

Index

The most important page references are in **bold**, and page references that contain figures are in *italics*.

- abalone, 126
- Acanthopeltis*, 99
- Acarychloris marina*, 43, 90
- accumulation body, 277, 297
- Acetabularia*, 22, **175–8**; *acetabulum*, 177; *calyculus*, 176; *crenulata*, 176; *kilneri*, 176; *mediterranea*, 176
- acetate, 256
- Achnanthes exigua*, 393, 395; *longipes*, 378, 379; *lanceolata*, 395
- acidic water, 155–7, 197, 258
- acritrachs, 277
- Acroparia paniculata*, 471
- Acrochaetales**, 107, 108, **115–16**
- Acrochaetium*, 96, 115; *asparagopsis*, 106; *corymbiterum*, 102
- acronematic flagellum, 7
- Acroseira*, 448
- acrylic acid (propenic acid), 498, 511–12
- actin, 24, 156, 165, 195; chloroplast movement, 422; gliding, 380; *Fucus* zygote orientation, 470–11
- Actiniscus pentasterias*, 278, 279
- Actinocyclus subtilis*, 380–1
- adelphoparasite, 97
- aerolae, 371–3
- Aethiops vegetabilis*, 460
- agar, 10, 90, **99–100**, 124–6
- agarpectin, 10, 99
- agarophytes, 99, 100, 124–6
- agarose, 10, 99
- agglutination, 143, 193–4
- agglutins, *Chlamydomonas*, 193–4
- Aglaothamnion neglectum*, 106
- Aglaozonia*, 438, **439–42**
- agricultural guild of diatoms, 394–5
- Ahnfeltia*, 99
- air bladder, 464, 473–5
- akinete, cyanobacteria, 37, 41–2, **45–9**, 72; Chlorophyta, 188, 208; Xanthophyceae, 416
- Alaria*, 451, 455, 464, 466; *esculenta*, 464
- Alariaceae**, 453, **462**, 464
- Alexandrium*, 282, 284, 509, 513; *acatenella*, 281; *catenella*, 278; *excavatum*, 281, 283; *minutum*, 283, 505; *ostenfeldii*, 509; *tamarensis*, 281
- algal volatile compounds, 340
- algicide, 66, 387
- alginic acid, 10, 427–8, 458, **459**, 466, 470
- algology, 3
- alkadienes, 211
- alkaloids, 65
- alkenes, 396
- allantoin, 115
- allelochemical, 66, 513
- allelopathic interactions, 66
- alloparasite, 97
- allophycocyanin, 17–18, 43, 90, 323
- alveolus, 310, **312**
- ammonia, 26, 42–3, 47, 54, 72
- amnesic shellfish poisoning, 387–8, 509
- AMP, cyclic, 37–8, 194, 504
- Amphidinium*, 513; *carteri*, 263, 270, *cryophilum*, 295; *klebsii*, 296–7
- amphiesma*, **263–5**
- Amphiprora*, 514
- Amphiroa rigida*, 122
- Amphisclops langerhansii*, 296, 297
- Amphora*, 379, 388, 403; *coffaeformis*, 382–3; *perpusilla*, 395
- amylopectin, 20, 92; Chlorophyta, 140; Cryptophyta, 323; cyanobacteria, 41
- amyloplast, 11, 140, 178–9, 184–6, 214
- amylose, 140, 323
- amylum stars, *Chara*, 165
- Anabaena*, 34–5, 37, 47, 58, 61, 65, 509; *azollae*, 57; *circinalis*, 72; *crassa*, 41; *cylindrica*, 62; *flos-aquae*, 42, 45
- Anacyclis nidulans*, 40
- anaerobe, 44
- anatoxin, 65, 504, 506, 509
- ancestral green flagellate, 154
- androsporangia, **224–6**
- androspore, 225
- anemones, symbiotic Dinophyta, 295–6
- anhydrobiotic, **62**
- anisogamy, 143
- anisokont flagella, 9
- Anomoeoneis*, 398
- Antarctic, **513–4**, Cryptophyta, 325; cyanobacteria, 61; Phaeophyta, 441, 464; Rhodophyceae, 89
- Antarctic circumpolar current, 513–14
- Antarctic coastal current, 513–4
- Antarctic lakes, **515–6**
- antheridium, Chlorophyta, 162, 163–6; Rhodophyceae, 117–18, 125, 127, 155
- Anthophysa*, 342; *vegetans*, 337, 341
- anthropogenic effects, 173, 189
- antibiotics, 68
- anticlinal division, 432, 446, 466
- anti-herbivore chemicals, 66
- Antithamnion*, 95; *nipponicum*, 106; *plumula*, 96; vesicular cell, 97
- Apedinella*, 359–60; *spinifera*, 360
- Aphanizomenon*, 45, 61, 65, 509; *flos-aquae*, 42, 67
- Aphanocapsa thermalis*, 62
- Aphanothecaceae*, 67
- Apicomplexa, 239, **310–23**
- apicoplast, 310–2
- Apistonema*, 499
- aplanogamete, 156
- aplanospore, 143; Chlorophyta, 169, 190, 208, 210–1, 223; Phaeophyta, 434; Xanthophyceae, 415–16, 418
- apoprotein, 141
- apoptosis, cyanobacteria, 48; Phaeophyceae, 128
- aquaculture, 504
- aronite, **93–4**, 117; Chlorophyta, 184; Phaeophyta, 428; Prymnesiophyceae, 492
- aragonite sea, 94–5
- arctic, cyanobacteria, 61, Rhodophyceae, 89
- Arthrobacteria*, 99
- Ascophyllum*, 96–7, 472; *nodosum*, 97, 473–4; sperm, 8
- Astasia*, 250; *klebsii*, 257
- astaxanthin, 139–40, 197
- Asterionella*, 379; *formosa*, 393–4, 398
- Asterocytis*, 101, 110
- atmosphere, ancient, 26, 44
- ATP, 4; in nitrogen fixation, 49–51

- ATPase in calcification, 494
Attheya, 350
Audouinella, 115
Aulosira fertilissima, 63–4; *implexa*, 72
Aureococcus anophagefferens, 365–6
Aureodinium pigmentosum, 276
Aureoumbra lagunensis, 365–6, 505
 autolysin, 194
 autospore, 143, 217
 autotrophy, 23
 auxiliary cells, Rhodophyceae, 101–2,
 117, 120, 125, 127–8, 130
 auxospore, 382, 383–6, 388–9, 399,
 400–1, 403
 auxotroph, 23, 55
 axoneme, 4, 5
Azolla, 56–58
Azotobacter, 181
 babesiosis, 311
 Bacillariales, 399, 401–4
 Bacillariophyceae (diatoms), 369–407,
 carotenoids, 17; chlorophyll, 16;
 chloroplast DNA, 14;
 chrysotaminarin, 21; evolution of,
 368; glycolate dehydrogenase, 20;
 motile cell, 9; sea ice, 514; scales,
 336; silicification, 368; toxins, 509
 bacteria, 45; cell wall, 34; Rubisco, 12
 bacteriocins, 68
 baecocyte, 53–5
 Bahamas, 69–70
Bangia, 113–4; *atropurpurea*, 113; cell
 wall, 90; fossil, 108;
 fuscopurpurea, 114; mucilage, 10
 Bangiales, 90, 92, 107, 108, 110–15
Bangiomorpha pubescens, 114
 Bangiophycidae, 107
 barium carbonate crystals, 160
 barium sulphide statolith, 165
 basal body of flagellum, 5
 basidiomycete, 57
 Batrachospermales, 107, 116–18
Batrachospermum, 106, 117–18
 betaine and halotolerance, 64–5
 bicarbonate, 39, 40; in calcium
 deposition, 94–5; in water,
 239–42
 bicosoecids, 8
 Biddulphiales, 398–401
Bigelowiella natans, 318
 biocides, 99, 496
 biofilms, 377
 biological clock, 289–91
 biological oxygen demand, 216
 bioluminescence, 96, 285–89, 293
 biosilicification, 376
 bisporangia, 106
 bivalve, 285
 block, polyspermy, 470, 474
 blooms, 504–10; control of, 387;
 cyanobacterial, 61; diatoms, 340;
 Dinophyta, 282, 284–5;
 Pelagophyceae, 365;
 Prymnesiophyceae, 498
 blue-green algae (cyanobacteria),
 33–80; chlorophylls, 16;
 endosymbiosis, 81–7; fossils, 26;
 glycolate dehydrogenase, 20;
 phycobilisomes, 11–12, 16–19;
 symbioses, 393; thylakoids,
 11–2; toxins, 504, 509
Botanella, 426
 bodonids, 248, 252
Bolidomonas, 368
 Bolidophyceae, 368; 398
Bonnemaisonia, 95–6
 Botrydiales, 416, 418
Botrydium, 418; granulatum, 416–18
 botryococcene, 211
Botryococcus brauni, 210–11
Braarudosphaera bigelowii, 495
 Brachytrichia, 67
 brevetoxin, 409–10, 504, 508–9
 brine algae, 514
 bromine, 95
 brown algae (Phaeophyceae), 426–83;
 carotenoids, 17; chloroplasts, 11;
 evolution of, 346, 413; glycolate
 oxidase, 20; mucilages, 10;
 storage product, 21–2
 brown tides, 365
Bryopsis, 265–6; *plumosa*, 179, 182
Bulbochaete gigantea, 222
Bumilleria, 14
 buoyancy, cyanobacteria, 41–3, 45;
 Bacillariophyceae, 391, 393
 butyric acid, 256

Cachonia niei, 264
 calcareous ooze, 496
Calcidinellum operosum, 278
 calcification, Chlorophyta, 164–7, 174,
 198–9, 336; Chrysophyceae, 337;
 corals, 296; Dinophyta, 278;
 Phaeophyceae, 427–8, 434;
 reaction, 494; Rhodophyceae,
 93–5, 117–18, 121
 calcite, 93–4; Chlorophyta, 198–9;
 Prymnesiophyceae, 491–3, 496
 calcite sea, 94–5; Chlorophyta, 164,
 184–5
 calcium, channels, 281, 504;
 euglenoid movement, 247;
 flagella beating, 142, 265, 267; in
 water, 160, 333; influx and
 blocks, 470; phototaxis, 13;
 Prymnesiophyceae, 484–5
 calcium carbonate, 492–4;
 Chlorophyta, 164–5, 184;
 Dinophyta, 278; fossil
 cyanobacteria, 69; Phaeophyta,
 428; Rhodophyceae, 93–4, 117
 callose, 441, 451
 calmodulin, 504
Calothrix, 42, 59; *fusca*, 72; *scopulorum*,
 59
Campylodiscus clypeus, 398
 canal, Euglenophyta, 246–7; 256–8;
 Dinophyta, 270, 274
 capitulum, 164, 166
 capsule, 37–8
 carbon, forms in water, 239–42
 carbon dioxide, and calcification,
 494; in water, 43; in the
 atmosphere, 511, 514–15
 carbon fixation, 12, 39, 40
 carbonic acid, 124
 carbonic anhydrase, 39–40, 66, 240
 carboxysome, 39–40
 carotene, 139–40; Bolidophyceae, 368;
 Cryptophyta, 322; Euglenophyta,
 250; Eustigmatophyceae, 355;
 Pinguiophyceae, 358;
 Prymnesiophyceae, 484;
 Raphidophyceae, 410
 carotenoids, 17; Chlorophyta, 139,
 197; cyanobacteria, 43;
 Dinophyta, 263, 269–71;
 Euglenophyta, 250;
 Raphidophyceae, 410
 carpogonium, 101–3, 111, 115–16,
 118–19, 121, 124–8, 130
 carposporangium, 101–3, 122, 125–7,
 130
 carpospore, 91, 101–3, 109, 112, 117,
 118–20
 carposporophyte, 98, 116–17, 124,
 126–8
 carrageenan, 10, 90, 99–101
 catalase, 149
Campylodiscus clypeus, 398

- Caulerpa*, 140, 185; *floridana*, 182;
microphysa; 182; *prolifera*, 182;
taxifolia, 186–7
- Caulerpaceae**, 179, 185–7
- Caulerpales**, 139, 168, 178–88
- caulerpenyene, 187
- cell wall, 9–10
- cellulose, 9, 89; Chlorophyta, 139,
 147, 153, 178; Dinophyta, 263;
 Phaeophyta, 427, 434, 458–9,
 470; Prymnesiophyceae, 491;
 Rhodophyceae, 114;
 Xanthophyceae, 413
- cellulose synthetase, 147
- Centrales**, 399
- centrin, 486
- Ceramiales**, 97, 107, 127–30
- Ceratium*, 263, 298; *cornutum*, 300; *fusus*,
 287; *hirundinella*, 278; *horridum*, 301
- Chaetoceros*, 383, 391, 504; *diadema*,
 401–2; *laciniosus*, 403; *peruvianus*,
 392
- Chaetomorpha*, 473; *aerea*, 173–4;
microcladioides, 173
- Chaetophora incrassata*, 221
- Chaetophorales**, 191, 221–2
- chalk, 496
- Chamaesiphon*, 63; *incrustans*, 54
- Chara*, 163–7; *corallina*, 164; *fibrosa*,
 167; *muelleri*, 167; *vulgaris*, 167
- Charales**, 148, 155, 163–8
- Charophyceae**, 144–50, 152, 154–68
- Chattonella*, 409; *antigua*, 410–11, 505
- chemical defense, 430–1
- chemoheterotroph, 23, 55
- chemotaxis, Chlorophyta, 143, 225–6;
 cyanobacteria, 64; Cryptophyta,
 325; Dinophyta, 295;
 Euglenophyta 257; Phaeophyta,
 453, 462
- chemotroph, 23
- Chilomonas*, 322, 324, 327; *paramecium*,
 328
- China, cyanobacteria as food, 67;
 fossils, 70; *Porphyra*, 114
- chitin, Chrysophyceae, 336;
 Prymnesiophyceae, 488
- Chlamydomonadaceae**, 191–8
- Chlamydomonas*, 172, 190, 191–8;
allenworthii, 196; *eugametos*, 193;
flagella, 139; gamete, 8; *moewusii*,
 145, 191–3, 196; phototaxis, 13,
 141–3; *reinhardtii*, 141, 143, 195–6;
rivalis, 196
- chloramydopsin, 141
- chloramyrhodopsin, 13
- Chlorarachnion reprans*, 317–19
- Chlorarachniophyta*, 317–19
- Chlorella*, 141, 143, 213; *vulgaris*, 216
- Chlorellales**, 191, 211, 212–18
- Chlorobotrys regularis*, 354
- Chlorococcum*, 212–4; *echinozygotum*,
 212; *humicola*, 214
- Chlorogloea fritschii*, 56
- chloromonads, 409–12
- Chlorophyceae**, 144, 146–9, 152,
 189
- chlorophyll, 14–6
- Chlorophyta, chlorophylls, 15–16;
 chloroplast DNA, 14;
 endosymbiosis leading to, 81–2;
 eyespot, 14; glycolate enzymes,
 20; mitochondria, 19; motile
 cell, 9; mucilages, 9–10; plastids,
 11–12; Rubisco, 12; starch, 21–2;
 sugars, 22
- chloroplast division ring, 86
- chloroplast endoplasmic reticulum,
 11, 239–43, 315–17
- chloroplast movement, 156, 164,
 421–2
- Chlorosarcina*, 220
- Chlorosarcinales**, 191, 220
- Chlorosarcinopsis gelatinosa*, 142
- Chodatella*, 214
- cholesterol, 381
- Chondria*, 96; *caeruleascens*, 96
- Chondrus crispus*, 100
- Chorda*, 432, 44–9, 453, 462; *filum*,
 462
- Chordaceae**, 460, 462
- Choreocolax*, 46; *polysiphonae*, 87–8
- Choristocarpus tenellus*, 433
- chromatic adaptation, 18;
 Bacillariophyceae, 393;
 Cryptophyta, 323;
 cyanobacteria, 43; Dinophyta,
 272
- chromophore, 17–19, 141
- chromoplast, 10
- Chromulina*, 342; *conica*, 341; *placentula*,
 336; *psammobia*, 339
- Chromulinales**, 341–4
- Chroococcales*, 71
- Chroomonadales**, 327, 330
- Chroomonas*, 330; *mesostigmatica*,
 323–4; *nordstedtii*, 328; *oblonga*,
 329
- Chroothecae*, 110
- Chrysoamoeba*, *radians*, 360
- Chryschromulina**, 485, 487, 497, 504;
ephippum, 487; *ericina*, 490–1;
kappa, 490–1; *minor*, 342; 490–1;
parkae, 491; *polylepis*, 488, 491;
pringsheimii, 490–1
- Chrysocosmus*, 342; *rufescens*, 337
- chrysolaminarin (leucosin), 21;
- Bacillariophyceae, 369, 381;
- Chrysophyceae, 33–4; 337–8,
 341–4; Dictyochophyceae, 361;
- Euglenophyta, 245, 255;
- Heterokontophyta, 317, 333;
- Synurophyceae, 349, 352–3;
- Prymnesiophyceae, 317, 484–8,
 491, 497
- Chrysomeridales**, 341, 344–5
- Chrysosphaera*, 343; *magna*, 344
- Chrysophyceae**, 333–48, 359, 365,
 409, 484; carotenoids, 17;
- chloroplast DNA, 14;
- chlorophylls, 11, 16;
- chrysolaminarin, 21; in ice, 514;
- osmoregulation, 22–3
- ciguatera fish poisoning, 281, 504
- ciguatoxin, 281, 504, 508
- cilia, 4
- ciliates, 294, 324, 326, 513
- Ciliophrys*, 359
- cingulum, 262
- circadian rhythms, cyanobacteria,
 51–2; Dinophyta, 286–91;
- Euglenophyta, 247, 252–3;
- Phaeophyta, 453; Rhodophyceae,
 106
- circannual rhythm, 455
- circein, 225
- cirri, 218, 220
- Cladonia cristatella*, 217–18
- Cladophora*, 173–4; *glomerata*, 169
- Cladophorales**, 168, 173–4
- Climaconeis colemaniiae*, 371
- Closterium moniliforma*, 160
- cloud condensation nuclei, 511–12
- Cnidaria**, 295
- cnidocysts, 274
- coals, 210, 284–5
- coccoliths, 484, 490–6, 499
- coccolithophorids, 284, 493–4, 495,
 511
- Coccolithus*, 493, 498; *pelagicus*, 495;
huxleyi, 496
- Cocconeis placentula*, 395

- Codiaceae, 179–85
 Codiales, 179
Codium, 180–4; *fragile*, 180–1
 coenobia, 143, 191, 198
 coenocytic algae, Chlorophyta, 175,
 178, 184, 186–7, 190;
 Xanthophyceae, 416, 418, 419,
 422
Colacium, 247, 252, 255; *libellae*, 258–9;
 vesiculosum, 258
 Coleochaetales, 139, 148, 155, 162–3,
 221
 Coleochaete, 143, 147, 162–3
Compsopogon, 93
 conceptacle, Rhodophyceae, 98, 117,
 120–2; Phaeophyta, 442, 448,
 464–8, 472, 475
Conchocelis, 107, 113–15
 conchosporangia, 111–13
 conchospore, 112
Condylostoma magnum, 294
 conjugation, Chlorophyta, 155–8,
 160–1; Bacillariophyceae,
 399
 conjunctive cell, 98
 conoid, 310
 constitutive defense, 511
 contractile vacuole, 22–3;
 Chlorophyta, 141;
 Chrysophyceae, 333–7, 341;
 Dictyochophyceae, 360–3;
 Dinophyta, 335; Euglenophyta,
 246, 248, 256–7;
 Phaeothamniophyceae, 424;
 Prymnesiophyceae, 488, 500;
 Raphidophyceae, 410;
 Synurophyceae, 349;
 Xanthophyceae, 413, 416
 control of algae, 99, 387, 496
Convoluta, 152; *roscoffensis*, 153
 cooling of the Earth, 511
 copepod grazing, 282, 287, 390, 511
 copper, inhibition of algal growth,
 387
 corals, Dinophyta, 295–6;
 endosymbiotic cyanobacteria,
 58, 60; reefs, 124
Corallina, 122
 Corallinales, 93, 107, 118, 120–4
 coralline algae, Rhodophyta, 93–95,
 108, 117, 130–4
Corethron, 350; *hystris*, 293
 corona, *Acetabularia*, 175–8
 coronal cells, *Chara*, 166–7
 Corps de Maupas, 277, 322, 324
Corynebacterium, 99
Coscinodiscus, 370, 383, 391; *linatus*,
 372; *radiatus*, 397; *wailesii*, 378
Cosmarium botrytis, 160–1
 costa, 372
Coxiella, 513
 cribum, 372
Cricosphaera, 496, 499
 cryophilic algae, 514
 cryptobiotic crust, 63
 cryptoblast, 464, 467
Cryptochlora perforens, 318
 Cryptomonadales, 326–7
Cryptomonas, 321, 325, 327, 329; *erosa*,
 328; *rostella*, 323
 Cryptophyta, 321–31, 484;
 chlorophylls, 15; chloroplasts,
 11–12; chloroplast DNA, 14;
 chloroplast endoplasmic
 reticulum, 317; Corps de
 Maupas, 277; contractile
 vacuole, 22–3; eyespot, 14;
 mitochondria, 19; motile cell, 9;
 phycobilisomes, 12, 16, 17–19;
 starch, 21; symbioses, 268
 cryptosporidiosis, 311
 cryptostomata, 462
Cryptothecodium cohnii, 264, 275
Crystallolithus, 493; *hyalinus*, 494
 cuticle, Chlorophyta, 222;
 Phaeophyta, 440, 446, 465–6;
 Rhodophyceae, 90, 96
Cutleria, 431, 433, 436; *multifida*, 432,
 438
 Cutleriales, 433
 cyanelle, 12, 58, 85–88
 Cyanidales, 107–9
Cyanidioschyzon merolae, 108
Cyanidium, 89; *caldarium*, 108
 cyanobacteria (blue-green algae),
 33–80; chlorophylls, 16;
 endosymbiosis, 81–7; fossils, 26;
 glycolate dehydrogenase, 20;
 phycobilisomes, 11–12, 16–19;
 symbioses, 393; thylakoids,
 11–12; toxins, 504, 509
 cyanobacterin, 68
 cyanoglobin, 50
 cyanome, 58, 85–9
 cyanophages, 67
Cyanophora paradoxa, 12, 86–88,
 149
 cyanophycin, 38–9, 45–6, 52
 cyanotoxins, 65–7, 509
 cycads, 57–8
Cyclotella antique, 396, 398; *cryptica*,
 387; *striata*, 375
Cylindrocystis, 160; *brebissonii*, 156
Cylindrospermum, 46, 53; *majus*, 42;
 raciborskii, 46
Cymatiosphaera, 150
Cymatopleura, 396; *elliptica*, 398
Cymbella, 403
 cyst, Chlorophyta, 150, 176, 178, 225;
 Chrysophyceae, 337, 342;
 Dinophyta, 265–6, 277–8;
 Euglenophyta, 247–8;
 Raphidophyceae, 410, 412;
 Xanthophyceae, 416–18
 cystocarp, 120, 125, 127–30
Cystophora, 464
 cytokinesis, 144
Cytophaga, 170
 cytoplasmic streaming, 165, 180
 cytosome, 248, 252, 257, 291
 damselfish, 130
 damselfly, 258
Daphnia, 216; *pule*, 258
 Dasycladaceae, 175–8
 Dasycladales, 139, 168, 174–8
Dasycladus, 175; *vermicularis*, 177
 defense mechanisms, 98–9, 458, 511,
 513
Delisea pulchra, 99
Derbesia, 143, 179–80; *tenuissima*, 179,
 181
 Derbesiaceae, 179–80
Dermocarpa pacifica, 54
Dermocarrella gardneri, 55
 desiccation resistance, 473
 desmarestene, 432, 441, 453
Desmarestia, 431, 439, 440–1; *aculeata*,
 432, 441–2; *anceps*, 442; *menziesii*,
 442
 Desmarestiales, 434, 439
 Desmidaceae, 156
 desmids, 160–2
Desmonema wrangelii, 73
 desmoschisis, 220
Diacronema, 484
 diadinoxanthin, 415, 484
 diarrhetic shellfish poisoning,
 279–81, 504
Diatoma vulgare, 395
 diatomaceous earth, 396–7, 464;
 ooze, 377

- diatoms (Bacillariophyceae), 369–407,
 carotenoids, 17; chlorophyll, 16;
 chloroplast DNA, 14;
 chrysolaminarin, 21; evolution
 of, 368; glycolate dehydrogenase,
 20; motile cell, 9; nutrient
 depletion, 284; sea ice, 514;
 scales, 336; silicification, 368;
 toxins, 509
- diatoxanthin, 322, 368, 484
- diazocyte, 52
- diazotroph, 49, 393
- Dichotomosiphon*, 178, 187; *pusillus*,
 188; *tuberousus*, 188
- Dichotomosiphonaceae, 179, 187–9
- Dicrateria*, 484
- Dictyocales, 359–64
- Dictyocha*, 360; *fibula*, 360, 363;
speculum, 361
- Dictyochophyceae, 359–64
- Dictyosiphonaceae, 444, 462
- Dictyosiphonales, 444, 462
- Dictyosphaeria cavernosa, 189
- Dictyota, 170, 431; *dichotoma*, 432,
 434–5
- Dictyotales, 429, 433–5
- dictyotene, 432, 434
- diel migration, 268, 325, 391
- diffuse growth, 431
- dimethyl sulfide, 511–12
- dimethylsulfoniopropionate and
 osmoregulation, 511–13
- Dinobryon*, 336, 339–40, 342–3;
cylindricum, 342–3
- Dinophytales, 262, 296, 298–9
- Dinophysis*, 279, 509; *acuminata*, 280;
forti, 280, 505
- dinophysistoxin, 279–81, 504, 507,
 509
- Dinophyta, 262–313; chlorophylls,
 15–6; chloroplast, 11–2, 239;
 chloroplast DNA, 14; DMSP
 production, 511; eyespot, 14;
 growth inhibition, 66; motile
 cell, 9; Rubisco, 12; sea ice, 514;
 starch, 21; toxins, 504, 509
- dinosporin, 279
- dinosterol, 285
- dioecious, 467
- Dioon spinulosum*, 58
- Diplopsalis*, 292
- discobolocyst, 335–6, 338
- Discosphaera tubifera*, 495
- Dissodinium*, 287
- dissolved inorganic carbon and
 evolution of chloroplast E.R.,
 239–42
- Distigma*, 288
- Ditylum brightwelli*, 382, 391–2
- diurnal rhythm in calcification, 185,
 491, 496
- DMSP and osmoregulation, 511–13
- DNA, chloroplast, 12, 14, 428;
 cyanobacteria, 38–9; nucleotide
 sequencing, 24
- domoic acid, 388, 506, 509
- Draparnaldia glomerata*, 221
- Dreissemma polymorpha*, 66
- dulcitol, 92
- Dumontia*, 473
- Dunaliella*, 22, 139; *acidophila*, 197;
bioculata, 198; *salina*, 197, 199, 294
- Durvillea*, 464
- dynamin, 20
- dynein, 4–5
- Earth cooling, 511
- east coast fever, 311
- ecdad, 474
- ecdysis, Dinophyta, 265–6
- echineone, 43, 85, 250
- Ecklonia*, 458
- Ectocarpaceae, 441–4
- Ectocarpales, 429, 434, 442–9, 462
- ectocarpene, 432, 436, 441, 443–4, 453
- Ectocarpus fasciculatus*, 431; *siliculosus*,
 427, 432, 442–4
- ectoplasm, *Chara*, 165
- eelgrass, 365
- eicosanoic acid, 390
- eicosapentaenoic acid, 357, 390
- ejectosome, Apicomplexa, 312;
 Cryptophyceae, 322, 324–5, 327–8
- eleutheroschisis, 425
- Ellerbeckia anenaria*, 385
- Ellipsaglospora britannica*, 496
- Ellipsoidion acuminatum*, 355
- Elysia*, 183; *viridis*, 184
- embryophyte, 144
- Emiliania huxleyi*, 492–3; 495–6, 498, 511
- Encephalartos*, 58
- endolith, 60
- endophyte, 115, 162, 220
- endoplasm, *Chara*, 165
- endosome, 248
- endospore, 71; bacterial, 45;
 cyanobacteria, 55, 71–2;
- Dinophyta*, 302–3
- endosymbioses, primary, 81–2;
 secondary, 239–42; tertiary, 269,
 361
- Enteromorpha*, 169–70, 172, 473
- Entosiphon*, 246
- envelope, 253
- Euentophysalis belcherensis*, 70
- Eohyella dichotoma*, 60
- epicone, 262–3, 270, 297–9, 302
- epilimnion, 42
- epiphyte, Bacillariophyceae, 391,
 394–5; Chlorophyta, 162, 179,
 222; Rhodophyta, 96–8, 99, 110,
 115, 121
- Epipyxis pulchra*, 339
- epitheca, 369, 379, 373–6, 394
- erogen, 342
- Erythropsis cornuta*, 273–4
- ethanol, 256
- Euastrum affine*, 160
- Eucheuma*, 100
- Eudorina unicocca*, 200
- Euglena ascus*, 248; *gracilis*, 246, 249,
 251, 253, 255, 257; *obtusa*, 252;
proxima, 252; *spiropyra*, 255;
stellata, 244; *terricola*, 250
- Euglenales, 246, 258–9
- Euglenamorpha*, 245
- euglenoid movement, 247, 251
- Euglenophyta, 239, 245–61;
 chlorophylls, 15; chloroplast,
 11–12; eyespot, 14; glycolate
 dehydrogenase, 20; Rubisco, 12;
 storage product, 21–2, 487
- Eunotia*, 370, 398; *soleirolii*, 383
- Euphasia superba*, 513
- euphotic zone, 60
- eutraphaline, 64, 409
- eutrapheric, 409
- Eustigmatophyceae, 354–6, 359, 409;
 chloroplast, 11–12; eyespot, 14;
 motile cell, 9
- Euteptia*, 245, 250, 254, 258
- Euteptiales, 246, 256, 258
- Euteptiella*, 245, 258; *gymnastica*,
 254–5; *marina*, 257
- eutrophic conditions, 43, 395
- evolution of algal groups, 25–6
- exospore, cyanobacteria, 63
- extinction, end-Permian, 510
- extracellular polymeric substance
 (EPS), 37–8
- extrosome, 318
- Exuviaella*, 279

- eyespot (stigma), Chlorophyta, 140–5, 152–3, 168–9, 172, 198; Chrysophyta, 333–7, 341, 344; Cryptophyta, 323–4; Dictyochophyceae, 360; Dinophyta, 272–4; Euglenophyta, 245–6, 250, 252; Eustigmatophyceae, 354–5; Phaeophyta, 427–8, 440, 469; Prymnesiophyceae, 484, 500; Xanthophyceae, 413, 415–16
- facultative, heterotroph, 23; phototroph, 44
- farmerfish, 130
- Favella ehrenbergii*, 513
- feedback control, cyanobacteria, 56, 85
- ferredoxin, 51
- Fibrocapsa japonica*, 409
- filopodia, 489
- fish kills, 210, 283, 295, 410, 496–7, 504
- flagellar structure, 4–9; roots, 5–7
- flatworm symbioses, 152, 183, 296
- flavins as photoreceptors, 421, 428
- Flavobacterium*, 99, 170
- flavodoxin and salt stress, 65
- flexibacteria, 61
- floridean starch, 20–1, 89, 91–2
- Florideophycidae, 107
- florideside, 21–2, 91–2, 98
- food algae, 67, 114–15, 173, 216, 459, 460
- food vesicle in endosymbiosis, 81, 85
- fossil algae, 26; Bacillariophyceae, 395–8; Chlorophyta, 150, 167, 174–5, 184, 186, 198; cyanobacteria, 33, 60, 69; Dictyochophyceae, 360, 364; Dinophyta, 279, 280, 298; Phaeophyceae, 433, 439, 449, 464; Prymnesiophyceae, 364, 484, 496
- fouling, 99, 378, antifoulants, 436
- Fragilaria virescens*, 392
- fragmentation, 143, 157
- Franceia*, 214
- Fritsch, Felix, 27
- Fritschia tuberosa*, 221
- fructosan, 22
- Frustula rhomboidea*, 398
- frustule, 350, 369–77
- frustulin, 376
- Fucales, 429–30, 433–4, 464–75
- fucoidin, 10, 427, 452, 473
- fucoserratene, 432, 469
- fucoxanthin, 16–17; Bacillariophyceae, 368; Bolidophyceae, 368; Chrysophyceae, 334; Dinophyta, 269–1; Heterokontophyta, 317, 333; Pinguiophyceae, 358; Phaeophyceae, 426, 429; Phaeothamniophyceae, 425; Prymnesiophyta, 317; Raphidophyceae, 409
- Fucus*, 431, 433, 437, 464–6; 470–2; *serratus*, 433, 465, 468, 473; *spiralis*, 473; *vesiculosus*, 433, 465, 467–8, 473
- fuel cell, 517
- furones, 99
- galactans, 114
- Galaxaura*, 93, 117–18; *apiculata*, 120
- Galderia sulphuraria*, 108
- Gambierdiscus toxicus*, 265–6, 281, 505
- gambieric acid, 281–2
- gas vacuoles, 41–3, 45, 52–3
- gas vesicles, 465–6, 473–4
- Gastroclonium*, 96
- Gelidiales, 107, 124–5
- Gelidium*, 99, 124–5; *cartilagineum*, 125–6
- gene sequencing, 24
- Geosiphon*, 86
- geosmin, 66–7
- geotaxis, 142–3, 165
- germanium, 336, 349, 376, 387
- Gigartina stellata*, 100
- Gigartinales, 97
- Giraudyopsis stelliger*, 345
- girdle, 262, 273, 298–300
- girdle band, 369–70, 373, 380
- gland cell, Rhodophyta, 96–7
- Glaucoystis*, 86; *nostochinearum*, 87
- Glauco phyta, 85–8; glycolate oxidase, 20, 149
- Glenodinium*, 272–3; *foliaceum*, 273
- gliding, 13–14; cyanobacteria, 33–5, 53–4; Bacillariophyceae, 377–9, 386, 399; Chlorophyta, 142, 159; Euglenophyta, 246; Rhodophyta, 106
- globule, *Chara*, 164–6
- Gloeobacter violaceus*, 42–3, 71
- Gloeothece*, 37–8, 59; *magna*, 71
- Gloeotrichia*, 61; *ghosei*, 41; *echinulata*, 42
- Glossomastix chrysoplasta*, 358
- glucosylglycerol and halotolerance, 64–5
- glutamic acid, 388, 506, 509
- glutamine, 47–9
- glycerol, 59, 265; osmoregulation, 197, 511
- glycine and halotolerance, 64–5
- glycocalyx, 263–4, 470–1
- glycogen, cyanobacteria, 33, 38–9; 43, 45
- glycolate, 19, 149, 256; dehydrogenase, 144–5, 190; oxidase, 144, 154, 162
- glycoproteins, 139
- Golgi body, 3, 4
- Gomphonema parvulum*, 375, 379, 395
- gonidia, *Volvox*, 200–7
- gonimoblast filament, 101–3, 116–20, 125–8, 130
- Gonimophyllum*, 96
- Goniomonadales, 327–8
- Goniomonas*, 321–2, 327–8; *truncata*, 328
- Goniotrichum*, 106; *alsidii*, 110
- Gonium*, 198, 200
- gonoid ornamentation, 370, 383, 398–9
- Gonyaulax grindleyi*, 278; *polyedra*, 287
- gonyautoxin, 506, 509
- Gonyostomum*, 412; *semen*, 411
- Gracilaria*, 100, 126–7; *conferta*, 99; *verrucosa*, 98
- Gracilariales, 107, 125–7
- gravity response, 142–3, 165
- grazing, 216, 515; deterrent, 96, 162, 287, 325, 390, 394, 430, 434, 472, 497, 504, 511, 513
- Great Barrier Reef, 61, 189
- Great Salt Lake, 187
- greenhouse effect, 514
- gullet, 327
- gymnodimine toxin, 507, 509
- Gymnodiniales, 297, 300, 302–3
- Gymnodinium*, 118, 513; *brevis*, 272; *catenatum*, 278, 278, 509; *catenatus*, 283; *fungiforme*, 294; *galatheanum*, 283; *mikimotoi*, 272; *neglectum*, 275–6; *pseudopalustre*, 300, 302; *sanguineum*, 268
- gyrogonite, 167
- Gyrosigma*, 396; *attenuatum*, 398

- hai dai, 460
 hair, 7–8; Bacillariophyceae, 368;
 Bolidophyceae, 368; Chlorophyta,
 139, 151; cyanobacteria, 72;
 Dictyophyceae, 360–2;
 Dinophyta, 265, 267;
 Eustigmatophyceae, 354–5;
 Heterokontophyta, 317;
 Pelagophyceae, 366;
 Phaeothamniophyceae, 424;
 Phaeophyceae, 427–8, 469;
 Pinguiophyceae, 351;
 Raphidophyceae, 409–10;
 Xanthophyceae, 413
Halicystis, 179–80
Halidrys, 472; *siliquosa*, 473–4
Halimeda, 184, 185; *discoidea*, 185;
 opuntia, 185
Haliotis, 126
 halogens, Rhodophyceae, 95–6, 99, 511
 halophilic algae, 64, 514, 197
Hantzschia amphioxys, 386
 haplostichous, 442
 haptera, 447, 450, 456
 haptonema, 484–6, 484–9, 497, 499
 Haptophyta (Prymnesiophyta), 269,
 298, 315, 317, 361, 484–503;
 carotenoids, 17; chloroplasts,
 11–12; DMSP production, 511;
 motile cell, 9; scales, 336; storage
 product, 21–2; toxins, 509–10
Harveyella, 96
Haslea, 396; *nipkowii*, 372
 haustoria, 98, 219, 295
Hegnaria, 245
 heliotrophic cyanobacteria, 67–70
 hematochrome, 139
Hematococcus, 139, 141, 197, 199
Hemiaulus, 393
 hepatotoxins, 65, 504
Heribaudiella fluviatilis, 426
Heterocapsa, 265; *artica*, 266;
 circularisquama, 266; *horiguchi*,
 266; *ildefina*, 266; *niei*, 267;
 triquetra, 266
 heterococcolith, 493–4
Heterococcus, 217
 heterocyst, 38–9, 41–2; 46–52, 57, 59,
 62–3, 71, 72–4
 heterokont, 9
 Heterokontophyta, 333, 484;
 chloroplast, 11–12; chloroplast
 E.R., 315, 317; eyespot, 14;
 flagella, 9
 Heteronematales, 256–7
 Heterosigma carterae, 409–10
 heterotrichy, cyanobacteria, 72
 heterotrophy, 23, 73, 221, 256, 291–5,
 381, 387, 442
 heteroxanthin, 415, 425
 histones, 14, 38, 275
 HIV virus, 101
 Holmsella pachyderma, 96, 98
 holococcolith, 493–4
 holophyte, 23
 holozoic, 23
 hormogonia, 42, 53–4, 72–4
 Hormosira banksii, 430
 hot spring, Bacillariophyceae, 395;
 cyanobacteria, 61–2;
 Rhodophyceae, 108–9, 157
 hydrocarbons, biocides, 99;
 Botryococcus, 210–11; Dinophyta,
 284–5
 Hydrocoleus, 71–2
 Hydrodictyon reticulatum, 212, 215
 hydrogen gas for fuel cells, 50, 517–18
 hydrogen peroxide, 99, 149, 458
 Hyella, 38; *immanis*, 60
 Hymenomonas carterae, 494, 499;
 roseola, 485; 488
 hypersaline, 64, 365
 hyphae, 441, 448, 450, 452, 466
 Hyphochytridomycetes, 8
 Hypnea musciformis, 102
 hypnospore, Dinophyta, 281, 284,
 302–3
 hypnozygote, Dinophyta, 283
 hypocone, 262–3, 270, 297–9
 hypogynous cell, 117, 119
 hypolimnion, 42
 hypothallus, 120–2
 hypotheca, 369–70, 373–6, 379
 hystrichosphaerids, 277–8
 ice algae, 514
 ichthytoxin, 496–7
 Imatonia rotunda, 485, 497
 imine toxins, 507, 509
 inducible defense, 511
 infochemicals, 67, 216, 497
 infundibulum, 327–8
 intercalary growth, 431, 434, 448–9,
 452, 462
 internode, 163, 165
 inulin, 22
 invasive algae, 180–1, 187
 inversion, *Volvox*, 295–6
 invertebrate, fecundity, 390; grazing,
 66
 iodine, 95–6, 114, 446, 459
 Iridaea, 96
 iridescence, Rhodophyta, 96
 Irish moss, 100
 iron, 42; cyst envelope, 254–5;
 growth, 514–5; lorica, 336–7, 349;
 nitrogen fixation, 49; resting
 spore, 383; siderophores, 68
 Ischadites abbottae, 175
 Ischnura verticalis, 258
 isoagglutination, 143
 Isochrysis, 484; *galbana*, 497
 isofloridoside, 22–3; and
 osmoregulation, 339
 isogamy, 143, 155
 isokont flagella, 9
 isoprenoids, 396
 Jania rubens, 122
 jasmonic acid, 431
 Julescraneia grandicornis, 464
 junctional pores, 34–5
 kai proteins, 52–3
 kairomones, 513
 kappa particle, 324
 Kappophycus, 100; *alvarezii*, 101
 Karenia brevis, 269, 272; *mikimotoi*, 269,
 272; *selliformis*, 509
 Karlodinium veneficum, 264, 269, 283
 karyolymph, 3
 Katablepharis ovalis, 312
 Katagymneme, 51; *pelagica*, 52; *spiralis*,
 52
 kelp, 442, 459, 464; ash, 459
 Kephyrion rubri claustrum, 336
 kerogen, 284
 ketoglutarate, 47–9, 55
 Khawkinea, 245, 250
 kieselguhr, 396
 kinesin, 5; *Volvox* inversion, 206
 kinetochore, Dinophyta, 275–6
 Kinetoplastida, 248, 252, 256
 Kirk, D., 208
 Klamath Lake, 67
 Klebsiella, 245
 Klebsomormidales, 155
 Klebsormidium, 155
 kleptoplastid, Dinophyta, 269
 kombu, 460
 Kraft, G., 131
 krill, 513–14

- Kylin, H., 131
Kylinia, 106, 115; *rhipidandra*, 102
- labyrinthulids, 8
 lagoon, 124, 185
 Lake Kinnert, 66
Laminaria, 110, 428, 432, 450–1, 453, 458, 460–2; *cloustoni*, 452; *digitata*, 455, 457; *groenlandica*, 457; *hyperborea*, 449, 451, 455, 457; *japonica*, 454; *saccharina*, 451, 457–8; *setchellii*, 110; *solidungula*, 455
- Laminariaceae, 453, 460, 462
 Laminariales, 429–30, 433–4, 436, 441–2, 448–64
 laminarin, 21, 381, 426, 419, 458–9
 laminin, 311
 lamoxirene, 432–3
Laurencia, 473; *spectabilis*, 121; xylans, 10
 laver, 114, 173
 lectins, 104
 lens, Dinophyta, 274
Lepocinclis ovata, 248
 lessepsian species, 187
Lessonia, 442, 464; *nigrescens*, 462–3
 Lessoniaceae, 453–62
 leucoplast, 11, 322, 341–2
 leucosin (chrysolaminarin), 21;
 Bacillariophyceae, 369, 381;
 Chrysophyceae, 33–4; 337–8, 341–4; Dictyochophyceae, 361;
 Euglenophyta, 245, 255;
 Heterokontophyta, 317, 333;
 Synurophyceae, 349, 352–3;
 Prymnesiophyceae, 317, 484–8, 491, 497
Liagora, 93; *viscida*, 102
 lichen, 57–9, 62–3, 191, 217–19
Lichina, 59; *pygmaea*, 57
 light-harvesting complex, 16
 light responses, 12–4, 156, 204–6
Limnophytes paradoxus, 439
Lingulodinium polyedrum, 268, 275, 277, 286–91
 list, 298–9
 lithophyte, 72, 121, 123, 474
Lithothamnion, 121; *glaciale*, 122; *lenormandii*, 122
 lithotroph, 23
 littoral zone, 59
 loculus, 371–2, 378
 lorica, Euglenophyta, 247;
 Chrysophyceae, 198–9, 336–8, 342–3
Lotharella globosa, 318
 luciferase, 285–6
 luciferin, 285–7
Lucina borealis, 285; *miniscula*, 285
 luminescence, 96, 279, 285–89, 293
 lunar rhythms, *Derbesia*, 179; *Dictyota*, 434; *Ulva*, 170–1
 lutein, 139–40, 410
 lycopadiene, 211
 lycopods, 162
Lyngbya, 61, 72; *aeruginosa*, 35; *birgei*, 71; *majuscula*, 59; *sordida*, 59
 lysosome, 255
 macrandrous species of *Oedogonium*, 224–6
Macrocystis, 432, 442, 452, 453, 459, 462; *pyrifera*, 447, 458, 464; *integrifolia*, 452
 macrolide toxins, 279, 504
 magnesium, 94, 110, 124; carbonate, 164
 maitotoxin, 281–2; 504, 506
 malaria, 311
 malic acid, 441
Mallomonas acaroids, 352; *zellensis*, 350
 maltose, 214
 manganese, 254–5, 336–7
 mangrove swamps, 175
 mannan, 9, 104, 139, 178
 mannosid, 21–2, 57, 92, 98, 429, 451, 458, 459, 468
 mantle, Bacillariophyceae, 369, 381
 Manton, I., 486
Mantoniella, 152, 514; *squamata*, 191
 manubrium, 164–6
 manure, 57, 460
 marine snow, 377
 marl, 124, 164, 496
 Martin, John, 514–15
Mastigocladus laminosus, 61–2
 mastigoneme, 7–8, 138;
 Bacillariophyceae, 368;
 Bolidophyceae, 368; Chlorophyta, 139, 151; Dictyochophyceae, 360–2; Dinophyta, 265, 267;
 Eustigmatophyceae, 354–5;
 Heterokontophyta, 317;
 Pelagophyceae, 366;
 Phaeothamniophyceae, 424;
 Phaeophyceae, 427–8, 469;
 Pinguiophyceae, 351;
 Raphidophyceae, 409–10;
 Xanthophyceae, 413
Mastogloia angulata, 373; *grevillei*, 370
 mating structure, 6; *Chlamydomonas*, 195
 mating-type reaction, 143
 Mattox, K., 144–5
 McMurdo Dry Valleys, 325–6, 515–16
 medicinal uses, 459–60
 Mehler reaction, 58–9
 melatonin, 278, 291
 Melkonian, M., 330
Melobesia lejolisi, 121; *limitata*, 121; *maginata*, 121
Melosira, 383; *arenaria*, 396, 398; *nummuloides*, 401; *varians*, 395, 399–400
 Mereschkowsky, K., 82–3, 85
 meristoderm, 432, 441, 449–50, 452, 466
Mesenchytræus, 196
Mesodinium, 268
 mesokaryotic nucleus, Euglenophyta, 245, 248–50; Dinophyta, 263, 275
Mesophyllum, 121; *alternans*, 121
Mesostigma, 139; *viride*, 154
 Mesotaeniaceae, 156, 159–60
Mesotaenium de greyi, 156
 metachromatic body, 40
 methane, 26
 methane sulfonic acid, 511–12
 2-methylisoborneol, 66–7
 Mg/Ca ratio, seawater, 94–5, 123
 MIB, 66–7
Microasterias radiata, 160
Microcoleus chthonoplastes, 59, 64; *vaginatus*, 62–3
 microcystin, 65–6, 504, 506, 509
Microcystis, 61, 65, 509; *aeruginosa*, 42, 66, 71
 Micromonadophyceae, 144, 150–4
 microneme, 310
Microspora, 218; *crassior*, 219
 migration in water column, 289, 393, 410
 Mischooccales, 416, 418
Mischooccus, 418; *sphaerocephalus*, 413
 mitochondria, 19–20
 mixotroph, 23, 291, 325–6, 339, 359
 molluscs and symbionts, 183
 molybdenum in nitrogen fixation, 49
 monoecious, 462
 monosporangia, 102, 106, 113, 115
 monospore, 109–10, 112, 115–16, 118
Monostroma, 114, 169, 170; *cavernosa*, 58

- Mougeotia*, 155; *scalaris*, 156
 muciferous body, Chrysophyceae, 334–5, 344; Dictyochophyceae, 360; Euglenophyta, 246–7, 253–4
 mucilage canals, 451–2
 mucilages, 9–10; Bacillariophyceae, 373, 377–80; cyanobacteria, 61; Rhodophyceae, 90
 mucocyst, Dinophyta, 264;
 Euglenophyta, 245–6, 253;
 Raphidophyceae, 409–10, 412
 mud algae, 64; Bacillariophyceae, 379, 386; Chrysophyceae, 339–40; Euglenophyta, 252–3
 Muller, D. G., 432–3
 multifidene, 432, 439
 multilayered structure (MLS), 144–7, 154, 162, 190
 mutualism, 130
 mycobiont, 57, 217–18
 mycosporine sunscreen, 517–18
 myoglobin, 50
 myosin, 146
 myxophycean starch, 21
 myxoxanthophyll, 43, 85
 myzocytosis, Dinophyta, 291
 nannandrous species of *Oedogonium*, 224–6
Nannoceratopsis, 298
 nanoplankton, 484, 496
Navicula, 370, 379, 383, 396, 403;
 cryptocephala, 395; *cuspidata*, 385;
 glaciei, 393; *pelliculosa*, 386–7;
 radiosa, 395
 necridia, 54, 73
 Nemaliales, 93, 107–8, 117–18
Nemalion, 117, 119
Nemastoma laingii, 101
 nemathecia, 120
 nematocyst, 292
 nematode, 67
Nematodinium armatum, 273–4
Neomeris, 175; *annulata*, 177
Neoperidinium, 263
 neosaxitoxin, 506
Nereocystis, 451, 469, 462–3; *luetkeana*, 464
 neurotoxin, 504–10; cyanobacteria, 64; Dinophyta, 281; Raphidophyceae, 408
Nitella, 164–5, 186
 nitrate, 47, 72
 nitrite, 47
- nitrogen, algal growth, 340, 342; Bacillariophyceae symbiosis, 393; deficiency, 47, 255, 298, 393, 492; fixation, 43, 49–51, 54, 57–8, 60, 62–4, 181, 517; induction of gametogenesis, 184, 196, 212, 214, 223–5; pollution, 395; resting spore formation, 383; storage, 18–19, 39
 nitrogenase, 517; cyanobacterial, 47–52
Nitzschia, 403; *corta*, 514; *palea*, 379, 386–7, 395; *putrida*, 379; *stellata*, 574
Noctiluca, 287, 291–2; *scintillans*, 296–7
 node, *Chara*, 163, 165
Nodularia, 59, 65, 509; *spumigena*, 59
 nodularin, 65, 504, 506
 nori, 114–15
Nostoc, 45, 56, 65, 67, 509; *commune*, 62–3, 67; *linckia*, 72; *punctiforme*, 54; *verrucosum*, 63, 67
 Nostocales, 71–3
Nottheia, 448
 nucleoid, chloroplast, 14
 nucleolus, 3
 nucleomorph, 315–16,
 Chlorarachniophyta, 317–18;
 Cryptophyta, 321, 324
 nucleule, *Chara*, 164–5
 nutrition, 230
 nutritive cell, Rhodophyceae, 124–5, 127
 ocellus, 274
Ochromonas, 333–4, 341; *danica*, 334–5;
 malhamensis, 23, 336, 339;
 sociabilis, 336; *sphaerocystis*, 338; *tuberculatus*, 335–6; 338
 Octolaminaceae, 344
Oedocladium hazenii, 222
 Oedogoniales, 139, 144, 191, 218, 221–6
Oedogonium, 143, 222–6; *cardiacum*, 225; *crassum*, 225
 ogonori poisoning, 126
 oil shales, 210, 284–5, 496
 okadaic acid, 279–1, 504, 507
 omega-3 fatty acids, 358
 ooblast, 120
 ooid, 60
 Oomycetes, 8
Ophiocytium majus, 414–15
 opsin, 141
Opuntiella californica, 97
 organotroph, 23
Ornithocercus, 278; *magnificus*, 299
 Oscillatoria, 34, 37, 53–4, 61, 65, 72, 509; *agardhii*, 42; *limnetica*, 42, 44; *princeps*, 35; *redekei*, 41; *terebiformis*, 61
 Oscillatoriales, 71–2
Oscillatoriopsis, 70
 oscillin, 33–4
 osmoregulation, 22–3, 511;
 Chlorophyta, 141, 197;
 Chrysophyceae, 339;
 cyanobacteria, 64–5;
 Euglenophyta, 248; Phaeophyta, 429; Rhodophyta, 91
 osmotroph, 23, 256, 291
Ostreococcus tauri, 150
Ovulites margaritula, 185–6
 2-oxoglutarate, 47–9, 55
 oxygen, activated, 99; atmospheric, 26; radicals, 150
 oxygenase, Dinophyta, 286
Oxyrrhis, 275, 277, 513; *marina*, 263, 267
 oxytoxin 2, 187
 oyster beds, *Codium* in, 181
 pachydictyol, 434, 436
Padina, 428, 434
Paleocodium, 185–6
Paleoconchocelis starmachii, 114
Paleolynbya barghooriana, 70
 paleothermometer, 124
 palium, Dinophyta, 291–3
Palmella miniata, 199
 Palmellaceae, 210
Palmeria mollis, 93
 palythene, 518
Pandorina, 198; *morum*, 200
 pantonematic flagellum, 7
Paracentrotus lividus, 457
 paraflagellar swelling, Euglenophyta, 246, 250, 258–9
 paralytic shellfish poisoning, 279–84, 509
Paramecium, 213
 paramylon, 21–2, 245–7, 255, 256, 415, 487
 paraphysis, 445–7, 453–4, 456, 465, 467
Paraphysomonas, 342, 336–7; *sigillifera*, 337

- parasitic algae, 23; Chlorophyta, 218;
 Euglenophyta, 245;
 Rhodophyceae, 96–8
- parasitophorus vacuole, 311
- parasporangia, Rhodophyceae, 106
- paraxonemal rod of flagellum, 245–6,
 359, 361
- Parmales, 336, 341–4, 369
- parthenogenesis, 168, 176, 226, 438–9
- Pascher, A., 346
- Patina pellucida*, 455
- Pavlova, 485–67, 500; *granifera*, 500;
 mesolychnon, 486–7
- Pavlovales, 498, 500
- PCU (practical salinity unit), 365
- peat bogs, 160
- pedicel, *Chara*, 164, 166
- Pedinella*, 359–60; *hexacostata*, 361;
squamata, 362
- Pedinellales*, 359–60
- Pedinomonas*, 296–7
- peduncle, Dinophyta, 291, 294–5
- Pelagococcus subviridis*, 365–6
- Pelagomonas calceolata*, 365–6
- Pelagophyceae, 359, 365–7
- Pelagophycus*, 462
- pellicle, Apicomplexa, 310;
 Euglenophyta, 246–51, 253;
 Dinophyta, 263, 265–66
- Pelvetia canaliculata*, 473; *fastigata*, 472
- Penicillius*, 180, 184–5; *capitatus*, 182
- pennate ornamentation, 370, 383,
 399, 403
- Pentalamina*, 345
- Pentalaminaceae, 344
- pentaster, 279
- pentose phosphate pathway, 55
- peptidoglycan, cyanobacteria, 33–5
- Peranema*, 246, 248, 252; *trichophorum*,
 256–7
- Peridinium gatunense*, 66
- pericarp, 126
- periclinal division, 432, 441, 446, 466
- Peridiniales, 273, 297, 298–300
- peridinin, 263, 269–71; chlorophyll a–protein (PCP), 271–2
- Peridinium*, 263; *cinctum*, 267, 269;
pentagonium, 287; *westii*, 272
- periplast, Cryptophyta, 317, 321–2, 329
- perithallus, 121–2
- perizonal auxospore, 383–4
- perizonium, 383–5
- Permian extinction, 510
- Permocalculus*, 118
- peroxisome, 19–20, 149
- Petalonia*, 431, 442, 444; *fascia*, 444,
 446–7
- petroleum deposits, 210–11, 284–5,
 496
- Pfiesteria piscicida*, 294–5
- Phacotus lenticularis*, 198–9
- Phacus*, 255, *triqueter*, 248, 257
- Phaeaster*, 359; *pascheri*, 360
- Phaeocystis*, 497–8, 511, 513; *globosa*,
 488, 490; *pouchetti*, 497, 505
- Phaeodactylum tricornutum*, 386–7, 381,
 390
- Phaeomonas parva*, 357
- Phaeophyceae (brown algae), 426–83;
 carotenoids, 17; chloroplasts, 11;
 evolution of, 346, 413; glycolate
 oxidase, 20; mucilages, 10;
 storage product, 21–2
- phaeophycin tannins (phloroglucinol),
 426, 429–30, 511
- Phaeoschizochlamys mucosa*, 425
- Phaeothamnion polychrysis*, 424
- Phaeothamniophyceae, 424–5, 427
- phagotrophy, 23; Apicomplexa, 312;
 Chrysophyceae, 339–40, 342;
 Cryptophyta, 325–6;
- Dictyochophyceae, 359–60;
- Dinophyta, 291–5; Euglenophyta,
 248, 256; evolution of
 chloroplast E.R., 240;
- Prymnesiophyceae, 489
- pharmaceuticals from algae, 100–1
- pheromone (sexual hormone,
 sirenine), 160, 196–7, 225–6;
- Phaeophyta, 432–3, 436, 439,
 441, 443, 462, 469, 513
- phialopore, *Volvox*, 205–6
- phloroglucinol, 430
- phlorotannins (phaeophycin
 tannins), 426, 429–30, 511
- Phormidium*, 59, 72; *autumnale*, 71;
inundatum, 42; *uncinatum*, 34, 36–7
- phosphoglycerate, 40, 149
- phosphorescence, 96, 285
- phosphorus, algal growth, 340, 459;
 deficiency, 45, 73, 298, 492;
 pollution, 375; marine snow,
 278; resting spore induction,
 383; storage, 40, 43
- photoautotroph, 23, 255
- photochemical reaction center, 16
- photoheterotroph, 23, 55
- photoluminescence, 285
- photoperiod, 110, 112, 169, 196, 455,
 472
- photophile, 106
- photophobia (photoshock), 13, 141–2,
 250
- photoreceptor, 141–3; 349, 421, 426
- photorespiration, 149
- photosystem II, 17, 113
- phototaxis, 12–13; Bacillariophyceae,
 386; Chlorophyta, 141–2, 146,
 158–9, 170, 172, 198, 202;
- Chrysophyceae, 340;
- Cryptophyta, 324–5;
- cyanobacteria, 54, 64;
- Dinophyta, 272–4;
- Euglenophyta, 250, 252–3;
- Phaeophyta, 428, 446, 449;
- Raphidophyceae, 412;
- Rhodophyceae, 109
- phototroph, 55
- phototropin, 194
- Phragmites communis*, 394–5
- phragmoplast, Chlorophyta, 144, 149,
 154, 162–3
- phycobiliproteins, 17–18, 27;
- cyanobacteria, 38, 43;
- Cryptophyta, 317, 321, 322–3,
 326–7; Rhodophyta, 90–1
- phyacobiont, 57, 217–18
- phycocyanin, 12, 17–19, 43, 90–1,
 322–3, 327, 330
- phycoerythrin, 12, 17–19, 43, 60,
 90–1, 322–3, 326
- phycomata, 150, 152
- phycophaein, 430
- phytoplasm, 144, 148–9, 189, 218, 221–2
- phytocotoxins, 504–10; Dinophyta,
 279–84; Prymnesiophyta, 496–7
- Phymatolithon calcareum*, 123
- physode, 425, 427, 430, 442
- phytochrome, 113, 156, 194
- Pickett-Heaps, J., preface, 144
- picophytoplankton, 60, 368
- pili, cyanobacteria, 36–7
- Pinguicrysis pyriformis*, 358
- Pinguicoccus pyrenoidosus*, 358
- Pinguicophyceae, 357–8
- pinnatoxin, 509
- Pinnularia*, 403–4; *viridis*, 371, 377, 380
- pit connections, 89, 92–3, 97–8,
 102–3, 110, 115, 129–30
- Placobranchus*, 183
- plakea, 196
- planozygote, 281, 283, 300–1, 352

- Plasmodium*, 311
 plastids, 10–12
 plastid division ring, 20
 plastoquinone, 196–7
 plasmdermata, Chlorophyta, 148,
 155, 163, 191, 220; cyanobacteria,
 49; Phaeophyceae, 428, 451–2
Platydorina, 199; *caudata*, 200
Platymonas, 152
Plectonema notatum, 62
Pleodorina, 200
 pleomorphism, 386
Pleosporium vancouverianum, 102
 plethysmochallus, 431
 pleurilocular sporangia, 426, 431,
 436–8, 442–8
Pleurocapsa minor, 71–2
Pleurochrysis carterae, 496; *scherffelii*,
 491–3
Pleurochloris magna, 354
Pleurocladia incustris, 426
Pleurosigma, 396
Pleurotaenium nodosum, 160
 polyether toxins, 508
 polyglucan granule, cyanobacteria,
 40
 polyhedral body, 46, 85
Polyhedriella helvetica, 354
Polykrikos kofoides, 292; *schwartzii*, 278,
 293
 polymorphism, desmids, 160;
 Saccorhiza, 455; *Scenedesmus*, 216,
 Ulva, 179
 polyphosphate body, 39–40
Polysiphonia, 91, 98, 127–8; *denudata*,
 130, *fastigata*, 97; *lanosa*, 96–7;
 nigrescens, 95; *stricta*, 129
 polysiphonous structure, 127–8, 433,
 436–7
 polysporangia, Rhodophyceae, 106
 polystichous, 442
Pontosphaera syracusana, 495
 poroid, Bacillariophyceae, 372, 388
Porolithon, 124
Porphyra, 91, 110–15; cell wall, 90;
 dioica, 111; *gardneri*, 110, 112;
 mucilage, 10; *perforata*, 113
Porphyridiales, 92; 107–10
Porphyridium, 90, 104, 109
Porphyrosiphon notarissi, 62
Postelsia palmeformis, 462–3
 potassium, 189, 340, 395
Poterioochromonas malhamensis, 22–3
 practical salinity unit (PCU), 365
Prasinocladus, 152–3
 Prasinophyceae, 139, 144, 149–54,
 255–6
Prasiola stipitata, 211–13
 Prasiolales, 191, 211–13
 predation, 513; Bacillariophyceae,
 390; Dinophyta, 287;
 Euglenophyta, 256–7
 proboscis, 421, 433, 469
 procarp, Rhodophyceae, 120, 125, 130
Prochlorococcus, 43, 40; *marinus*, 71
Prochloron, 43
Prochlorophyta, 33
Prochlorothrix, 43
 projectiles, Chrysophyceae, 335;
 Dinophyta, 275–6, 279
 prokaryote, 3
 promeristem, 433–4, 466
 propagule, 433, 436–7
 propenic acid (acrylic acid), 498, 511,
 512
 properizonal auxospores, 383–4
 proplastid, 10, 90, 334, 381
 Prorocentrales, 296–8
Prorocentrum, 276, 279, 297, 509;
 hoffmannianum, 298; *lima*, 280;
 mican, 299
 prostaglandin E, 126–7
 protein phosphatase and
 hepatotoxins, 65, 504
 prothallus, 117–18
Protoperidinium, 292; *conicum*, 293
Prototheca, 214, 216
Prymnesiales, 498–500
Prymnesiophyta (Haptophyta), 269,
 298, 315, 317, 361, 484–503;
 carotenoids, 17; chloroplasts,
 11–12; DMSP production, 511;
 motile cell, 9; scales, 336; storage
 product, 21–2; toxins, 509–10
Prymnesium, 484, 496–7, 507, 509;
 parvum, 485, 489, 497, 505
Pseudoboomilleriopsis, 418; *pyrenoidosa*,
 415–16
Pseudocharaciopsis texensis, 355
 pseudocilia, 191, 209
Pseudokephyrion pseudospinale, 336
Pseudo-nitzschia, 383, 387–8, 409, 509;
 multiseries, 388, 389, 404, 509
 pseudoparenchyma, 442
Pseudopedinella, 359
 pseudopod, Chloroarachniophyta,
 318; Dinophyta, 292–4;
 Prymnesiophyta, 489
 pseudoraphe, 371
Pseudotrebouxia, 217
 psychrophile, 61, 365, 516
 psychrotroph, 61
 pteriatoxin, 509
Pteridomonas, 359
Pterocladia, 99
Pterosperma, 150; *cristatum*, 152
Pterygophora californica, 449
 punctae, Bacillariophyceae, 372
 Punctariaceae, 444
 purine toxins, 506
 pusule, 268, 270, 278, 335, 361
Pyramimonas 139; *obovata*, 150–1
 pyrenoid, 11–12, 21, 109
Pyrocystis fusiformia, 286–7; *lunula*, 293;
 noctiluca, 293
Pyrodinium bahamense, 281, 283, 287,
 509
 quartzite, 373
 radiolaria, 489–90
Ralfsia, 442, 444; *confusa*, 445
 Ralfsiaceae, 442, 444
 raphe, 370–1, 378–80, 399
 ramuli, 124
Raphidiopsis curvata, 45; *mediterranea*,
 45
Raphidonema nivale, 155
 Raphidophyceae, 409–12, 487;
 chloroplast DNA, 14; toxins, 503
 R-body, 324
 receptacle, 464–8, 472–5
 Receptaculitaceae, 175
 red algae, 89–137; endosymbiosis,
 81–2; glycolate oxidase, 20;
 mitochondria, 19; mucilages, 10;
 plastids, 11; phycobilisomes,
 11–12, 17–19; storage products,
 20–2
 Red Sea, 61
 red tides, Dinophyta, 279–84, 511;
 Raphidophyceae, 410
 reef algae, Chlorophyta, 175, 185, 189;
 Dinophyta, 295; Rhodophyta,
 123–4
 reservoir, Eulenophyta, 246–8, 250
 resting spore, Bacillariophyceae,
 382–3, 401–2; Chrysophyceae,
 337; Dinophyta, 277–8, 284;
 Xanthophyceae, 418
 reticulopodia, 317, 319
 retinal, 141–2, 334

- retinoid, 274
- R-fiber, flagellum, 265, 268
- Rhipocephalus*, 185
- Rhizochromulina*, 359; *marina*, 360
- Rhizochromulinales, 359
- rhizoid, 96, 98, 110, 112, 128–9, 221, 416–17, 439–40, 465, 470–1
- rhizoplast, 5–7; Chlorophyta, 144–6, 152, 154, 171, 190
- rhizopodia, Dictyochophyceae, 359–60
- Rhizosolenia*, 350, 391, 396; *castracanei*, 393; *imbricate*, 393
- Rhodella maculata*, 109
- Rhodochaete*, 93
- Rhodochorton*, 96, 115–16; *investiens*, 115; *purpureum*, 106; xylans, 10
- rhodolith, 94
- Rhodomonas lacustris*, 328
- Rhodophyta (red algae), 89–137; endosymbiosis, 81–2; glycolate oxidase, 20; mitochondria, 19; mucilages, 10; plastids, 11; phycobilisomes, 11–12, 17–19 storage products, 20–2
- rhodopsin, 141–2, 334
- Rhodosorus marinus*, 109
- Rhodymenia*, xylans, 10
- Rhoicosphaera curvata*, 395
- Rhopalodia gibba*, 398
- rhoptry, 310
- rhythms, Bacillariophyceae, 383; bioluminescence, 286; Chlorophyta, 150, 170, 184; cyanobacteria, 50–2; Dinophyta, 287–91; Euglenophyta, 247, 252–3; lunar, 170, 179; Rhodophyta, 106; Phaeophyta, 434, 453, 455; Prymnesiophyta, 491, 496
- rib, Bacillariophyceae, 372, 388
- riboflavin, 422
- ribosomes, 3–4, 24; cyanobacteria, 38–9
- ribulose 1,5-diphosphate, 149
- ribulose-1,5-bisphosphate carboxylase/oxygenase (Rubisco), 12, 24, 39–40, 55, 85–6, 240
- rice paddies, 64
- Rivularia*, 59; *dura*, 72
- RNA nucleotide sequencing 24
- RNA polymerase, 24
- Rubisco (ribulose-1,5-bisphosphate carboxylase/oxygenase), 12, 24, 39–40; 55, 85–6, 240
- Saccorhiza*, 436, 448, 453; *bulbosa*, 462; *polyschides*, 457
- salt marsh, 427
- salt-stress protein, 65
- salt tolerance, *Dunaliella*, 197
- saprophyte, 23, 219
- Sargasso Sea, 393, 427, 475
- Sargassum*, 464; *filiendula*, 476; *longifolium*, 475
- Saunders, G. W., 131
- saxitoxin, 65, 281, 504, 506, 509
- scales, Bacillariophyceae, 385, 401; Chlorophyta, 139, 145–6, 149–51, 154–5, 162, 166, 168, 191; Chrysophyceae, 333, 336–7; Cryptophyta, 321–2; Dictyochophyceae, 360–2; Dinophyta, 265–7; Prymnesiophyceae, 484–8, 490–7; Synurophyceae, 349–50, 352
- Scenedesmus*, 214; *armatus*, 216; *obliquus*, 216
- Scherffelia dubis*, 7
- Schizothrix*, 62, 69
- Schoenoplectus lacustris*, 394–5
- scintillon, 280
- Scrippsiella trochoidea*, 262, 277–8
- Scytonema*, 62, 63; *arcangeli*, 73; *hofmanni*, 63, 68; *myochrou*, 74; 518
- Scytosiphon lomentaria*, 429, 442, 444, 446
- Scytosiphonaceae*, 442, 444–8
- sea ice, 513–14
- sea lettuce communities, 5, 173
- sea otter, 457
- sea palm, 462
- sea sawdust, 61
- sea urchin, 457
- seas, ancient, 94–5
- seawater, carbon dioxide, 494; density, 391; HCO_3^- , 494; pH 494; physical characteristics, 239–40; salinity, 365
- secondary endosymbiosis, 239–43, 315, 510
- secretion, mucilage, 109, 141–2, 253; proteins, 56
- secretory cells, Rhodophyta, 95–6
- segregative cell division, 188–9
- separation disc, 54, 73
- seriochemical, 513
- setae, 155, 162, 342, 401–2, 391
- sexual hormone (pheromone, sirenine), 160, 196–7, 225–6; Phaeophyta, 432–3, 436, 439, 441, 443, 462, 469, 513
- shade form, *Ceratium*, 298
- sheath, cyanobacteria, 37–8, 63
- shellfish poisoning, 504–10; Bacillariophyceae, 387–8; Dinophyta, 279–84
- siderophores, cyanobacterial, 68
- sieve, cells, 451–2; filaments, 441, 463, 466; membrane, 372, 378; sieve plates, 451, 466; pore, 372
- silaffins, 376–7, 378
- silica, Bacillariophyceae, 369, 373–4, 393; Dictyochophyceae, 359–60; Synurophyceae, 347
- silica deposition vesicle, Bacillariophyceae, 375–6, 378; Chrysophyceae, 336, 338, 342–3, 349
- silicalemma, Bacillariophyceae, 375–6; Synurophyceae, 349
- silicoflagellates, 360
- silicon, 278–9, 342, 344–5, 367, 374
- silting, adaption to, 64
- sinus, desmids, 160
- siphonaceous algae, Chlorophyta, 139–40, 175, 178, 184, 186–7, 190; Xanthophyceae, 416, 418, 419, 422
- Siphonales, 179
- siphonein, 139, 168, 178, 188
- Siphonocladales, 139, 168, 188–9
- Siphonocladus tropicus*, 188–9
- siphonoxanthin, 139–40, 168, 179, 188
- Skeletonema costatum*, 374, 387, 392; *pseudocostatum*, 390
- skotophile, 106
- Skuja, H. L., 131
- slime secretion, cyanobacteria, 33–5
- Smith, M. S., 27
- Smithora*, 90
- snow algae, *Chlamydomonas*, 196
- sodium, and osmoregulation, 197; channels, 281, 470, 474, 504, 509; silica uptake, 375
- sorbitol, 92
- sorus, 434, 439, 446, 452, 454, 469
- Southern Ocean, 513–15
- spermatangia, Rhodophyta, 103–5
- spermine, 104–5
- spermocarp, Chlorophyta, 163

- Sphaerelaria*, 429, 431–2; *bipinnata*, 436–7; *cirrhosa*, 437; *furcigera*, 436; *lacustris*, 426
- Sphaeckillariales**, 433
- Sphaeroplea*, 218; *annulina*, 218; *fragilis*, 220
- Sphenomonas*, 246; *laevis*, 255
- spindle, 144–5, 148–9; 162, 189
- Spirogyra*, 157–9; *adnata*, 156
- spirolide toxin, 507, 509
- Spirotaenia*, 160; *condensata*, 156
- Spirulina*, 67, 72; *major*, 71
- Splachnidiaeae*, 442, 448
- Splachnidium*, 448
- Sphaeopleales*, 191, 218–20
- Spondylosium moniliforme*, 160
- spongiome, 22
- Sporchnales**, 439
- sporophylls, 462, 464
- sporopollenin, 193, 279
- stalk, Euglenophyta, 247, 253, 258
- starch, Chlorophyta, 140, 150–3, 198; Cryptophyta, 321–4; Dinophyta, 263, 297; Rhodophyta, 91–2, 98
- statoliths, *Chara*, 165
- statospore, Chrysophyceae, 333, 337–8, 342–3; Synurophyceae, 350, 352–3; Xanthophyceae, 416
- Stauroastrum curvatum*, 160
- Stegastes nigricans*, 130
- stephanokont flagella, 9, 179, 191, 222–6
- Stephanon*, 199; *askenasyi*, 200
- Stephanopyxis*, 383; *broschi*, 397; *turris*, 392–3, 397
- sterols, Dinophyta, 285; Bacillariophyceae, 381
- Stewart, K., 144–5
- stichidia, 130
- Stichococcus bacillaris*, 155
- Stigeoclonium farctum*, 221
- stigma (eyespot), Chlorophyta, 140–5, 152–3, 168–9, 172, 198; Chrysophyta, 333–7, 341, 344; Cryptophyta, 323–4; Dictyochophyceae, 360; Dinophyta, 272–4; Euglenophyta, 245–6, 250, 252; Eustigmatophyceae, 354–5; Phaeophyta, 427–8, 440, 469; Prymnesiophyceae, 484, 500; Xanthophyceae, 413, 415–16
- Stigonema*, *mammilosum*, 74; *ocellatum*, 74; *turfaceus*, 73
- stoneworts, 164
- storage products, 20–3
- stramenopile, 7–8
- Streptophyta**, 144
- streptophyte, 163
- striae, Bacillariophyceae, 370–2
- striated strand, flagellum, 265, 269, 271
- stroma, 3, 11
- stromatolite, 69
- stylet, 311
- suffultory cell, 224–5
- sulcus, Dinophyta, 262, 267, 274, 298–300
- sulfated polysaccharides, Rhodophyta, 96
- sulfur, cyanobacterial photosynthesis, 44
- sulfuric acid in the atmosphere, 511–12
- sunscreens, 517; cyanobacteria, 63; Phaeophyta, 430
- superoxide dismutase, Chlorophyta, 149–50
- supporting cell, Rhodophyta, 103, 124–5, 128
- suture, 297–8
- Sweeney, B. M., 289
- swimming rate, Dinophyta, 268–9; Euglenophyta, 246
- Symbiodinium microadriaticum*, 276, 295
- symbioses, Bacillariophyceae, 393; Chlorophyta, 152–3, 183–4, 213; Cryptophyta, 326–7; Dinophyta, 276–7, 287, 295–6; Prymnesiophyceae, 489–90
- syncyanosis, 85–8
- Syndinium*, 275; *turbo*, 275–6
- Synechococcus*, 50–2, 60–1, 71; *aeruginosus*, 42; elongates, 52–3; *lividus*, 61–2
- Synechocystis*, 36–7, 60, 71
- syngamy, 144
- synomone, 513
- Synura*, 349; *echinulata*, 352; *petersenii*, 350, 352; *uvella*, 351
- Synurales*, 350
- Synurophyceae*, 349–53; scales, 336
- Syracosphaera nodosa*, 495
- Tabellaria*, 398; *fenestrata*, 393; *flocculosa*, 344, 393, 395
- tannins, 426, 429–30
- Tasmanites*, 150
- tentacle, Dictyochophyceae, 359, 361; Dinophyta, 274, 291–2, 297, 299
- terpenoids, water quality, 66; grazing deterrent, 434–6
- tertiary endosymbiosis, 269, 361
- Tessellaria volvocina*, 350–1
- Tetrachrysis minor*, 425
- Tetraparma*, 344
- Teraselmis*, 139, 146, 151–3
- Tetraspora*, 210; *gelatinosa*, 209
- Tetrasporaceae, 209–10
- Tetrasporales, 191, 208–11
- tetrasporangia, 105, 117, 119–20, 125–6, 128–9
- tetraspores, 101–3, 109, 116–19, 127–8, 130, 434–5
- tetrasporophyte, 101–3, 116, 118, 124, 126–7, 130
- Tetrasporopsis fusescens*, 425
- Texas cattle fever, 311
- Thalassiosira gessneri*, 374; *lacustris*, 374; *pseudonana*, 387; *wailesii*, 372
- thallophyte, 3
- thallusin, 170
- theca, Chlorophyta, 145–6, 148–50, 152–3, 189; Dinophyta, 262, 264–6, 273, 276–7, 297–8
- Theileriosis*, 311
- thermophilic algae, 61, 108–9, 395
- thraustochytrids, 8
- thylakoid, 11, 38–9, 43
- Thysanocladia densa*, 95
- tidal rhythms, *Derbesia*, 179; Dictyota, 434; *Ulva*, 170–1
- Tiffaniella snyderae*, 106
- tinsel flagellum, 7–8
- tintinnid grazing, 513
- Tolyphothrix*, 42; *tenuis*, 73
- torbonite, 210
- toxic algae, 504–10; Dinophyta, 279–84; Prymnesiophyta, 496–7
- Toxoplasma*, 311
- trabeculae, *Caulerpa*, 185
- Trachelomonas*, 247, 253, 255; *grandis*, 257; *lefeveri*, 254
- Trailiella*, 96
- translocation of nutrients, 441, 466
- Trebouxia*, 143, 217; *ericii*, 218
- Trebouxiiales, 191, 211, 217–18
- trehalose, 22; and halotolerance, 64

- trellisoid ornamentation, 370, 383, 399, 403
- Trentepohlia*, 217
- Tribonema*, 413, 415–16, 418; *bombycinum*, 414; *regulare*, 414; *utriculosum*, 414; *viridae*, 414
- Tribonematales**, 416, 418
- Tribophyceae**, 413
- tricarboxylic acid cycle, 55
- Triceratium*, 370
- Trichodesmium*, 42, 51, 60–1, 65, 72; *lacustre*, 52, 71
- trichoblast, 128–30
- trichocyst, Dinophyta, 263, 275–7, 324; Raphidophyceae, 410, 412
- Trichodesmium*, 509
- trichogyne, 102–4, 113, 115–16, 119, 120–1, 124, 128, 130
- trichome, 33, 53
- trichothallic growth, 431, 433–4, 436, 439, 441–2, 448, 472
- Tridachia*, 183
- Triparma*, 344–5; *laevis*, 345; *stigmata*, 345
- Triticum*, 275
- trumpet hyphae, 441, 450
- trypanosomes, 245, 248
- tubulin, 4
- twitching, cyanobacteria, 36
- Udotea*, 180, 185; *conglutinata*, 182
- Ulothrix*, 141, 143, 145, 155, 168–9; *zonata*, 169
- Ulotrichales, 139, 144, 168–9
- ultraplankton, 365
- ultraviolet radiation, 517
- Ulva*, 141, 169–73; *arasaki*, 171; *intestinalis*, 171; *lactuca*, 5, 6; *lobata*, 170; *mutabilis*, 170; *pertusa*, 170
- Ulvales*, 168–73
- Ulvophyceae, 144–49, 168–89, 217
- unilocular sporangia, 345, 426–7, 431, 434, 436–8, 440, 442–5, 448, 452–4, 456
- upwelling, 513
- urea, 144, 149; amidolyase, 144–5, 149, 190
- urease, 144–5, 149
- Uroglena*, 340, 342; *conradii*, 341
- Urospora*, 473
- utricles, *Codium*, 181; *Halimeda*, 184
- Vacuolaria*, 412; *virescens*, 410
- Valonia*, 188; *ventricosa*, 189–90
- valve, Bacillariophyceae, 369
- Vaucheria*, 413, 416, 418–19, 422, 433; chloroplast DNA, 14; *dillwynii*, 419; *sessilis*, 420; *synandra*, 421
- Vaucheriales, 416, 418–22
- vaucherianthrin, 355, 415
- velum, Bacillariophyceae, 372
- Ventricaria ventricosa*, 189–90
- Verrucaria*, 57, 59
- vesicular cells, Rhodophyta, 95, 96–7
- vestibulum, Cryptophyta, 327
- violaxanthin, 345, 355, 358
- viridene, 441
- Viridiplantae, 144
- vitamins, 115, 255
- volatile organic compounds, cyanobacteria, 66
- volutin granule, 40
- Volvocaceae*, 191, 198–208
- Volvocales*, 22, 139, 143–4, 151–2, 191–208
- Volvox*, 140, 198–208; *carteri*, 141, 143, 201–3
- volvoxopsin, 141
- Volvulina*, 199; *steinii*, 200
- von Stosch, H. A., 303
- Warnowiaceae**, 273
- water quality, Chrysophyceae, 340; cyanobacteria, 66
- water stress protein, 62
- whiplash flagellum, 7–8
- Woloszynskia coronata*, 272; *tenuissima*, 273; *tylota*, 276, 278
- wound response, Chlorophyta, 174, 187
- Xanthidium antilopaeum*, 160
- Xanthophyceae**, 57, 217–18, 354, 359, 413–23; chloroplast, 14; paramylon, 21
- xanthophylls, 16–17, 250, 322, 410
- Xanthoria parietina*, 217
- xylans, 10; Chlorophyta, 139, 178, 188; Rhodophyta, 90, 114
- yessotoxin, 279, 504, 508
- Zanardina*, 436
- zeaxanthin, 358
- zebra mussel, 66
- Zhao, J., 74
- zoospores, 143, 152–3
- zooxanthellae, Dinophyta, 58, 295–6; storage product, 22
- Zostera marine*, 365
- Zygnemataceae, 156–8
- Zygnematales, 143–4, 155–62
- Zygogonium*, 156
- zygospore, Chlorophyta, 155, 157–8, 161, 183, 196, 203, 208, 215