Order CLATHRODICTYIDA
Bogoyavlenskaya, 1969

Skeleton consists of continuous, single-layer, inflected to planar laminae and short to superposed pillars; microstructure compact; interspaces are galleries. [Clathrodictyidae were separated from actinostomatids by Kühn (1939) as an independent family. Bogoyavlenskaya (1969) elevated the group to the ordinal rank, defining it as being represented by stromatoporoids with inflected laminae and poorly differentiated pillars. The stromatoporoids with well-differentiated planar laminae and rod-shaped pillars were distinguished by her as the separate order Geronnostomatida. Nestor in Stearn and others (1999) reclassified geronnostomatids as a family within the order Clathrodictyida.] Upper Ordovician (Katian)—Lower Carboniferous (Serpukhovian).

Family CLATHRODICTYIDAE
Kühn, 1939

Skeleton elements weakly differentiated; laminae irregularly inflected, bending down into short pillars; galleries open, lenticular or irregular in longitudinal section. [Bogoyavlenskaya (1969) restricted the scope of Clathrodictyidae to the forms having inflected laminae. Later, Bogoyavlenskaya (1977) established a new family Coenellostromatidae, merged with Clathrodictyidae by Nestor in Stearn and others (1999).] Upper Ordovician (Katian)—Lower Carboniferous (Serpukhovian).

Clathrodictyon Nicholson & Murrey, 1878, p. 220 [*C. vesiculosum; OD; holotype NHM P5495]. Growth form domical to laminar; laminae irregularly wrinkled; pillars short, in many cases oblique or funnel shaped, rodlike at base; galleries lenticular or irregular in longitudinal section; astrophizae common. Upper Ordovician (Katian)—Middle Devonian: Australia (New South Wales, Tasmania), Canada (Anticosti), China (Inner Mongolia, Guangxi, Shanxi, Zhejiang), Estonia, Norway, Katian—Hirnantian; Canada (Anticosti, Arctic islands, Hudson Bay, eastern Quebec), central Asia (Tien Shan), China (Quizhou), Estonia, Greenland, Norway, Russia (Altai, Arctic islands, Siberian Platform, Tuva, western Urals), Ukraine (Podolia), United States (Missouri, Ohio), Llandovery; Canada (Arctic islands, Hudson Bay, Manitoba, Ontario, eastern Quebec), central Asia (Tien Shan), England, Estonia, Greenland, Norway, Russia (Altai, Pechora Basin, northeastern Siberia, Siberian Platform, Tuva), Sweden (Gotland), United States (Kentucky), Winlock; Australia (New South Wales), Canada (Ontario), central Asia (Tien Shan), Estonia, Iran, Russia (Altai, Arctic islands, Pechora Basin, Siberian Platform, western Urals), Sweden (Gotland), Ukraine (Podolia), Ludlow; Canada (Arctic islands), Emian; China (Yunnan), England, Russia (Urals, northeastern Siberia), United States (Ohio), Middle Devonian.——Fig. 1.1a–b. *C. vesiculosum, Clinton, Llandovery, Yellow Springs, Ohio, United States, holotype NHM P5495; longitudinal and tangential sections, ×10 (new).

Bullulodictyon Yavorsky, 1967, p. 17 [*B. patokense; OD; holotype CNIGR 7351/557]. Growth form laminar; laminae moderately inflected, zonally indefinite; pillars very weakly differentiated; galleries lenticular, of different sizes; astrophizae large, frequent. Upper Devonian (Frasnian); Russia (Pechora Basin).——Fig. 1.2a–b. *B. patokense, River Bol’shoy Potok, holotype CNIGR 7351/557; longitudinal and tangential sections, ×10 (Yavorsky, 1967, pl. 3, 5.7).

Coenellostroma Bogoyavlenskaya, 1977, p. 14 [*C. kaljanum Bogoyavlenskaya, 1977, p. 15; OD; holotype UGM 1089/40]. Growth form domical; laminae wrinkled, inflected downward into funnel-shaped pillars; galleries arch shaped in longitudinal, meandroid or subhexagonal in tangential section; astrophizae large, superposed, frequent. Lower Devonian—Middle Devonian: Russia (Eastern Urals).——Fig. 1.3a–b. *C. kaljanum, Karpinskii Horizon, Middle Devonian, Kal’ia village, Severourals’kii District, holotype, UGM 1089/40a; longitudinal and tangential sections, ×10 (new).

Kyklopora Bogoyavlenskaya, 1982, p. 37 [*K. kalniusenii; OD; holotype UGM 15/57/103]. Growth form laminar; laminae abruptly wrinkled;
Fig. 1. Clathrodictyidae (p. 1–3).
Clathrodictyida

pills very weakly differentiated; galleries irregular; astrorhizae obscure. Lower Carboniferous (Serpukhovian): Russia (Donetsk Basin).—Fig. 1, 4a–b. *K. kalmiusensis*, Kal’mius River at Zhelvakovaia, holotype, UGM 15/57/103; longitudinal and tangential sections, ×10 (new).

Labechiina KHALFINA, 1961, p. 55 [*L. cylindrica* KHALFINA, 1961, p. 56, holotype CSGM 401/50; OD]. Growth form columnar, without axial canal; laminae moderately wrinkled, thin, bending downward into short pillars; long, stout megapillars well developed, densely spaced. Silurian–Lower Devonian: Canada (Mackenzie District), Silurian; Russia (Salair), Lower Devonian.—Fig. 2, 1a–b. *L. cylindrica*, Sukhia Suite, Lochkovian, Aleksandrovka, Salair, holotype CSGM 401/50; transverse and tangential sections, ×10 (new, courtesy of V. G. Khromykh).

Oslodictyon MORI, 1978, p. 134 [*O. henningsmoeni* MORI, 1978, p. 135, holotype, PMO 45420; OD] [=Distylostroma KOSAREVA in BOGOYAVLENSKAYA & KHROMYKH, 1985, p. 75 (type, D. crassum, nom. nud.)]. Growth form domical to laminar; laminae moderately wrinkled, bending downward into short pillars; long, stout megapillars are present; astrorhizae obscure. Silurian (Llandovery)–Middle
Devonian: Canada (Anticosti), Estonia, Norway, Llandovery; Urals, Silurian; Canada (Arctic islands), Russia (northeastern Siberia), Lower Devonian; Russia (Salair), Middle Devonian. —— Fig. 2,2a–b. *O. henningmoeni, Ryttärek Formation (7b), Llandovery, Velešanya, Ringerike, Norway, holotype PMO 45420; longitudinal and tangential sections, ×10 (Mori, 1978, fig. 9A–B).

**Stelodictyon** BOGOYAVLENSKAYA, 1969, p. 17 [*S. iniquum; OD; holotype UGM 990/61a*. Growth form domical or laminar; laminae micromounded at junctions of funnel-shaped pillars, may be penetrated by pores; galleries arch shaped in longitudinal section, open in tangential section; astrophizae rare, irregular. Upper Ordovician (Hirnantian)—Lower Devonian (Lochkovian): Estonia, Hirnantian; Canada (Manitoba, Ontario), England, Russia (western Urals, Siberian Platform), Sweden (Gotland), Ukraine (Podolia), Wotnok; Russia (Urals), Ludlow; United States (New York), Lochkovian. —— Fig. 2,3a–b. *S. iniquum, Isoskoia Suite, Ludlow, Is River, Isosköki District, Middle Urals, holotype UGM 990/61a; longitudinal and tangential sections, ×10 (new).

**Family ACTINODICTYIDAE** KHALFINA & YAVORSKY, 1973


Skeletal elements very weakly differentiated; laminae crumpled (zigzag), forming cassiculate network; pillars indistinct or oblique; galleries labyrinthine, subangular in longitudinal section; megapillars and paralaminae may be present. [KHALFINA and YAVORSKY (1973) restricted the family Actinostromatidae to the genera having long megapillars, in addition to crumpled laminae. BOGOYAVLENSKAYA (1981) erected a new family Plexodictyidae, based on the presence of crumpled laminae and paralaminae. STEARN (1980) treated the presence of megapillars and paralaminae as genus-level characters and combined all genera with crumpled laminae, including Actinodictyidae and Plexodictyidae, into the newly erected family Eclimadictyidae, which by priority became a junior synonym of Actinodictyidae (NESTOR in STEARN & others, 1999).] **Upper Ordovician (Katian)—Lower Devonian (Emian).**

**Actinodictyon** PARKS, 1909, p. 30 [*A. canadense PARKS, 1909, p. 32; SD BASSLER, 1915, p. 15; holotype GSC 9123*. Growth form columnar; laminae irregularly crumpled, fused with dissepiments, intersected by scattered, crooked megapillars; galleries very irregular, labyrinthine; astrophizae obscure. Silurian: Russia (Pechora Basin); Canada (Hudson Bay). Llandovery: Australia (New South Wales). Ludlow. —— Fig. 3,1a–b. *A. canadense, lower Silurian, Southampton Island, Hudson Bay, holotype GSC 9123; transverse and tangential sections, ×10 (new).

**Eclimadictyon** NESTOR, 1964, p. 60 [*Clathrodic- tyon fastigiatum NICHOLSON, 1887, p. 8; OD; holotype NHM P5773*. Growth form laminar to domical; laminae crumpled, forming cassiculate network; pillars oblique or indistinct; galleries labyrinthine, subangular in longitudinal section; astrophizae fasiculate, irregular. Upper Ordovician (Katian)—Silurian: Australia (New South Wales, Tasmania), China (Quinghai, Xinjiang, Zhejiang), Estonia, Kazakhstan, Russia (Urals, Altai, Gorna Shoria), Katian–Hirnantian; Canada (Anticosti, Arctic islands, eastern Quebec), central Asia (Tien Shan), China (Guizhou, Hubei, Sichuan), Estonia, Greenland, Iran, Norway, Russia (Arctic islands), United States (Iowa, Michigan, Missouri, Ohio, Oklahoma), Llandovery: Australia (New South Wales), Canada (eastern Quebec, Ontario), central Asia (Tien Shan), England, Estonia, Norway, Russia (Altai, Arctic islands, Siberian Platform, Urals), Sweden (Gotland), Ukraine (Podolia), United States (Michigan), Wotnok; Canada (eastern Quebec, Ontario), China (Inner Mongolia), Norway, Russia (Arctic islands, Urals), Sweden (Gotland), Ludlow; Russia (Urals), Prudoli; Russia (Pechora Basin, northeastern Siberia, Tuva), Silurian.—— Fig. 3,2a–b. *E. fastigiatum (NICHOLSON), Much Wenlock Limestone Formation, Wotnok, Ironbridge, Shropshire, holotype NHM P5773; longitudinal and tangential sections, ×10 (new).

**Neobeatricea** RUKHIN, 1938, p. 95 [*Beatricea tenutextilis YAVORSKY, 1929, p. 92; OD; holotype CNIGR 2595/20*. Growth form columnar, without axial canal; laminae irregularly crumpled, intertwined with flat dissepiments; short pillars indistinguishable, megapillars absent; astrophizae rare, with short unbranched canals. Silurian: Russia (Siberian Platform, Urals), Wotnok; Canada (Quebec), Ludlow; Russia (northeastern Siberia, Novaya Zemlya, Pechora Basin), Silurian.—— Fig. 3,3a–b. *N. tenutextilis (YAVORSKY), Silurian, Rusanov valley, Novaya Zemlya, northern island, holotype CNIGR 2595/20; longitudinal and tangential sections, ×10 (new).

**Plexodictyon** NESTOR, 1966, p. 20 [*P. katriense NESTOR, 1966, p. 21; OD; holotype IGTUT 114-18 (Co 3132). Growth form laminar or domical; laminae crumpled, forming regular cassiculate network traversed by planar paralaminae; astrophizae rare, tubular. [A few superficially similar species from the Upper Ordovician and Llandovery (Silurian) may represent another genus.]] **Upper Ordovician, Silurian (Llandovery, Ludlow–Prudoli): Australia (New South Wales, Queensland), Upper Ordovician; China (Guizhou, Hubei), Llandovery;
Australia (New South Wales, Queensland), Canada (Arctic islands), central Asia (Tien Shan), China (Inner Mongolia), Estonia, Sweden (Gotland, Scania), Russia (Arctic islands, northeastern Siberia, Pechora Basin, Urals), Ukraine (Podolia), United States (Michigan, Virginia), Ludlow–Pridoli.

Fig. 4, 1a–b. *P. katriense*, Paadla Stage, Ludlow, Katri, Saaremaa Island, Estonia, holotype IGTUT 114-18 (Co 3132); longitudinal and tangential sections, ×10 (new).

Yabeodictyon Mori, 1968, p. 67 [*Y. balticum* Mori, 1968, p. 68; OD; holotype SMNH Cn 68177 (GIK-35)] [=Neoclathrodictyon Lessovaja, 1971, p. 116 (type, *N. flexibilis*, OD)]. Growth form domical or laminar; laminae crumpled, intersected by long megapillars; galleries labyrinthine; astrorhizae common, small. [Nestor (1976, p. 59) treated Neoclathrodictyon as a junior synonym of Yabeodictyon.] Silurian (Llandovery)–Lower Devonian (Emsian): Canada (Arctic islands, eastern Quebec), Russia (Siberian Platform), Sweden (Gotland), Wenlock; Canada (Arctic islands), central Asia (Tien Shan), Russia (Urals, ?Salair), Ludlow–Pridoli; Canada (Hudson Bay), Russia (Pechora Basin),
Silurian; central Asia (Tien Shan), Emsian.—Fig. 4,2a–b. *Y. balticum*, Slite Beds, Wenlock, Slite, Gotland, holotype SMNH Cn 68177 (GIK-35); longitudinal and tangential sections, ×10 (new).

**Family GERRONOSTROMATIDAE**

Bogoyavlenskaya, 1969


Skeletal elements very well differentiated; laminae continuous, planar (straight); pillars simple, rodlike, short or long (superposed); galleries open, subrectangular in longitudinal section; astrorhizae rare, irregular.

[BogoyavleNskaya (1969) originally incorporated stromatoporoids with single-layer and tripartite laminae both in the present family. Stearn (in Stearn & others, 1999) removed those with tripartite laminae into the family Stromatoporellidae and thus restricted the scope of Gerronostromatidae. KHALFINA and Yavorsky (1971) established a new family Clathrostomatidae, which differs from Gerronostromatidae by the presence of short pillars in addition to the long ones. This feature is not considered to be diagnostic of the family level by other investigators.] Silurian (Llandovery)—Upper Devonian (upper Famennian).

**Gerronostromaria** Nestor, nom. nov. herein (Gerronostroma Yavorsky, 1931, p. 1392, nom. nud.) [*Gerronostroma elegans* Yavorsky, 1931, p. 1393; OD; holotype CNIGR 3338/3] [=Clathrostroma Yavorsky, 1960, p. 132 (type, *C. stolbergense*, OD)]. Growth form domical or bulbous; laminae planar, continuous; pillars rodlike, mostly long or superposed; galleries rectangular in longitudinal section; astrorhizae rare, fasciculate. [Yavorsky (1931) established a new genus Gerronostroma without designation of the type species, and therefore, according to the IZCN Code (1999), Article 13.3, its name is invalid and requires replacement. Yavorsky (1960) established the new genus Clathrostroma, differing from Gerronostroma by the presence of both short and long (superposed) pillars. The presence of partly short and partly long pillars is not considered here to...
be a generic character.] Silurian (Llandovery)—Upper Devonian (upper Famennian): Canada (Arctic islands), Llandovery, Canada (Quebec), Russia (Pechora Basin, Urals), Ludlow—Pridoli; Canada (Arctic islands), central Asia (Tien Shan), Russia (Kuznetsk Basin, northeastern Siberia, Urals), Lower Devonian; Afghanistan, Australia (Queensland, Victoria), central Asia (Tien Shan), Russia (Kuznetsk Basin, northeastern Siberia, Pechora Basin, Urals), United States (Indiana, Ohio), Middle Devonian; Canada (Alberta), Germany, Russia (Kuznetsk Basin, Russian Platform), Upper Devonian; Germany, Russia (southern Urals), upper Famennian.—Fig. 5, 1a—b. *G. elegans (Yavorsky), Middle Devonian, Bachat village, Kuznetsk Basin, holotype CNIGR 3338/3; longitudinal and tangential sections, ×10 (new).

**Gerronodictyon** Bogoyavlenskaya, 1969, p. 20 [*G. incisum*; OD; holotype UGM 990/189a]. Growth form domical or irregular; laminae thick, discontinuous; pillars rodlike, mostly superposed, unequally situated; astrorhiza rare, fasciculate. Silurian (Wenlock): Russia (Urals).—Fig. 5, 2a—b. *G.
incisum, Pavdinsk Horizon, Wenlock, Is River, Isovskoi District, Middle Urals, holotype UGM 990/189a; longitudinal and tangential sections, ×10 (new).

Petridiostroma Stearn, 1992, p. 531, nom. nov. pro Petrostroma Stearn, 1991, p. 617, non Doderlein, 1892 [*Simplexdictyon simplex Nestor, 1966, p. 25; OD; holotype IGTUT 114-20 (Co3134) [=Facielloidium Lessovaïa, 1991, p. 28 (type, Simplexdictyon torosum Lessovaïa, 1972, p. 49, OD)]. Growth form laminar to domical; laminae planar, continuous; pillars short, rodlike to spool shaped; galleries open, rectangular, oval to arch-shaped in longitudinal section; astrorhizae rare, inconspicuous. [Stearn (1991) and Lessovaïa (1991) in the same year published the morphologically identical genera Petrostroma and Facielloidium. The former name has priority, as it was published in July, while the latter appeared in November.] Silurian (Telychian)–Middle Devonian; Estonia, Norway, Sweden (Gotland), Canada (Anticosti), Telychian; central Asia (Tien Shan), Estonia, Russia (Ural), Sweden (Gotland), United States (Kentucky), Wenlock; Russia (Pechora Basin, northeastern Siberia), Silurian; Australia (Victoria), Canada (Arctic islands), central Asia (Tien Shan), Estonia, Russia (Ural), Sweden (Gotland), United States (New York), Lower Devonian; Canada (Ontario), central Asia (Tien Shan), Germany, Russia (Kuznetsk Basin, northeastern Siberia, Pechora Basin, Ural), United States (Ohio), Middle Devonian.—Fig. 5, 3a–b. *P. simplex (Nestor), Jaani Stage, Wenlock, Liiva, Saaremaa Island, Estonia, holotype IGTUT 114-20 (Co3134); longitudinal and tangential sections, ×10 (new).

Family TIENODICTYIDAE

Bogoyavlenskaya, 1965


Skeletal elements well differentiated; laminae continuous, planar; branching or oblique longitudinal skeletal elements, together with dissepiments, form tangled network in interlaminar space; galleries irregular, astrorhizae weakly developed. Silurian (Llandovery)–Upper Devonian (Franian).

Tiendicthyon Yabe & Sugiyama, 1941, p. 139 [*T. zonatum; OD; holotype TUM 65229]. Growth form domical, structure laminate; laminae planar; interlaminar space divided into two zones, longitudinal skeletal elements in lower zone very irregular, connected with processes into tangled network, in upper zone, isolated pillars occur, circular in cross section; galleries irregular; dissepiments abundant in upper zone; astrorhizae indistinct. Lower Devonian–Upper Devonian (Franian); Australia (northern Queensland), Russia (northeastern Siberia), Lower Devonian; Australia (northern Queensland), Canada (Northwest Territories), China (Yunnan), Russia (eastern Ural, Kuznetsk Basin, Salair), Middle Devonian; Czech Republic (Moravia), Franian.—Fig. 6, 1a–b. *T. zonatum, Middle Devonian, Nanshan, Paichiaying, eastern Yunnan, China, holotype TUM 65229; oblique longitudinal and tangential sections, ×10 (new).

Hammatostroma Stearn, 1961, p. 939 [*H. albertense Stearn, 1961, p. 940; OD; holotype GSC 15318]. Growth form domical to laminar; laminae planar or irregularly wavy, transversely fibrous; interlaminar spaces occupied by tangled, irregular structure, forming discontinuous, crumpled additional laminae in the middle part; galleries irregular; astrorhizae inconspicuous. Lower Devonian–Upper Devonian (Franian); Austria (Carnic Alps), Lower Devonian; China (Guangxi), Givetian; Canada (Alberta, Saskatchewan), China (Guangxi), Czech Republic (Moravia), Poland, Russia (Arctic islands, Timan, Ural), United States (Iowa), Franian.—Fig. 6, 2a–b. *H. albertense, Cairn Formation, Franian, Isaac Creek, Rocky Mountains, Alberta, holotype GSC 15318; longitudinal and tangential sections, ×10 (new, courtesy of T. E. Bolton).

Intesodictyidae Nestor, nom. nov. herein (Intesodictyon Yavorsky, 1963, p. 34, nom. nud.) [*Intesodictyon perplexum Yavorsky, 1963, p. 36; OD; lectotype CNIGR 7351/469]. Growth form domical; laminae thin, planar; longitudinal skeletal elements (pillars) thin, irregularly branching, forming a fine tangled network in interlaminar space; additional inflected lamina locally developed in interlaminar space or below the planar lamina. [Yavorsky (1963) erected the new genus Intesodictyon without designation of the type species, and therefore, according to the IZCN Code (1999), Article 13.3, its name is invalid and requires replacement.] Silurian (Llandovery)–Lower Devonian; Canada (Arctic islands, eastern Quebec), China (Quizhou); Estonia, United States (northern Michigan), Llandovery; Russia (northeastern Siberia, Pechora Basin, Tuva), Silurian; China (Inner Mongolia), Russia (Kuznetsk Basin), Lower Devonian.—Fig. 6, 3a–b. *I. perplexum (Yavorsky), upper Silurian, R. Iblagas, Magadan, northeastern Siberia; lectotype CNIGR 7351/469; longitudinal and tangential sections, ×16 (new).

Pseudoactinodictyon Flügel, 1958, p. 137 [*P. juxi; OD; holotype SMF XXV-1184] [*Duadrostoma KHALFINA, 1968b, p. 61 (type, Stromatoporella dualis KHALFINA, 1961, p. 332, OD); = Intesodictyonella Yavorsky, 1969, p. 102 (type, Stromatoporella undata Yavorsky, 1950, p. 258, OD)]. Growth form laminar to domical; laminae planar; pillars short, partly superposed, locally crooked or oblique, expanding at tops; wide interlaminar spaces filled with abundant convex dissepiments; astrorhizae irregular. [Flügel (1958) originally published negative prints of Pseudoactinodictyon with low magnification that complicated identification
Fig. 6. Tienodictyidae (p. 8–10).
Family ANOSTYLOSTROMATIDAE  
Nestor, new family  

[Skeletal elements well differentiated; laminae continuous, planar; pillars expanding and branching at tops. [The genera included herein in the family Anostylostromatidae were formerly included in the family Tienodictyidae (Stearn & others, 1999).] Silurian (Ludlow)–Upper Devonian (upper Famennian).]

ANOSTYLOSTROMA  
Parks, 1936, p. 44 [*A. hamiltonense Parks, 1936, p. 46; OD; emend., Stearn, 1991, p. 612, holotype ROM 16536 (2240)]. Growth form laminar to domical; laminae thin, planar, penetrated by scattered pores; pillars thick, expanding and branching at tops, oblong to vermiform in tangential section; galleries irregular; dissepiments common; astorhizae rare, small. Middle Devonian–Upper Devonian (upper Famennian); Canada (Arctic islands), China (Guangxi), Russia (eastern Urals, Kuznetsk Basin), United States (Indiana, Missouri), Middle Devonian–Kazakhstan, Russia (Pechora Basin), Frasnian; China (Guangxi), France, Germany (Aachen), Russia (Pechora Basin), upper Famennian.—Fig. 7.1a–b. *A. hamiltonense* Long Lake, Alpena, Michigan, Hamilton Formation, holotype ROM 16536 (2240); longitudinal and tangential sections, ×10 (new).

BELEMNOSTROMA  
Stearn, 1990, p. 504 [*B. hastatum Stearn, 1990, p. 505; OD; holotype GSC 95772]. Growth form laminar to domical; laminae planar, inflected upward at megapillars; ordinary, short pillars expanding and branching at top; thicker megapillars, circular in cross section, penetrate through several laminae; astorhizae inconspicuous. Lower Devonian (Lochkovian); Canada (Arctic Islands).—Fig. 7.2a–b. *B. hastatum*, Loc. B24A near Polar Bear Pass, Bathurst Island, Stuart Bay Formation, holotype GSC 95772; longitudinal and tangential sections, ×10 (new).

NEXILILAMINA  
Mallett, 1971, p. 241 [*N. dipreekensis*; OD; emend., Webb & Zhen, 1997, p. 35, holotype UQF 47608]. Growth form laminar to domical; laminae planar with few pores; pillars of two types: superposed, long, spool-shaped (megapillars) and simple, short, rodlike, expanding and branching at top, rounded to angular in cross section; dissepiments scattered; astorhizae apparently lacking. Lower Devonian (Emiian)–Middle Devonian (Eifelian); Australia (northern Queensland).—Fig. 7.3a–b. *N. dipreekensis*, Martins Well, Broken River, Dip Creek Limestone, holotype, UQF 47608; longitudinal and tangential sections, ×10 (new, courtesy of B. D. Webb).

SCHISTODICTYON  
Lessovaia in Lessovaia & Zakharova, 1970, p. 47 [*S. poecilus*; OD; holotype GMU 240/2-9/74]. Growth form domical; laminae thin, planar; pillars upward forking or funnel shaped, branching in longitudinal section once or twice before reaching overlying lamina, pillars vermicular, irregular to circular in cross section; galleries irregular; astorhizae rare. Silurian (Ludlow)–Upper Devonian (Frasnian); Australia (New South Wales, northern Queensland), central Asia (Tien Shan), Ludlow–Pridoli; Australia (New South Wales, northern Queensland), Russia (Kuznetsk Basin), Lower Devonian; Belgium, Canada (Ontario), United States (Michigan, Missouri, Ohio), Russia (southern Urals, Kuznetsk Basin), Middle Devonian; Canada (Arctic islands), Russia (Kuznetsk Basin), Turkey, Frasnian.—Fig. 7.4a–b. *S. poecilus*, Isfar River, Tien Shan, Isfarinsk Horizon, Pridoli, holotype GMU 240/2-9/74; longitudinal and tangential sections, ×10 (new).

Family ATELODICTYIDAE  
Khalifina, 1968  


[Skeletal elements well differentiated; laminae continuous, planar; pillars blade shaped, laterally joined in chains or walls; galleries labyrinthine in tangential section, subrectangular in longitudinal section; astorhizae rare. [Stearn (1991) transferred the genus Ateledictyon from Actinostromatida to Clathrodictyida, as it has continuous and not colliculate laminae. The so-called hexactinellid structure occurs in the interlaminal space of Ateledictyon and not at the level of lamina, as in actinostromatids. The representatives of the family Aculatostromatidae Khalifina & Yavorsky, 1973, have quite analogous interlaminal structure and...]

of the genus. Therefore, the species Stromatoporella undata Yavorsky, 1950, were distinguished as new genera Dualestrona and Intexodictyonella, respectively. Lower Devonian (Pragian)–Upper Devonian (Frasnian); Australia (Victoria), United States (Michigan), Pragian; Australia (northern Queensland), Canada (Alberta, Ontario), China (Yunnan), Czech Republic (Moravia), England, France (Boulonnais), Germany (Sauerland), Poland, Russia (Kuznetsk Basin, southern Urals), United States (Ohio), Middle Devonian; Belgium, Canada (Alberta, Arctic islands), China (Guangxi), Germany (Sauerland), Russia (Russian Platform), Frasnian.—Fig. 6.4a–b. *P. juxus*, holotype SMF XXV-1184, "Massenkalk," Givetian, Delsten-Milchenbach, Sauerland, Germany; longitudinal section; galleries irregular; dissepiments scattered; astorhizae apparently lacking. Lower Devonian (Emiian)–Middle Devonian (Eifelian); Australia (northern Queensland).—Fig. 7.3a–b. *N. dipreekensis*, Martins Well, Broken River, Dip Creek Limestone, holotype, UQF 47608; longitudinal and tangential sections, ×10 (new, courtesy of B. D. Webb).

Family ANOSTYLOSTROMATIDAE  
Nestor, new family  

[Anostylostromatidae Nestor, herein] [type genus, Anostylostroma Parks, 1936, p. 44]
Fig. 7. Anostylostromatidae (p. 10).
continuous laminae. Therefore, the latter family is synonymous with Atelodictyidae.)

**Lower Devonian–Upper Devonian (upper Famennian).**

*Atelodictyon* Lecompte, 1951, p. 124 [*A. fallax* Lecompte, 1951, p. 125; OD; holotype IRScNB 7411] [=*Aculatostroma Kalfina*, 1968b, p. 62 (type, *Syringostroma verrucosum* Kalfina, 1961, p. 342, OD)]. Growth form laminar or domical; laminae continuous, planar, thin; pillars bladelike, laterally joined in chains, short to superposed; galleries labyrinthine in tangential section, rectangular in longitudinal section; astorhizae rare. [The original figures of *Syringostroma verrucosum* (Kalfina, 1961, pl. D13, 3a–b), designated as the type species of the genus *Aculatostroma Kalfina*, 1968b, clearly demonstrate that it has continuous laminae and so-called hexactinellid structure in the interlaminar space. Therefore, *Aculatostroma* is treated as a junior synonym of *Atelodictyon.*)

**Lower Devonian–Upper Devonian (upper Famennian): Australia (northern Queensland, Victoria), central...**

**Fig. 8. Atelodictyidae (p. 10–13).**
Asia (Tien Shan), Russia (Kuznets Basin, northeastern Siberia), Lower Devonian; Afghanistan, Austria, Belgium, China (Quzhou), France (Boulonnais), Poland, Russia (Kuznets Basin, northeastern Siberia, Urals), United States (Indiana), Middle Devonian; Canada (Alberta), Czech Republic (Moravia), Poland, Russia (Kuznets Basin, northeastern Siberia, Russian Platform), United States (Iowa), Upper Devonian; Belgium, Germany, Kazakhstan, Strunyi.——Fig. 8, 5a–b. *A. fallax*, Couvinian, Eifelian, Dinant Basin, Belgium, holotype IRScNB 7411; longitudinal and tangential sections, ×10 (new, courtesy of C. W. Searns).

**Coenosteldictyon** Yavorsky in Khalfina & Yavorsky, 1971, p. 118 [*Clathrodictyi krekovi*, Yavorsky, 1955, p. 50; OD: holotype CNIGR 7351/62]. Growth form laminar; laminae thin, planar, slightly inflected at the junctions with pillars; pillars bladelike, circular at base, mainly isolated but laterally joined in chains at top; galleries open in tangential section, subrectangular in longitudinal section; astrophizae unknown. Lower Devonian (Pragian)–Middle Devonian (Eifelian): Russia (Kuznets Basin, Pragian; China (Yunnan), Eifelian.—Fig. 8, 5a–b. *C. krekovi* (Yavorsky), Krekov Horizon, Pragian, River Chernovoi Bachat, Kuznets Basin, holotype CNIGR 7351/62; longitudinal and tangential sections, ×20 (new).

**Cubodictyon** Yang & Dong, 1979, p. 45 [88] [*C. sinense*, OD: holotype NIGP Bd 644–4]. Growth form domical or irregular; laminae thin, continuous, wrinkled on a small scale; longitudinal elements, walls of subhexagonal chambers; astrophizae unknown. [The presence of chamberlike structures in interlaminar spaces shows that the relationship of the genus with stromatoporoids is problematic.] Middle Devonian (Eifelian): China (Guangxi).——Fig. 8, 5a–b. *C. sinense*, Beiliu Formation, holotype NIGP Bd 644–4; longitudinal and tangential sections, ×10 (Yang & Dong, 1979, pl. 20, 5–6).

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