and that the life-cycle embraces at least two alternating modes of brood formation.

The subdivision of the phylum is no less difficult. The char­acter of the pseudopods (see Amoeba) is the most obvious one to select, as it appears to be fairly constant. The surface may be a “ precipitation-pellicle,” not wetted by water, and the cytoplasm immediately within (“ ectosarc ”) free from granules, so that no streaming movement is visible at the surface of the pseudopods, which are blunt or taper sharply to a point (Rhizopoda Lobosa); or the cytoplasm has no such protective outer layer, and the granules extend to the surface where they show a constant streaming, and the pseudopods are fine-pointed, and taper very slowly to the tip, as in all the other groups. For convenience, however, from general similarity of habit, habitat and general structure, we have been obliged to give **a** minor importance to this character within Rhizopoda. The divisions then stand thus:—

1. Proteomyxa.—Pseudopods fine granular, not branching freely ; fission usually multiple, in a cyst; no conjugation process known.

2. Rhizopoda.—Simple forms, sometimes with a simple shell, chitinous, siliceous or of cemented particles, never calcareous; pseudopods lobose, in the tapering and branching never either stiff or reticulate.

3. Heliozoa.—Pseudopods granular, finely radiate, and gradually tapering, stiff ; skeleton variable, never calcareous nor of cemented particles.

4. Foraminifera.—Pseudopods branching freely and anastomos­ing, flexible except in a few pelagic forms where they are more radiate; shell variable, mostly of cemented sand-grains, calcare­ous, very rarely siliceous in a few deep-sea forms, not generically separable from

5. Radiolaria.—Cytoplasm divided into a central and a peripheral region by a perforated membranous central capsule; pseudo- pods radiate flexible branching or not ; skeleton either of a proteid (?) substance (“ a canthin ”) or siliceous, of spicules or forming an elegant lattice, more rarely continuous.

6. Labyrinthulidea.—Body a reticulate plasmodium, formed by cells more or less coalescent, and connected by a network of anastomosing threadlike pseudopods. Cells aggregated into loose networks without distinct boundaries, the minor aggregates con- nected by fine threadlike pseudopodia.

7. MyxomycEtes.—Cells at first free, finally aggregated to form a coalescent fructification, usually preceded by a continuous or fenestrated plasmodium stage in which alI cytoplasmic boundaries may be lost.

The reproduction processes of the Sarcodina are (1) Binary fission, equal or nearly so. (2) Multiple fission or “ sporulation ” (also termed “ brood formation ”). Conjugation (equal or unequal) usually occurs between cells produced by the latter mode (microgametes); or if not, there are antecedent processes suggesting that brood formation has been lost. Conjugation is entirely unknown in Proteomyxa, Labyrinthulidea and Myxo- mycetes, even at stages where it occurs in other groups, and it has only been definitely made out in a very limited number of genera in the remaining groups. The zygote or product of cell fusion is usually here, as in the majority of *types* of conjugation, a resting cell. (See the separate articles on the classes.)

The young of the Sarcodina, formed from the outcome of multiple fission, or single resting cells (spores), may be provided with pseudopodia from the first (myxopods or amoebulae), or come into active life fora short time with flagella (mastigopods or flagellulae).

Literature.—*Bütschli* in Bronn’s *Tierreich,* vol. i. pt. i. (1882) ; Y. Delage and E. Hérouard, *Traité de zoologie concrète,* vol. i., *La Cellule et les protozoaires* (1896) ; A. Lang, *Handb. der Zoologie,* ed. 2, pt. i. “ Protozoen ” (1902); M. Hartog, *Cambridge Natural History,* vol. i. (1906) ; in the first four b∞ks full bibliographies are given.

(M. Ha.)

SARCOPHAGUS (Gr. *σαρκοφάγος,* literally “ flesh-eating,” from σαρξ, flesh, *φwyeiv,* to eat), the name given to a coffin in stone, which on account of its caustic qualities, according to Pliny *(H.N.* xxxvi. 27), consumed the body in forty days; also by the Greeks to a sepulchral chest, in stone or other material, which was more or less enriched with ornament and sculpture. One of the finest examples known is the sarcophagus of Seti, the second king of the XIX. Egyptian dynasty (1326-1300 B.c.), which is carved out of a block of Aragonite or hard carbonate of lime, now in the Soane Museum; of later date are the green

porphyry sarcophagus and the terra-cotta sarcophagus from Clazomenae; both of these date from the early 6th century B.c., and are in the British Museum. The finest Greek examples are those found at Sidon in 1887 by Hamdy Bey, which are now in the Imperial Museum at Constantinople (see Greek Art). Of Etruscan sarcophagi there are numerous examples in terra­cotta; occasionally they are miniature representations of temples, and sometimes in the form of a couch on which rest figures of the deceased; one of these in the British Museum dates from 500 B.c. The earliest Roman sarcophagus is that of Scipio in the Vatican (3rd century b.c.), carved in peperino stone. Of later Roman sarcophagi, there is an immense series enriched with figures in high relief, of which the chief are the Niobid example in the Lateran, the Lycomedes sarcophagus in the ‘Capitol, the Penthesilea sarcophagus in the Vatican, and the immense sarcophagus representing a battle of the Romans and the barbarians in the Museo delle Terme. In later Roman work there was a great decadence in the sculpture, so that in the following centuries recourse was had to the red Egyptian porphyry, of which the sarcophagi of Constantia (a.D. 355) and of the empress Helena (a.d. 589), both in the Vatican, are fine examples. Of later date, during the Byzantine period, there is a large series either in museums or in the cloisters of the Italian churches. They are generally decorated with a series of niches with figures in them, divided by small attached shafts with semicircular or sloping covers carved with religious emblems, one of the best examples being the sarcophagus of Sta Barbara, dating from the beginning of the 6th century, at Ravenna, where there are many others. The term sarcophagus is sometimes applied also to an altar tomb.

SARD, a reddish-brown chalcedony much used by the ancients as a gem-stone. Pliny states that it was named from Sardis, in Lydia, where it was first discovered; but probably the name came with the stone from Persia (Pers. *sered,* yellowish- red). Sard was used for Assyrian cylinder-seals, Egyptian and Phoenician scarabs, and early Greek and Etruscan gems. The Hebrew *odem* (translated *sardius),* the first stone in the High Priest’s breastplate, was a red stone—probably sard, but perhaps carnelian or red jasper (see J. Taylor, “ Sardius,” in Hastings’s *Dict. Bibl.).* Some kinds of sard closely resemble carnelian, but are usually rather harder and tougher, with a duller and more hackly fracture. Mineralogically the two stones pass into each other, and indeed they have often been regarded as identical, both being chalcedonic quartz coloured with oxide of iron. The range of colours in sard is very great, some stones being orange-red, or hyacinthine, and others even golden, whilst some present so dark a brown colour as to appear almost black by reflected light. The hyacinthine sard, resembling certain garnets, was the most valued variety among the ancients for cameos and intaglios. Dark-brown sard is sometimes called “sardoine,” or “sardine”; whilst certain sards of yellowish colour were at one time known to collectors of engraved gems as “beryl.”

SARDANAPALUS, or Sardanapallus, according to Greek fable, the last king of Assyria, the thirtieth in succession from Ninyas. The name is derived from that of Assur-danin-pal, the rebel son of Shalmaneser H., whose reign ended with the fall of Nineveh in 823 B.c. (or perhaps from that of Assur-dan III., the last king but one of the older Assyrian dynasty); his character is that ascribed to Assur-bani-pal. He was the most effeminate and corrupt of a line of effeminate princes; hence Arbaces, satrap of Media, rebelled and, with the help of Belesys, the Babylonian priest, besieged Nineveh. Sardanapalus now threw off his sloth and for two years the issue was doubtful. Then, the Tigris having undermined part of the city wall, he collected his wives and treasures and burned them with himself in his palace (880 b.c.). His fate is an echo of that of Samas- sum-yukin, the brother of Assur-bani-pal *(q.v.).*

See J. Gilmore, *Fragments of the Persika of Ktesias* (1888).

(A. H. S.)

SARDARPUR, a British station in Central India, within the state of Gwalior, on the Mahi river, 58 m. by road E. of Mhow;