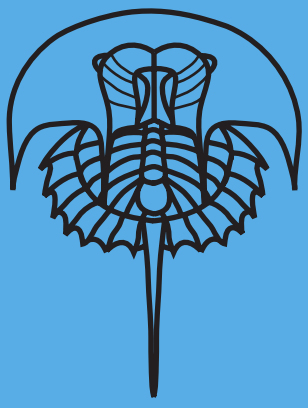

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PART E, REVISED, VOLUME 4, CHAPTER 8: GLOSSARY OF TERMS APPLIED TO THE HYPERCALCIFIED PORIFERA

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This glossary covers all the major groups of hypercalcified sponges, including the fossil representatives of the Archaeocyatha, Stromatoporoidea, Chaetetida, Sphinctozoa, and Inozoa, and as well the living hypercalcified members of the classes Demospongiae and Calcispongiae. It includes the terms used to describe the wide range of morphological types of nonspiculate basal calcareous skeletons. It includes also relevant spicule terminology for the well-preserved fossil skeletons exhibiting spicule traces and for describing the spicules associated with the living hypercalcified basal skeletons, as well as those loosely aggregated in soft tissues of their upper growing surfaces. The glossary reflects the scope and wide-ranging progress made in research on the various hypercalcified sponge groups over the past 40 years. Many of the terms defined in the glossary are discussed and illustrated in the introductory chapters of this volume.

Parts of this compilation are based significantly on the following works: (1) Boury-Esnault and Rützler's (1997) *Thesaurus on Sponge Morphology* (with its terminology focused on extant forms); (2) parts of Hooper and van Soest's (2002) *Systema Porifera* that deal with the terminology of fossil Sphinctozoa (contributed by Senowbari-Daryan and Garcia-Bellido) and the Archaeocyatha (with its separate glossary contributed by Debrenne, Zhuravlev, and Kruse); (3) the contribution on Paleozoic stromatoporoids by Stearn and others (1999), also with a separate glossary; and (4) the fossil sponge glossary in the *Treatise on Invertebrate Paleontology,* Part E, Revised, vol. 2, contributed by Reid and Rigby (2003). An etymology of the Greek words used in the formation of sponge terminology, nomenclature, and taxon names by Boury-Esnault and Rützler (1997) and Hooper and van Soest (2002) is presented in Voultsiadou and Gkelis (2005).

The terms defined here in alphabetical order as being of greater importance in this *Treatise* volume are listed in bold and singular, and the groups of hypercalcified sponges to which they apply are denoted at the end of each entry by abbreviations in bold and square brackets. These latter are identified (special interests of authors are included in parentheses) as follows: **Ar,** archaeocyaths (Debrenne, Zhuravlev, Kruse); **Ch**, chaetetids (West); **Cr,** cribricyaths (Zhuravlev, Kruse); **Di**, disjectoporids (Stearn); **Ex**, extant forms (Vacelet, Willenz); **In,** inozoans (Senowbari-Daryan, Rigby); **Ms,** Mesozoic stromatoporoids (Wood); **Ps**, Paleozoic stromatoporoids (Stearn, Webby, Nestor, Stock, Kershaw); **Pu**, pulchrilaminids (Webby); **Ra**, radiocyaths (Kruse, Zhuravlev, Debrenne); **Sp**, sphinctozoans (Senowbari-Daryan, Rigby). Some nonspiculate stromatoporoid-like forms (Stearn, Stock) from the Mesozoic are also denoted by **Ms**.

Each entry in the alphabetically arranged glossary list includes the specific term, then one or more sentences defining the term, and then a listing of additional terms that

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are included for comparative purposes to the defined term. Other terms that are viewed as having lesser importance are also listed but in parentheses, as synonyms (syn.); these are mainly regarded as superfluous (or obsolete). A few other terms are entered in the glossary with italics, and contributing authors regard these as obsolete; consequently they are not recommended for continued use by workers on hypercalcified sponges. Two examples are: the so-called coralline sponges, a term that is more or less synonymous with hypercalcified sponges but inappropriately named, even allowing for some that show a superficial resemblance to corals; and the Sclerospongiae is an artifical (polyphyletic) grouping of living forms exhibiting demosponge affinities, with solid calcareous skeletons and, as well, fossil stromatoporoids and chaetetids.

The presentation of this consolidated glossary has involved entering terminology across a number of different hypercalcified sponge groups, and this has resulted in some multiple listings with a term having been introduced independently by workers in a number of different groups. Consequently, the definitions vary greatly: in some cases they describe very similar structures, and in other examples the features given a common name represent entirely unrelated structures. For example, whereas the term astrorhiza seems to define homologous structures across a number of different groups, the term tabula appears to represent completely unrelated types of structures across various groups. In preparing this consolidated glossary, we maintain the separated multiple entries for each term using an italicized *or* between each successive entry. The only other alternative was to present separate glossaries for each group, but this seemed a less satisfactory approach, given the longer-term aim should be to produce an entirely unified nomenclature for the hypercalcified sponges.

Though the archaeocyathan terms used here derive mainly from the summary in Debrenne, Zhuravlev, and Kruse (2002), they were originally proposed by a number of workers, most notably Debrenne, Rozanov, and Zhuravlev (1990, p. 205); Zhuravlev, Debrenne, and Wood (1990); Wood, Zhuravlev, and Debrenne (1992); and Debrenne and Zhuravlev (1992, p. 34, 58). In addition, some general terms were taken from Vlasov (1962); Rozanov (1973, p. 62–77); Wendt (1980); Wood (1987); and Meyen (1988).

The Paleozoic stromatoporoid terms compiled here have been compiled from the glossary list in Stearn and others (1999, p. 5–10). This was the first attempt since the late 1950s (Galloway, 1957, p. 350–360) to produce a concise, simplified, yet comprehensive list of morphological terms in English. Bogoyavlenskaya (1968, 1984), Khalfina (1972), and Bol'shakova (1973) provided other morphological summaries.

A glossary of Mesozoic stromatoporoid terms was compiled by Wood (1987), and, prior to the summary of morphological terminology in Senowbari-Daryan and Garcia-Bellido (2002), there was a comprehensive coverage of the morphological terminology of sphinctozoans assembled by Senowbari-Daryan (1990).

A divergence of opinion exists between the usages of the term stromatoporoid among authors of the chapters dealing with Mesozoic taxa. Wood (*Treatise Online*, Part E, Revised, Volume 4, Chapters 3, 4A–B) has treated the term stromatoporoid as representing a grade of organization of the hypercalcified skeleton, and so the term is viewed as having little or no taxonomic significance. The spiculate relationship is considered by Wood to have prime importance in classifying the Mesozoic taxa and in assigning them to the class Demospongiae; or, where spicules are lacking, the taxa are placed in *incertae sedis* of the Porifera. The second opinion stems from the long-standing perception among Paleozoic workers that the term stromatoporoid is taxonomically important: it remains the basis for recognition of the Ordovician–Devonian class Stromatoporoidea as an independent, unified, and exclusively nonspiculate group. Given this background, Stearn and Stock

(*Treatise Online,* Part E, Revised, Volume 4, Chapter 5) regarded the comparatively limited and uncertain record of nonspiculate, upper Paleozoic–Mesozoic forms as being stromatoporoid-like taxa, with uncertain links to early to mid-Paleozoic Stromatoporoidea.

It should be noted that the list of Paleozoic stromatoporoid terms presented in this glossary is additionally classified into those terms that are (1) related to skeletal form and structure (skeleton = sk); (2) structures parallel to growth surfaces (tangential = ts); (3) structures normal to growth surfaces (longitudinal = ls); (4) related to the aquiferous filtration system (aquiferous = aq); and (5) related to microstructural type (microstructure = mi). One of the supplementary categories in parentheses (above) has been added to each Paleozoic stromatoporoid term listed in the glossary.

It is important also to distinguish growth orientations within laminar, domical, and bulbous stromatoporoid skeletons, as well as to the different orientations of thin sections used to study them. In particular, growth takes place *longitudinally* as the organism extends outwardly through successive growth surfaces, and *tangentially* as it extends laterally, parallel to successive growth surfaces. For studying columnar and dendroid skeletons, three different orientations are used: *longitudinally*, in the direction of the long axis of the column or branch; *transversely*, at right angles to the long axis; and *tangentially*, in the direction of the long axis, but offset to near the outer margin of the column or branch. In the *transverse* cut, structures are parallel to growth toward the periphery of branch, but normal to growth in the axial region.

Thin sections used in studying archaeocyaths and chaetetids are typically cut in two main orientations: *longitudinally* and *transversely* (perpendicular to and parallel to the growth surface, respectively).

Other abbreviations used in the Glossary are listed below.

S2a: *Systema Porifera*, vol. 2, Debrenne, Zhuravlev, and Kruse, 2002, p. 1539–1699, Class Archaeocyatha Bornemann, 1884.

S2b: *Systema Porifera*, vol. 2, Senowbari-Daryan and Garcia-Bellido, 2002, p. 1511–1533, Fossil sphinctozoan: chambered sponges (polyphyletic).

Th: *Thesaurus on Sponge Morphology* (edited by Boury-Esnault & Rützler, 1997, Smithsonian Contributions to Zoology 596:1–55).

Tr: *Treatise on Invertebrate Paleontology*, Part E, Revised, Volume 2 (Reid & Rigby, 2003), glossary for Porifera, p. 177–190.

References to figures and usage of terms within the chapters of the *Treatise Online,* Part E, Revised, Volume 4, are denoted by the chapter number and figure listing (where known), for example, Ch. 9C, Fig. 8. For a complete listing of chapters, see the Table of Contents online at www.paleo.ku.edu/treatiseonline.

acanthostyle. Single-axis spicule that bears small spines (or spinules), one blunt end and one pointed end; normally a megasclere (Th, fig. 216; Tr, p. 177) [**Ms, Ch, Ex**].

acosmoreticular (mi). A microreticulate microstructure where the orientation of micropillars and microcolliculi is without order [**Ps**].

allotube (ls). An elongate space within the skeleton aligned normal to the growth surface, meandriform or irregular in tangential section, bounded by amalgamate net of pachysteles and pachystromes, internally divided by dissepiments in orders Stromatoporida and Syringostromatida (Ch. 9C, Fig. 8,*4;* 9,*3;* 13,*3–4* (syn., pseudozooidal tube, coenotube) [**Ps**].

altoid wall. In Kazachstanicyathida, a simple outer wall of lintels linking distal ends of pillars to form a continuous plate pierced by frequent polygonal pores (Ch. 18B) (syn., simple wall of *Altaicyathus*-type; Debrenne & Zhuravlev, 1992) [**Ar**].

amalgamate structure (sk). Three-dimensional network in which discrete, persistent, tangential structural elements are poorly defined (Ch. 9C, Fig. 5–*6*) [**Ps**].

ambiostium. A large exopore in interwall at the junction of two chambers, that opens into both chambers (S2b, fig. 1) [**Sp, In**].

ambisiphonate. Condition in which a spongocoel or axial tube is formed by growth upward from the chamber floor and downward from the roof. Usually the two parts do not grow completely together, leaving a ring of perforations or exopores (S2b, p. 1515, fig. 10) [**Sp, In**].

ambitopic mode of life. Like a number of other Paleozoic benthic organisms (JAANUSSON, 1979, p. 269), many stromatoporoids were capable of maintaining markedly different types of substrate preferences, first as attached forms during early growth stages, and then switching to live essentially freely on unconsolidated substrates, like level-bottom muddy settings, through their remaining life history [**Ps**].

amphiaster. A microsclere with rays radiating from both ends of a shaft. The rays are shorter than the shaft (Th) [**Ex**].

amphiblastula. Hollow, ovoid larva, with anterior (flagellated) and posterior (nonflagellated) groups of cells, typical of Calcaronea (Th) [**Ex**].

annulation. A ringlike structure marked by either a constriction or expansion in the outer wall of the skeleton [**Sp, In**].

annulus (pl., **annuli**). Ring-shaped (annular) plate separating horizontal files of wall openings (alone or in combination with other wall types); develops on external surface of outer walls or internal (central cavity) surface of inner walls; may be of planar, S-shaped, or V-shaped section (Ch. 18B; S2a, p. 1689, fig. 19–21) [**Ar**].

anthoid wall. In Anthomorphina, a simple outer wall comprising transverse lintels linking adjacent pseudosepta to form a single row of slightly subquadrate large pores; additional lintels may delineate additional, discontinuous pore rows (Ch. 18B) (syn., simple wall of *Anthomorpha*-type; DEBRENNE & ZHURAVLEV, 1992) [**Ar**].

apical actine (ray). Fourth actine of a tetractine that is joined to the basal triradiate system (Th) [**Ex**].

apochete. Exhalant canal [**Sp, In**].

apopore. Exhalant pore [**Sp, In**].

apopyle. Opening of a choanocyte chamber into an exhalant canal (Th, p. 8, fig. 37) [**Ex**].

aporate. Without pores [**Sp, In**].

aporose septum. Septal pores absent. See septum (S2a, p. 1692, fig. 39H) [**Ar**].

aquiferous system. Whole water-conducting system of a sponge between the ostia and the osculum, comprising the inhalant system, choanocyte chambers, and exhalant system (Th, p. 8, fig. 37) [**Ms, Ch, Ex**].

aquiferous unit. Portion of the sponge that is a more or less functionally independent water-conducting system, comprising associated ostia, inhalant system, choanocyte chambers, and exhalant system, and has its drainage converging on a single osculum. See functional unit and module, which are treated as equivalents) (S2a, p.1689, fig. 3) [**Ar, Ms, Ch, Ex**].

archaeocyathan architecture. Skeletal structure with radial-longitudinal and/or radial-transverse partitions in intervallum. See architecture (Ch. 18B; S2a, p. 1689, fig. 2A, C) [**Ar**].

architecture. Type of primary skeletal structure. See archaeocyathan architecture, chaetetid architecture, stromatoporoid architecture, thalamid architecture (Ch. 18B; S2a, p. 1689, fig. 1); syn., growth pattern [**Ar**].

asiphonate. Without a spongocoel or axial canals (S2b, p. 1519, fig. 10) [**Sp, In**].

asiphonate exhalant system. Condition in sphinctozoan sponges where any form of axial canal is lacking (S2b, p. 1513) [**Sp**].

aster. Any polyactinal (multi-rayed) microsclere in which the processes diverge from a common center or axial shaft (Tr, p. 178; HOOPER & WIEDENMAYER, 1994, p. 38, fig. 117–131) [**Ms, Ch, Ex**].

astrorhiza (pl., **astrorhizae**) (aq). A set of radiating (stellate) and branching canals, grooves, ridges, and openings of exhalant canal system of primary skeleton, as imprints converging to a single osculum (or closely spaced oscula) on terminal growth surface of skeleton; the structures may be associated with mamelons (Ch. 9C, Fig. 10,*1–5;* 11,*2–4;* 12,*1–4*; S2a, p. 1689, fig. 61F; Th, p. 36, fig. 203, 210; Tr, p. 178); syn., excurrent canal traces, astrosystem, stellate venations [**Ar, Ps, Ms, Ch, Ex, Sp, In**].

astrorhizal canal (aq). Part of a stellate, radiating, and/or branching, exhalant canal system within the skeleton (both longitudinally and tangentially oriented), composed of walled tubes, or where preserved without walls, as astrorhizal paths. In chaetetids, they are confined to the external surface. Canals may be partitioned by tabulae or dissepiments (syn., lateral tube, transverse astrotube, lateral canal) [**Ps, Ms, Ch, Ex**].

astrorhizal path. See astrorhizal canal (Ch. 9C, Fig. 11,*2–3*) [**Ps**].

astrotube. The terms lateral and axial astrotubes have been applied to distribution of oscula on Mesozoic stromatoporoids (HUDSON, 1958); now obsolete [**Ms**].

atrium. An exhalant aquiferous cavity receiving water from one or more exhalant canals or apopyles and conducting it to one or more oscula) (Th, p. 8, fig. 40; Tr, p. 178); syn., spongocoel, preoscular cavity, cloaca [**Ms, Ch, Ex**].

atrium. Spongocoel (Th, p. 8, fig. 40) [**Sp, In**].

attached microporous sheath. Microporous sheath attached directly to carcass pore lintels; may be continuous (covering entire surface of carcass) or discontinuous (covering each carcass pore separately). See microporous sheath (Ch. 18B; S2a, p. 1690, fig. 44D, G) [**Ar**].

autotube (ls). An elongate space between pachysteles with circular to subcircular outline in tangential section [**Ps**].

axial. The central (older) part of a skeletal branch [**Ms, Ch**].

axial canal (aq). Longitudinally oriented median structure of the astrorhizal system in domical, laminar, bulbous, and irregular skeletons that may be analogous to the axial canal in some columnar to dendroid stromatoporoids; may be tabulated (Ch. 9C, Fig. 13,*1;* Ch. 9F, Fig. 2,*2;* Ch. 16E, Fig. 43*a*) [**Ps**].

axial canal. Spongocoel [**Sp, In**].

axial tube. Spongocoel, or a combination of discontinuous but aligned tubelike structures in interwalls [**Sp, In**].

backfill. Secondarily secreted calcareous filling material that grows syntaxially over the primary calcareous skeleton. Backfill may partially or fully occlude the primary pore space. See secondary calcareous skeleton [**Ms, Ch**].

baculus (pl., **baculi**). Longitudinal, rodlike element on external surface of outer wall [**Cr**].

bar. Radial-transverse lintel separating pores in a uniporous septum; biconcave in plan and with elongate cross section. See rod, uniporous septum (Ch. 18B; S2a, p. 1689) [**Ar**].

barrel-shaped chamber shape. Chambers with nearly flat interwalls, but with bulging sides at midheight in subcylindrical structure [**Sp, In**].

basal calcareous skeleton. Hypercalcified sponges composed of either a rigid aspiculate or rigid spiculate skeleton, or a combination of both; the basal skeleton of calcium carbonate is considered by analogy with living hypercalcified sponges to have underlain a mantling layer of living tissue during its upward and outward growth. See rigid aspicular skeleton, rigid spicular skeleton [**Ps, Ms, Ch, Ex**].

basal layer (ts). A thin, dense, initial investment of skeletal material at the base of a stromatoporoid or chaetetid skeleton, with associated basal surface with either smooth or concentrically arranged, wrinkled, fine to coarse striae; basal layer is typically confined to undersides of laminar-domical shaped skeletons but may extend to lateral surfaces of small, cup-shaped skeletons; may be synonymous with epitheca of corals and extant hypercaclcified sponges but is not of secondary origin; the basal layer was produced in an inital stage of the growth process, as part of the basal phase of Stearn (1989); in chaetetids, the basal layer appears to be organic [**Ps, Ch**].

basal phase (ts). A unit distinguished by structures different from those of the mature skeleton, formed in the initial growth of skeletal material across the surface of the sediment or hard substrate, or resumption of growth at the base of a latilamina (Ch. 9C, Fig. 13,*2;* 14,*3*) [**Ps**].

basic wall. Wall constructed only of marginal intervallar structures with additional lintels between. See rudimentary wall (Ch. 18B; S2a, p. 1689, fig. 60L) [**Ar**].

bisiphonate. Sponges with two spongocoels [**Sp, In**].

bowl-like cup. Widely conical cup. See cup (Ch. 18B; S2a, p. 1690, fig. 69A) [**Ar**].

bract. S-shaped, cupped, or tubular plate incompletely covering a single pore; develops on external surface of outer wall or internal (central cavity) surface of inner wall. See fused bract, pore tube (Ch. 18B; S2a, 1689, fig. 44C) [**Ar**].

branching canal. Canal completely divided at a point along the length into two or more subsidiary canals. See canal (Ch. 18B; S2a, p. 1689, fig. 22J) [**Ar**].

branching gross morphology. Spreading out in branches; syn., dendritic, dendroid, foliose, fasciculate, ramose, digitate, phaceloid [**Ms, Ch, Ex**].

branching modular organization. Type of modular organization generated either by longitudinal subdivision or by external or interseptal budding. See modular organization; syn., dendroid, ramose (Ch. 18B; S2a, p. 1691, fig. 60F–G) [**Ar**].

budding. Type of asexual reproduction in which parent cup is distinct from its progeny, though contiguous with them. [This budding terminology does not apply to chaetetids.] See external budding, intercalicular budding, interseptal budding (Ch. 18B; S2a, p. 1689, fig. 9) [**Ar**].

bulbous growth morphology. Having the form of bulbous calcareous skeleton [**Ms, Ch, Ex**].

bullipore. Pore of a cribribulla (S2b, fig. 1) [**Sp, In**].

buttress. Complex, aporose structure of secondary skeleton consisting of several lamellar elements and extending from outer surface of primary skeleton to connect it with any firm substrate. See exocyathoid buttress, tersioid buttress (Ch. 18B; S2a, p. 1689) [**Ar**].

calcareous skeleton. The calcareous skeletal material of hypercalcified demosponges and calcisponges, both aspiculate and spiculate. See basal calcareous skeleton, skeleton; syn., coenosteum [**Ms, Ch, Ex**].

calicle. Longitudinal, tubelike, intervallar structure that can be hexagonal or tetragonal in cross section. See facet (Ch. 18B; S2a, p. 1689, fig. 71A–B) [**Ar**]; *or calicle.* Not recommended as a chaetetid morphological term because of its cnidarian connotations; replaced by tubule (see definition for tubule) [**Ch**].

calthrop. Equiangular tetraxon with equal rays, so-called from resemblance to the four-pointed weapon known as a calthrop; may be a mega- or microsclere (Th, p. 42, fig. 228) [**Ms, Ch, Ex**].

cambroid wall. In Loculicyathina, a simple outer wall consisting of a continuous plate pierced by simple pores; pores may be rounded, irregularly rounded, or irregularly quadrate (Ch. 18B); syn., simple wall of *Cambrocyathellus*-type; Debrenne & Zhuravlev, 1992) [**Ar**].

canal. Wall opening of length greater than diameter. See branching canal, communicating canal, noncommunicating canal, S-shaped canal, subdivided canal, V-shaped canal, spongiose wall [S2a, p. 1689] [**Ar**]; *or* internal passage for water circulation, may be single or dichotomously to multidichotomously branched, or labyrinthic branched. See groovelike canal, fully roofed canal, exopore (S2b, p. 1519, fig. 8) [**Sp, In**].

canal system. Inhalant and exhalant canals for water circulation within the sponge [**Sp, In**].

carcass. Layer of otherwise simple pores and intervening lintels, the latter supporting microporous sheath in walls of microporous sheath type (S2a, p. 1689, fig. 27B) [**Ar**].

cassiculate structure (sk). Formed by oblique skeletal elements joined to enclose diamond-shaped galleries in a network like that of a chainlink fence (Ch. 9C, Fig. 6,*1*) [**Ps**].

cateniform. Catenulate or moniliform structure [**Sp, In**].

catenulate. Arrangement of ringlike chambers in moniliform structure around one or more spongocoels (S2b, p. 1515, fig. 4) [**Sp, In**].

catenulate modular organization. Chainlike modular organization consisting of individuals united

laterally with one or two others; generated by incomplete longitudinal subdivision. See modular organization (Ch. 18B; S2a, p. 1691, fig. 41K) [**Ar**].

cavaedia (pl.). Large, deep indentations between folds in a plicate dermal surface of a sponge [**Sp, In**].

cellular (mi). Speckled skeletal material filled with closely spaced, irregularly distributed, subspherical, clear areas (cellules) that appear to have been voids in the structural element (Ch. 9D, Fig. 5,*1;* 6,*1;* 10,*2*) [**Ps**].

cellules (mi). See cellular [**Ps**].

cemented (fused) spicule. Interlocked or adjacent spicules firmly linked by calcareous cement; the cement may be restricted to the junction area or may progressively encase the entire spicule (Th, p. 36, fig. 204) [**Ms, Ch, Ex**].

central cavity. Space within two-walled cup, bounded externally by inner wall (S2a, p. 1690) [**Ar**].

chaetetid architecture. Skeletal structure consisting of calicles in archaeocyaths. [Use of the term tubules is preferred in chaetetids.] See architecture (Ch. 18B; S2a, p. 1689, fig. 2D) [**Ar**].

chamber. Space in a thalamid cup bounded by adjacent arched tabulae and their contiguous walls (S2a, p. 1690) [**Ar**]; *or* hollow, superposed, or laterally attached, major structures in sphinctozoan skeleton (S2b, fig. 1) [**Sp**].

chamber shape. Form of hollow major structures of the sponge skeleton. See barrel-shaped chamber shape, crescentic chamber shape, flattened chamber shape, funnel-shaped chamber shape, hemispherical chamber shape, tubular chamber shape, spheroidal chamber shape, rectangular chamber shape [**Sp**].

chamber wall. The skeletal structure that defines an individual chamber and may be subdivided into an exowall, interwall, and endowall [**Sp, In**].

chimney. Vertically developed mamelons bearing oscula, both of which protrude beyond the general growth surface [**Ms, Ch, Ex**]; *or* see exaulos [**Ar, Sp, In**].

clathrate wall. Wall consisting of a carcass of slitlike pores supporting a layer of more closely spaced, longitudinal ribs with or without transverse linking lintels. See pseudoclathrate wall (S2a, p. 1690, fig. 38E, J, 50F, H) [**Ar**].

clavidisc. Specialized microsclere, comprising an ovate disc with an elongate central perforation [**Ms, Ch, Ex**].

clinogonal microstructure. Elongate microstructural elements are divergent from a common axis at angles of less than 45° and may be penicillate, of thin pencil-like elements, or water-jet of divergent, irregular, linear elements or trabecular, of rods of anastomosing filaments, which may form an irregular mesh or web. Penicillate and water-jet are confirmed as basic types of clinogonal microstructure in sponges, but trabecular represents a cnidarian condition (not known in sponges), consequently an obsolete term in relation to sponges. Note also fascicular fibrous microstructure is broadly synonymous with clinogonal microstructure (Wendt, 1984; Boury-Esnault & Rützler, 1997) [**Ch, Sp, In, Ms, Ex**].

clinoreticular (mi). A microreticulate microstructural type where micropillars are inclined upward and outward from subcolumn axes; note that subcolumns in the syringostromatids have been been referred to as pillars [**Ps**].

cloaca. See spongocoel [**Sp, In**].

cloacal. Of the cloaca or spongocoel [**Sp, In**].

coarsely porous porosity. Pore diameter greater than lintel width; pores rounded to polygonal in outline. See porosity (Ch. 18B; S2a, p. 1691, fig. 56F) [**Ar**].

coeloblastula (blastula). Hollow larva composed of an envelope of morphologically similar equipotent cells, to which a few, larger, nonflagellated cells may be added at the posterior pole (Th) [**Ex**].

coenostele (ls). Not recommended because of its cnidarian connotations. See pachystele [**Ps**].

coenosteum (sk). See skeleton. The term is not recommended for continued use in describing the solid calcified skeleton of stromatoporoid sponges. [It remains applicable to cnidarians that exhibit a common colonial skeleton, and to Bryozoa with vesicular or solid skeletal material between zooecia.] [**Ps, Ms**].

coenostrome (ts). Not recommended because of its cnidarian connotations. See pachystrome; syn., coenostrom [**Ps**].

coenotube (ls). Not recommended because of its cnidarian connotations. See allotube [**Ps**].

collencyte. Cell with branching pseudopods, involved in the secretion of collagen (Th, p. 12, fig. 49) [**Ex**].

colliculus (pl., **colliculi**) (ts). A rod attached to a pillar that joins other such rods to form a net parallel to the growth surface in the order Actinostromatida; hence the laminae in this group are composed of colliculi (Ch. 9C, Fig. 5,*1–2*) [**Ps**].

column (ls). Skeletal structure (of macrostructure level) in which the arrangement of skeletal elements differs from that of intercolumn areas. The difference is commonly in the concentration and width of astrorhizae, pillars, or other longitudinal structures. See mamelon column (Ch. 9C, Fig. 9,*5*) [**Ps**]; *or* radial structural element of the calcareous skeleton, which appears vertical in longitudinal section. Greater degree of continuity and size than pillars; syn., vertical element, radial pillar, vertical lamella [**Ms**].

columnar gross morphology. Elongate forms with a circular or subcircular cross section; syn., cylindrical [**Ms, Ch, Ex**].

comma (pl., **commas**). A curved microstyle (Th) [**Ex**].

communicating canal. Canal connected to its neighbors either by pores piercing mutual canal walls or by anastomosing. See canal (Ch. 18B; S2a, p. 1689, fig. 25E, 31E–F, 37E–F); syn., perforate canal [**Ar**].

compact (mi). Specks are distributed evenly throughout the skeletal elements so that the elements have no regular internal microstructure [**Ps**].

compensation. Morphogenetic process involving the addition of a microporous sheath-screen or other

elements in response to oligomerization (S2a, p. 1690) [**Ar**].

completely porous septum. Septal pores distributed frequently and uniformly over entire septum. See septum (Ch. 18B; S2a, p. 1691, fig. 22H, 24B) [**Ar**].

compound wall. Wall in which component pores or cells bear spinelike elements projecting inward from their lintels; spines may unite across pore orifice to form micropores (complete pore subdivision) or remain incompletely connected (incipient pore subdivision) (Ch. 18B; S2a, p. 1690, fig. 67F, 68F, respectively) [**Ar**].

concentrically porous wall. Wall in which pores are grouped into more or less discrete clusters corresponding to cells bounded by adjacent radial-longitudinal partitions and tangential synapticulae (Ch. 18B); syn., centripetal wall of GRAVESTOCK, 1984) [**Ar**].

conical cup. Cup in form of inverted cone. See cup (S2a, p. 1690, fig. 13C) [**Ar**].

conical gross morphology. Having the form of an inverted cone [**Ms, Ex**].

contemporary phase (ls). A unit of skeletal growth of characteristic structure that displaces others, tangentially reflecting different structures formed contemporaneously along the growth surface (e.g., areas exhibiting structures unique to those formed by the superposition of mamelons) (Ch. 9C, Fig. 6,*5*) [**Ps**].

coralline sponges. So named because of their superficial resemblances to groups of skeletonized, colonial organisms like tabulate corals in the Paleozoic and scleractinian corals in the Mesozoic to Recent; and also because of the many associations where sponges occur in reef-building habitats. Both these connotations are misleading, however: coralline is not a sponge-derived morphological term, and it has no place in the broader taxonomic classification and/or evolutionary development of sponges, either hypercalcified or otherwise. Consequently, the expression coralline, even as part of a general informal usage, should be discontinued. The term *coralline demosponges* is similarly a misnomer [**Ps, Ms, Ch, Sp, In, Ex**].

corallite. Not recommended because the term has cnidarian connotations [**Ms, Ch**].

corolla. Star-shaped, convex-downward, umbrella-like structure projecting from external surface of a cup and consisting of hollow, closed shafts and their connecting membranes; part of primary skeleton (Ch. 18B; S2a, p. 1690, fig. 53J–L) [**Ar**].

cortex (pl., **cortices**). Thin, rindlike external layer of the rigid skeleton, usually with a structure different from that of the interior part of the skeleton (S2b, fig. 1) [**Sp, In**].

cortical. Of the cortex [**Sp, In**].

craticula (pl., **craticulae**). A screenlike element across the outer end of an exaulos (S2b, fig. 1) [**Sp, In**].

craticular pore. An opening or pore in a craticula [**Sp, In**].

crenulate. Wall in which each intersept is individually folded to form smoothly rounded bulge directed away from the intervallum (S2a, p. 1690, fig. 74A–B); syn., turgescent [**Ar**].

crenulation (ls). A small, upward inflection of a cyst plate or lamina (Ch. 16B, Fig. 1,*2a–b*) [**Ps**].

crescentic chamber shape. Chambers that are C-shaped, or shaped like the moon in its first quarter [**Sp, In**].

cribribulla (pl., **cribribullae**). Blisterlike sieve at the inner end of an exaulos (S2b, fig. 1) [**Sp, In**].

cribripore. Pores in sievelike or screenlike cribribulla (S2b, fig. 1) [**Sp, In**].

cryptosiphonate. Condition in sphinctozoan sponges in which chambers communicate through an aperture or group of apertures through the interwall between chambers (S2b, p. 1513, 1519, fig. 10) [**Sp**].

cryptosiphonate exhalant system. Condition in sphinctozoan sponges where skeletal chambers communicate through an aperture or group of apertures in chamber interwalls, without an axial tube (S2b, p. 1513) [**Sp**].

cup. Calcareous archaeocyathan skeleton. See bowl-like cup, conical cup, cylindrical cup, domal cup, juvenile cup, multichambered cup, platelike cup, sheetlike cup, single-chambered cup (S2a, p. 1690, fig. 1) [**Ar**].

cyathiform. Cup shaped [**Sp, In**].

cylindrical cup. Narrowly conical cup approaching form of cylinder. See cup (Ch. 18B; S2a, p. 1690, fig. 12J) [**Ar**].

cyst (ts). The space enclosed by the cyst plate [**Ps**].

cyst plate (ts). An upwardly and outwardly convex (in a few taxa, flat or concave) skeletal plate parallel to the growth surface characteristic of the order Labechiida (Ch. 9C, Fig. 2,*5;* Ch. 16B, Fig. 5*g,* 6*e*) [**Ps**].

denticle. Flattened, toothlike projection from free edge of an annulus (Ch. 18B; S2a, p. 1690, fig. 20A,C) [**Ar**]; *or* short, solid, skeletal rod raised above the surface of cyst plates, and may extend from flanks of some pillars in the order Labechiida (incorporates villi of GALLOWAY, 1957) (Ch. 9C, Fig. 5,*4;* 6,*5*) [**Ps**].

dermal. Outer surface or part of a sponge [**Sp, In**].

desma. Typically an interlocking megasclere of varied geometry that contributes to the main body of skeleton of lithistid demosponges (Th) [**Ex**].

diapason (tuning-fork spicule). Sagittal triactine with parallel, paired rays (Th) [**Ex**].

diaphragm. Thin, flat, or convex membrane narrowing orifice of a simple pore (Ch. 18B; S2a, p. 1690, fig. 19C, left) [**Ar**]; *or* more or less rigid plate subdividing chamber interiors [**Sp, In**].

dichotomous exopore. A pore that subdivides once into two branches in the outer part of the wall [S2b, fig. 8] [**Sp, In**].

dictyonal network. Three-dimensional intervallar structure comprising radial and longitudinal lintels of taeniae (in which pores are subtetragonal) linked by tangential synapticulae at each interpore node to form an orthogonal, scaffoldlike network of equidimensional units (Ch. 18B; S2a, p. 1690, fig. 60J, M) [**Ar**].

diplaster. An astrose microsclere in which the rays or spines radiate from two slightly distant points (Th) [**Ex**].

dissepiment (ts). An upwardly convex or inclined plate occupying interlaminar space; the term is also applied to partitions in allotubes, autotubes, and astrorhizal canals; not always easy to distinguish from tabulae in astrorhizal canals and interlaminar spaces; also dissepiments in places partition some peripheral vesicles of the amphiporids (Ch. 9C, Fig. 3,*1;* 3,*3;* 9,*3*) [**Ps**].

domal cup. Cup in form of domelike plate. See cup (S2a, p. 1690, fig. 61A) [**Ar**].

domical growth morphology. Having a calcareous skeleton with a domical growth form [**Ms, Ch, Ex**].

echinating. Megascleres that protrude from the spongin plate, a fiber, or a spicule tract (Th, p. 30, fig. 173) [**Ms, Ch, Ex**].

encrusting growth habit. Forms with a low height-to-width ratio that demonstrably encrust a substrate or another organism; syn., matlike gross morphology [**Ms, Ch, Ex**].

encrusting growth morphology. Exhibiting a matlike skeletal form seen to encrust substrate or other organism [**Ms, Ch, Ex**].

encrusting mode of life. These types of stromatoporoid organisms may be distinguished from their ambitopic counterparts by remaining in occupation of hard substrates throughout most of their life history; they are especially commonly associated with reef habitats [**Ps**].

encrusting modular organization. Modular organization in the form of a multioscular plate whose lower surface is attached to substrate. See modular organization (Ch. 18B; S2a, p. 1691, fig. 61A) [**Ar**].

endocameral. Within the chambers of sphinctozoan (or informally termed thalamid) sponges [**Sp**].

endopore. Opening through the wall of a spongocoel or endowall (S2b, fig. 1) [**Sp, In**].

endotube. Tube that pierces the endowall and extends into the chamber interior from the endowall in a sphinctozoan sponge (S2b, fig. 1) [**Sp**].

endowall. The wall between the spongocoel and surrounding chamber (S2b, fig. 1) [**Sp, In**].

entrapped spicules. Calcareous or siliceous spicules that are not part of the primary spicule framework but are enclosed progressively within the calcareous solid skeleton during growth (Th, p. 36, fig. 205) [**Ms, Ch, Ex**].

enveloping skeletal growth (sk). This condition occurs where growth of a succeeding latilamina (or lamina) overlaps the previous latilamina when the living tissue was able to entirely mantle the calcareous skeleton from its top to lower lateral extremities, and to remain free from any contamination from associated sediment [**Ps**].

epitheca (ts). Thin, wrinkled, calcareous covering of the basal surface of the skeleton of fossil hypercalcified sponges, probably representing initial growth. Problematic term, given its long-established cnidarian and bryozoan connotations; preferentially replaced by descriptive term basal layer for fossil stromatoporoids and chaetetids, whereas epitheca continues to be used by specialists on extant hypercalcified taxa [**Ps, Ch**]; *or* thin, wrinkled, calcareous basal layer of finer structure than the superjacent, normal skeleton that covers the dead basal part of the rigid calcareous demosponge skeleton, and considered to be of secondary origin (Th, p. 36, fig. 203) [**Ms, Ex**].

euaster. A collective term for astrose microscleres in which the rays radiate from a central point (Th, p. 44, fig. 223, 258, 275, 276, 279, 291) [**Ms, Ch, Ex**].

exaulos (pl., **exaules**). Protruding, spoutlike extension of outer walls. See chimney in *Retilamina* (Debrenne & James, 1981) (Ch. 18B; S2a, p. 1690, fig. 61A, 75H; S2b, fig. 1) [**Ar, Sp, In**].

excurrent. See exhalant [**Sp, In**].

excurrent canal. See exhalant canal (Th, p. 8, fig. 37) [**Sp, In**].

exhalant. Allowing the outward flow of water (syn., excurrent) [**Sp, In**].

exhalant canal. Canal that forms a part of the exhalant system and is lined by the apopinocoderm; allows discharge of water from the sponge interior; syn., excurrent canal [**Sp, In**].

exhalant canal system. Part of the aquiferous system between the apopyle and oscule (Th, p. 8, fig. 37) [**Ms, Ch, Ex**].

exhalant opening. Opening through which water exits; may be through an exhalant or gastral pore, if larger, or an exopore, if smaller [**Sp, In**].

exhalant system. Arrangement of canals or other openings through which water exits a sponge or a chamber. See asiphonate exhalant system, cryptosiphonate exhalant system, siphonate exhalant system; syn., excurrent canal system) [**Sp, In**].

exocyathoid buttress. Zoned buttress encrusting primary cup, in which each zone consists of concentric plates connected by radial plates. See buttress (Ch. 18B; S2a, p. 1689, fig. 56C, D) [**Ar**].

exopore. Pore that pierces the outer wall of a chamber. Several types of openings are included here, including single, dichotomous, multidichotomous, and labyrinthic exopores (S2b, fig. 1) [**Sp**].

exowall. External wall of a chamber (S2b, fig. 1) [**Sp**].

external budding. Bud on outer wall of parent cup. See budding (Ch. 18B; S2a, p. 1689, fig. 60G) [**Ar**].

facet. Any flat face of a calicle or syrinx (Ch. 18B; S2a, p. 1690, fig. 72A–D) [**Ar**].

fascicular fibrous microstructure. General term for microstructure of crystal fibers fanning outward and radiating upward. See clinogonal microstructure (Th, p. 36, fig. 206) [**Ms, Ch, Ex**].

fiber. A column (strand, thread) of spongin forming a reticulate or dendritic skeleton, with or without indigenous spicules or foreign material (Th, p. 30, fig. 160, 170) [**Ms, Ch, Ex**].

fiber skeleton. Aragonitic or calcitic rigid skeleton of inozoans and sphinctozoans [**Sp, In**].

fibrous (mi). Specks and crystal boundaries aligned. In laminae, this alignment is transverse; in pillars,

it may curve upward and outward from the axis in a water-jet or feather structure (Ch. 9D, Fig. 3,*1;* 12,*1*) [**Ps**].

filling material (filling tissue). Secondary calcareous skeleton that partitions or fills abandoned parts of the skeleton (Th, p. 38, fig. 207) [**Ms, Ch, Ex**].

filling structure (or **skeleton**). Elements of the skeleton filling within chambers of sphinctozoan sponges; may be reticulate, trabecular, tubular, radially septate, sporelike, pisolitic, vesicular, or a combination, such as septate-reticulate (S2b, p. 1513, fig. 1, 11) [**Sp**].

finely porous porosity. Pore diameter less than lintel width. See porosity (Ch. 18B; S2a, p. 1691, fig. 62D) [**Ar**].

first-order intervallar structure. Intervallar structure directly connecting both walls. See intervallar structure, pseudoseptum, septum, taenia (S2a, p. 1690) [**Ar**].

flattened chamber shape. Chambers with relatively low heights as compared to their diameters [**Sp**].

foramen (pl., **foramina**). Circular aperture in tabulae of chaetetid skeletons, allowing interconnection between adjoining intertabular spaces (Th, p. 38, see label "fo" shown on fig. 208) [**Ch**]; *or foramen* (ts). See pore [**Ps, Ms**].

fully roofed canal. Canal enclosed within the skeleton [**Sp, In**].

functional unit. The portion of water-conducting system of a sponge draining a single osculum; comprised of ostia, the inhalant system, choanocyte chambers, and exhalant system [**Ms, Ch, Ex**].

fungiform. Shaped like a mushroom [**Sp, In**].

funnel-shaped chamber shape. Chambers that are like an inverted cone, with a hole or small tube at the lower or narrow end [**Sp**].

fused bract. Neighboring bracts of the same horizontal file, incompletely amalgamated to form a single structure covering two or more openings in a wall, rarely forming a complete circle. Fused bracts are planar or S-shaped in longitudinal profile (S2a, p. 1690, fig. 61B–C); syn., pseudoannulus [**Ar**].

gallery (sk). The three-dimensional interlaminar space between adjacent pillars and bounded above and below by laminae or pachystromes; may contain other structural elements (e.g., dissepiments). The term is not usually applied in the Labechiida [**Ps**].

gastral. Inner surface or part of a sponge wall around a spongocoel [**Sp, In**].

globular gross morphology. Exhibiting a globular-shaped calcareous skeleton [**Ms, Ch, Ex**].

glomerate. Arrangement of the chambers like the seeds in an ear of corn or the grapes in a cluster [**Sp, In**].

granular (or **microgranular**) **microstructure**. Composed of irregular grains or granules [**Sp, In**].

groovelike canal. Canal impression in the skeleton as a groove in the dermal layer, marking the position of a canal that was not covered by skeletal material [**Sp, In**].

gross morphology. The overall shape of the calcareous skeleton. Often subject to considerable environmental control. See nodular gross morphology, branching gross morphology, columnar gross morphology, conical gross morphology, encrusting gross morphology, laminar gross morphology, domical gross morphology. It does not include other parts of external morphology, such as surface features (e.g., mamelons, traces of astrorhizae) [**Ms, Ch, Ex**].

growth axis. Represents the direction the skeleton grew in nodular, branching, columnar, conical, and domical forms, perpendicular to the growth surface [**Ms, Ch, Ex**].

growth banding. Banding in skeleton of some hypercalcified sponges reflects variations in growth due to a range of external and possibly internal controls. Three styles of banding are recognized: (1) density banding; (2) growth interruption banding; (3) postmortem banding (Young & Kershaw, 2005); the first two styles reflect periodic changes in growth (syn., latilaminae), but the third style is produced by secondary processes of diagenesis and compaction [**Ps**].

growth form (sk). Overall shape or morphotype; may be laminar, domical, bulbous, irregular, columnar, dendroid, digitate, or digitolaminar. Laminar, domical, irregular, bulbous, and digitolaminar forms may interfinger (in places giving ragged skeletal outlines) at their outer edges with surrounding sediment, whereas columnar, dendroid, and digitate forms tend to have smooth outer margins. Among Paleozoic stromatoporoids, the domical to laminar shapes are most common (and include the largest), and the other main shapes, arranged in decreasing order of abundance, are: irregular, bulbous (moderately common), columnar, digitate, dendroid to digitolaminar (less common to rare). [**Ps, Ch**].

growth habit. The growth habits reflect different levels of skeletal integration of the modular organization and may be associated with the growth morphologies (given in parentheses) and defined in separate entries. See pseudocolonial growth habit (branching), multiserial erect growth habit (branching), multiserial encrusting-encrusting growth habit (laminar, encrusting), multiserial encrusting-massive growth habit (nodular, conical, hemispherical) [**Ms, Ch, Ex**].

growth module. See module [**Ps**].

growth surface (ts). Any level in the skeleton where addition to the surface is contemporaneous; basal and terminal refer to the first and last surfaces of skeletal growth (Ch. 9C, Fig. 2,*1;* Ch. 9F, Fig. 4,*1–2*) [**Ps**]; *or* any contemporaneous surface on or within the skeleton [**Ms, Ch, Ex**].

hemispherical chamber shape. Chambers with relatively flat bases but spheroidal roofs [**Sp**].

hemispherical gross morphology. Having a flat base and a convex upper surface; syn., massive gross morphology, domical gross morphology [**Ms, Ch, Ex**].

hypercalcified sponges. The original term hypercalcified sponges (Termier & Termier, 1973) is a generalized, informal name to describe sponges that have secreted excessive amounts of solid, nonspiculate, calcium carbonate to their basal skeletons. The name has been used for nearly

four decades to recognize a wide variety of fossil sponges—groups that include the archaeocyaths, stromatoporoids, chaetetids, sphinctozoans, and inozoans, as well as a relatively small number of questionably related lines of living Demospongiae and Calcispongiae; in most cases, the skeletons were confined more or less entirely to the bases of the living tissue, but this was not always so in the sphinctozoans, nor in all probability, in the archaeocyaths. Additionally the term hypercalcified has for convenience been applied to certain spiculate groups, those where the spicules have been cemented together with calcium carbonate coatings without producing a completely fused basal skeleton, as in the class Heteractinida, and in some inozoans (FINKS & RIGBY, 2004, p. 585) of the class Calcispongiae. In the interests of stability in sponge nomenclature, it is important that the informal term **hypercalcified sponges** be maintained exclusively for the combined living and fossil members of both formal classes Demospongiae and Calcispongiae. To avoid confusion it must be clearly distinguished from the term **calcareous sponges,** another rather similar informal name, but this name has been reserved mainly by zoologists for use in describing members of the class Calcispongiae. See *coralline sponges* [**Ar, Ps, Ms, Ch, Sp, In, Ex**].

incurrent. See inhalant [**Sp, In**].

incurrent canal. See inhalant canal [**Sp, In**].

independent microporous sheath. Microporous sheath supported above carcass by short rods arising from carcass pore lintels; this sheath type is invariably continuous. See microporous sheath (Ch. 18B; S2a, p. 1690, fig. 27B, 54G, I) [**Ar**].

individual. A single skeleton, composed of one or more functional units, representing one individual. In biological terms, this represents all the cellular components and all the interactions of their components within the pinacocyte envelope [**Ms, Ch, Ex**].

inhalant. Through which water enters [**Sp, In**].

inhalant canal. Any canal forming part of the inhalant system and lined by the prosopinacoderm (Th, p. 8) [**Ms, Ch, Ex**]; *or* any canal for passage of inhalant water leading into sponge interior, which would have initially had a lining of prosopinacoderm [**Sp, In**].

inner cavity. Space within one-walled cup, bounded externally by the wall (S2a, p. 1690) [**Ar**].

inner wall. Inner of two concentric walls in two-walled cups (S2a, p. 1690) [**Ar**].

Inozoa (STEINMANN, 1882) or **inozoans**. Nonchambered, usually cylindrical or club-shaped sponges with both rigid and additionally spiculate skeleton (calcisponges, demosponges) [**In**].

Inozoida (RIGBY & SENOWBARI-DARYAN, 1996), or **inozoides**. Nonchambered, usually cylindrical or club-shaped sponges with rigid skeletons but without spicules; hence assignments to calcisponge or demosponge groups remain uncertain [**In**].

intercalicular budding. Bud inside a single calicle. See budding (Ch. 18B; S2a, p. 1689, fig. 62F) [**Ar**].

interlaminar space. Area or space enclosed between two successive laminae [**Ps, Ms**].

internal filling skeleton. See filling structure [**Sp, In**].

interpore. Pore in interwalls between chambers (S2b, fig. 1) [**Sp, In**].

intersept. That part of a wall or intervallum bounded by adjacent radial-longitudinal partitions (septa, taeniae) (S2a, p. 1690) [**Ar**].

interseptal budding. Bud in intervallum. See budding (Ch. 18B; S2a, p. 1689, fig. 62F); syn., interparietal [**Ar**].

interseptal plate. Second-order intervallar structure in form of porous plate linking adjacent radial-longitudinal partitions (septa, taeniae) (Ch. 18B; S2a, p. 1690, fig. 29D–E) [**Ar**].

interskeletal space. Referring to the spaces between any skeletal elements. See gallery, chamber, coenospace, coenotube [**Ms, Ex**].

intertabula (pl., **intertabulae**). That part of a wall or intervallum bounded by adjacent tabulae (S2a, p. 1690) [**Ar**].

intertube. Small tube that connects chambers through interwalls [**Sp, In**].

intertubular increase. Budding of the rigid calcareous skeleton involves the separation of tubule walls where they meet at an angle (at each intersection) and gradual expansion to full-sized tubule size with upward growth; syn., intercalicle budding [**Ch**].

intervallar cell. Part of intervallum bounded by adjacent radial-longitudinal partitions and tangential synapticulae (S2a, p. 1690) [**Ar**].

intervallar structure. Any skeletal element in the intervallum. See first-order intervallar structure, second-order intervallar structure (S2a, p. 1690) [**Ar**].

intervallum. Space enclosed between walls of a two-walled cup (S2a, p. 1690) [**Ar**].

interwall. The wall or walls between two adjacent chambers (S2b, fig. 1) [**Sp, In**].

invaginated wall. Inner wall closed at base and contiguous with tabula (S2a, 1690) [**Ar**].

irregular gross morphology. Having an irregularly shaped calcareous skeleton [**Ms, Ch, Ex**].

irregular microstructure. Irregular (felt) microstructure in which tangled linear crystal fibers have no preferred orientation (e.g., *Vaceletia*). Shape and nature of crystal fibers may be diverse or with unaligned and irregularly spaced elements (Th, p. 38, fig. 209); syn., granular, compact, freely micritic [**Ms, Ch, Sp, In, Ex**].

Ischyrospongiae (TERMIER & TERMIER, 1973). Introduced originally as a class to accommodate the extant Calcispongiae and Demospongiae with a solid calcareous skeleton and the fossil stromatoporoids and chaetetids, but the group name was seldom used, as it initially lacked priority over the Sclerospongiae HARTMAN & GOREAU (1970), only remaining applicable to extant calcisponges. However, use of the TERMIERS's name has been discontinued since VACELET (1985) established the group as polyphyletic; hence the term is obsolete [**Ps, Ms, Ch, Sp, Ex**].

isodiametric. Of equal diameter, as in isodiametric spherulites in some skeletal structures [**Sp, In**].

isodictyal. An isodictyal skeleton exhibits an arrangement of spicules in simple, triangular meshes with single monaxons united tip to tip around each side (Th, p. 32; Tr, p. 183) [**Ms, Ch, Ex**].

juvenile cup. That portion of a cup generated prior to complete development of all mature structures. See cup (Ch. 18B; S2a, p. 1690, fig. 62G–H) [**Ar**].

labripore. Exopores surrounded by a distinct external lip or rim [S2b, fig. 1] [**Sp, In**].

labyrinthic exopore. A pore that subdivides several times into a labyrinth or network of interconnected branches in the wall (S2b, fig. 8) [**Sp, In**].

lamella. A term introduced by Lecompte (1956), for lamina, but now obsolete [**Ps**].

lamellar microstructure. Laminate microstructure of thin layers that may be smooth and more or less uniform, to undulating and irregular [**Sp, In**].

lamina (pl., **laminae**) (ts). A tangentially extensive skeletal plate or net parallel to the growth surface; it may be single-layered or tripartite; i.e., with a less opaque central zone, a line of cellules in the central zone (ordinicellular) or an opaque central microlamina, or it may be composed of multiple microlaminae (Ch. 9C, Fig. 1,*2;* 4,*1*) [**Ps**]; *or* a continuous, concentric, calcareous sheet parallel to the growth surface, and perpendicular to radial skeletal elements, e.g., the long axes of chaetetid tubules. Laminae in chaetetids are bounded above and below by growth interruptions, and in that sense they are more analogous to latilaminae of stromatoporoids than to stromatoporoid laminae; syn., lamella *pars*, coenosteal lamella, thecal lamella [**Ms, Ch**].

laminar gross morphology. Forms with a low height-to-width ratio that are free living, i.e., that do not appear to be attached to a hard substrate; syn., tabular gross morphology [**Ms, Ch, Ex**].

laminar-encrusting gross morphology. Exhibiting overall shape as matlike or tabular growth form that may be free-living or encrusting [**Ms, Ch, Ex**].

latilamina (pl., **latilaminae**). A tangentially continuous set of layers of skeletal material of the calcareous skeleton, visible as periodic growth bands bounded above and below by phase changes or growth interruption surfaces (Ch. 9C, Fig. 13,*2;* 14,*3*) [**Ps, Ms**].

leuconoid. Aquiferous system in which the choanocytes are restricted to discrete choanocyte chambers, which are dispersed in the mesohyl (Th) [**Ex**].

lintel. Skeletal structure separating and bounding adjacent pores (S2a, p. 1690) [**Ar**].

lipped pore. Labripore [**Sp, In**].

loculus (pl., **loculi**). That part of an intervallum delimited by two adjacent septa-taeniae and two adjacent tabulae (S2a, p. 1690) [**Ar**].

longitudinal fission. Increase in the rigid calcareous skeleton by the development of one or more pseudosepta that subdivide the tubule into equal or unequal parts; commonly the subdivision is across the shortest transverse dimension of the tubule (West & Clark, 1984) [**Ch**].

longitudinal fold. In a two-walled cup, the fold of one wall or mutual folds of both walls to impart a succession of more or less regular transverse annulations of the cup (Ch. 18B; S2a, p. 1690, fig. 16A) [**Ar**].

longitudinal subdivision. Type of asexual reproduction by which the parent cup divides into two or more cups of equal sizes; syn., longitudinal fission (Ch. 18B; S2a, p. 1690, fig. 9, 59F, 60F–G) [**Ar**].

louver. Plate incompletely covering two or more adjacent pores or intersepts in the same horizontal file; intermediate between fused bract and annulus (Ch. 18B; S2a, p. 1691, fig. 18B) [**Ar**].

macrostructure. Pertains to visible internal skeletal structures in low magnification (up to ×10) using oriented thin sections. See lamina, pillar, cyst plate, dissepiment [**Ps**]; wall, tubule, tabula, lamina, pseudosepta [**Ch**].

mamelon (ts). An updomed area of skeletal material on the terminal growth surface (Ch. 9C, Fig. 10,*1;* 10,*3*) [**Ps**]; *or* rounded regular or irregular elevation of the skeleton surface; may or may not show correlation with astrorhizae; syn., monticule [**Ms, Ch, Ex**].

mamelon column (ls). A structure composed of upwardly inflected laminae, cyst plates or pachystromes formed by superposition of mamelons (Ch. 9C, Fig. 9,*4–5*) [**Ps**].

massive. Solid mass (a skeleton of relatively large bulk but not specifically shaped) [**Sp, In**].

massive gross morphology. Characteristically showing a bulky, nondescript type of calcareous skeleton [**Ms, Ch, Ex**].

massive modular organization. Type of modular organization (bulky skeleton) generated by contiguous addition of new aquiferous units. See modular organization (Ch. 18B; S2a, p. 1691, fig. 71A, 75A, E) [**Ar**].

meandroid. A flexuous pattern shown by tubules in transverse section as opposed to discrete, regular, or irregular polygons [**Ch**].

megapillar (ls). A rodlike structure of a larger order of magnitude than a pillar. Megapillars can be distinguished in taxa having two sizes of pillars, such as *Bifariostroma*, *Oslodictyon*, *Yabeodictyon*, *Actinodictyon* [**Ps**].

megasclere. Major supporting spicule; the larger size group where two distinct size categories exist. Generally with a length greater than 100 µm [**Ms, Ch, Ex**].

melanospheric (mi). Specks are concentrated in closely spaced, irregularly distributed, subspherical opaque areas separated by clear areas (Ch. 9D, Fig. 5,*2–3*) [**Ps**].

membrane tabula. Second-order intervallar structure developed in same plane in one or several intersepts by fusion of spines. See tabula (Ch. 18B; S2a, p. 1692, fig. 10) [**Ar**].

mesohyl. Part of sponge enclosed in pinacoderm and choanoderm (Th, p. 12) [**Ex**].

microcolliculus (pl., **microcolliculi**) (ts). A very fine, tangentially oriented rod that with other such rods

forms a network joining micropillars within microreticulate microstructure [**Ps**].

microgranular microstructure. Diverse microstructure composed of equant micrite-sized grains or crystals; in some cases, anhedral crystals have randomly oriented c-axes (Ch. 18B; Th, p. 8, fig. 211; S2a, p. 1691) [**Ar, Ms, Ch, Ex**].

microlamellar microstructure. Structure in which the crystal fibers are disposed in crisscross layers, mostly parallel to the growing surface of the skeleton (e.g., *Acanthochaetetes)* (Th, p. 41, fig. 212) [**Ch, Ms, Ex**].

microlamina (pl., **microlaminae**) (ts). A thin, compact, laterally persistent plate that may be part of a lamina, or a single element parallel to the growth surface, or may consist of microcolliculi (Ch. 9C, Fig. 6,*3*) [**Ps**].

micropillar (ls). A very fine, rodlike, longitudinal structural element within microreticulate microstructures [**Ps**].

microporous sheath. Thin skeletal plate supported by lintels of carcass pores and pierced by micropores of lesser diameter; develops on external surface of outer wall or internal (central cavity side) surface of inner wall. See attached microporous sheath, independent microporous sheath (Ch. 18B; S2a, p. 1690); syn., microporous membrane [**Ar**]; *or* an external layer of nesasters in some radiocyath genera; comprises anastomosing rays and tangential linking cross pieces (Ch. 18B) [**Ra**].

microreticulate (mi). Structural elements composed of micropillars and microcolliculi giving a three-dimensional network of fine posts and beams. See acosmoreticular, clinoreticular, orthoreticular (Ch. 9D, Fig. 6,*3*) [**Ps**].

microsclere. Accessory spicule of often ornate shape; the smaller size group where two size categories exist. Spicules generally smaller than 100 µm (Th, p. 44) [**Ms, Ch, Ex**].

microstructure. Crystal arrangement of calcareous skeleton that forms the skeletal elements, as seen under high power using a light microscope and/or an SEM. See irregular microstructure, microgranular microstructure, microlamellar microstructure, penicillate microstructure, clinogonal microstructure, orthogonal microstructure, spherulitic microstructure, trabecular microstructure, water-jet microstructure, fascicular fibrous microstructure, lamellar microstructure (Ch. 18B; S2a, p. 1690; S2b, p. 1520, fig. 12); syn., ultrastructure, skeletal material, skeletal tissue [**Ar, Ms, Ch, Sp, In, Ex**]; *or* see compact, fibrous, striated, tubulate, cellular, melanospheric, microreticulate (three types), ordinocellular, vacuolate [**Ps**].

modular organization. Skeleton incorporating two or more aquiferous units united by common intervallar structures. See branching modular organization, catenulate modular organization, encrusting modular organization, massive modular organization, pseudocerioid modular organization (Ch. 18B; S2a, p. 1691, fig. 9) [**Ar**].

module. Functional unit of the poriferan aquiferous filtration system, serving a fixed volume of cells. A sponge module consists of incurrent pores (ostia), a connective canal system of incurrent and excurrent canals, and a common exhalant opening (osculum). In fossil sponges, a module is defined by the extent and influence of each osculum that may be expressed by the catchment area of the astrorhizae. See functional unit, aquiferous unit [**Ar, Ms, Ch, Ex**]; *or* fundamental construction unit of the skeleton of Stromatoporellida and Clathrodictyida consisting of a floor that becomes the upper layer of a tripartite lamina (and is absent in the clathrodictyids), a roof that becomes the lower layers of the succeeding lamina, and the pillars and other structures enclosed between these layers; alternatively termed a growth module. Note that this concept of a sponge module relates to the secretion of successive structural elements (floors and posts) rather than the organization of aquiferous units (Ch. 9F, Fig. 5,*2;* 6,*1–2*) [**Ps**].

monaxon. Linear, nonradiate spicule, or a spicule type not having more than two rays along one axis (Th, p. 44) [**Ms, Ch, Ex**].

moniliform. Linear arrangement of the chambers in asiphonate sphinctozoans (S2b, p. 1512, 1515, fig. 4) [**Sp**].

monoglomerate. Arrangement of several cystlike chambers in a single layer around one or more axial spongocoel(s) (S2b, p. 1512, 1515, fig. 4) [**Sp, In**].

monoplatyform. Chambers forming plates a single chamber layer thick, with chambers laterally adjacent to one another (S2b, p. 1512, 1515, fig. 4) [**Sp, In**].

monticule (ts). A small mamelon in Paleozoic stromatoporoids. See mamelon [**Ps**].

multichambered cup. Cup incorporating two or more chambers. See cup (Ch. 18B; S2a, p. 1690, fig. 2B2, 52G–H) [**Ar**].

multidichotomous exopore. A pore that subdivides once into several branches in the outer part of the wall (S2b, fig. 8) [**Sp, In**].

multiperforate tumulus. Tumulus with several pores, each pore surmounting a small papilla. See tumulus (Ch. 18B; S2a, p. 1692, fig. 31N) [**Ar**].

multiserial encrusting-encrusting growth habit. A form with a low height-to-width ratio, composed of many laterally connected modules. See laminar-encrusting gross morphology [**Ms, Ch, Ex**].

multiserial encrusting-massive growth habit. A form with a high height-to-width ratio that is composed of many modules. The modules are often bound both laterally across the growth surface and along the growth axis of the skeleton, with no skeletal separation between them. Often the skeleton consists of many superposed modules, though only surficial modules will be active. See nodular gross morphology, columnar gross morphology, conical gross morphology, hemispherical gross morphology [**Ms, Ch, Ex**].

multiserial erect growth habit. Where more than one laterally connected functional module is present on

each skeletal branch at any one time. See branching gross morphology [**Ms, Ch, Ex**].

nesaster. Primary constituent of inner or outer wall; solid, starlike structure consisting of 6 to 20 coplanar rays radiating from a central boss. In some genera, nesasters additionally bear an external microporous sheath. See microporous sheath (Ch. 18B); syn., aster, rosette [**Ra**].

netlike porosity. Pore diameter much greater than lintel width; pores polygonal in outline. See porosity (Ch. 18B; S2a, p. 1691, fig. 49D, 62A, C); syn., retiform porosity, reticulate porosity [**Ar**].

nodular gross morphology. Almost spherical, often composed of a number of nodular growths. See globular gross morphology, irregular gross morphology, subspherical gross morphology, bulbous gross morphology, massive gross morphology [**Ms, Ch, Ex**].

noncommunicating canal. Canal lacking connecting pores or any other communication with adjacent canals. See canal (Ch. 18B; S2a, p. 1689, fig. 23H); syn., imperforate canal [**Ar**].

non-enveloping skeletal growth (sk). A type of growth condition that occurs where a succeeding latilamina (or lamina) fails to completely overlap the preceeding latilamina, giving a smooth appearance in cases where comparatively rapid upward growth was maintained, or it develops a ragged appearance when sediment spreads across lower parts of lateral margins of the skeleton [**Ps**].

oligomerization. Morphogenetic process involving decrease in number of pores or pore rows per intersept with accompanying increase in size of individual pores (S2a, 1691) [**Ar**].

ontogeny. The development during the course of an individual's life history; has not been recognized in either stromatoporoids or chaetetids; probably the term should be regarded as obsolete in these groups [**Ms, Ch**]. Skeletal ontogeny is recognized in archaeocyaths, however. See skeletal ontogeny [**Ar**].

orbicyathoid. See transverse fold (Ch. 18B; S2a, p. 1691, fig. 16D–E) [**Ar**].

ordinicellular (mi). Axial planes of laminae are marked by a layer of subspherical clear areas (cellules), giving laminae a three-layered, or tripartite, appearance in longitudinal section. Where divisions between these cellules are missing, the semicontinuous, clear middle layer accentuates this tripartite appearance. In some tripartite laminae, the central layer may be more opaque than those above and below (Ch. 9C, Fig. 4,*1;* Ch. 16E, Fig. 1c) [**Ps**].

organic skeleton. Spongin or collagenous part of mechanical support found in demosponges [**Ms, Ch, Ex**].

orthogonal microstructure. Microstructure in which the crystal fibers are in perpendicular and radial orientation relative to a central axis (Th, p. 40, fig. 213) [**Ms, Ch, Ex**]; *or* elongate microstructural elements diverging from a common axis at high angles to produce a radial, fibrous microstructure (Th, p. 40, fig. 213) [**Sp, In**].

orthoreticular (mi). Microreticulate microstructure where micropillars are normal to laminae-pachystromes and the microlaminae are parallel to the laminae [**Ps**].

oscule. See osculum [**Sp, In**].

osculum (pl., **oscula**). One (or more) openings through which water discharges from a sponge to the exterior; usually located at top of sponge (Th, p. 8, fig. 8, 38; S2b, fig. 1); syn., lateral astrotube, axial astrotube [**Ar, Ms, Ch, Sp, In, Ex**].

ostial pore. Proposed as new term for small inhalant apertures through external wall of calcarous skeleton [**Sp, In**].

ostium (pl., **ostia**). Any opening in the exopinacoderm through which water enters the living sponge. The term should be reserved for small inhalant apertures through living tissue. For inhalant apertures through calcareous walls of fossil skeletons, for example, the exowall of sphinctozoans, the general term pore remains available, or more specifically, ostial pore may be applied (Th, p. 8, fig. 45) [**Sp, Ex**].

outer wall. Outer of two concentric walls in two-walled cups (S2a, p. 1691) [**Ar**].

pachystele (ls). A wall-like part of the amalgamate net, either meandriform or fused to form a closed, continuous network in tangential section of orders Stromatoporida and Syringostromatida (Ch. 9C, Fig.5,*5–6*); syn., coenostele [**Ps**].

pachystrome (ts). A part of the amalgamate net that parallels the growth surface in the orders Stromatoporida and Syringostromatida (Ch. 9C, Fig. 5,*5–6*); syn., coenostrome [**Ps**].

palmate. With palms or with handlike structure [**Sp, In**].

papilla (pl., **papillae**) (ls). A raised, rounded extension of a pillar on the terminal growth surface [**Ps**].

paragaster. Spongocoel [**Sp, In**].

paralamina (pl., **paralaminae**) (ts). A planar skeletal plate that traverses single-layered, chevron-shaped laminae of a few genera of the order Clathrodictyida (Nestor, 1966) [**Ps**].

pectinate tabula. Second-order intervallar structure developed in same plane in all or most intersepts and consisting of bolster(s) and centripetal spines in mutually opposed, comblike arrangement. See tabula (Ch. 18B; S2a, p. 1692, fig. 15H) [**Ar**].

pellis. Simple, aporose structure of secondary skeleton externally enveloping outer wall (S2a, p. 1691, fig. 59A) [**Ar**].

pelta. In Monocyathida, a transverse, convex or concave primary skeletal structure, the direct extension of the wall, roofing inner cavity, and with central sag bearing an orifice (Ch. 18B; S2a, p. 1691, fig. 2G, 12H) [**Ar**].

penicillate microstructure. Crystal fibers fanning outward and radiating upward in a freely divergent manner (e.g., *Ceratoporella*). This microstructure is a subdivision of the broader clinogonal and fascicular fibrous microstructural types. See fascicular fibrous microstructure, clinogonal microstructure (Th, p. 40) [**Ch**].

periloph. Raised rim around an exopore or inhalant pore (formerly ostium); shorter than tubular exaulos. See labripore [**Sp, In**].

peripheral. Outer (younger) part of a skeletal branch [**Ms, Ch**].

peripheral expansion. Increase in the rigid calcareous skeleton by the development from the thin growing edge (soft tissue), of new, full-sized tubules on a preexisting substrate that fuse with preexisting tubules of the skeleton (West & Clark, 1983) [**Ch**].

peripheral membrane. See sheath [**Ps**].

peripheral vacuole. A cellule that occupies a space between a pillar-pachystele, small interconnecting processes, and an adjacent, thin, curved plate resembling a dissepiment (previously termed peripheral membrane and cyst plate) of a few trupetostromatid genera (e.g., *Hermatostroma, Hermatoporella*) (Ch. 9C, Fig. 7,*1;* 8,*2*) [**Ps**].

peripheral vesicle (ls). Elongated, bubble-like, gallery space forming part of a sporadically developed row along the inner side of the sheath of amphiporid stromatoporoids; in some cases partitioned by dissepiments (Ch. 16E, Fig. 43*b*) [**Ps**].

peripterate. Ribbonlike element spirally coiled along cup axis to form outer wall (Ch. 18B) [**Cr**].

*Pharetronida (*Zittel, 1878). Former grouping for sphinctozoan and inozoan sponges (polyphyletic) [**Sp, In**].

phase (sk). A part of the skeleton characterized by a change of growth structure either longitudinally (successive) or tangentially (contemporary). Divided into basal phase, contemporary phase, spacing phase, successive phase, and terminal phase (Ch. 9C, Fig. 13,*5;* 14,*1*) [**Ps**].

pillar (ls). A skeletal rod (rarely a plate); may be long, columnar, continuous through laminae and interlaminar spaces, or may be confined to an interlaminar space, upwardly conical, spool shaped, grading into upwardly or downwardly inflected laminae in Paleozoic stromatoporoids. Pillars of order Labechiida may be circular, irregular, meandriform, or bladed (with or without flanges) in tangential section. A series of short, superposed interlaminar pillars in families Trupetostromatidae and Gerronostromatidae that may be difficult to distinguish from long, continuous pillars unless the traces of laminae cross them. See ring pillar (Ch. 9C, Fig. 1,*3;* 3,*5;* 5,*2;* 6,*2;* 7,*3–4*) [**Ps**]; *or* pillars are relatively short and discontinuous. See column; syn., vertical lamella, radial pillar [**Ms**]; *or* rodlike structure connecting adjacent tabulae and may extend through tabulae (Ch. 18B; S2a, p. 1691, fig. 2F, 51F, 75G–H) [**Ar**]; *or* rodlike elements extending between interwalls of successive chambers [**Sp**].

pillar-lamellae. Horizontal elements that are part of the primary calcareous skeleton; short, discontinuous, concentric elements, contiguous with pillars or columns; syn., horizontal lamellae, concentric lamellae, lamellae *pars*, transverse lamellae) [**Ms**].

pinacocyte. Cell delimiting the sponge from the external milieu and always in a layer one-cell deep only (Th, p. 14, fig. 49, 51, 59) [**Ex**].

pinacoderm. Surface lined by pinacocytes (Th, p. 14, fig. 49) [**Ex**].

pisolitic filling structure (or **skeleton**). Composed of small, round-to-ellipsoidal calcium carbonate bodies with concentric and radial internal structure [**Sp, In**].

platelike cup. Conical cup in which apical angle of cone approaches 180°. See cup (Ch. 18B; S2a, p. 1690, fig. 58A) [**Ar**].

plate tabula. First-order intervallar structure in form of porous plate. See tabula (Ch. 18B; S2a, p. 1692, fig. 40C, 43F) [**Ar**].

plicate wall. Wall in which each intersept is individually folded to form sharp, mid-interseptal longitudinal ridge, directed away from intervallum and separating planar to subplanar lateral flanks (Ch. 18B; S2a, p. 1691, fig. 42A); syn., asteroid, stellate [**Ar**].

plumose. A type of skeletal construction made of primary fibers or spicule tracts from which skeletal elements radiate obliquely (Th, p. 34, fig. 192) [**Ms, Ch, Ex**].

polyactine. A spicule with many growth axes [**Ms, Ch, Ex**].

polyglomerate. Arrangement of chambers around one or more axial spongocoel(s) in two or more layers (S2b, p. 1512, 1515, fig. 4) [**Sp, In**].

polyplatyform. Chambers forming plates composed of two or more flat layers, with chambers laterally adjacent to one another (S2b, p. 1512, 1515, fig. 4) [**Sp, In**].

polysiphonate. Sponges with more than two spongocoels [**Sp, In**].

porate. With pores. Sphinctozoans whose chamber walls (at least the exowall) contain small and equally distributed openings of the same size [**Sp**].

pore. General term for any small opening of a calcareous wall through which water passes. On external walls of hypercalcified sponges, such pores may represent inhalant apertures (the term ostia was previously applied to these structures but should be reserved for inhalant openings through the exopinacoderm of living sponges). See ostial pore [**Sp, In**]; *or* restricted to openings piercing any primary skeletal structure, of diameter greater than thickness of that structure. See slitlike pore, stirrup pore, subdivided pore (S2a, p. 1691) [**Ar**]; *or* an opening of rounded section through a lamina (foramen of Galloway, 1957, is a large pore) [**Ps, Ms**].

pore field. Cluster of pores, particularly if in flat area surrounded by a low rim, in an exowall [**Sp, In**].

pore tube. Structure of elongate, scooplike to tubular shape, completely or almost completely covering a single pore (Ch. 18B; S2a, p. 1691, fig. 64A–D, 70C) [**Ar**].

porosity. Character of pore arrangement in a primary skeletal structure. See coarsely porous porosity, finely porous porosity, netlike porosity, slitlike porosity, septum, pseudoseptum, taenia (S2a, p. 1691) [**Ar**].

primary calcareous skeleton. Initially formed calcareous skeleton and well differentiated from an enveloping secondary calcareous skeleton. [Paleozoic stromatoporoids do not show such a clear-cut differentiation into primary and secondary

skeletal growth, and to some extent this applies to chaetetids as well.] (Th, p. 40, fig. 207) [**Ms, Ch, Ex**]; *or* that part of skeleton formed during ontogeny (primary growth of individual) by biologically controlled processes and serving as the locus for principal life functions (Ch. 18B; S2a, p. 1691, fig. 4) [**Ar**].

primary spicule framework. Framework of arranged spicules around which the predominantly primary calcareous skeleton is precipitated (Th, p. 40, fig. 207) [**Ms, Ch, Ex**].

prosiphonate. A type of spongocoel in which individual chamber roofs or interwalls grew upward to form the spongocoel (S2b, p. 1519, fig. 10) [**Sp**].

prosopore. Inhalant pore [**Sp, In**].

prosopyle. Opening of an inhalant canal into a choanocyte chamber (Th, p. 8, see label "pro" in fig. 37) [**Ex**].

pseudocerioid modular organization. Massive type of modular organization consisting of individuals united laterally with two or more other individuals; generated by incomplete longitudinal subdivision. See modular organization (Ch. 18B; S2a, p. 1691, fig. 25A) [**Ar**].

pseudoclathrate wall. Wall consisting of a layer of closely spaced, longitudinal ribs and transverse linking lintels supported by short rods above quadrate intervallar cells. See also clathrate wall (Ch. 18B; S2a, p. 1691, fig. 55D) [**Ar**].

pseudocolonial growth habit. Having only one active functional module present on each skeletal branch. See branching gross morphology [**Ms, Ch, Ex**].

pseudogemmule. Accumulation of gemmular archaeocytes in basal cavities of a solid skeleton or hypercalcified skeleton (Th) [**Ex**].

pseudolamellar microstructure. Diagenetic alteration of the microstructure, producing parallel plates of recrystallized crystals and giving an internally layered appearance in transverse section [**Ms**].

pseudoseptum (pl., **pseudosepta**). Radial-longitudinal first-order intervallar structure formed by irregularly porous, planar-to-subplanar partition, developed during ontogeny from initial taenial structure; may be coarsely porous or finely porous. See porosity (Ch. 18B; S2a, p. 1691, fig. 57E, 59G) [**Ar**]; *or* calcareous structure that subdivides (or longitudinally partitions) tubules; pseudosepta are associated with the growth and expansion of the rigid calcareous skeleton. See longitudinal fission [**Ch**].

pseudosiphonate. A type of spongocoel that lacks a true axial tube but with a tubular axial passage that may or may not be outlined by an endocameral structure (S2b, p. 1519, fig. 10) [**Sp, In**].

pseudospicules. Linear, spicule-like elements of spongin or spongin-related materials in living forms, or of secondary mineral fillings of primary or secondary linear openings within skeletal structures in fossil examples [**Sp, In**].

pseudotaenial network. Three-dimensional intervallar structure, comprising taeniae linked by synapticulae at each interpore node (Ch. 18B; S2a, p. 1691, fig. 64A–D, 66F–G, 67D–E) [**Ar**].

pseudozooidal tube. A term introduced by Galloway (1957) but because of its hydrozoan and/or bryozoan connotations, it is here replaced by allotube [**Ps**].

pugiole tetractine. Dagger-shaped, cruciform, or harpoonlike tetractine (Borojevic, Boury-Esnault, & Vacelet, 2000) [**Ex**].

pustula (pl., **pustulae**). Wall structure covering an individual wall pore, in form of low cone or hemispherical dome pierced by a single central orifice (Ch. 18B; S2a, p. 1691, fig. 59K) [**Ar**].

radial. Elements radiating outward from a central point or area [**Ms, Ch**].

radial canal. Radially directed inhalant or exhalant canal [**Sp, In**].

radiate. Spicule with three or more radiating growth axes, or referring to radiating arrangement of megascleres [**Ms, Ch, Ex**].

radiate skeleton. A type of skeleton in which the structural components diverge from a central region toward the sponge surface (Th, p. 34, fig. 194) [**Ms, Ch, Ex**].

radicatus (pl., **radicati**). Dense lamellar structure of secondary skeleton anchoring the cup to a substrate (Zhuravleva & Myagkova, 1981, fig. 7; S2a, p. 1690, fig. 1); syn., epitheca [**Ar**].

raphide. A very thin, hairlike microsclere, often in bundles called trichodragmas (Th) [**Ex**].

rectangular chamber shape. Chambers that have four sides and are quadrangular [**Sp**].

recurrence. Morphogenetic polymorphic set of features regularly repeating along the same vector in each series of homologous variability (S2a, p. 1691) [**Ar**].

redimiculus (pl., **redimiculi**). Narrow, aporose, radial-longitudinal plate projecting externally or internally from a wall (Ch. 18B; S2a, p. 1691, fig. 51B) [**Ar**].

regular spicule. Triactine or tetractine spicule with basal rays of equal length and with equal angles (120° between them, when projected into a plane perpendicular to the optic axis) (Th) [**Ex**].

reticular. Endocameral structure consisting of an irregularly three-dimensional network of beams of skeleton (S2b, fig. 11) [**Sp, In**].

reticulate filling structure (or **skeleton**). Composed of a three-dimensional network of fibers or other linear elements [**Sp, In**].

reticulate skeleton. General organization of skeleton consists of a three-dimensional network of fibers, tracts, lines, and/or individual spicules (Th, p. 34, fig. 155–158, 163, 175, 176, 180, 195); syn., reticulum [**Ms, Ch, Ex**].

retrosiphonate. A type of spongocoel formed by downward or backward extension of the chamber walls in sphinctozoans (S2b, p. 1519, fig. 10) [**Sp, In**].

rhagon. Earliest functional stage with multiple choanocyte chambers and aquiferous canals, typical for Demospongiae (Th, p. 18, fig. 86) [**Ms, Ch, Ex**].

rib. Narrow longitudinal plate linking annuli to wall (S2a, p. 1691, fig. 19G–H) [**Ar**].

rigid aspicular skeleton. A skeleton that originates from the direct secretion of aspiculate elements made of calcium carbonate; siliceous or calcareous

spicules may be secondarily entrapped in the skeleton during the growth process. See basal calcareous skeleton (Th, p. 40, fig. 208) [**Ms, Ch**].

rigid skeleton. Skeleton of hypercalcified sponges that is not flexible; either aspiculate, spiculate, or both, and irrespective of whether it developed initially from a completely fused basal calcarous skeleton or not [**Sp, In**].

rigid spicular skeleton. Skeleton in which the main framework is first made up of fused or linked spicules that may later be invested by an aspiculate cement (Th, p. 40, fig. 204) [**Ms, Ch**].

rim. In two-walled cups, a planar-to-convex primary skeletal structure developed by the direct extension of one wall to unite with the other, creating intervallum roofing (Ch. 18B; S2a, p. 1691, fig. 26B) [**Ar**].

ring pillar. Short pillar that appears as a hollow cone formed by upward inflection of a lamina (e.g., *Stromatoporella*) [**Ps**].

rod. Radial-transverse lintel separating pores in a uniporous septum; of uniform diameter and circular cross section. See bar, uniporous septum (S2a, p. 1691) [**Ar**]; *or* rodlike skeletal elements for disjectoporids, either longitudinal or tangential, forming the three-dimensional skeletal network (Ch. 6, Fig. 1*a–b;* 2*a–b*); syn., trabecula, concentrirod, radirod) [**Di**].

rudimentary wall. Wall constructed only of marginal intervallar structures. See basic wall (Ch. 18B; S2a, p. 1691, fig. 71C–D) [**Ar**].

sagittal spicule. Triactine or tetractine with two equal angles (paired angles) and one dissimilar angle (unpaired angle) at the center, when projected into a plane perpendicular to the optic axis (Th) [**Ex**].

scale. Triangular or circular spicule derived from a triactine (Th) [**Ex**].

scalenohedral structure. Diagenetic pseudostructure caused by recrystallization. Forming a sawtooth arrangement of fibers that appear darker in thin section [**Ms, Ch**].

sclere. Spicule [**Sp,In**].

sclerocyte. Cell involved in spicule formation. In demosponges with intracellular secretion, sclerocytes are characterized by numerous mitochondria and the presence of spicule-axial filaments. In calcisponges, where secretion is extracellular, sclerocytes have septate junctions between them (Th, p. 14, fig. 49, 69) [**Ex**].

sclerodermite. Aggregate of crystals forming a microstructural unit of the calcareous skeleton (Th, p. 40, fig. 215) [**Ms, Ch, Ex**].

sclerosome. Calcareous cement or nonspiculate calcium carbonate that unites spicules or forms skeletal fibers that then become imbedded (Tr, p. 187) [**Sp, In**].

Sclerospongiae (Hartman & Goreau, 1970). This group was introduced as a separate class to include extant Demospongiae with solid calcareous skeletons and fossil counterparts (stromatoporoids, chaetetids, and sphinctozoans), but this combination proved to include polyphyletic relationships (Vacelet, 1985); hence the term is obsolete. No hypercalcified calcisponges were associated with this group [**Ps, Ms, Ch, Sp, Ex**].

secondary calcareous skeleton. Skeletal components formed after the deposition of the primary skeleton, enveloping and/or infilling space between the initial elements; not easy to distinguish in chaetetids (Ch. 18B; Tr, p. 40, fig. 207; S2a, p. 1691, fig. 4) [**Ar, Ms, Ch**].

secondary thickening. A type of secondary calcareous material that precipitates as simple aporose structures in multiple layers of enveloping elements upon the primary skeleton; difficult to differentiate in chaetetids (S2a, p. 1691, fig. 4) [**Ar, Ms, Ch**].

second-order intervallar structure. Intervallar structure developed upon first-order structures. See intervallar structure (S2a, p. 1690) [**Ar**].

segment. Term used by some authors for a chamber of a sphinctozoan [**Sp**].

segmentation. Subdivision of some linear sphinctozoan sponges into chambers, often marked by annulations of outer walls at chamber junctions [**Sp**].

segmented tabula. Plate tabula being a direct extension of outer and/or inner walls. See tabula (Ch. 18B; S2a, p. 1692, fig. 66D–E) [**Ar**].

septate filling structure (or **skeleton**). Composed of vertical, bladelike elements that are commonly radially arranged [**Sp, In**].

septate-reticulate filling structure (or **skeleton**). Composed of a combination of two types of filling structures: septate and reticulate. Such combinations of these and other filling structures are rare [**Sp, In**].

septum (pl., **septa**). Radial-longitudinal, first-order intervallar structure in form of planar partition, ontogenetically fully developed (apart from porosity) from its inception. See aporose septum, completely porous septum, sparsely porous septum, uniporous septum (S2a, p. 1692); syn., pariety [**Ar**].

shaft. Radial-transverse element linking one nesaster of outer wall with corresponding nesaster of inner wall; of uniform diameter and circular cross section (Ch. 18B) [**Ra**].

sheath (ls). Imperforate, calcified, commonly discontinuous, thin outer wall that bounds the stem fragments of the order Amphiporida and the family Stachyoditidae; has contact with and is supported by outer extensions of the skeletal network (pillars with lateral processes, amalgamate, or pachystelelike structural elements) (Ch. 9F, Fig. 2,*2;* Ch. 16E, 43*a–b*); syn., peripheral membrane [**Ps**].

sheetlike cup. Cup in form of vertical or horizontal plate. See cup (Ch. 18B; S2a, p. 1690) [**Ar**].

sieve plate. Screenlike or perforated plate in an osculum or across a spongocoel below the level of the osculum [**Sp, In**].

simple tumulus. Tumulus with a single, typically downwardly oriented pore. See tumulus (Ch. 18B; S2a, p. 1692, fig. 30L, 47B) [**Ar**].

single-chambered cup. Cup incorporating one chamber only. See cup (Ch. 18B; S2a, p. 1690, fig. 2B1, 52A) [**Ar**].

single exopore. A single, tubular, unbranched opening (S2b, fig. 8) [**Sp, In**].

siphon. Spongocoel [**Sp, In**].

siphonate. Having a distinct spongocoel [**Sp, In**].

siphonate exhalant system. Condition in sphinctozoan sponges where skeletal chambers communicate through an axial tube (S2b, p. 1513) [**Sp, In**].

skeletal ontogeny. Development of the primary skeleton through the lifetime of the organism, from juvenile to adult [**Ar**].

skeletal structure (sk). Frameworks (laminae, pillars, and other elements) of the basal calcareous skeleton dominated by gridlike combinations of structural elements that characterize the main orders of the class Stromatoporoidea: (a) domes (cyst plates) and pillars in order Labechiida; (b) floors (laminae) and pillars in order Clathrodictyida and order Stromatoporellida; (c) beams (colliculi) and pillars in order Actinostromatida; and (d) an amalgamate structure composed of floors (pachystromes) and walls (pachysteles) in orders Stromatoporida and Syringostromida (**Ps**).

skeletal tracts. A column of aligned megascleres (Th, p. 34, fig. 201) [**Ms, Ch**].

skeleton. All hard parts secreted by the living organism in support and protection of itself above the substrate, thus avoiding mantling sediment and/or overgrowth by competitors (Th, p. 34); syn., coenosteum, colony, coenosarcal tissue, coenochyme. Given the connotations these five synonyns have with colonial organisms (in particular cnidarians), their continued use in sponge terminology should not be maintained [**Ps, Ms, Ch, Ex**].

slitlike pore. Pore in form of a transversely oriented slit. See pore (Ch. 18B; S2a, p. 1691, fig. 21M, 40G, J) [**Ar**].

slitlike porosity. Pores elongate-elliptical in outline. See porosity (Ch. 18B; S2a, p. 1691, fig. 40J) [**Ar**].

spacing phase (ts). A unit distinguished by changes in the spacing of laminae, cysts, or pachystromes (Ch. 9C, Fig. 1,*4;* 13,*5*) [**Ps**].

sparsely porous septum. Septal pores distributed frequently and uniformly over part of septum only or irregularly or infrequently distributed. See septum (Ch. 18B; S2a, p. 1692, fig. 21G) [**Ar**].

speck (mi). An equidimensional opaque body in skeletal material of a stromatoporoid a few micrometers across that is the smallest (microgranule size) unit of microstructure seen in the light microscope (Ch. 9D, Fig. 2,*2*) [**Ps**].

spheroidal chamber shape. Chambers that are globose or essentially spherical [**Sp**].

spherulite. Skeletal microstructure composed of spherulites that are composed of crystals radiating from a common center (Th, p. 40, fig. 215; S2b, fig. 12) [**Sp, In, Ch**].

spherulitic microstructure. Globular (centric or excentric) arrangement of crystal fibers or skeletal elements radiating from a common center (e.g., *Astrosclera*) (Th, p. 40, fig. 215); syn., spheroidal microstructure [**Ms, Ch, Sp, In, Ex**].

Sphinctozoa (Steinmann, 1882; =Thalamida de Laubenfels, 1955), or **sphinctozoans**. General terms applied to chambered sponges. Because of polyphyletic nature of chambered sponges, the terminology is not taxonomically valid (demosponges, calcisponges) [**Sp**].

spicular. Of or pertaining to spicules [**Ms, Ch, Sp, In, Ex**].

spiculate. Consisting of spicules, or spicule-bearing [**Ms, Ch, Sp, In, Ex**].

spiculate skeleton. Framework of arranged spicules [**Ms, Ch, Ex**].

spicule. A discrete, mineralized skeletal element, generally composed of silica or calcium carbonate, and secreted by sclerocytes. Spicules typically formed as more or less elongated rays with pointed, rounded, or more elaborated terminations, arranged along one or more axes (Th, p. 34, fig. 195) [**Ms, Ch, Sp, In, Ex**].

spine. Skeletal structure comprising a narrow, elongate, and typically tapering process projecting freely from any skeletal element; a spine is distinguished from a bract by the relatively small, circular-to-subcircular attachment area and a needlelike-to-thornlike shape (acicular to flattened) of the former. For inner walls, spines are considered as ornamental elements of simple walls; whereas bracts, together with scales, are a family diagnostic character. The distinction is difficult to appreciate, as there are no distinct morphological boundaries in the continuum from spines to cupped bracts (e.g., in the *Anapyctocyathus-Erugatocyathus* group, in which the whole continuum of structures may be seen). See bract (S2a, p. 1692, fig. 67K) [**Ar**].

spinose rod (ls). A slender, upwardly tapering rod, usually with spar-replaced center and resembling a spine (Ch. 17, Fig. 2) [**Pu**].

spongin. Skeletal substance in Demospongiae consisting of collagen microfibrils of approximately 10 nm diameter (Th, p. 34, fig. 160, 170, 176, 185, 200) [**Ms, Ch, Ex**].

spongiose wall. Massive inner wall consisting of elaborately waved, communicating canals (Ch. 18B; S2a, p. 1692, fig. 39E–F) [**Ar**].

spongocoel. Large central canal or canals for exhalant (or excurrent) water. If only a single spongocoel is present, it is usually axially situated. If more spongocoels are present, they may be grouped in axial bundles or distributed throughout the sponge body [**Sp, In, Ex**].

spongocyte. Cell secreting spongin fibers (Th, p. 14, fig. 49, 71, *spo* = spongin) [**Ex**].

spore-like filling structure or skeleton. Composed of hollow sporelike structures that may be attached to one another or arranged in a network [**Sp, In**].

S-shaped canal. Canal with S-shaped aspect in longitudinal section. See canal (Ch. 18B; S2a, p. 1689, fig. 28K–L, 59L) [**Ar**].

stem (sk). Term applied to fragmentary parts of branches of dendroid-shaped skeletons of the order Amphiporida [**Ps**].

stipule. Leaflike appendage arising from canal-bract junction in a wall with a longitudinal, V-shaped

appearance, or subdividing subspherical chambers in outer walls of some Ethmophylloidea (Ch. 18B; S2a, p. 1692, fig. 32F, 34C–F, 36C–E, 49C) [**Ar**].

stirrup pore. Pore located at junction of a wall and a septum. See pore (Ch. 18B; S2a, p. 1691, fig. 17A) [**Ar**].

stratiform. Sheetlike growth form consisting of single layer of chambers. Also, arrangement of tubelike chambers around one or more spongocoels (S2b, p. 1512, 1515, fig. 4) [**Sp, In**].

stratocyst (ts). A term introduced by BOGOYAVLENSKAYA (1984, p. 11) for long and low cyst plates resembling microlaminae. Not recommended for continued use, as it duplicates more commonly accepted usages of "long and low cyst plates," and "long-low cyst plates," especially in the Labechiida [**Ps**].

streptaster. Aster in which the rays proceed from an axis that is usually spiral (Th) [**Ex**].

striae (pl.). Transverse platelike elements of inner wall (Ch. 18B) [**Cr**].

striated (mi). Specks concentrated in short, rodlike bodies; a microstructure apparently unique to *Stachyodes* (Ch. 16E, Fig. 41*d–e*) [**Ps**].

stromatoporoid architecture. Skeletal structure with mattresslike chambers containing pillars, bearing superficial resemblance to some stromatoporoids. See architecture (Ch. 18B; S2a, p. 1689, fig. 2E) [**Ar**].

strongyle. An isodiametric, diactinal megasclere with rounded ends (Th, p. 46, fig. 280) [**Ms, Ch, Ex**].

style. Monaxon spicule with one end pointed, the other (head or base) blunt; normally a megasclere (Th, p. 46, fig. 282) [**Ms, Ch, Ex**].

subcolumn (ls). A structure of subcircular cross section that consists of micropillars and microcolliculi arranged in an acosmoreticular or clinoreticular pattern; in syringostromatids, the term pillar has been used an an alternative [**Ps**].

subdivided canal. Canal bearing processes projecting inward from its wall. See canal (Ch. 18B; S2a, p. 1689, fig. 70A–E) [**Ar**].

subdivided pore. Pore with more or less well-developed subdivision, ranging from radially directed spines to complete microporous sheath. See pore, compound wall (Ch. 18B; S2a, p. 1691, fig. 67G–H, 69A) [**Ar**].

subspherical growth morphology. Having a subspherically shaped calcareous skeleton [**Ms, Ch, Ex**].

successive phase (ts). A unit of growth distinguished and bounded by longitudinal changes in structure within the skeleton; the phase may be terminal, basal, or spacing (Ch. 9C, Fig. 14,*1*) [**Ps**].

superposed astrorhizae. Successive generations of astrorhizae that have formed along the same radial axis (Ch. 9C, Fig. 7,*4;* 12,*2*); syn., stacked astrorhizae, astrorhizal cylinders, astrorhizal columns, astrorhizal corridors, astrocolumns [**Ps, Ms**].

synapticula (pl., **synapticulae**). Second-order intervallar structure comprising narrow tangential rod linking adjacent, longitudinally oriented first-order intervallar structures (Ch. 18B; S2a, p. 1692, fig. 32A) [**Ar**].

syrinx (pl., **syringes**). First-order intervallar structure comprising porous radial tube of hexagonal or tetragonal cross section (Ch. 18B; S2a, p. 1692, fig. 72A–D) [**Ar**].

tabellar wall. Wall consisting of longitudinal ribs linked by flattened transverse lintels (S2a, p. 1692, fig. 70H–I) [**Ar**].

tabula (pl., **tabulae**). Transverse porous partition linking both walls of a two-walled cup. See membrane tabula, pectinate tabula, plate tabula, segmented tabula (Ch. 18B; S2a, p. 1692) [**Ar**]; *or* flat to gently curved plates that partition astrorhizal canals (Ch. 9C, Fig. 9,*1;* 13,*1*) and localized areas of interlaminar space; they commonly develop tangentially and may be difficult to distinguish from dissepiments. Also, irregular, complete to incomplete plates within the axial canal of the order Amphiporida and other dendroid to columnar growth forms (*Stachyodes, Idiostroma*) (Ch. 9C, Fig. 9,*1;* 13,*1;* Ch. 9F, Fig. 2,*2*) [**Ps**]; *or* a discrete calcareous plate, generally flat or slightly curved parallel to the growth surface, which, as a floor, partitions the basal part of the skeletal cavity; this plate may or may not be perforated by a foramen that may or may not be subsequently infilled and is commonly thinner than the tubule walls. These distinctive features, which are present in both Mesozoic stromatoporoids and chaetetids, do not appear to be homologous with tabulae of archaeocyaths or Paleozoic stromatoporoids [**Ms, Ch, Ex**].

tabular. Platelike [**Sp, In**].

tabular wall. Wall being an outward or inward extension of a chamber-forming segment (Ch. 18B; S2a, p. 1692, fig. 54C) [**Ar**].

tabulate osculum. Osculum in stromatoporoids that has been repeatedly partitioned by secondarily deposited tabulae; syn., zooidal tube, superposed galleries, zooidal tubule, major autotube [**Ms**].

tabulum. Platelike elements that divide skeletal cavity. Relationship between the term tabulum and the tabulae of other hypercalcified groups remains unknown [**Sp, In**].

taenia (pl., **taeniae**). First-order intervallar structure; nonplanar, often dichotomous, radial-longitudinal partitions in intervallum; may be coarsely or finely porous. See porosity (Ch. 18B; S2a, p. 1692) [**Ar**].

terminal phase (ts). Consists of the last units of skeletal growth that preserve a change in structure [**Ps**].

tersioid buttress. Tubular buttress consisting of concentric envelope and infilling platy elements. See buttress (Ch. 18B; S2a, p. 1689, fig. 42B) [**Ar**].

tetractine. A spicule with four rays (Th, p. 26, fig. 144) [**Ex**].

Thalamida (DE LAUBENFELS, 1955). Former grouping of sphinctozoans [**Sp**].

thalamid architecture. Skeletal structure with subspherical chambers. See architecture (Ch. 18B; S2a, p. 1689, fig. 2B1–B2) [**Ar**].

thalamidarium. Single layer of chambers in a stratiform or sheetlike sphinctozoan sponge in which chambers are convex toward the growing edge [**Sp**].

toroidal. Growth form having an open or doughnut-shaped coil [**Sp, In**].

trabeculae (pl.). Filling structure composed of regular rodlike or beamlike pillars supporting roof over the bottom of chambers in sphinctozoans; in living hexactinellid sponges, the same term is used for divided and anastomosed, protoplasmic filaments that form a network of water-filled interspaces (S2b, fig. 11) [**Sp, In**].

trabecular filling structure of skeleton. Composed of parallel or slightly diverging, rod- or beamlike elements supporting chamber walls [**Sp, In**].

trabecular microstructure. Where the crystal fibers are symmetrically arranged around the growth axis and axial fibers are absent (a cnidarian condition that is unknown in sponges).

transverse fold. In a two-walled cup, fold of one wall or mutual folds of two walls to impart a succession of more or less regular, longitudinal annulations of cup (Ch. 18B; S2a, p. 1692, fig. 58A); syn., orbicyathoid [**Ar**].

triactine. A spicule with three rays (Th, p. 26, fig. 148, 150–153) [**Ms, Ch, Ex**].

tubercule. Small, slightly raised calcareous projections, like tiny spines, that occur at the junction between two or more tubules at the top of the basal calcareous skeleton, where the thin soft tissue is presumed to have been in contact with the skeleton [**Ch**].

tubiform. Polyplatyform with tubelike chambers, laterally or vertically adjacent, forming platelike structures (S2b, p. 1513) [**Sp, In**].

tubular. Arrangement of skeletal elements with appearance of closely packed tubes [**Ms, Ch**]; *or* endocameral filling structure usually consisting of branched tubes between the openings of exowalls and endowalls (S2b, fig. 11) [**Sp, In**].

tubular chamber shape. Chambers that are linear and pipelike [**Sp**].

tubular filling structure of skeleton. Composed of small, tubelike elements that may be curved, irregularly oriented, and often bifurcated [**Sp, In**].

tubulate (mi). Clear, vermiform areas extending irregularly through the speckled skeletal material; best shown in *Clathrocoilona* (Ch. 9D, Fig. 4,*2*) [**Ps**].

tubule. The tubes that constitute the basal calcareous skeleton of chaetetid hypercalcified demosponges; exhibiting meandroid- to irregularly polygonal-shaped outlines in tangential section; syn., calicle, pseudocalyx (pl., pseudocalices) [**Ch**].

tubulus (pl., **tubuli**). Complex structure of secondary skeleton consisting of tubular structure in central cavity (S2a, p. 1692, fig. 66G) [**Ar**].

tumulus (pl., **tumuli**). Outer wall structure in shape of a discrete, hollow subspherical dome covering an individual wall opening. See multiperforate tumulus, simple tumulus (Ch. 18B; S2a, p. 1692) [**Ar**].

tylostyle. A style with a tyle (globular swelling) at the base (Th, p. 48, fig. 493) [**Ms, Ch, Ex**].

uniporous septum. Septum with single longitudinal row of pores of diameter subequal to intervallum width; pores separated by bars or rods. See septum, bar, rod (Ch. 18B; S2a, p. 1692, fig. 13B–C) [**Ar**].

unpaired actine. The ray of a triactine or of a triradiate basal system of a tetractine, lying in the plane of bilateral symmetry of sagittal spicules (not the basal ray) (Th) [**Ex**].

uviform. Sponges with chambers clustered to form irregular aggregates (S2b, p. 1512, fig. 4) [**Sp, In**].

vacuolate (mi). Scattered subspherical voids larger than cellules (about 100 µm) within compact laminae and pillars, as in *Trupetostroma* (Ch. 9D, Fig. 7,*3;* Ch. 16E, Fig. 48*a*) [**Ps**].

vermiculate. Irregularly sinuous [**Sp, In**].

verticillately spined style. Acanthostyle with spines arranged in regular rows; the term is used for the spicules of Astroscleridae and Agelasidae (VACELET, 2002; VAN SOEST, 2002) [**Ex**].

vesicle. Simple, aporose, bubble-like structure of secondary skeleton (Ch. 18B; S2a, p. 1692, fig. 4, 59L–M) [**Ar**].

vesicle or **vesicular skeleton**. Filling structure of bubblelike imperforate diaphragms, usually within chambers, but rarely in a spongocoel, or in exhalant and inhalant canals (S2b, fig. 11) [**Sp, In**].

vesicular filling structure (or **skeleton**). Composed of small, blister- or bubblelike elements that are upwardly or laterally convex [**Sp, In**].

villi. An obsolete term used by GALLOWAY (1957) that is incorporated in the definition of denticle [**Ps**].

V-shaped canal. Canal with V-shaped aspect in longitudinal section; may be upright or inverted. See canal (Ch. 18B; S2a, p. 1689, fig. 49C–D); syn., geniculate [**Ar**].

wall. The calcareous element, or elements, that define(s) the basal skeleton of the individual in solitary hypercalcified demosponges, or the constituent modules of modular hypercalcified demosponges. In chaetetids, the microstructure is commonly fascicular, but may be either water jet, penicillate, or spherulitic when unaltered [**Ch**]; *or* see altoid wall, anthoid wall, basic wall, cambroid wall, concentrically porous wall, clathrate wall, compound wall, inner wall, outer wall, plicate wall, pseudoclathrate wall, rudimentary wall, spongiose wall, tabellar wall, tabular wall [**Ar**].

water-jet microstructure. Where crystal fibers progressively fan outward around the growth axis (e.g., *Merlia*). This microstructure is a subdivision of the broader clinogonal and fascicular fibrous microstructural types. See fascicular fibrous microstructure, clinogonal microstructure (Th) [**Ch, Ex**].

zygosis. Mode of junction between siliceous desmas or calcareous tetractines by the interlocking of their terminal or lateral expansions. A secondary cement may be present (Th) [**Ex**].

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