht was listed as an uncertain synonym of *N. foliosum*. Kützing clearly distinguished the Mediterranean from the Atlantic species, placing *Kallymenia reniformis* (Turner) J. Agardh in *Euhymenia* Kützing (Phycol. Gen. 400. 1843), a substitute name for *Kallymenia*, which Kützing considered too similar to *Calymenia* Persoon 1805 (Nycetaginaceae).

*Neurocaulon* is thus seen to have been initially superfluous. It must be typified with *N. rosa-marina*, the lectotype of the suppressed generic name *Constantinea*. Until 1897, Kützing was alone in using *Neurocaulon*, all other workers retaining *Constantinea*. The need for both names would obviously arise if the Mediterranean plant were separated generically from the North Pacific plants. Zanardini (Mem. Reale Ist. Veneto Sci. Lett. Arti 14: 463-464. 1869) contemplated this separation and stated that if it were supported by future study, the Mediterranean plant should be called *Neurocaulon reniforme*. This binomial is clearly provisional and hence invalid. The generic separation was effected by Schmitz (Flora 72: 453. 1889), to whom the binomial *Neurocaulon reniforme* must be accredited. The generic distinctions were set forth by Schmitz & Hauptfleisch (in Engler & Prantl, Nat. Pflanzenfam. 1(2): 520, 525. 1897), who placed *Constantinea* in the Dumontiaceae and *Neurocaulon* in the tribe or subfamily Halarachnieae or Halarachnioideae ('Halarachnionae') of the Nemastomataceae ('Nemastomaceae').

The question whether *Constantinea reniformis* should be interpreted as a new species is immaterial to the present proposal for conserving *Neurocaulon*, affecting the correct name of the type species but not the type species itself. In view of the long history of confusion with *Kallymenia reniformis*, however, there is merit in considering it a combination of *Fucus reniformis* Turner, along with *Halymenia reniformis*, *Iridaea reniformis*, *Kallymenia reniformis*, *Euhymenia reniformis* (all mentioned above), *Sphaerococcus reniformis* (Turner) C. Agardh (Syn. Alg. Scand. xvi. 1817), and *Rhodomenia reniformis* (Turner) W. J. Hooker (Brit. Fl. 2(1): 292. 1833). *Neurocaulon reniforme* Schmitz 1889 would remain as a new name for *Constantinea reniformis* sensu Postels et Ruprecht and a later taxonomic synonym of *N. foliosum*.

(508) *Prasiola* (C. Agardh) Meneghini, Nuovi Saggi Imp. Regia Accad. Sci. Padova 4: 360. 1838 (*nom. cons. prop.*); *Ulva* tribus *Prasiola* C. Agardh, Sp. Alg. 1: 416. 1823. Lectotype species (designated herein): *P. crispa* (Lightfoot) Kützinger, Phycol. Gen. 295. 1843 (*Ulva crispa* Lightfoot, Fl. Scot. 972. 1777). Chlorophyceae: Prasiolaceae.

*Humida* S. F. Gray, Nat. Arr. Brit. Pl. 1: 278, 281. 1821 (*nom. rejic. prop.*). Lectotype species: *H. muralis* (Dillwyn) S. F. Gray (*Conferva muralis* Dillwyn, Brit. Conf. t. 7. 1802) (vide Drouet, Acad. Nat. Sci. Philadelphia Monogr. 15: 312. 1968). Chlorophyceae: Prasiolaceae.

(509) *Schizogonium* Kützinger, Phycol. Gen. 245. 1843 (*nom. cons. prop.*). Lectotype species (designated herein): *S. murale* (Dillwyn) Kützinger (*Conferva muralis* Dillwyn, Brit. Conf. t. 7. 1802). Chlorophyceae: Prasiolaceae.

*Humida* S. F. Gray, Nat. Arr. Brit. Pl. 1: 278, 281. 1821 (*nom. rejic. prop.*). Lectotype species: *H. muralis* (Dillwyn) S. F. Gray (*Conferva muralis* Dillwyn, Brit. Conf. t. 7. 1802) (vide Drouet, Acad. Nat. Sci. Philadelphia Monogr. 15: 312. 1968). Chlorophyceae: Prasiolaceae.

Drouet (loc. cit.) examined an authentic specimen of *Conferva muralis* housed in Herb. Agardh (LD) and found it to be representative of *Schizogonium*, as would be expected from the description. Because the taxonomic relationship between *Prasiola* and *Schizogonium* has not been elucidated to the point of evoking a consensus, both names are proposed for conservation against *Humida*. With conservation, the correct name for a combined genus would be *Prasiola*, while the correct names for two separate genera would be *Prasiola* and *Schizogonium*, respectively.

(510) *Rivularia* C. Agardh ex Bornet et Flahault, Ann. Sci. Nat. Bot. sér. 7. 3: 341; *ibid.* 4: 345. 1886 (*nom. cons. prop.*). Alternative lectotype species: *R. atra* Roth ex Bornet et Flahault (vide Gardner, New York Acad. Sci., Sci. Surv. Porto Rico 8: 307. 1932) or *R. dura* Roth ex Bornet et Flahault (vide Geitler in Engler et Prantl, Nat. Pflanzenfam. ed. 2. 1b: 169. 1942). Cyanophyceae: Rivulariaceae.

*Rivularia* Roth, Catalecta Bot. 1: 212. 1797 (*nom. rejic. prop.*). Lectotype species: *R. cornu-damae* Roth (vide Hazen, Mem. Torrey Bot. Club 11: 210. 1902). Chlorophyceae: Chaetophoraceae.

The taxonomic history of *Rivularia* involves what I have termed a sliding circumscription. The genus was first proposed by Roth to accommodate two new species of fresh-water algae, *R. cornu-damae* and *R. confervoides*, which were set apart from *Ulva* and *Tremella* because of their gelatinous-cartilaginous substance and lack of a membranous integument. Subsequently, Roth added several other species to the genus, some of which were definitely cyanophycean. C. Agardh (Disp. Alg. Suec. 42-44. 1812) realized the similarity of part of this assemblage of species to *Chaetophora* Schrank (Naturforscher [Halle] 19: 125. 1783) and transferred four of Roth's species into that genus. He retained *Rivularia* for *R. angulosa* Roth and a new species, *R. nitida*, observing that *Rivularia* was as different from *Chaetophora* as *Oscillatoria* was from *Draparnaldia*. Later, C. Agardh (Syn. Alg. Scand. xxxviii. 1817) transferred the two original species of *Rivularia* Roth into *Chaetophora* and attributed *Rivularia* to himself. The lectotype species of *Rivularia* Roth (*R. cornu-damae*) was placed in synonymy with *Chaetophora incrassata* (Hudson) Hazen by Hazen (Mem. Torrey Bot. Club 11: 214. 1902). The identity of the second original species (*R. confervoides*) is uncertain, although according to Bornet & Flahault (Ann. Sci. Nat. Bot. sér. 7. 4: 345. 1886) it is representative of *Hydrurus* in the Chrysophyceae.

*Rivularia* C. Agardh as a genus of filamentous Cyanophyceae was brought into valid nomenclature by Bornet & Flahault in 1886. The earliest lectotypification appears to be that by Gardner, but because he did not follow the rule of later starting points, the validity of his lectotypification may be questioned. The choice between the two alternative lectotypes will be left to the Committee for Algae.

(511) *Schizymenia* J. Agardh, Sp. Alg. 2: 158, 169. 1851 (*nom. cons. prop.*). Lectotype species: *S. dubyi* (Chauvin) J. Agardh (*Halymenia dubyi* Chauvin in Duby, Bot. Gall. 944. 1830) (vide Schmitz, Flora 72: 453. 1889). Rhodophyceae: Nemastomataceae.

*Schizymenia* J. Agardh, Sp. Alg. 2: 158, 169. 1851 (*nom. rejic. prop.*). Type species: *S. edulis* (Stackhouse) J. Agardh (*Ceramium edule* Stackhouse, Ner. Brit. 2: xxiv. 1797; *Fucus edulis* Stackhouse in Withering, Arr. Brit. Pl. ed. 3. 4: 101. 1796, non *F. edulis* S. G. Gmelin, Hist. Fuc. 113. 1768). Rhodophyceae: Dumontiaceae.

*Platymenia* J. Agardh, Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 5: 47. 1848 (*nom. rejic. prop.*). Lectotype species (selected herein): *P. apoda* J. Agardh. Rhodophyceae: Nemastomataceae.

*Schizymenia* was proposed to replace *Platymenia*, which Agardh considered a homonym of *Platymenia* Bentham 1840 (Leguminosae). *Platymenia* originally included four new species (*P. apoda*, *P. carnosa*, *P. erosa*, and *P. undulata*), without an indication of type. It has never been lectotypified, either explicitly or by the process of elimination. According to Art. 7.9, *Schizymenia* is typified by the type of *Platymenia*. A conflicting consideration, however, is that *Schizymenia* was superfluous, whether or not *Platymenia* is deemed a homonym of *Platymenia*, since its original circumscription included the type of *Dilsea* Stackhouse 1809. In my opinion Art. 7.11 prevails, so that the type of *Schizymenia* is the type of *Dilsea*. Schmitz's lectotypification is incorporated in the present proposal for conservation.

The question whether *Platymenia* is a later homonym can be obviated by lectotypification and conservation. *Platymenia undulata* is representative of *Grateloupia* C. Agardh 1822 (*nom. cons. prop.*) (cf. Kylin, Lunds Univ. Årsskr. N.F. Avd. 2. 34(8): 9. 1938), *P. erosa* is representative of *Iridaea* Bory 1826 (*nom. cons.*) (cf. Kylin, Lunds Univ. Årsskr. 28(8): 10. 1932), while *P. carnosa* is the lectotype of *Pachymenia* J. Agardh 1876 (vide Schmitz, Flora 72: 452. 1889). The remaining species, *P. apoda*, was based on two elements: a complete frond collected at Table Bay, Cape of Good Hope, by Pappe and sent directly to Agardh (#22012 in Herb. Agardh); and fragments of specimens in Herb. Areschoug also collected at Table Bay by Pappe (#22014). According to Kylin (loc. cit.), the complete frond is referable to *Schizymenia obovata* (J. Agardh) J. Agardh (*Platymenia undulata* var. *obovata* J. Agardh, loc. cit.) while the fragments represent a species of *Pachymenia*. Professor G. F. Papenfuss has kindly shared the results of his examination of these materials. He confirms Kylin's opinion and further specifies that the *Pachymenia* is *P. cornea* (Kützinger) Chiang. I hereby lectotypify *P. apoda* with #22012. The correct name for the species is *Schizymenia apoda* (J. Agardh) J. Agardh (Sp. Alg. 2: 175. 1851), dating as a species from 1848, rather than *S. obovata*, dating as a species from 1851. After lectotypifying *Platymenia apoda* with a representative of *Schizymenia*, I lectotypify *Platymenia* with *P. apoda* and propose it as nomen rejiciendum in favor of *Schizymenia*.

Elsewhere, I shall propose Nemastomataceae Schmitz 1892 for conservation against an earlier taxonomic synonym, Gymnophlaeaceae Kützinger 1843.

(512) *Sphacelaria* Lyngbye, Tent. Hydrophytol. Dan. xxxi, 103. 1819 (*nom. cons. prop.*). Type species: *S. caespitula* Lyngbye. Phaeophyceae: Sphacelariaceae.

*Sphacelaria* Lyngbye, loc. cit. (*nom. rejic. prop.*). Lectotype species: *S. scoparia* (Linnaeus) Lyngbye (*Conferva scoparia* Linnaeus, Sp. Pl. 1165. 1753) (vide Bonnemaison, J. Phys. Chim. Hist. Nat. Arts 94: 190. 1822). Phaeophyceae: Stypocaulaceae.

Although the first generic name applicable through lectotypification to a group of algae currently placed in the Sphacelariales was *Cladostephus* C. Agardh (Syn. Alg. Scand. xxv. 1817), the concept of the sphacelarialean type of filamentous brown algae was formulated by Lyngbye when proposing *Sphacelaria*. Lyngbye placed eight species in the genus, as follows: (1) *S. plumosa* Lyngbye, segregated by Kütz-

ing (Phycol. Gen. 293. 1843) into its own genus, *Chaetopteris* (not currently recognized). (2) *S. disticha* Lyngbye, usually considered a synonym of *Halopteris scoparia* (Linnaeus) Sauvageau. (3) *S. scoparia* (Linnaeus) Lyngbye, based on *Conferva scoparia* Linnaeus (Sp. Pl. 1165. 1753), which Kützting (Phycol. Gen. 293. 1843) placed in the monotypic genus *Stypocaulon* (usually merged with *Halopteris* Kützting, Phycol. Gen. 292. 1843). (4) *S. pennata* (Hudson) Lyngbye, allegedly based on *Conferva pennata* Hudson (Fl. Angl. 486. 1762), a species of doubtful identity (cf. Dixon & Parkes, Bot. Not. 121: 80. 1968). *Delisella* Bory (Dict. Class. Hist. Nat. 3: 340. 1823; *ibid.* 5: 389. 1824) was based on Lyngbye's interpretation of *S. pennata*. The alga to which Lyngbye applied this name is usually referred to *S. cirrhosa* (Roth) C. Agardh and it may be noted that Lyngbye cited *Conferva cirrhosa* Roth as a synonym of *S. pennata*. (5) *S. caespitula* Lyngbye, currently retained in the genus. (6) *S. reticulata* Lyngbye, which was placed in the monotypic genus *Disphacella* by Sauvageau (J. Bot. [Morot] 17: 338, 345. 1903). (7) *S. spinulosa* Lyngbye and (8) *S. scoparioides* Lyngbye, both usually considered synonyms of *Halopteris scoparia*. Thus, Lyngbye's concept of *Sphacelaria* approximated that of the order Sphacelariales (except for *Cladostephus*, which he recognized separately).

The earliest lectotypification of *Sphacelaria* appears to be that by Bonnemaison, who chose *S. scoparia*, a species that lies outside the modern circumscription of the genus. Because Lyngbye's brief description of the genus is compatible with any of the several genera subsequently segregated from *Sphacelaria*, Bonnemaison's lectotypification cannot be rejected except by conservation. Unless *Sphacelaria* is conserved with a type that falls within the current circumscription of the genus, the name must replace *Stypocaulon* Kützting 1843 or its taxonomic synonym *Halopteris* Kützting 1843, while the genus as presently circumscribed must bear the name *Delisella* Bory 1823 or, if the application of that name is uncertain, *Chaetopteris* Kützting 1843. For the present proposal, *S. caespitula* is chosen as the type species, authentic material of which is conserved in the Botanical Museum and Herbarium at Copenhagen.

(513) **Sphaeripara** Poche, Arch. Naturgesch. 77(1, suppl. 1): 80. 1911 (*nom. cons. prop.*). Type species: *S. catenata* (Neresheimer) Loeblich Jr. et Loeblich III, Stud. Trop. Oceanogr. 3: 56. 1966 (*Lohmannia catenata* Neresheimer, Biol. Zentralbl. 23: 757, f. 2, 3. 1903). Dinophyceae: Sphaeriparaceae.

*Lohmannia* Neresheimer, Biol. Zentralbl. 23: 757. 1903 (*nom. rejic. prop.*). Type species: *L. catenata* Neresheimer. Dinophyceae: Sphaeriparaceae.

*Lohmannia*, being preoccupied in zoological nomenclature, was renamed *Lohmannella* by Neresheimer (Z. Wiss. Zool. 76: 137. 1904). *Lohmannella* was also preoccupied in zoological nomenclature, however, and was renamed\**Sphaeripara* by Poche and, superfluously, *Neresheimeria* by Uebel (Zool. Anz. 39: 461. 1912). Because *Lohmannia* is not preoccupied in botanical nomenclature, it is the correct name for this genus according to the ICBN while *Sphaeripara* is the correct name according to the ICZN. Since dinoflagellates are treated by many workers as animals, a problem exists, but conservation of *Sphaeripara* offers a simple solution. In addition to bringing the two nomenclatures into agreement, it would make Sphaeriparaceae available.

(514) **Trentepohlia** Martius, Fl. Crypt. Erlang. lxii, 351. 1817 (*nom. cons. prop.*). Type species: *T. aurea* (Linnaeus) Martius (*Byssus aurea* Linnaeus, Sp. Pl. 1168. 1753). Chlorophyceae: Trentepohliaceae.

*Byssus* Linnaeus, Sp. Pl. 1168. 1753 (*nom. rejic. prop.*). Lectotype species: *B. jolithus* Linnaeus (vide E. M. Fries, Stirp. Agri Fems. 42. 1825). Chlorophyceae: Trentepohliaceae.



After a thorough study, Ross and Irvine (Taxon 16: 186. 1967) lectotypified *Byssus* Linnaeus 1753 with *B. cryptarum* Linnaeus. An authentic specimen of this species was determined by Ross to be representative of *B. aurea* Linnaeus 1753, the holotype of *Trentepohlia* Martius 1817, a later homonym that has already been conserved. Accordingly, they proposed that *Byssus* be added as a nomen rejiciendum against *Trentepohlia*. The proposal was not assigned a number, however, and was not acted upon at the Leningrad Congress. Ross and Irvine overlooked a previous lectotypification (1825) by E. M. Fries, who chose *B. jolithus* Linnaeus 1753. Even though the only specimen of this species in the Linnaean Herbarium was placed there after 1753, the protologue clearly shows (by references to *Flora lapponica*, *Flora suecica*, and *Wästgöta-Resa*) that Linnaeus had original material in hand at the time or previous to the time that he wrote *Species plantarum*. There is no reason to doubt the correctness of associating the name *Byssus jolithus* with the alga currently known as *Trentepohlia jolithus* (L.) Wallr. Thus, the lectotypification by Fries should be accepted. By adding *Byssus* as a nomen rejiciendum against *Trentepohlia*, a troublesome generic name would be laid to rest.

(515) **Urospora** J. E. Areschoug, Nova Acta Regiae Soc. Sci. Upsal. ser. 3. 6(2): 15. 1866 (*nom. cons. prop.*). Type species: *U. mirabilis* J. E. Areschoug. Chlorophyceae.

*Codiolum* Braun, Alg. Unicell. 19. 1855 (*nom. rejic. prop.*). Type species: *C. gregarium* Braun. Chlorophyceae.

The taxonomic history of *Urospora* is tied to that of *Hormiscia*, a genus established by E. M. Fries (Fl. Scan. 326, 327. 1836) to accommodate two existing species, *Conferva penicilliformis* Roth (Catalecta Bot. 3: 271. 1806) and *C. wormskiolddii* Mertens (in Hornemann, Fl. Dan. t. 1547. 1816). The name was changed to *Hormotrichum* by Kützing (Phycol. Germ. 204. 1845), who thought that it was too similar to *Hormiscium* Kunze 1817 (*Hormiscium* Kunze ex Wallroth 1833) in the fungi. Kützing also began a trend to associate species currently referred to *Ulothrix* Kützing 1833 with species currently referred to *Hormiscia* or *Urospora*, which ultimately resulted in greatly confused treatments (such as that by De Toni, Syll. Alg. 1: 159, 232. 1889). Order was restored by Hazen (Mem. Torrey Bot. Club 11: 145. 1902). J. E. Areschoug (loc. cit.), observing an alga similar to *Hormiscia penicilliformis* but which produced quadriflagellate 'megaspores' [zoospores] protracted posteriorly into a tail, established for it a genus appropriately called *Urospora* (Greek *oura*, tail + *sporos*, seed), comprising the single species *U. mirabilis*. Later, Areschoug (Nova Acta Regiae Soc. Sci. Upsal. ser. 3. 9(1): 1-7. 1874) decided that *U. mirabilis* was conspecific with *H. penicilliformis*, but incorrectly retained the generic name *Urospora* because it was descriptive of an important feature. *Hormiscia* was restored to its rightful position by Hazen (op. cit. 146), but most subsequent workers have preferred *Urospora*. A proposal to conserve *Urospora* against *Hormiscia* was made by Cotton (in Briquet, Int. Rules Bot. Nomencl. ed. 3. 120. 1935), which was accepted by the Paris Congress in 1954. Meanwhile, in bringing the various pending proposals for conservation of generic names of algae in line with the type method, I had proposed *Hormiscia penicilliformis* (Roth) E. M. Fries as the lectotype of its genus (Silva, Univ. Calif. Publ. Bot. 25: 270. 1952).

The taxonomic premises upon which the conservation of *Urospora* is based have been challenged. The seed of suspicion was planted by Jorde (Nyt Mag. Naturvidensk. 73: 1-20. 1933), who discovered that *Codiolum*, a unicellular alga previously assigned to the Chlorococcales, was a stage in the life history of *Urospora*. She assumed that she was dealing with *C. gregarium*, the type species of its genus, and with *U. mirabilis*, one of three species of *Urospora* that grew at Dröbak, Norway, where she made her investigations. Because there was general agreement during the ensuing period that *U. mirabilis* was a later taxonomic synonym of *U. penicilliformis*, *Codiolum gregarium* was linked with that species. Noting that *Codiolum* has priority

over *Urospora*, I made the combination *C. penicilliforme* (Roth) P. C. Silva (Taxon 6: 142. 1957). Kornmann (Helgoländer Wiss. Meeresuntersuch. 7: 252–259. 1961), culturing *Codiolum gregarium* from the type locality (Helgoland), concluded that *U. wormskioldii* (Mertens) Rosenvinge rather than *U. mirabilis* or *U. penicilliformis* was the gametophyte and accordingly made the combination *C. wormskioldii*, in which action he was anticipated by den Hartog (Epilith. Alg. Commun. 111 adnot. 1959). Later, Kornmann (Helgoländer Wiss. Meeresuntersuch. 13: 408–425. 1966) recognized *Hormiscia* and *Urospora* as distinct genera. He included in *Hormiscia* those species which are anisogamous, with the zygote developing into the *Codiolum*-stage, and which are filamentous when cultured at 5° or 15°. *Urospora* was restricted to species which lack gametes and are filamentous at 5° but modify into dwarf plants at 15°. The dwarf plants produce biflagellate zoospores which develop into the *Codiolum*-stage. Kornmann further decided that the filamentous stage of *Codiolum gregarium* was not any known species of *Urospora* or *Hormiscia*, as previously believed, but an unknown form which he described as *Hormiscia neglecta*. There was no need to propose a new epithet, however, as the plant already had a legitimate name. The species should be called ***Hormiscia gregaria*** (Braun) comb. nov.

Concomitant with the culture studies of *Urospora*, other investigations (especially by Kornmann) were establishing the existence of a *Codiolum*-stage in the life histories of algae with a wide diversity of gametophytic form, including *Olothrix*, *Gomontia*, *Collinsiella*, *Monostroma*, *Acrosiphonia*, and *Spongomorpha*. It thus became apparent that the retention of *Codiolum* as a generic name would be extremely awkward. Moreover, by linking the type species of *Codiolum* with *Hormiscia* rather than with *Urospora*, Kornmann was justified in abandoning *Codiolum*, which is more recent than *Hormiscia* (but older than *Urospora*). Nonetheless, reflecting the great importance that he accorded the *Codiolum*-stage, he grouped *Hormiscia* and *Urospora* in the family Codiolaceae (previously established by den Hartog, Epilith. Alg. Commun. 111 adnot. 1959) coextensive with the order Codiolales Haeckel (Gen. Morphol. Organismen 2: xxxiii. 1866). The various families in which *Codiolum*-stages occur—Ulotrichaceae, Codiolaceae, Monostromataceae, and Acrosiphoniaceae, each coextensive with an order—were then removed from the Chlorophyceae to a segregate class, Codiolophyceae Kornmann (Helgoländer Wiss. Meeresuntersuch. 25: 2, 11, invalid: no Latin diagnosis. 1973).

The morphogenetic plasticity of algae in general, and the *Hormiscia-Urospora* complex in particular, raises questions as to the validity of separating *Hormiscia* from *Urospora* on the basis of differences in life history. For the benefit of those workers who prefer to recognize only one genus, I propose *Urospora* for conservation against *Codiolum*. This action would have no effect on Kornmann's treatment, in which *Codiolum* is considered a later taxonomic synonym of *Hormiscia*. Because *Urospora* and *Hormiscia* are taxonomic rather than nomenclatural synonyms, both names are available if separate genera are recognized. If only one genus is recognized, however, the correct name would be *Codiolum* unless that name were added as a nomen rejiciendum against *Urospora*.

The family placement of *Urospora* is controversial. Kornmann includes it, along with *Hormiscia*, in the Codiolaceae, a name that would become unavailable if the present proposal for conservation is accepted and if only one genus is recognized. Other workers (e.g., Abbott & Hollenberg, Mar. Alg. Calif. 93. 1976) retain it in the Cladophoraceae. Parke and Burrows (J. Mar. Biol. Assoc. U.K. 56: 567. 1976) include it in the Ulotrichaceae while Bold and Wynne (Introd. Alg. 186. 1978) refer it to the Acrosiphoniaceae.