

APPENDIX A¹

CLASSIFICATION OF PLANTS

Phylum — Thallophyta.

Sub-phylum I — Algae.

Class 1 — Cyanophyceae (Blue-green Algae, 1200 species), Fission Algae.

Examples — Gleocapsa, Nostoc, Oscillatoria, Anabaena, Rivularia, Trichodesmium (Red Sea).

Class 2 — Chlorophyceae (Green Algae, 9000 species), Unicellular-green Algae, Desmids, Diatoms, Confervas, Pond Scums, Sea Lettuce, Tubular Algae, Stoneworts.

Examples — Pleurococcus, Sphaerella, Chlamydomonas, Gonium, Ulothrix, Ulva, Oedogonium, Cladophora, Spirogyra, Cosmarium, Navicula, Vaucheria, Chara.

Class 3 — Phaeophyceae (Brown Algae, 1000 species), Kelps and Rockweeds.

Examples — Ascophyllum, Fucus, Ectocarpus, Laminaria, Macrocystis, Postelsia, Sargassum.

Class 4 — Rhodophyceae (Red Algae, 3000 species).

Examples — Chondrus, Nemalion, Batrachospermum, Callithamnion, Dasya, Polysiphonia, Rhabdonia.

Sub-phylum II — Fungi.

Class 1 — Schizomycetes (Bacteria, 1400 species).

Examples — Bacillus vulgaris, Bacillus typhi, Vibrio, Spirillum.

Class 2 — Myxomycetes (Slime Mold^s, 400 species), Slime Fungi, Fungus-animals.

Examples — Aethalium, Fuligo.

Class 3 — Phycomycetes (Alga-like Fungi, 330 species), Blights, Mildews, True Molds.

Examples — Rhizopus, Mucor, Saprolegnia, Albugo, Phytophthora.

Class 4 — Ascomycetes (Sac Fungi, 20,000 species), Black Fungi, Mildews, Yeasts, Blue and Green Molds, Lichens.

Examples — Penicillium, Aspergillus, Peziza, Morchella, Claviceps, Physcia, Cladonia, Usnea, Saccharomyces.

¹ Several groups of organisms were omitted from the discussion in the text.

Class 5 — Basidiomycetes (Basidia Fungi, 20,000 species),
Smuts, Rusts, Toadstools, Puff Balls, Mushrooms.

Examples — Ustilago, Puccinia, Clavaria, Boletus, Hydnum,
Agaricus, Coprinus, Amanita, Geaster.

Phylum — Bryophyta, 16,000 species.

Class 1 — Hepaticae (Liverworts).

Examples — Ricciocarpus, Marchantia, Porella, Anthoceros.

Class 2 — Musci (True Mosses), True Mosses and Peat Mosses.

Examples — Funaria, Bryum, Polytrichum, Sphagnum.

Phylum — Pteridophyta, 4500 species.

Class 1 — Filicineae (Ferns).

Examples — Aspidium, Pteris, Dicksonia, Osmunda, Onoclea,
Nephrolepis, Gleichenia, Polypodium, Marsilia, Ophioglos-
sum, Botrychium.

Class 2 — Lycopodiineae (Club Mosses).

Examples — Lycopodium, Selaginella, Isoetes, Lepidodendrum.

Class 3 — Equisetineae (Horsetails).

Examples — Equisetum, Calamites.

Phylum — Spermatophyta.

Class 1 — Gymnospermae (Gymnosperms), 500 species.

Order 1 — Cycadales — (Cycads).

Examples — Cycas, Zamia.

Order 2 — Coniferales (Conifers).

Examples — Pine, Fir, Spruce, Hemlock, Yew, Cedar,
Cypress, Redwood, Larch, Juniper, Arbor Vitae.

Class 2 — Angiospermae.

Sub-class 1 — Dicotyledoneae, 100,000 species.

Order 1 — Salicales — Willows.

Order 2 — Juglandales — Walnuts, Hickories.

Order 3 — Urticales — Elm, Fig.

Order 4 — Rosales — Roses, Apple, Pear, Plum, Peach,
Currant, Strawberry, Cherry, Beans, Peas.

Order 5 — Sapindales — Maples.

Order 6 — Opuntiales — Cactus.

Order 7 — Tubiflorae — Sweet Potato, Mint, Tobacco,
Tomato, Potato.

Order 8¹ — Campanulales — Squash, Pumpkin, Cucumber,
Melon.

Sub-class 2 — Monocotyledontae (Monocotyledons), 30,000
species.

Order 1 — Naidales — Water Plants.

Order 2 — Graminales — Grasses, Corn, Wheat.

¹ Other orders are omitted.

Order 3 — Palmales — Palms.

Order 4 — Liliales — Lily, Asparagus, Iris, Tulip, Narcissus, Hyacinth.

Order 5 — Scitaminales — Banana, Canna.

Order 6¹ — Orchidales — Orchids.

CLASSIFICATION OF ANIMALS

Phylum — Protozoa. (One-celled animals.) About 10,000 species.

Class 1 — Sarcodina. (Locomotion by means of pseudopodia.)

Examples — Amoeba, Entamoeba, Diffugia, Arcella, Globigerina, Actinophrys, Thalassicola.

Class 2 — Mastigophora. (Locomotion by means of flagella.)

Examples — Spirochaeta, Treponema, Trypanosoma, Euglena, Synura, Pandorina, Volvox, Noctiluca.

Class 3 — Infusoria. (Locomotion by means of cilia.)

Examples — Paramoecium, Stentor, Styloichia, Vorticella, Oxytricha, Euplotes, Didinium.

Class 4 — Sporozoa. (Parasitic.)

Examples — Porospora, Gregarina, Monocystis, Plasmodium.

METAZOA. (Many-celled animals; see the following Phyla.)

Phylum — Porifera. (Pore-bearing animals — Diploblastic and without intestinal cavity. The Sponges.) About 2500 species.

Class 1 — Calcarea. (Simple sponges.)

Examples — Grantia, Leucosolenia.

Class 2 — Hexactinellida. (Glass sponges.)

Examples — Euplectella, Hyalonema.

Class 3 — Demospongiae. (Large, compound sponges, skeleton with spongin.)

Examples — Euspongia, Chalina, Cliona, Tethya.

Phylum — Coelenterata. (Diploblastic with intestinal cavity.) About 4300 species.

Class 1 — Hydrozoa. (Asexual hydroids with sexual medusoid stage.)

Examples — Hydra, Pennaria, Campanularia, Obelia, Gonionemus, Physalia.

Class 2 — Scyphozoa. (Larger Jellyfish, medusoid stage conspicuous.)

Examples — Aurelia, Cyanea.

Class 3 — Actinozoa. (Corals and Sea-anemones.)

Examples — Corallium, Astrangia, Meandrina, Fungia, Metridium, Sagartia, Pennatula.

Class 4 — Ctenophora. (Comb-bearing animals — Comb jellies.)

Examples — Mnemiopsis, Beroe.

¹ Other orders are omitted.

- Phylum — Platyhelminthes.** (Triploblastic — No Coelome. One opening serves as Mouth and Anus. Broad intestinal worms — flatworms.) About 4600 species.
- Class 1 — Turbellaria. (Small free-living flatworms.)
Examples — Planaria, Bdelloura.
 - Class 2 — Trematoda. (Flukes — parasitic.)
Examples — Distomum.
 - Class 3 — Cestoda. (Tapeworms.)
Examples — Taenia, Crossobothrium.
 - Class 4 — Nemertea. (Long, contractile, free-living flatworms.)
Example — Cerebratulus.
- Phylum — Nemathelminthes.** (Triploblastic — Coelome doubtful. Mouth and anus. Thread worms.) About 1500 species.
(Cobb estimates many thousand species.)
- Class 1 — Nematoda. (Round worms.)
Examples — Filaria, Trichinella, Ascaris, Necator, Syngamus.
 - Class 2 — Gordiacea. (Hair worms.)
Example — Gordius.
 - Class 3 — Acanthocephala. (Spiny-headed worms.)
Example — Echinorhynchus.
 - Class 4 — Chaetognatha. (Bristle-headed worms.)
Example — Sagitta, the arrow worm.
- Phylum — Trochelminthes.** (Wheel worms, Wheel animalcules.)
- Class — Rotifera.
Example — Rotifers.
- Phylum — Molluscoidea.** (Mollusk-like animals.)
- Class — Polyzoa. (Moss animals.)
Example — Bugula.
 - Class — Brachiopoda. (Arm-foot.)
Example — Lingula.
(Modern brachiopods are survivors of a once very numerous and varied group. Lingula appears to resemble closely similar forms found in the Silurian Period, millions of years ago.)
- Phylum — Echinodermata.** (Spiny-skinned animals.) About 4000 species.
- Class 1 — Crinoidea. (Feather stars, sea-lilies.)
Examples — Pentacrinus, Antedon.
 - Class 2 — Asteroidea. (Starfishes.)
Examples — Asterias, Solaster, Asterina, Ctenodiscus.
 - Class 3 — Ophiuroidea. (Brittle stars, snake-stars.)
Examples — Ophiopholis, Ophioderma, Gorgonocephalus.
 - Class 4 — Echinoidea. (Sea-urchins, cake-urchins, sand-dollars.)

Examples — *Arbacia*, *Strongylocentrotus*, *Echinarachnius*,
Clypeaster.

Class 5 — *Holothuroidea*. (Sea-cucumbers.)

Examples — *Cucumaria*, *Thyone*, *Leptosynapta*.

Phylum — Annelida or Annulata. (Segmented worms.) About 4500 species.

Class 1 — *Archiannelida*. (Primitive annelids.)

Example — *Polygordius*.

Class 2 — *Chaetopoda*. (Bristle-footed annelids.)

Order 1 — *Polychaeta*. (Many setae.)

Examples — *Aphrodite*, *Syllis*, *Nereis*, *Chaetopterus*, *Cirratulus*, *Amphitrite*, *Arenicola*, *Hydroides*.

Order 2 — *Oligochaeta*. (Few setae.)

Examples — *Lumbricus*, *Allolobophora*, *Tubifex*.

Class 3 — *Hirudinea*. (Leeches.)

Example — *Hirudo*.

Phylum — Mollusca. (Soft animals.) About 60,000 species.

Class 1 — *Amphineura*. (Double nerve.) Chitons.

Example — *Chiton*.

Class 2 — *Gasteropoda*. (Stomach foot.) Snails, whelks, slugs.

Examples — *Helix*, *Limax*, *Natica*, *Busycon*, *Triton*, *Urosalpinx*.

Class 3 — *Pelecypoda*. (Hatchet foot.) Oysters, clams, mussels, scallops.

Examples — *Ostrea*, *Mya*, *Venus*, *Mactra*, *Tridacna*, *Unio*, *Lampsilis*, *Ensis*, *Pholas*, *Pecten*, *Anodonta*, *Teredo*.

Class 4 — *Cephalopoda*. (Head-footed, *i.e.*, head with tentacles.)

Squid, cuttle fish, devil fish or octopus.

Examples — *Nautilus*, *Sepia*, *Loligo*, *Octopus*.

Class 5 — *Scaphopoda*. (Boat foot.)

Example — *Dentalium*.

Phylum — Arthropoda. (Jointed foot.) About 430,000 species.

Class 1 — *Crustacea*. (Skin-crust.)

Examples — *Daphnia* (Water flea), *Lepas* (Gooseneck barnacle), *Balanus* (Rock barnacle), *Oniscus* (Sow bug), *Gammarus* (Fresh-water shrimp), *Homarus* (Lobster), *Cambarus* (Crayfish), *Callinectes* (Blue crab), *Penaeus* (Shrimp), *Libinia* (Spider crab).

Class 2 — *Onycophora*. (Claw bearing.)

Example — *Peripatus*.

Class 3 — *Myriopoda*. (Ten thousand feet.) Centipedes, millipedes.

Examples — *Lithobius*, *Julus*, *Scutigera*.

Class 4 — Insecta. (Cut into.)

Order 1 — Coleoptera.

Examples — Beetles, Weevils, June bugs.

Order 2 — Hymenoptera.

Examples — Ants, Bees, Wasps.

Order 3 — Siphonaptera.

Example — Fleas.

Order 4 — Diptera.

Examples — Flies and Mosquitos.

Order 5 — Aptera.

Example — Fishmoths.

Order 6 — Ephemera.

Example — May-fly.

Order 7 — Odonata.

Example — Dragon-fly.

Order 8 — Isoptera.

Example — Termites or White Ants.

Order 9 — Orthoptera.

Examples — Cockroaches, Grasshoppers, Crickets.

Order 10 — Hemiptera.

Examples — Bugs, Lice, Locusts, Aphids, Scale Insects.

Order 11 — Neuroptera.

Example — Ant-lions.

Order 12 — Lepidoptera.

Examples — Butterflies and Moths.

Order 13 — Thysanoptera.

Example — Thrips.

Order 14 — Dermaptera.

Example — Earwigs.

Order 15 — Corrodentia.

Example — Book-lice.

Order 16 — Mallophaga.

Example — Bird-lice.

Order 17 — Trichoptera.

Example — Caddice-flies.

Order 18 — Plecoptera.

Example — Stone-flies.

Order 19 — Mecoptera — Scorpion Flies.

Class 5 — Arachnida. (Spider.)_cExamples — Limulus (King-crab), Scorpion, Tarantula, Spiders,
Ticks and Mites.

Phylum — Chordata. (Notochord.) About 30,000 species.

Sub-phylum I — Prevertebrates.

Class 1 — Hemichorda. (Enteropneusta.)

Example — Balanoglossus.

Class 2 — Urochorda. (Tunicata.) Sea-squirts.

Examples — Molgula, Cynthia, Ciona, Salpa.

Class 3 — Cephalochorda.

Example — Amphioxus, the lancelet.

Sub-phylum II — Vertebrata. (Craniata.)

Class 1 — Cyclostomata. (Round mouth.) Lampreys and Hag Fish.

Examples — Petromyzon, Myxine, Bdellostoma.

Class 2 — Pisces.

Sub-class I — Elasmobranchii.

Examples — Sharks, Skates, Sting-rays, Torpedo, Dogfish, Sawfish.

Sub-class II — Teleostomi.

Examples — Cod, Mackerel, Herring, Shad, Haddock, Swordfish, Tarpon, Trout, Salmon, Pickerel, Sucker, Eel, Seahorse, Goosefish, Gars, Bowfin, Sturgeon, Flounder, Whitefish, Tilefish.

Sub-class III — Dipnoi.

Examples — Neoceratodus — Australia.

Protopterus — Africa.

Lepidosiren — South America.

Class 3 — Amphibia.

Order 1 — Apoda.

Example — Ichthyophis.

Order 2 — Caudata. (Urodela.)

Examples — Mud Puppy, Hellbender, Siren, Congo eel, Giant Salamander, Salamanders and Newts.

Order 3 — Salientia. (Anura.)

Examples — Frogs, Toads, Tree Frogs.

Class 4 — Reptilia.

Order 1 — Rhynchocephalia.

Example — Sphenodon.

Order 2 — Lacertilia.

Example — Lizards.

Order 3 — Ophidia.

Example — Snakes (Serpents).

Order 4 — Chelonia.

Examples — Turtles and Tortoises.

Order 5 — Crocodilia.

Examples — Alligators, Crocodiles and Gavials.

Class 5 — Aves.

Sub-class 1 — Archaeornithes.

Example — Archaeopteryx. (Extinct.)

Sub-class 2 — Neornithes.

Division 1 — Ratitae.

Example — Ostrich.

Division 2 — Carinatae.

Examples — Emu, Cassowary, Kiwi, Penguin, Albatross,
Heron, Flamingo, Ducks, Geese, Terns, Gulls, Fowls,
Pigeons, Parrots, Owls, Wrens, Sparrows, Crows.

Class 6 — Mammalia.

Sub-class 1 — Prototheria or Monotremata.

Examples — Spiny Anteater, Duckbill.

Sub-class 2 — Metatheria or Marsupialia.

Examples — Kangaroo, Opossum, Wallaby.

Sub-class 3 — Eutheria or Placentalia.

Order 1 — Insectivora.

Examples — Moles, Shrews, Hedgehogs.

Order 2 — Chiroptera.

Examples — Bats and Flying Foxes.

Order 3 — Sirenia.

Examples — Manatee and Dugong.

Order 4 — Cetacea.

Examples — Whales, Porpoises, Dolphins.

Order 5 — Edentata.

Examples — Sloth, Anteater, Armadillo.

Order 6 — Rodentia.

Examples — Mice, Rats, Rabbits, Squirrels, Beavers,
Porcupines, Guinea Pigs.

Order 7 — Ungulata.

Sub-order 1 — Artiodactyla.

Examples — Pigs, Camels, Giraffes, Cattle, Deer, Hippo-
potamus, Bison, Moose.

Sub-order 2 — Perissodactyla.

Examples — Horses, Zebras, Tapirs, Rhinoceroses.

Sub-order 3 — Proboscidea.

Example — Elephants.

Order 8 — Carnivora.

Sub-order 1 — Fissipedia.

Examples — Dog, Cat, Fox, Lion, Tiger, Leopard, Lynx,
Skunk, Wolf, Raccoon, Bear, Weasel, Otter.

Sub-order 2 — Pinnipedia.

Examples — Seal, Walrus, Sea Lion.

Order 9 — Primates.

Sub-order 1 — Lemuroidea.

Family — Lemuridae.

Example — Lemurs.

Sub-order 2 — Anthropoidea.

Family — Hapalidae.

Example — Marmosets.

Family — Cebidae.

Examples — Howling Monkeys, Spider Monkeys.

Family — Cercopithecidae.

Examples — Macaques and Baboons.

Family — Simiidae.

Examples — Gibbon, Orang-utan, Chimpanzee,
Gorilla.

Family — Hominidae.

Example — Man.