

# RECENT BELGIAN FORAMINIFERA

---

Some time ago through the kindness of Dr. V. VAN STRAELEN, Director of the Musée Royal d'Histoire Naturelle de Belgique <sup>(1)</sup>, a collection of bottom samples from off the Coast of Belgium was sent me for a study of their contained foraminifera. This material has been collected by the services of the Museum under the direction of Prof. G. GILSON.

Some of the samples were rich in specimens and species and others had little. The depth of water as will be seen by the data given for those stations which had foraminifera is not great. This together with the fact that the area is somewhat shut off from the open sea evidently limits the foraminiferal fauna. Although data in regard to the salinity is not available there are certain stations at which the foraminifera suggest that less than normal salinity may be possible. It has been found elsewhere that an abundance of *Rotalia beccarii*, *Quinqueloculina* and *Elphidium* to the practical exclusion of other foraminifera is the indication of somewhat brackish conditions. A few of the stations have this type of fauna.

An interesting constituent of the samples is the considerable representation of Cretaceous foraminifera. There is a considerable fauna including the genera *Globigerina*, *Globotruncana*, *Gumbelina*, *Bolivinita*, *Eouvigerina* and *Pseudouvigerina* which are of Cretaceous age and derived from the exposures of Cretaceous chalks not far distant. Occasional specimens are also found which are of Tertiary age and are derived from erosion of Eocene and Pliocene sediments somewhere in the adjacent areas and even may have been brought into the area by stream transportation. If the fauna were fossilized as it now exists and studied later it would be a very confusing problem. It is an excellent example of what is taking place in other parts of the world where erosion is bringing in fossil specimens to areas where a Recent fauna now exists.

---

<sup>(1)</sup> By decree of the Regent under date of the 3rd. of September 1948, the Musée royal d'Histoire naturelle de Belgique becomes INSTITUT ROYAL DES SCIENCES NATURELLES DE BELGIQUE.

A number of species are represented by single specimens or by immature ones and have not been specifically identified. The fauna is naturally very similar to that described and figured by numerous authors from about the British Isles but the fauna from the Belgian samples is more restricted as already noted due to its greater distance from the open ocean and the shallow depths at which most of the samples were taken.

All the types and figured specimens as well as the general collection of material studied and reported on in this paper are deposited in the « Institut royal des Sciences naturelles de Belgique » (formerly the « Musée royal d'Histoire naturelle de Belgique ») in Bruxelles. A representative collection of the species found, except the very rare ones, are deposited in the CUSHMAN Laboratory for Foraminiferal Research in Sharon, Massachusetts, U.S.A.

A chart is given showing the distribution of the species by stations. A list of the stations is given below.

Station	Lat. N.	Long. E.	Depth in meters
S. 12	51°47'30''	2°10'20''	46.80
S. 57	51°43'	2°17'30''	—
S.101	51°32'20''	2°42'	32.76
S.178	51°57'	1°51'	56.
S.179	52°02'30''	1°40'	24.
S.180	51°39'	1°41'	20.
S.181	50°54'	1°32'	47.
S.183	51°04'30''	1°21'	30.
S.189	51°48'	2°10'	50.
300	51°21'	2°51'	24.
347	51°15'	2°49'	11.5
374	51°14'	2°53'	8.50
495	51°12'	2°45'	14.
571	51°10'	2°43'	6.80
588	51°16'	2°47'	16.5
700	51°10'	2°37'	8.40
824	51°09'	2°35'	14.75
865	51°06'	2°33'	10.5
1280	51°21'	3°05'	8.
1297	51°23'	3°07'	11.50

Station	Lat. N.	Long. E.	Depth in meters
1466	51°17'	2°41'	21.60
1487	51°14'	2°39'	—
1542	51°30'	3°21'	12.25
1585	51°26'	3°24'	9.25
1647	51°28'	3°27'	10.40
1680	51°21'	3°13'	10.60
1713	51°20'	2°57'	10.75
1744	51°23'	3°15'	14.25
1785	51°26'	3°17'	9.50
1786	51°22'	2°59'	10.80
1919	51°29'	3°29'	9.10
1968	51°26'	3°01'	16.50
2113	51°28'	3°19'	6.
2151	51°25'	3°31'	21.75
2384	51°24'	3°23'	11.25
2532	51°25'	3°33'	5.25
2657	51°17'	2°55'	12.50
2713	51°29'	3°11'	9.75
2986	51°26'	3°09'	8.50
3215	51°21'30"	2°24'30"	36.40
3333	51°25'05"	2°32'05"	34.
3467	51°31'45"	2°37'40"	40.
3627	51°26'05"	2°34'10"	28.
3743	51°18'05'	2°37'10"	30.
3776	51°33'40"	2°39'50"	39.
3878	51°30'30"	2°30'10"	34.
3930	51°37'40"	2°33'45"	27.

The following species and varieties occurred in the Belgian samples.

## FAMILY SACCAMMINIDÆ (¹).

Genus MILLETTELLA RHUMBLER, 1903.

*Millettella* sp. (²).

(Pl. I, fig. 1.)

The single specimen figured here is the only one of its kind found in the Belgian material. It evidently belongs to *Millettella* but not enough evidence is given by the one specimen to warrant placing it specifically.

## FAMILY TEXTULARIIDÆ.

Genus SPIROPLECTAMMINA CUSHMAN, 1927.

*Spiroplectammina wrightii* A. SILVESTRI.

(Pl. I, fig. 2-4.)

*Spiroplecta sagittula* WRIGHT (not *Textularia sagittula* DERANCE), Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 471.

*Spiroplecta wrightii* A. SILVESTRI, Atti Pont. Accad. Nuovi Lincei, Ann. lvi, 1903, pp. 1-5, fig. 1-6 (in text). — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 56; Journ. Roy. Micr. Soc., 1916, p. 42, pl. 6, fig. 7-10; Trans. Linn. Soc. London, vol. 11, ser. 2, 1916, p. 231. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 5, pl. 4, fig. 5-8. — LACROIX, Bull. Institut. Océanographique, n° 532, 1929, pp. 1-12, fig. 1-12 (in text).

They are a very few specimens in the samples but they are typical. All are young stages. This species is evidently a *Spiroplectammina* as both microspheric and megalospheric forms show a coiled stage in the early development. It has been recorded at numerous localities about the British Isles and in the Mediterranean. There is considerable variation in the shape, particularly in the adult

(¹) The manuscript for this paper was completed in early 1939 but publication was prevented by the outbreak of war. No attempt has been made to bring the synonymies up to the present date nor has the nomenclature in all cases been made to conform to current usage.

The following two works by Doctor CUSHMAN may be of assistance in enabling the student to work out more completely the subsequent references to forms recorded here :  
*Arctic Foraminifera*, Special Publ. n° 23, Cushman Lab. Foram. Res., April 29, 1948, Sharon, Mass.

*Foraminifera, their classification and economic use*, 4th ed., Nov. 1948, Cambridge, Mass.



chambers which apparently may become much higher and much more separated than in the earlier stages. The sutures also are usually thickened giving the appearance of being raised but are really flush with the surface and may become depressed.

#### FAMILY VERNEUILINIDÆ.

Genus GAUDRYINA D'ORBIGNY, 1839.

#### *Gaudryina* (*Pseudogaudryina*) *atlantica* (BAILEY).

(Pl. I, fig. 5.)

*Textularia atlantica* BAILEY, Smithsonian Contr., vol. 2, art. 3, 1851, p. 12, pl., fig. 38-43.

*Gaudryina atlantica* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 70, pl. 13, fig. 1-3; Special Publ, n° 7, Cushman Lab. Foram. Res., 1937, p. 95, pl. 14, fig. 4, 5.

*Gaudryina rugosa* FLINT (not D'ORBIGNY), Rep't U. S. Nat. Mus., 1897 (1899), p. 288, pl. 33, fig. 3.

*Verneuilina triquetra* GOËS (not MÜNSTER), Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 38.

Test elongate, triangular in section, the angles acute, triserial portion short, biserial portion mostly triangular, the last-formed one or two chambers often rounded, tapering gradually from the blunt initial end to the broadly rounded apertural end; chambers distinct, not inflated; sutures distinct throughout; wall coarsely arenaceous, of angular sand grains with a large proportion of whitish cement, surface rather smoothly finished; aperture elongate, slightly arched, in a deep re-entrant of the ventral inner border of the chamber; color light gray. Length 1,20 mm.; breadth 0,80 mm.

A single specimen of this species occurred in the Belgian collections. The species has not been recorded from the European coast but is very abundant in the North Atlantic especially in the western part.

#### FAMILY VALVULINIDÆ.

Genus EGGERELLA CUSHMAN, 1933.

#### *Eggerella* *scabra* (WILLIAMSON).

(Pl. I, fig. 6.)

*Bulimina scabra* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 65, pl. 5, fig. 136, 137 (*B. arenacea* on explanation of plate).

*Textularia scabra* FISCHER, Actes Soc. Linn. Bordeaux, vol. 27, 1870, p. 393, n° 32.

*Verneuilina polystropha* PARKER and JONES, Introd. Foram., Appendix, 1862, p. 311. — H. B. BRADY, Ann. Mag. Nat. Hist., sér. 5, vol. 1, 1878, p. 436, pl. 20, fig. 9 a-c. — BALKWILL and WRIGHT, Proc. Roy. Irish Acad., sér. 3, vol. 3, 1882, p. 447. — H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 386, pl. 47, fig. 15-17. — BALKWILL and WRIGHT, Trans. Roy. Irish Acad., vol. 28, 1885, p. 332. — H. B. BRADY, Journ. Roy. Micr. Soc., 1887, p. 896. — WRIGHT, Proc. Roy. Irish

Acad., ser. 3, vol. 1, 1891, p. 472. — ROBERTSON, Trans. Nat. Hist. Soc. Glasgow, vol. 3, pt. 3, 1892, p. 240. — GOËS, Kongl. Svensk. Vet. Akad. Handl., vol. 25, n° 9, 1894, p. 32, pl. 7, fig. 247-255. — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, 1905, p. 206. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, n° 64, 1913, p. 55, pl. 4, fig. 1-5; Journ. Roy. Micr. Soc., 1916, p. 42; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 231.

*Verneuilina scabra* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 55.

*Eggerella scabra* CUSHMAN, Special Publ. n° 8, Cushman Lab. Foram. Res., 1937, p. 50, pl. 5, fig. 10, 11.

Test elongate, tapering, triserial, the apical end bluntly rounded; chambers comparatively few, inflated; sutures distinct, depressed; wall coarsely arenaceous, surface slightly roughened; aperture oval, at the base of the inner margin of the last-formed chamber, in a depression formed at the junction of the three last-formed chambers; color reddish-brown. Length up to 1,00 mm.

This species is common about the British Isles and adjacent regions but was rather rare in the Belgian collections. The specimens are typical, however.

#### FAMILY MILIOLIDÆ.

Genus QUINQUELOCULINA D'ORBIGNY, 1826.

##### *Quinqueloculina seminula* (LINNÆUS).

(Pl. I, fig. 7.)

« Conchula minima arcte in se contorta, etc. », PLANCUS, DE CONCHIS min. not., 1739, p. 19, pl. 11, fig. 1 A, B, C.

« Tubulus marinus irregulariter intortus vermicularis » GUALTIERI, Index Test., 1742, pl. 10, fig. S.

*Serpula seminulum* LINNÆUS, Syst. Nat., ed. 12, 1767, p. 1264.

*Quinqueloculina seminulum* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 303. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 24, pl. 2, fig. 1, 2.

*Miliolina seminulum* WILLIAMSON, Rec. Foram. Great Britain, 1858, p. 85, pl. 7, fig. 183-185. — H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1888, p. 157, pl. 5, fig. 6.

Test longer than wide, greatest width near the middle, chambers distinct, of nearly uniform diameter, periphery rounded; sutures distinct, very slightly depressed; wall smooth, polished; aperture large, with a simple tooth. Length up to 1,00 mm., usually less.

This is a common species in these collections and occurs in considerable numbers. The species has been widely recorded in the literature but a glance at the figures will show that numerous species have been included under this name. It occurs in typical form in the North Atlantic both on the European and American coasts, in the Mediterranean, and as a late Tertiary fossil in the areas bordering those waters.

**Quinqueloculina subrotunda** (MONTAGU).

(Pl. I, fig. 8.)

« *Serpula subrotunda dorso elevato* » WALKER and BOYS, Test. Min., 1784, p. 2, pl. 1, fig. 4.

*Vermiculum subrotundum* MONTAGU, Test. Brit., 1803, pt. 2, p. 521.

*Quinqueloculina subrotunda* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 302. — H. B. BRADY, Nat. Hist. Trans. Northumberland and Durham, vol. 1, 1865, p. 94, pl. 12, fig. 2. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 25, pl. 2, fig. 4.

*Miliolina subrotunda* FISCHER, Actes Soc. Linn. Bordeaux, vol. 27, 1870, p. 386. — H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 168, pl. 5, fig. 10, 11. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 26; Trans. Linn. Soc., Zool., vol. 11, 1916, p. 209.

Test generally circular in front view, compressed, periphery rounded; chambers quinqueloculine or in the adult spreading and more or less in one plane, inflated; sutures distinct, slightly depressed; wall smooth; aperture usually with a simple tooth. Diameter 0,50 mm.; thickness 0,25 mm.

This is a very common species in the Belgian material and shows comparatively little variation except in size which is probably due to age.

**Quinqueloculina cliarensis** (HERON-ALLEN and EARLAND).

(Pl. I, fig. 10.)

*Miliolina stelligera* HERON-ALLEN and EARLAND (not SCHLUMBERGER), Proc. Roy. Irish Acad., vol. 31, n° 64, 1913, pp. 31, 187, pl. 1, fig. 14, 15; Trans. Linn. Soc. London, ser. 2, Zoology, vol. 11, 1916, p. 215, pl. 39, fig. 28-31.

*Miliolina cliarensis* HERON-ALLEN and EARLAND, Trans. Roy. Micr. Soc., ser. 3, vol. 50, 1930, p. 58, pl. 3, fig. 26-31.

Specimens of this species are rare in the Belgian material but evidently are identical with that described from off the British Isles by HERON-ALLEN and EARLAND.

**Quinqueloculina dunkerquiana** (HERON-ALLEN and EARLAND).

(Pl. I, fig. 9.)

*Quinqueloculina trigonula* TERQUEM (not LAMARCK), Essai Class. Anim. Dunkerque, 1875, p. 84, pl. 12, fig. 4 a-c.

*Miliolina dunkerquiana* HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., ser. 3, vol. 50, 1930, p. 56, pl. 2, fig. 9-11.

In our material there are numerous specimens of the form figured, with a very highly polished surface, that seem to belong to the species named by HERON-ALLEN and EARLAND from material from off Plymouth, England. The species is a smaller and shorter form than *Q. seminula* (LINNAEUS).

**Quinqueloculina lata** TERQUEM.

(Pl. II, fig. 1.)

*Quinqueloculina lata* TERQUEM, Essai Class. Anim. Dunkerque, 1875, p. 82, pl. 11, fig. 8 a, b.

*Miliolina oblonga* (MONTAGU) var. *lata* HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., ser. 3, vol. 50, 1930, p. 55, pl. 2, fig. 12-15.

This very truncate form has been recorded as very common by HERON-ALLEN and EARLAND from off Plymouth, England. The same form occurs in the Belgian material but it is very rare.

**Quinqueloculina bicornis** (WALKER and JACOB).

(Pl. II, fig. 2.)

*Serpula bicornis* WALKER and JACOB, in Kanmacher's ed., Adam's Essays Micr., 1798, p. 633, pl. 14, fig. 2.

*Miliolina bicornis* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 87, pl. 7, fig. 190-194. — H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 171, pl. 6, fig. 9, 11, 12. — BALKWILL and MILLETT, Journ. Micr., vol. 3, 1884, p. 6. — BALKWILL and WRIGHT, Trans. Roy. Irish Acad., vol. 28, 1885, p. 324. — SIDDALL, Proc. Lit. Phil. Soc. Liverpool, 1886, p. 62 (list). — (?) H. B. BRADY, PARKER and JONES, Trans. Zool. Soc., vol. 12, 1888, p. 214, pl. 40, fig. 25. — CHASTER, First Rep't Southport Soc. Nat. Sci., 1890-1891 (1892), p. 56. — J. WRIGHT, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 464. — DE AMICIS, Boll. Soc. Geol. Ital., vol. 12, fasc. 3, 1893, p. 32. — WOODWARD, The Observer, vol. 4, 1893, p. 76. — GOËS, Kongl. Svensk. Vet. Akad. Handl., vol. 25, n° 9, 1894, p. 113, pl. 21, fig. 860-861 e. — CHAPMAN, Proc. Zool. Soc. London, 1895, p. 10. — JONES, Foram. Crag., pt. 2, 1895, p. 122, pl. 3, fig. 41, 42. — A. SILVESTRI, Atti Accad. Sci. Acireale, vol. 7, 1895-1896, p. 37. — SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 48, n° 5, 1904, p. 14, pl. 4, fig. 13, 14. — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, 1905, p. 196. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1909, p. 313. — SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 54, n° 16, 1910, p. 5. — HERON-ALLEN and EARLAND, vol. 31, pt. 64, 1913, p. 32, pl. 2, fig. 5, 6; Trans. Linn. Soc. London, vol. 11, ser. 2, 1916, p. 214; Bull. Soc. Sci. Hist. Nat. Corse, 1922, p. 122; Trans. Zool. Soc. London, vol. 22, 1926, p. 69 (list).

*Quinqueloculina bicornis* H. B. BRADY, Trans. Linn. Soc. Zool., vol. 24, 1864, p. 472 (table); Nat. Hist. Trans. Northumberland and Durham, vol. 1, 1865 (1867), p. 94; Ann. Mag. Nat. Hist., ser. 4, vol. 6, 1870, p. 49. — TERQUEM, Ess. Anim. Plage Dunkerque, pt. 1, 1875, p. 39, pl. 6, fig. 6 a-c. — KIAER, Rep't Norwegian Fish and Mar. Invest., vol. 1, n° 7, 1900, p. 28. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 32, pl. 5, fig. 5-7; pl. 6, fig. 1, 2.

Test quinqueloculine, slightly longer than broad, periphery broadly rounded; chambers distinct, somewhat contorted, and sinuous; sutures distinct only slightly depressed; wall costate especially on the peripheral portion of each chamber, sides partially smooth; aperture elongate, more or less quadrate in

the adult, only slightly projecting, the edges with a slight rim and a single simple tooth. Length up to 1,00 mm.; breadth up to 0,70 mm.; thickness up to 0,50 mm.

This species is common off the Atlantic coast of Europe and in the Mediterranean and occurs as a late Tertiary fossil in lands bordering these areas. There is considerable variation in the height and strength of the costae as occurs in most costate species. As a rule the apertural end is not greatly extended and the periphery is rounded.

**Quinqueloculina bicornis** (WALKER and JACOB) var. **angulata** (WILLIAMSON).

(Pl. II, fig. 3.)

*Miliolina bicornis* (WALKER and JACOB), var. *angulata* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 88, pl. 7, fig. 196.

*Quinqueloculina bicornis* (WALKER and JACOB), var. *angulata* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 33, pl. 6, fig. 3, 4.

Variety differing from the typical in the very definite angles of the chambers, in the truncate periphery and in the ornamentation appearing as fine broken incisions rather than continuous costae.

The variety was described by WILLIAMSON from off the British Isles and in the Belgian material is more common than the typical form.

**Quinqueloculina cf. brongniartii** D'ORBIGNY.

(Pl. II, fig. 5.)

There are a few specimens which may with some question be referred to D'ORBIGNY'S species. The test is more or less rounded in front view and the surface has weak longitudinal costae. The aperture is usually a large one and the tooth is frequently missing.

Genus **MASSILINA** SCHLUMBERGER, 1893.

**Massilina secans** (D'ORBIGNY).

(Pl. II, fig. 4.)

*Quinqueloculina secans* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 303, n° 43, Modèles, n° 96. — BRONN, Lethæa Geognostica, ed. 2, 1837, p. 1146, pl. 42, fig. 32 a-c. — ROEMER, Neues Jahrb., 1838, p. 393, pl. 3, fig. 77. — PARKER, JONES and BRADY, Ann. Mag. Nat. Hist., ser. 3, vol. 16, 1865, p. 34, pl. 1, fig. 10; ser. 4, vol. 8, 1871, p. 250, pl. 8, fig. 14. — H. B. BRADY, Nat. Hist. Trans. Northumberland and Durham, vol. 1, 1865 (1867), p. 94. — KARRER, in VON DRASCHE, Frag. Geol. Luzon, 1878, p. 88, pl. 5, fig. 7. — BÜTSCHLI, in BRONN, Klassen und Ordnungen Thierreichs, 1880, p. 189, pl. 4, fig. 11. — BASSET, Ann. Soc. Sci. Charente-Inf., 1884 (1885), p. 163, fig. — KIAER, Rep't Norwegian Fish. and Mar. Invest., vol. 1, n° 7, 1900, p. 28.

- Miliolina secans* H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 167, pl. 6, fig. 1, 2.— BALKWILL and MILLETT, Journ. Micr., vol. 3, 1884, p. 6. — BALKWILL and WRIGHT, Trans. Roy. Irish Acad., vol. 28, Sci., 1885, p. 324. — SHERBORN and CHAPMAN, Journ. Roy. Micr. Soc., ser. 2, vol. 6, 1886, p. 742, pl. 14, fig. 4. — HOWCHIN, Trans. Proc. Roy. Soc. So. Australia, vol. 12, 1889, p. 3. — CHASTER, First Rep't Southport Soc. Nat. Hist., 1890-1891 (1892) p. 55. — HOWCHIN, Trans. Proc. Roy. Soc. So. Australia, vol. 13, 1890, p. 163. — EGGER, Abhandl. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 237, pl. 2, fig. 59-60. — GOËS, Kongl. Svensk. Vet. Akad. Handl., vol. 25, n° 9, 1894, p. 112, pl. 20, fig. 856-856 g. — A. SILVESTRI, Atti Accad. Sci. Acireale, vol. 7, 1896, p. 17.
- Massilina secans* SCHLUMBERGER, Mém. Soc. Zool. France, vol. 6, 1893, p. 218, pl. 4, fig. 82, 83, text fig. 31-33. — FORNASINI, Mem. Accad. Sci. Istit. Bologna, ser. 5, vol. 8, 1900, p. 10, fig. 10-13; ser. 5, vol. 10, 1902, p. 25. — SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 48, n° 5, 1904, p. 18. — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, 1905, p. 197. — MILLETT, Rec. Foram. Galway. 1908, p. 5. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1909, p. 317. — SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 54, n° 16, 1910, p. 6. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 34; Trans. Zool. Soc. London, vol. 20, 1915, p. 582, pl. 44, fig. 24-27; Trans. Linn. Soc. London, vol. 11, ser. 2, 1916, p. 215. — CUSHMAN, Bull. 71, U. S. Nat. Mus., pt. 6, 1917, pp. 15, 16, 59, text fig. 17-20. — MARTINOTTI, Atti Soc. Ital. Sci. Nat., vol. 59, 1920, p. 310, text fig. 122-123. — HERON-ALLEN and EARLAND, Bull. Soc. Sci. Hist. Nat. Corse, 1922, p. 122; Journ. Roy. Micr. Soc., 1924, p. 133. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 37, pl. 7, fig. 3, 4.
- Vermiculum disciforme* MACGILLIVRAY, Hist. Moll. Anim. Aberdeen, 1843, p. 319.
- Miliolina seminulum* (LINNAEUS), var. *disciformis* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 86, pl. 7, fig. 188, 189.

Test in the early stages quinqueloculine, later with the chambers added in one plane, in side view rounded, nearly as broad as long, in end view narrow; periphery rounded or acute, sometimes keeled; chambers distinct, usually four or five visible on each side; sutures distinct, depressed; wall smooth; aperture elongate, usually with a simple tooth.

Although this species has been recorded many times, mainly from the Western Coast of Europe and about the British Isles, it has been found to be very rare in our material. The megalospheric form seems to skip almost entirely the quinqueloculine stage although this appears in the microspheric form. There are a number of specimens that may possibly be the young stages.

#### **Massilina annectens SCHLUMBERGER.**

(Pl. II, fig. 8.)

The single specimen figured is very similar to that figured by HERON-ALLEN and EARLAND from the Clare Island Region as « *Massilina annectens* SCHLUMBERGER » (Proc. Roy. Irish Acad., vol. XXXI, n° 64, 1913, p. 34, pl. 1, fig. 9-11). It seems to have little in common with SCHLUMBERGER's type figure.

Genus SPIROLOCULINA D'ORBIGNY, 1826.

**Spiroloculina planulata** (LAMARCK).

(Pl. II, fig. 6.)

There are a few specimens in our material that are similar to some I have figured from off Southwest Ireland (Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 41, pl. 8, fig. 3, 4). For the many references to this species which is apparently very common about the British Isles and off the Western coast of Europe the above reference may be consulted.

Genus AMMOMASSILINA CUSHMAN, 1933.

**Ammomassilina cf. asperula** (KARRER).

(Pl. II, fig. 7.)

There is in our material the single specimen here figured, which is, in most of its characters, similar to the specimens figured by BRADY in the *Challenger* Rep't. It has rather coarse arenaceous fragments but the surface is not roughened. BRADY records it from the Faroe Channel.

Genus TRILOCULINA D'ORBIGNY, 1826.

**Triloculina tricarinata** D'ORBIGNY.

(Pl. II, fig. 9.)

*Triloculina tricarinata* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 299, n° 7; Modèles, 1826, n° 94. — H. B. BRADY, Trans. Linn. Soc. London, vol. 24, 1864, p. 446, pl. 48, fig. 3. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 56, pl. 13, fig. 3 a-c.

*Miliolina tricarinata* H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 165, pl. 3, fig. 17 a, b.

Test in the adult with three visible chambers, the angles of the chambers sharply angled often almost carinate, whole test usually somewhat longer than wide, in end view triangular, the sides straight; sutures distinct; wall smooth, often polished; aperture with a narrow bifid tooth or variously angled in large specimens.

This species is very rare in the Belgian collections. The angles are not so sharp nor are the sides so flattened as in material from deeper water.

**Triloculina trigonula (LAMARCK).**

(Pl. II, fig. 10.)

*Miliola trigonula* LAMARCK, Ann. Mus., vol. 5, 1804, p. 351, n° 3, vol. 9, 1807, pl. 17, fig. 4.*Triloculina trigonula* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 299, n° 1, pl. 16, fig. 5-9; Modèles, 1826, n° 93. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 56, pl. 12, fig. 10, 11; pl. 13, fig. 1, 2.*Miliolina tricarinata* H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 165, pl. 3, fig. 17 *a*, *b*.

Test in the adult with three visible chambers, the angles of the chambers sharply angled often almost carinate, whole test usually somewhat longer than wide, in end view triangular, the sides straight; sutures distinct; wall smooth, often polished; aperture with a narrow bifid tooth or variously angled in large specimens.

This species is more frequent than the preceding but is not common. Some of the early quinqueloculine stages are difficult to separate from the young of *Quinqueloculina seminula* (LINNAEUS) as they are often found together.

**Triloculina oblonga (MONTAGU).**

(Pl. II, fig. 11.)

*Vermiculum oblongum* MONTAGU, Test. Brit., 1803, p. 522, pl. 14, fig. 9.*Triloculina oblonga* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 300, n° 16; Modèles, n° 95; in DE LA SAGRA, Hist. Fis. Pol. Nat. Cuba, 1839 « Foraminifères », p. 175, pl. 10, fig. 3-5. — H. B. BRADY, Trans. Linn. Soc. Zool., vol. 24, 1864, p. 472 (table); Nat. Hist. Trans. Northumberland and Durham, vol. 1, 1865 (1867), p. 93; Ann. Mag. Nat. Hist., ser. 4, vol. 6, 1870, p. 46. — TERQUEM, Essai Class. Anim. Dunkerque, 1875, p. 38, pl. 5, fig. 19 *a*, *b*. — J. WRIGHT, Proc. Belfast Nat. Field Club, Appendix, 1876-1877, p. 103. — KIAER, Rep't Norwegian Fish. and Mar. Invest., vol. 1, n° 7, 1900, p. 26. — CUSHMAN, Contrib. Canad. Biol., 1921 (1922), p. 15; Publ. 311, Carnegie Instit. Washington, 1922, p. 73; Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 57, pl. 13, fig. 4, 5.*Miliolina oblonga* TERRIGI, Atti Accad. Pont. Nuovi Lincei, vol. 33, 1880, p. 51, pl. 1; fig. 2. — H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 160, pl. 5, fig. 4 *a*, *b*. — BALKWILL and MILLETT, Journ. Micr., vol. 3, 1884, p. 6. — BALKWILL and WRIGHT, Trans. Roy. Irish Acad., vol. 28, Sci., 1885, p. 324. — SIDDALL, Proc. Lit. Phil. Soc. Liverpool, 1886, p. 62 (list). — H. B. BRADY, PARKER and JONES, Trans. Zool. Soc., vol. 12, 1888, p. 214, pl. 40, fig. 27. — J. WRIGHT, Ann. Mag. Nat. Hist., ser. 6, vol. 4, 1889, p. 447. — HALKYARD, Trans. Manchester Micr. Soc., 1889, p. 60. — CHASTER, First Rep't Southport Soc. Nat. Sci., 1890-1891 (1892), p. 55. — WOODWARD, The Observer, vol. 4, 1893, p. 76. — GOËS, Kongl. Svensk. Vet. Akad. Handl., vol. 25, n° 9, 1894, p. 110, pl. 20, fig. 850-850 *f*. — FLINT, Ann. Rep't U. S. Nat. Mus., 1897 (1899), p. 297, pl. 43, fig. 3. — J. WRIGHT, Irish Nat., vol. 9, 1900, p. 52. — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, 1905, p. 194. — MILLETT, Rec. Foram. Galway, 1908, p. 4. — CUSHMAN, Proc. Boston Soc. Nat. Hist., vol. 34,



1908, p. 26. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1909, p. 312; Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 25; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 210.

*Miliolina seminulum* (LINNAEUS), var. *oblonga* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 86, pl. 7, fig. 186, 187.

Test elongate, the adult with three visible chambers, the last-formed chamber broadest near the initial end and longer than the preceding ones; test in end view triangular, the sides broadly curved and angles rounded, chambers inflated; sutures distinct, depressed; wall smooth and usually polished; aperture oval with the tooth simple or narrow and bifid at the tip. Length 1,00 mm.; breadth 0,55 mm.; thickness 0,35 mm.

Specimens of this species are not common and frequently have the last chamber missing. In these specimens the tooth of the last-formed chamber is left standing out at the end of the test giving a very peculiar appearance.

#### **Triloculina circularis** BORNEMANN.

(Pl. II, fig. 12.)

*Triloculina circularis* BORNEMANN, Zeitschr. deutsch. geol. Ges., vol. 7, 1855, p. 349, pl. 19, fig. 4.

There are a great many references for this species both fossil and Recent from all parts of the world. Some of the Belgian specimens seem to belong to this species but they are never common. (For the many references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 58).

Genus PYRGO DEFRANCE, 1824.

#### **Pyrgo depressa** (D'ORBIGNY).

(Pl. II, fig. 13.)

*Biloculina depressa* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 298, n° 7, Modèles n° 91.

*Pyrgo depressa* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 71, pl. 19, fig. 4, 5.

The only representatives of this genus in our material evidently belong to D'ORBIGNY's species which is common in deeper, cooler waters off the British Isles. The Belgian specimens are all small.

## FAMILY OPTHALMIDIIDÆ.

Genus CORNUSPIRA SCHULTZE, 1854.

**Cornuspira involvens** (REUSS).

(Pl. II, fig. 16.)

*Operculina involvens* REUSS, Denkschr. Akad. Wiss. Wien, vol. 1, 1850, p. 370, pl. 46, fig. 30.

*Cornuspira involvens* REUSS, Sitz. Akad. Wiss. Wien, vol. 48, Abt. 1, 1863, p. 39, pl. 1, fig. 2.

Test nearly circular in side view, consisting of a proloculum and a long closely coiled, planispiral second chamber of nearly equal diameter throughout, slightly involute; suture distinct, somewhat depressed; wall smooth and polished, occasionally showing slight lines of growth; aperture nearly the size of the open end of the tube.

This species occurs at a number of stations but always as rare specimens. It has been very widely recorded and for references the following may be consulted : CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 80.

Genus SPIROPTHALMIDIUM CUSHMAN, 1927.

**Spirophthalmidium acutimargo** (H. B. BRADY).

(Pl. II, fig. 14, 15.)

*Spiroloculina acutimargo* H. B. BRADY (part), Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 154, pl. 10, fig. 13 (not fig. 12, 14, 15). — BALKWILL and J. WRIGHT, Trans. Roy. Irish Acad., vol. 28, Sci., 1885, p. 323. — SIDDALL, Proc. Lit. Phil. Soc. Liverpool, 1886, p. 72 (list). — HALKYARD, Trans. Manchester Micr. Soc., 1889, p. 59. — CHASTER, First Rept Southport Soc. Nat. Sci., 1890-1891 (1892), p. 55. — J. WRIGHT, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 463. — MILLETT, Journ. Roy. Micr. Soc., 1898, p. 264. — CHAPMAN, Journ. Linn. Soc. Zool., vol. 28, 1900, p. 172. — SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 48, n° 5, 1904, p. 6. — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, 1905, p. 192. — BAGG, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 119. — CHAPMAN, Journ. Linn. Soc. Zool., vol. 30, 1910, p. 396. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 24, pl. 1, fig. 8. — CHAPMAN, Biol. Res. *Endeavour*, vol. 3, pt. 1, 1915, p. 6. — HERON-ALLEN and EARLAND, Trans. Zool. Soc. London, vol. 20, 1915, p. 557; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 208. — CUSHMAN, Bull. 71, U. S. Nat. Mus., pt. 6, 1917, p. 31, pl. 5, fig. 1. — SIDEBOTTOM, Journ. Roy. Micr. Soc., 1918, p. 5. — CUSHMAN, Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 398; Publ. 342, Carnegie Instit. Washington, 1924, p. 56. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., ser. 3, vol. 50, 1930, p. 51.

*Spirophthalmidium acutimargo* CUSHMAN, Contr. Cushman Lab. Foram. Res., vol. 3, 1927, p. 37, pl. 8, fig. 5; Special Publ. n° 1, Cushman Lab. Foram. Res., 1928, p. 165, pl. 20, fig. 7; pl. 21, fig. 5; Bull. 104, U. S. Nat. Mus., pt. 6, 1929, p. 90, pl. 22, fig. 1.

Test oval, much compressed, planispiral throughout, peripheral margin carinate; development consisting of a proloculum followed by several coils of an undivided second tubular chamber, then by chambers a half coil in length separated by a wide flange; wall smooth; aperture rounded, without a tooth. Length 0,75 mm.; breadth 0,50 mm.; thickness 0,08 mm.

The species has occurred at a number of stations but always as rare specimens. All are small and similar to those found off the British Isles. There is some variation in the apertural characters as seen in our two figures.

#### FAMILY TROCHAMMINIDÆ.

Genus TROCHAMMINA PARKER and JONES, 1859.

##### *Trochammina ochracea* (WILLIAMSON).

(Pl. III, fig. 1.)

*Rotalina ochracea* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 55, pl. 4, fig. 112; pl. 5, fig. 113.

*Trochammina ochracea* BALKWILL and MILLETT, Journ. Micr., vol. 3, 1884, p. 24, pl. 1, fig. 7. — MILLETT, Journ. Roy. Micr. Soc., 1899, p. 363, pl. 5, fig. 12. — SIDEBOTTOM, Mem. Proc. Manchester Lit. and Philos. Soc., vol. 49, pt. 2, n° 5, 1905, p. 5, pl. 1, fig. 8. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 51; Trans. Zool. Soc. London, vol. 20, 1915, p. 618, pl. 46, fig. 27, 28; Trans. Linn. Soc. London, vol. 11, pt. 13, 1916, p. 227. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 2, 1920, p. 75, pl. 15, fig. 3. — LACROIX, Bull. Institut. Océanographique, n° 549, 1930, p. 16, fig. 20 *a-c* (in text). — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50, 1930, p. 71.

Test small, thin, much compressed, trochoid, consisting of about two volutions; chambers about eight in the last-formed coil, sutures not depressed, evenly curved, those of the ventral side, slightly angled; wall finely arenaceous, almost translucent; aperture a narrow slit near the inner margin of the chamber; color yellowish brown.

Very typical specimens occur at several stations but never in any considerable numbers. The species has been recorded from widely scattered regions but as they are usually unaccompanied by figures they are not listed in the references above.

##### *Trochammina plicata* (TERQUEM).

(Pl. III, fig. 2.)

*Patellina plicata* TERQUEM, Ess. Anim. Plage Dunkerque, pt. 2, 1876, p. 72, pl. 8, fig. 9 *a, b*.

*Trochammina plicata* BALKWILL and WRIGHT, Journ. Micr., vol. 3, 1884, p. 26, pl. 1, fig. 8. — HALKYARD, Trans. Ann. Rept Manchester Micr. Soc., 1889, p. 69, pl. 1, fig. 11. — J. WRIGHT, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 469. — MILLETT, Journ. Roy. Micr. Soc., 1899, p. 363, pl. 5, fig. 13. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 51; Trans. Zool. Soc. London, vol. 20,

1915, p. 619; Trans. Linn. Soc. London, vol. 11, pt. 13, 1916, p. 227. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 2, 1920, p. 76, pl. 15, fig. 4. — LACROIX, Bull. Institut. Océanographique, n° 549, 1930, p. 16, fig. 21 *a, b* (in text). — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50, 1930, p. 71.

Test small, planoconvex, spire very much depressed, composed of about three whorls, increasing gradually in width as added, apparently attached in life; chambers small, numerous, as many as twelve in the whorl, about as high as broad, increasing very gradually in size as added, slightly inflated on the dorsal side, in the adult with the interior partially subdivided by irregular partitions growing in from the outer wall; sutures nearly radial on the dorsal side, slightly depressed; on the ventral side also radial, somewhat curved; wall finely arenaceous with a large proportion of cement, smoothly finished, ventral side very thin; aperture at the ventral edge of the last-formed chamber. Diameter up to 0.45 mm.

This is a unique species, occurring at a number of stations in our material but always in very small numbers. It occurs at numerous localities about the British Isles.

### *Trochammina inflata* (MONTAGU).

(Pl. III, fig. 3, 4.)

*Nautilus inflatus* MONTAGU, Test. Brit., Suppl., 1808, p. 81, pl. 18, fig. 3.

*Rotalina inflata* WILLIAMSON, Rec. Foram. Great Britain, 1858, p. 50, pl. 4, fig. 93, 94. — PARKER and JONES, Ann. Mag. Nat. Hist., ser. 3, vol. 4, 1859, p. 347, fig. F. — WILLIAMSON, Pop. Sci. Rev., vol. 4, 1865, p. 174, pl. 8, fig. 8.

*Trochammina inflata* W. B. CARPENTER, PARKER and JONES, Int. Foram., 1862, p. 141, pl. 11, fig. 5. — H. B. BRADY, Nat. Hist. Trans. Northumberland and Durham, vol. 1, 1865, p. 95. — HAEUSLER, Ann. Mag. Nat. Hist., ser. 5, vol. 10, 1882, p. 351, pl. 15, fig. 5-7; Neues Jahrb., 1883, pl. 1, fig. 60; pl. 4, fig. 6, 7. — H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 338, pl. 41, fig. 4 *a-c*. — HAEUSLER, Abh. Schweiz. Pal. Ges., vol. 17, 1890, p. 65, pl. 10, fig. 25, 26. — J. WRIGHT, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 469. — WOODWARD and THOMAS, Geol. and Nat. Surv. Minnesota, vol. 3, 1893, p. 28, pl. D, fig. 31. — EGGER, Abh. Bay. Akad. Wiss. München, vol. 18, 1893, pl. 5, fig. 10-12, 16-18. — GOËS, Kongl. Svensk. Vet. Akad. Handl., vol. 25, n° 9, 1894, p. 29, pl. 6, fig. 222-224. — MILLETT, Journ. Roy. Micr. Soc., 1899, p. 364. — FORNASINI, Mem. Real. Accad. Sci. Ist. Bologna, vol. 8, 1900, p. 367, fig. 15. — SIDEBOTTOM, Mem. and Proc. Manchester Lit. and Philos. Soc., vol. 49, n° 5, 1905, p. 6, pl. 1, fig. 9. — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, 1905, p. 203. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1909, p. 324. — CUSHMAN, Bull. 71, U. S. Nat. Mus., pt. 1, 1910, p. 121, fig. 188 *a, b*. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 52; Trans. Zool. Soc. London, vol. 20, 1915, p. 620; Trans. Linn. Soc. London, vol. 11, pt. 13, 1916, p. 227. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 2, 1920, p. 73. — HERON-ALLEN and EARLAND, Bull. Soc. Sci. Hist. Nat. Corse, 1922, p. 126; British Antarctic Exped., Zoology, vol. 6, 1922, p. 112. — HANNA and CHURCH, Journ. Pal., vol. 1, 1929, p. 201. — WIESNER, Deutsche Süd-Polar-Exped., vol. 20, Zool., 1929, p. 111, pl. 17, fig. 201. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50,

1930, p. 71. — HADA, Sci. Rep't Tohoku Imp. Univ., ser. 4, Biol., vol. 6, 1931, p. 90, fig. 43 (in text). — HERON-ALLEN and EARLAND, *Discovery Rep'ts*, vol. 4, 1932, p. 345. — BLAKE, Biol. Surv. Mt. Desert Region, pt. 5, 1933, p. 75. — CUSHMAN, Special Publ. n° 5, Cushman Lab. Foram. Res., 1933, pl. 18, fig. 3 *a-c*. — EARLAND *Discovery Rep'ts*, vol. 7, 1933, p. 86; *l. c.*, vol. 10, 1934, p. 99, pl. 3, fig. 41-43; vol. 13, 1936, p. 37.

Test trochoid, low spired, composed of about three volutions, the last-formed one consisting of five or six chambers, umbilicate, all chambers visible from above, only those of the last-formed coil from below; chambers inflated, subglobose, sutures distinct and deep, nearly at right angles to the periphery; wall of fine sand with an excess of cement, smooth and dully shining; aperture small, a small arched slit where the chamber meets the previous volution on the ventral side, and slightly in from the periphery, color clear yellowish brown, the spire often darker than the outer whorl. Diameter up to 1,00 mm.

This is a very widely distributed species but occurs in typical form at but few stations in our material. The early chambers are usually much darker than the later ones and stand out prominently.

***Trochammina inflata* (MONTAGU), var. *macrescens* H. B. BRADY.**

(Pl. III, fig. 5, 6.)

*Trochammina inflata* (MONTAGU), var. *macrescens* H. B. BRADY, in G. S. BRADY, ROBERTSON and H. B. BRADY, Ann. Mag. Nat. Hist., ser. 4, vol. 6, 1870, p. 290, pl. 11, fig. 5. — H. B. BRADY, Journ. Roy. Micr. Soc., 1887, p. 892. — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, 1905, p. 203. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 52; Trans. Linn. Soc. London, vol. 11, pt. 13, 1916, p. 227. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 2, 1920, p. 74, pl. 15, fig. 1. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50, 1930, p. 72.

Variety differing from the typical in the more compressed form, and thinner test, probably as suggested by HERON-ALLEN and EARLAND a form due to low salinity of the water in which it lives.

This variety is apparently limited in its distribution to the waters of the Coast of Western Europe, mostly recorded from about the British Isles. It occurs at a number of stations in the Belgian material. Due to the thin wall most specimens are more or less collapsed.

***Trochammina inflata* (MONTAGU), var.**

(Pl. III, fig. 7.)

*Trochammina inflata* (MONTAGU) var., HALKYARD, Trans. Manchester Micr. Soc., 1889, p. 63, pl. 1, fig. 10.

The peculiar form figured here is very similar to that shown in HALKYARD'S figure. The ventral side has peculiar lobes to the chambers almost appearing as supplementary ones in some lights. The whole test is low and plano-convex. It is rare in the Belgian collections.

**Trochammina rotaliformis** J. WRIGHT.

(Pl. III, fig. 8.)

*Trochammina inflata* (MONTAGU) var., BALKWILL and WRIGHT, Trans. Roy. Irish Acad., vol. 28 (Science), 1885, p. 331, pl. 13, fig. 11, 12.

*Trochammina rotaliformis* J. WRIGHT, in HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1911, p. 309. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 52, pl. 3, fig. 11-13; Trans. Zool. Soc. London, vol. 20, 1915, p. 620. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 2, 1920, p. 77, pl. 16, fig. 1, 2; Contrib. Canadian Biol., 1921 (1922), p. 8. — HERON-ALLEN and EARLAND, Bull. Soc. Sci. Hist. Nat. Corse, 1922, p. 126; British Antarctic Exped., Zoology, vol. 6, 1922, p. 114; Journ. Linn. Soc. Zool., vol. 35, 1924, p. 616. — LACROIX, Compte rendu Congrès Lyon, Assoc. Fr. Avan. Sci, 1926, p. 421, text-fig. 5; Comptes rendus Acad. Sci., vol. 183, August 17, 1926, pp. 430, 431. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50, 1930, p. 71. — CUSHMAN and PARKER, Proc. U. S. Nat. Mus., vol. 80, Art. 3, 1931, p. 6, pl. 2, fig. 5 *a-c*. — HERON-ALLEN and EARLAND, *Discovery* Rep'ts, vol. 4, 1932, p. 344. — EARLAND, *l. c.*, vol. 7, 1933, p. 85; *l. c.*, vol. 10, 1934, p. 99. — BERMUDEZ, Mem. Soc. Cubana Hist. Nat., vol. 9, 1935, p. 176.

This species was originally described from about the British Isles and from the records is a species of cold water. In our collections are numerous specimens which may be referred to this species. The ventral side is flattened, the dorsal side usually with a low spire. The wall is very variable, either of fine sand grains smoothly cemented or with included sponge spicules. The form is distinctly variable but the number of chambers in the adult varies little.

Specimens that can be referred to this species are rather rare in the Belgian material. It is a somewhat variable form in the number of chambers to a whorl and in the width of the whorls themselves.

**Trochammina squamata** JONES and PARKER (?).

(Pl. IV, fig. 1.)

There are a very few small specimens with comparatively few chambers in the whorl and the ventral side much flattened which may possibly belong to this species. It is recorded from numerous localities about the British Isles.

**Trochammina** sp. (?).

(Pl. IV, fig. 2.)

There are numerous specimens of a very small and very variable species that in some of its examples suggest *T. rotaliformis* J. WRIGHT while others become globular and have the spire depressed similar to the specimen here figured. It is placed here as a record as later work will undoubtedly reveal more and better material.

## FAMILY LAGENIDÆ.

Genus LENTICULINA LAMARCK, 1804.

**Lenticulina rotulata** LAMARCK (?).

(Pl. IV, fig. 3, 4.)

A very few specimens, most of them representing young stages, occur in the Belgian samples. They are evidently of the form referred by WILLIAMSON to « *Cristellaria calcar* » (Rec. Foram. Gt. Britain, 1858, p. 27, pl. 2, fig. 52, 53). Figures of two of them are given on our plate.

Genus PLANULARIA DEFRANCE, 1824.

**Planularia** sp. (?).

(Pl. IV, fig. 5.)

The specimen figured is probably the young stage of a much flattened form but no adults were found.

Genus LAGENA WALKER and JACOB, 1798.

**Lagena melo** (D'ORBIGNY).

(Pl. IV, fig. 6.)

*Oolina melo* D'ORBIGNY, Voy. Amér. Mérid., Foraminifères, 1839, p. 20, pl. 5, fig. 9.*Entosolenia squamosa* (MONTAGU), var. *catenulata* WILLIAMSON, Rec. Foram. Great Britain, 1858, p. 19, pl. 2, fig. 20.

In this form the longitudinal costae are connected by either horizontal or slightly upward bent costae of lesser height, dividing the surface into rather uniform areas. Such specimens occur at a number of stations but are never common.

**Lagena squamosa** (MONTAGU).

(Pl. IV, fig. 12.)

*Vermiculum squamosum* MONTAGU, Test. Brit., 1803, p. 525, pl. 14, fig. 2.

The ornamentation of this species consists of vertical costae with scale-like areas between, much finer in its general appearance than the preceding and less definitely pyriform in shape. Specimens are rare even at the few stations at which they occur.

**Lagena hexagona** (WILLIAMSON).

(Pl. IV, fig. 7.)

*Entosolenia squamosa* (MONTAGU), var. *hexagona* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 20, pl. 2, fig. 23.

The ornamentation of this species typically has hexagonal meshes and the areas not arranged in vertical lines. The general shape is pyriform with a rather pointed apertural end. Specimens occur at a number of Belgian stations but are always rare.

**Lagena lævis** (MONTAGU).

(Pl. IV, fig. 8.)

*Vermiculum læve* MONTAGU, Test. Brit., 1803, p. 524.

*Lagena lævis* WILLIAMSON, Ann. Mag. Nat. Hist., ser. 2, vol. 1, 1848, p. 12, pl. 1, fig. 1, 2.

Smooth species of this genus are less common than ornamented ones in this Belgian material. Under this name have been grouped those specimens which have an elongate chamber, usually rounded at the base and extending out into a slender neck at the apertural end. It is variable in shape and there are intermediate forms between this and the following species.

**Lagena clavata** (D'ORBIGNY).

(Pl. IV, fig. 9.)

*Oolina clavata* D'ORBIGNY, Foram. Foss. Bass. Tert. Vienne, 1846, p. 24, pl. 1, fig. 2, 3.

In this species the base is continued out into a point, otherwise the characters are very similar to those of *L. lævis* (MONTAGU). It is slightly more common than the preceding.

**Lagena perlucida** WILLIAMSON.

(Pl. IV, fig. 10.)

*Lagena lævis* (MONTAGU), var. *perlucida* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 5, pl. 1, fig. 7, 8.

This is very similar to *L. lævis* (MONTAGU) except that the initial end has a few longitudinal costae. It is very rare in the Belgian material.

**Lagena williamsoni** (ALCOCK).

(Pl. IV, fig. 11.)

*Entosolenia williamsoni* ALCOCK, Proc. Lit. Philos. Soc., vol. 4, 1865, p. 193.

*Lagena williamsoni* WRIGHT, Proc. Belfast Nat. Field Club, 1876-1877, App. 4, p. 104, pl. 4, fig. 14. — BALKWILL and WRIGHT, Proc. Roy. Irish Acad., ser. 2, vol. 3, 1882, p. 547; Trans. Roy. Irish Acad., vol. 28, 1885, p. 339, pl. 14, fig. 6-8. — H. B. BRADY, Journ. Roy. Micr. Soc., 1887, p. 903. — WRIGHT, Proc. Roy. Irish Acad., ser. 3,



vol. 1, 1891, p. 479. — ROBERTSON, Proc. Nat. Hist. Soc. Glasgow, pt. 3, 1892, p. 241. — GOËS, Kongl. Svensk. Vet. Akad. Handl., vol. 25, n° 9, 1894, p. 79. — WRIGHT, Irish Nat., vol. 9, n° 3, 1900, p. 54. — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, n° 57, 1905, p. 212. — BALKWILL and MILLETT, Rec. Foram. Galway, 1908, p. 5. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1909, p. 424; Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 80; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 247; Journ. Roy. Micr. Soc., 1916, p. 45. — CUSHMAN, Bull. 104, pt. 4, 1923, p. 61, pl. 11, fig. 8, 9. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., ser. 3, vol. 50, 1930, p. 165.

Test somewhat pyriform, circular in transverse section, basal end broadly rounded, apertural end somewhat extended; surface ornamented by numerous longitudinal costae, 14-18 in number, the upper portion of these coalescing and forming a collar made up of a reticulate network below the aperture; aperture rounded, sometimes with a slight lip. Length up to 0,50 mm.

This is a very distinctive species and the most common of this genus in the Belgian collections. Its distribution is largely limited to the region of Western Europe.

**Lagena sulcata** (WALKER and JACOB).

(Pl. IV, fig. 13.)

This name is used here for those specimens which have a subglobose or somewhat pyriform test, with a more or less developed neck, the surface of the test ornamented with numerous, 14-18, distinct, longitudinal costae running from the base to the apertural end. Such specimens have occurred at several stations.

**FAMILY POLYMORPHINIDÆ.**

Genus GUTTULINA D'ORBIGNY, 1826.

**Guttulina problema** D'ORBIGNY.

(For references, see CUSHMAN and OZAWA, Proc. U. S. Nat. Mus., vol. 77, Art. 6, 1930, p. 19.)

A single immature specimen referable to this species was found in this material.

Genus GLOBULINA D'ORBIGNY, 1826.

**Globulina gibba** D'ORBIGNY.

(Pl. IV, fig. 16.)

(For references, see CUSHMAN and OZAWA, Proc. U. S. Nat. Mus., vol. 77, Art. 6, 1930, p. 60.)

This species is very rare in the Belgian material but the figured specimen appears to be typical.

**Globulina gibba** D'ORBIGNY, var. **myristiformis** (WILLIAMSON).

(Pl. V, fig. 1.)

(For references, see CUSHMAN and OZAWA, Proc. U. S. Nat. Mus., vol. 77, Art. 6, 1930, p. 66.)

Variety having the wall marked by numerous longitudinal costae usually interrupted at the sutures and occasionally broken, especially in the basal area.

This variety is one of Western Europe and the Mediterranean. Like others of this family it is rare in our material.

Genus SIGMOMORPHINA CUSHMAN and OZAWA, 1928.

**Sigmomorphina undulosa** (TERQUEM).

(Pl. V, fig. 2.)

*Polymorphina amygdaloides* TERQUEM (not REUSS), Mém. Soc. Géol. France, sér. 3, vol. 1, 1878, p. 39, pl. 3 (8), fig. 22, 25 (not 23, 24, 26-30).

*Polymorphina undulosa* TERQUEM, Mém. Soc. Géol. France, sér. 3, vol. 1, 1878, p. 41, pl. 3 (8), fig. 35 a, b (not 36).

*Sigmomorphina undulosa* CUSHMAN and OZAWA, Proc. U. S. Nat. Mus., vol. 77, Art. 6, 1930, p. 131, pl. 34, fig. 4, 5.

Test oval to ovate, compressed; chambers elongated, embracing, arranged in a contraclockwise sigmoid series, each succeeding chamber not much removed from the base; sutures depressed, distinct; wall smooth, rather thin, often covered with fistulose tubes; aperture radiate. Maximum length 0,60 mm.; breadth 0,30 mm.; thickness 0,15 mm.

This species occurs at three stations and shows little variation.

**Sigmomorphina williamsoni** (TERQUEM).

(Pl. IV, fig. 14.)

(For references, see CUSHMAN and OZAWA, Proc. U. S. Nat. Mus., vol. 77, Art. 6, 1930, p. 138.)

The figured specimen, one of two from the only two localities in the Belgian material at which the species was found, is fairly typical. Most of the records for the species are from off the British Isles and adjacent regions.

**Sigmomorphina concava** (WILLIAMSON).

(Pl. V, fig. 3.)

*Polymorphina lactea* WALKER and JACOB, var. *concava* WILLIAMSON, Recent Foram. Gt. Britain, 1858, p. 72, pl. 6, fig. 151, 152.

*Sigmomorphina concava* CUSHMAN and OZAWA, Proc. U. S. Nat. Mus., vol. 77, Art. 6, 1930, p. 139, pl. 38, fig. 5-7.

The attached form figured is the only one in the collection that can be assigned to this species.

Genus GLANDULINA D'ORBIGNY, 1826.

**Glandulina** (?) sp. (?).

(Pl. V, fig. 4.)

The figured specimen in some respects seems possibly to belong to *Glandulina* although it is very difficult to determine whether the initial portion consists of a single chamber or not. It is the only specimen of its kind in the collections.

Genus PSEUDOPOLYMORPHINA CUSHMAN and OZAWA, 1928.

**Pseudopolymorphina ovalis** CUSHMAN and OZAWA.

(Pl. IV, fig. 15.)

*Polymorphina ovata* D'ORBIGNY, *Foram. Foss. Bass. Tert. Vienne*, 1846, p. 233, pl. 13, fig. 1-3 (not of 1826). — H. B. BRADY, *Rep. Voy. Challenger*, *Zoology*, vol. 9, 1884, p. 564, pl. 72, fig. 7, 8. — CUSHMAN, *Bull.* 104, U. S. Nat. Mus., pt. 4, 1923, p. 151, pl. 40, fig. 11, 12.

*Pseudopolymorphina ovalis* CUSHMAN and OZAWA, *Proc. U. S. Nat. Mus.*, vol. 77, Art. 6, 1930, p. 103, pl. 27, fig. 1; pl. 29, fig. 6.

Test fusiform, more or less compressed, elliptical in end view; chambers inflated, much embracing, arranged in a nearly biserial series, each succeeding chamber not much removed from the base; sutures but little depressed, fairly distinct; wall smooth; aperture radiate.

The figured specimen seems nearer to this species than to any other. It is recorded from the Pliocene of Belgium.

FAMILY NONIONIDÆ.

Genus NONION MONTFORT, 1808.

**Nonion scaphum** (FICHTEL and MOLL).

(Pl. V, fig. 6.)

*Nautilus scapha* FICHTEL and MOLL, *Test. Micr.*, 1798, p. 105, pl. 19, fig. *d-f*.

*Nonionina scapha* H. B. BRADY, *Nat. Hist. Trans. Northumberland and Durham*, vol. 1, 1865 (1867), p. 106, pl. 12, fig. 10 *a, b*. — TERRIGI, *Atti Accad. Pont. Nouvi Lincei*, vol. 35, 1883, p. 202, pl. 4, fig. 47. — H. B. BRADY, *Rep. Voy. Challenger*, *Zoology*, vol. 9, 1884, p. 730, pl. 109, fig. 14, 15, 16 (?). — TERRIGI, *Atti Accad. Lincei*, ser. 4, Mem. vol. 6, 1893, p. 120, pl. 10, fig. 7. — GOËS, *Kongl. Svensk. Vet. Akad. Handl.*, vol. 25, n° 9, 1894, p. 104, pl. 17, fig. 830 (part) (?). — CUSHMAN, *Publ.* 342, Carnegie Instit. Washington, 1924, p. 47, pl. 16, fig. 1.

*Nonion scaphum* CUSHMAN, *Bull.* 104, U. S. Nat. Mus., pt. 7, 1930, p. 5, pl. 2, fig. 3, 4.

*Nautilus faba* FICHTEL and MOLL, *Test. Micr.*, 1798, p. 103, pl. 19, fig. *a-c*.

Test planispiral, bilaterally symmetrical, somewhat evolute, periphery rounded, whole test compressed, umbilici depressed, unornamented; chambers numerous averaging about 12 in the last-formed coil, later ones as they tend to become evolute, broadening on the proximal end and the outline of the periphery somewhat less curved and the chambers slightly more inflated; sutures distinct, depressed, not limbate; wall smooth, finely perforate; aperture, a small opening at the base of the apertural face next to the preceding coil.

This species is rare in the Belgian material but the figured specimen seems typical.

***Nonion depressulum* (WALKER and JACOB).**

« *Nautilus spiralis* utrinque subumbilicatus » WALKER and BOYS, Test. Min., 1784, p. 19, pl. 3, fig. 68.

*Nautilus depressulus* WALKER and JACOB, in ADAMS'S Essays, KANNMACHER'S ed., 1798, p. 641, pl. 14, fig. 33.

*Nonionina depressula* HERON-ALLEN and EARLAND, Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 279, pl. 43, fig. 4-7.

*Nonion depressulum* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 7, 1930, p. 3, pl. 1, fig. 3-6.

There are numerous specimens which may be referred to this species.

***Nonion pauperatum* (BALKWILL and WRIGHT).**

(Pl. V, fig. 5.)

*Nonionina pauperata* BALKWILL and WRIGHT, Trans. Roy. Irish Acad., vol. 28, Sci., 1885, p. 353, pl. 13, fig. 25, 26. — HALKYARD, Trans. Manchester Micr. Soc., 1889, p. 71, pl. 2, fig. 13. — CHASTER, First Rep't Southport Soc. Nat. Sci., 1890-1891 (1892), p. 66. — WRIGHT, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 493; Irish Nat., vol. 9, 1900, p. 55. — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, 1905, p. 230. — MILLETT, Rec. Foram. Galway, 1908, p. 7. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1911, p. 342, pl. 11, fig. 16, 17; Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 144; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 281; British Antarctic Exped., Zoology, vol. 6, 1922, p. 228; Journ. Linn. Soc. Zool., vol. 35, 1924, p. 640; Journ. Roy. Micr. Soc., vol. 50, 1930, p. 192.

*Nonion pauperatum* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 7, 1930, p. 13, pl. 5, fig. 4, 5, 7. — HERON-ALLEN and EARLAND, *Discovery* Rep'ts, vol. 4, 1932, p. 437.

Test planispiral, bilaterally symmetrical, involute, periphery angular; chambers, about nine in the last-formed coil, of uniform shape and relative size, slightly inflated; sutures distinct, slightly depressed, limbate toward the proximal end, the umbilicus filled and confluent with the sutures; wall distinctly perforate, smooth; aperture, a low opening at the base of the apertural face.

This is common in the Belgian material and shows considerable variation.

Genus *ELPHIDIUM* MONTFORT, 1808.

*Ephidium macellum* (FICHTEL and MOLL).

(Pl. V, fig. 8.)

*Nautilus macellus* FICHTEL and MOLL, Test. Micr., 1798, p. 66, var.  $\beta$ , pl. 10, fig. *h-k*.

*Elphidium macellum* MONTFORT, Conch. Syst., vol. 1, 1808, p. 15, 4<sup>e</sup> genre.— CUSHMAN and LEAVITT, Contr. Cushman Lab. Foram. Res., vol. 5, 1929, p. 18, pl. 4, fig. 1, 2.

Test of medium size for the genus, about three and one-half times longer than wide in peripheral view, lenticular, planispiral, completely involute, umbilical regions flat, periphery angular, slightly more rounded in the last-formed chambers, slightly keeled, somewhat lobulate; chambers numerous, averaging seventeen in adults in the last-formed coil, slightly arched giving a ribbed appearance to the test; sutures slightly depressed, those of the last-formed chambers slightly more so, partially obscured by the retral processes, curved backward strongly toward the periphery, the proximal half nearly radial, set with indistinct pores; wall thin, finely perforate, usually with less than twelve relatively long retral processes, more widely spread than in *E. crispum* and extending from well up on the side of the chamber to the front of the preceding and appearing as narrow, fairly widely spaced, low elevations of the wall; aperture, a row of small openings between the retral processes at the base of the apertural face, which is convex, sagittate, with the sides slightly convex, the lobes sharply angled, saddling the preceding coil. Diameter typically less than 1.00 mm.; thickness 0.25 mm.

Occasional specimens referable to this species occur in the Belgian material with the varietal form having more definitely raised areas somewhat resembling the variety described by CHAPMAN as var. *limbatum*.

*Elphidium macellum* (FICHTEL and MOLL), var. *aculeatum* (SILVESTRI).

(Pl. V, fig. 10.)

*Polystomella macella* (FICHTEL and MOLL), var. *aculeata* SILVESTRI, Boll. sed. Accad. Gioenia Sci. Nat. Catania, 1900, fasc. 64, pp. 19-29, 2 figures in text.

It is probably that this is the same as the form referred to by FICHTEL and MOLL as *Nautilus strigillata*, var.  $\beta$ , which had a very spinose periphery. Similar forms occur in the late Tertiary of Southern Europe and on the coast of France and England. A very few specimens from the Belgian material with spinose periphery evidently belong here.

**Elphidium incertum** (WILLIAMSON).

(Pl. V, fig. 9.)

*Polystomella umbilicatula*, var. *incerta* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 44, pl. 3, fig. 82, 82 a.

*Polystomella striato-punctata*, var. *incerta* KIAER, Rept. Norwegian Fish. Mar. Invest., vol. 1, n° 7, 1900, p. 51 — CUSHMAN, Rept. Canad. Arctic Exped., pt. M, 1913, p. 10.

*Elphidium incertum* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 7, 1930, p. 18, pl. 7, fig. 4-9; Bull. 4, Florida State Geol. Surv., 1930, p. 39, pl. 7, fig. 2 a, b. — CUSHMAN and COLE, Contr. Cushman Lab. Foram. Res., vol. 6, 1930, p. 96, pl. 13, fig. 6, 7. — COLE, Bull. 6, Florida State Geol. Surv., 1931, p. 35, pl. 4, fig. 8. — DOLGOPOLSKAYA and PAULI, Trav. Sta. Biol. Karadagh, vol. 4, 1931, p. 37, pl. 3, fig. 15 a, b. — CUSHMAN and PARKER, Proc. U. S. Nat. Mus., vol. 80, Art. 3, 1931, p. 10. — CUSHMAN and PONTON, Bull. 9, Florida State Geol. Surv., 1932, p. 70. — MACFADYEN, Geol. Mag., vol. 69, 1932, pl. 35, fig. 16 a, b. — CUSHMAN and CAHILL, U. S. Geol. Surv., Prof. Paper 175-A, 1933, p. 21, pl. 7, fig. 8. — BLAKE, Biol. Surv. Mt. Desert Region, pt. 5, 1933, p. 76. — SHUPACK, Amer. Mus. Novitates, n° 737, 1934, p. 12, pl., fig. 10 a, b.

*Polystomella decipiens* HERON-ALLEN and EARLAND (not COSTA), Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 282, pl. 43, fig. 20-22.

*Elphidium brooklynense* SHUPACK, Amer. Mus. Novitates, n° 737, 1934, p. 10, pl., fig. 7 a, b.

*Elphidium florentinae* SHUPACK, *l. c.*, p. 9, pl., fig. 5 a, b.

Test of small size for the genus, compressed, periphery broadly rounded, margin entire or with the last two or three chambers lobulated, umbilical regions slightly depressed, often with a slight knob or irregularly arranged slits at the base of the sutures; chambers few, usually less than ten in the last-formed whorl, slightly if at all inflated, distinct; sutures distinct, mainly marked by the openings which are in a single row, retral processes very few, usually not more than five or seven, distinct, the inner ends of the sutures slit-like; wall thick, usually opaque; aperture composed of several small, rounded openings at the base of the apertural face.

Specimens of this species are not common in the Belgian collection but are typical. It occurs in cold water on both sides of the Atlantic.

**Elphidium excavatum** (TERQUEM).

(Pl. VI, fig. 2.)

*Polystomella excavata* TERQUEM, Essai Class. Anim. Plage Dunkerque, 1875, p. 25, pl. 2, fig. 2 a-f.

*Elphidium excavatum* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 7, 1930, p. 21, pl. 8, fig. 1-7.

*Polystomella umbilicatum* WILLIAMSON (not WALKER and JACOB), Rec. Foram. Gt. Britain, 1858, p. 42, pl. 3, fig. 81.

Test of small size for the genus, much compressed, periphery broadly rounded, margin entire or slightly lobulate, umbilical regions usually slightly

depressed, sometimes with one or more small, rounded bosses; chambers few, eight to ten making up the last-formed coil, slightly if at all inflated; sutures distinct, very slightly depressed, marked by the very short, narrow, retral processes with wide openings, between eight and ten in number, usually rather even and distinct; wall smooth; aperture composed of a row of small, rounded pores at the base of the apertural face.

This species is common in the Belgian collections and is evidently the same as that described by TERQUEM from the Coast of France.

### **Elphidium lidoense** CUSHMAN.

(Pl. VI, fig. 1.)

*Elphidium lidoense* CUSHMAN, Contr. Cushman Lab. Foram. Res., vol. 12, 1936, p. 86, pl. 15, fig. 6a, b.

Test moderately compressed, sides flattened, umbilical region with numerous, irregular bosses, periphery broadly rounded; chambers very distinct, slightly inflated, about ten in the adult coil increasing gradually in size as added; sutures very distinct, slightly depressed, distinctly broadening toward the inner margin, retral processes short, small, indistinct, ten or more in the adult chamber; wall distinctly perforate, smooth except for the bosses of the umbilical region and a series of small papillae at either side of the earliest exposed chambers; aperture a low opening at the base of the semi-elliptical apertural face. Diameter 0,50-0,60 mm.; thickness 0,22 mm.

This species was described from the Adriatic but seems to be present at numerous stations along the Belgian Coast.

### FAMILY BULIMINIDÆ.

Genus BULIMINELLA CUSHMAN, 1911.

#### **Buliminella minutissima** (J. WRIGHT).

(Pl. VI, fig. 3.)

*Bulimina minutissima* J. WRIGHT, in T. M. READE, Proc. Liverpool Geol. Soc., vol. 9, 1902, p. 190, pl. 13, fig. 9-12; Proc. Belfast Nat. Field Club, Appendix, 1910-1911, p. 12, pl. 2, fig. 5, 6. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 62, pl. 4, fig. 11, 12; Trans. Linn. Soc. London, vol. 11, ser. 2, 1916, p. 237; Journ. Roy. Micr. Soc., 1916, p. 43. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 108, pl. 17, fig. 5, 6. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50, 1930, p. 78; *Discovery* Rep'ts, vol. 4, 1932, p. 351.

Except for the last reference all the records for this species are from off the British Isles. It is a minute but distinctive species. It is very rare in the Belgian collections.

**Buliminella elegantissima** (D'ORBIGNY).

(Pl. VI, fig. 4, 5.)

*Bulimina elegantissima* D'ORBIGNY, Voyage dans l'Amérique méridionale, vol. 5, n° 5 « Foraminifères », p. 51, pl. 7, fig. 13, 14, 1839. — SCHUMBERGER, Feuille Jeun. Nat., vol. 12, p. 8, pl. 1, fig. 14, 1882. — H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, p. 402, pl. 50, fig. 20-22, 1884. — SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 49, n° 5, p. 11, pl. 2, fig. 6, 1905.

*Buliminella elegantissima* CUSHMAN, Bull. 71, U. S. Nat. Mus., pt. 2, p. 89, 1911; Proc. U. S. Nat. Mus., vol. 56, p. 606, 1919; Contr. Cushman Lab. Foram. Res., vol. 1, pt. 2, p. 40, pl. 6, fig. 5 *a, b*, 1925. — CUSHMAN and KELLETT, Proc. U. S. Nat. Mus., vol. 75, Art. 25, p. 6, pl. 3, fig. 1-3, 1929. — CUSHMAN, Florida State Geol. Surv. Bull. 4, p. 42, pl. 8, fig. 2, 3, 1930. — CUSHMAN and PARKER, Proc. U. S. Nat. Mus., vol. 80, Art. 3, 1931, p. 13, pl. 3, fig. 12, 13. — CUSHMAN, Special Publ. n° 4, Cushman Lab. Foram. Res., 1933, pl. 22, fig. 3; *l. c.*, n° 5, 1933, pl. 27, fig. 4 *a, b*.

Test elongate, spiral, making about three volutions, initial end pointed, much more so in the microspheric form; chambers numerous, seven to ten in the last-formed whorl, narrow, slightly inflated; sutures distinct, slightly curved, very slightly depressed; wall smooth, finely perforate; aperture elongate, narrow, somewhat enlarged toward the middle of the apertural face.

This is a fairly common species in the Belgian collection. There is a very great range as elsewhere from the very elongate, tapering microspheric form to the more rounded megalospheric one with the last whorl making up most of the test. It has been recorded from numerous localities but only those references are given above that are accompanied by figures or where original material has been seen.

Genus BULIMINA D'ORBIGNY, 1826.

**Bulimina marginata** D'ORBIGNY.

(Pl. VI, fig. 6.)

*Bulimina marginata* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 269, n° 4, pl. 12, fig. 10-12. (For additional references see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 91.)

This species is rare in the Belgian collections but is often abundant about the British Isles. It is subject to some variation but the main characters are fairly well held in this material.



**Bulimina elongata** D'ORBIGNY (?).

(Pl. VI, fig. 7, 8.)

*Bulimina elongata* D'ORBIGNY, Foram. Foss. Bass. Tert. Vienne, 1846, p. 187, pl. 11, fig. 19, 20.

The small specimens figured are perhaps young individuals of this species originally described from the Miocene of the Vienna Basin but recorded from numerous localities about the British Isles. Such specimens are rare in the Belgian material.

**Bulimina aculeata** D'ORBIGNY.

Specimens referable to this species are extremely rare and not typical. It is interesting to note that HERON-ALLEN and EARLAND had but a single specimen and that not a fully developed one in their material from off Plymouth, England.

Genus VIRGULINA D'ORBIGNY, 1826.

**Virgulina schreibersiana** CZJZEK.

*Virgulina schreibersiana* CZJZEK, Haidinger's Nat. Abhandl., vol. 2, 1848, p. 11, pl. 13, fig. 18-21. (For additional references see CUSHMAN, Special Publ. n° 9, Cushman Lab. Foram. Res., 1937, pp. 13, 14.)

Very rare specimens occur in our Belgian collections which may be referred to this species. It has been recorded very rarely from off the British Isles.

Genus BOLIVINA D'ORBIGNY, 1839.

**Bolivina pseudoplicata** HERON-ALLEN and EARLAND.

(Pl. VI, fig. 11, 12.)

*Bolivina pseudoplicata* HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50, 1930, p. 81, pl. 3, fig. 36-40; *Discovery* Rept's, vol. 4, 1932, p. 355, pl. 9, fig. 9-11 (?). — CUSHMAN, Special Publ. n° 9, Cushman Lab. Foram. Res., 1937, p. 166, pl. 19, fig. 12-20.

*Bolivina plicata* H. B. BRADY (not D'ORBIGNY), Ann. Mag. Nat. Hist., ser. 4, vol. 6, 1870, p. 63, pl. 12, fig. 7a, b. — BALKWILL and WRIGHT, Proc. Roy. Irish Acad., ser. 2, vol. 3, 1882, p. 547 (list). — WRIGHT, Proc. Belfast Nat. Field Club, Appendix, 1885-1886, p. 323 (list). — BALKWILL and WRIGHT, Trans. Roy. Irish Acad., vol. 28, Sci., 1885, p. 335. — SIDDALL, Proc. Lit. Phil. Soc. Liverpool, 1886, p. 66 (list). — H. B. BRADY, Journ. Roy. Micr. Soc., 1887, p. 899. — HALKYARD, Trans. Manchester Micr. Soc., 1889, p. 11, pl. 1, fig. 13. — WRIGHT, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1889-1891 (1891), p. 474. — ROBERTSON, Trans. Nat. Hist. Soc. Glasgow, vol. 3, 1889-1892 (1892), p. 240. — CHASTER, First Rept Southport Soc. Nat. Sci., 1890-1891 (1892), p. 59. — HALKYARD, Trans. Manchester Micr. Soc., 1891 (1892), p. 7 (list). — GOËS, Kongl. Svensk. Vet. Akad. Handl., vol. 25, n° 9, 1894, p. 51, pl. 9, fig. 487, 488 (?). — WRIGHT, Irish Nat., vol. 9, 1900, p. 53 (list). — READE, Geol. Mag.,

dec. 4, vol. 7. 1900, pl. 5, fig. 7. — WRIGHT, Proc. Liverpool Geol. Soc., 1901-1902 (1902, p. 183 (list); Journ. Isle of Man Nat. Hist. Ant. Soc., vol. 3, 1902, p. 2 (list); Irish Nat., 1903, p. 174 (list). — READE, Proc. Liverpool Geol. Soc., 1903-1904 (1904), pp. 4, 5, 7, 9, 11 (lists); *l. c.*, 1904-1905 (1905), p. 5 (list). — EARLAND, Journ. Quekett Micr. Club, ser. 2, vol. 9, 1905, p. 209. — GOUGH, Dept. Agric. Tech. Inst. Ireland, Fish. Branch, Sci. Invest., n° 3, 1905, p. 9 (list). — READE and WRIGHT, Proc. Liverpool Geol. Soc., 1905-1906 (1906), pp. 6-10, 12, 14. — READE, *l. c.*, 1907-1908 (1908), p. 8 (list). — MILLETT, Rec. Foram. Galway, 1908, p. 5. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1908, p. 335. — SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 54, pt. 3, 1910, p. 13. — WRIGHT, Proc. Belfast Nat. Field Club, Appendix, 1910-1911 (1911), pp. 5-8. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 68; Journ. Roy. Micr. Soc., 1916, p. 43; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 240; Bull. Soc. Sci. Hist. Nat. Corse, 1922, p. 128. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 39 (part). *Bolivina subangularis* HOFKER (not H. B. BRADY), Flora en Fauna der Zuiderzee, Protozoa, 1922, p. 141, text fig. 30 *a-c*.

Test small, stout, about twice as long as broad, somewhat compressed, periphery of the early portion subacute, in the adult more rounded; chambers distinct, somewhat inflated, increasing gradually in relative height toward the apertural end, each chamber with a high central ridge produced backward into an angular process, with deep reentrants at each side, making the central axis of the test deeply grooved and pitted, the outer portion falling off rapidly toward the periphery, and also deeply pitted; sutures distinct, depressed, oblique, forming an angle of 30-35° with the horizontal; wall coarsely perforate; aperture broadly oval, sometimes with a distinct tooth. Length 0,35-0,40 mm.; breadth 0,15-0,18 mm.; thickness 0,10-0,12 mm.

This is the most common species of the genus in the Belgian material and shows considerable variation in the amount of excavation of the surface. There are many records for it from about the British Isles. The types are from off Plymouth, England. The species has been confused with *B. plicata* d'ORBIGNY but the two are distinct.

#### *Bolivina variabilis* (WILLIAMSON).

(Pl. VI, fig. 13-16.)

*Textularia variabilis* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 76, pl. 6, fig. 162, 163. *Bolivina variabilis* CHASTER, First Rept. Southport Soc. Nat. Sci., 1890-1891 (1892), pp. 59, 69. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1909, p. 336; Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 68; Journ. Roy. Micr. Soc., 1916, p. 43; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 240. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 49, pl. 4, fig. 3 *a, b*. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1930, p. 81. — CUSHMAN, Special Publ. n° 9, Cushman Lab. Foram. Res., 1937, p. 158, pl. 16, fig. 6, 12-14.

« Shell oblong; sub-compressed; with rounded and crenulated margins. Segments more or less turgid; of nearly equal length and breadth. Septal lines

depressed; sometimes straight, but more frequently a little arcuate, and bending towards the primordial segment; those of one longitudinal series of segments opposed to the centres of the segments in the other series, producing a longitudinal zigzag line in each peripheral aspect, sometimes excavated into a deep and conspicuous groove with prominent margins. Septal orifice conspicuous; at the umbilical border of each segment, close to the preceding one. Texture hyaline, or subhyaline; conspicuously foraminated; foramina sometimes placed at the bottom of deep hexagonal pits, which render the shell rugose and semi-opaque. Hue a dirty white. Length,  $1/45$  [inch]. »

The original description is copied here. It is possible that the description includes more than one species but from the many specimens in the Belgian samples the amount of variation is considerable. On the one hand it tends toward *B. laevigata* (WILLIAMSON) and on the other toward the more compressed forms such as *B. spathulata* (WILLIAMSON).

***Bolivina tortuosa* H. B. BRADY, var. *atlantica* CUSHMAN.**

(Pl. VI, fig. 17.)

*Bolivina tortuosa* H. B. BRADY, var. *atlantica* CUSHMAN, Special Publ. n° 6, Cushman Lab.

Foram. Res., 1936, p. 57, pl. 8, fig. 8 *a, b*; *l. c.*, n° 9, 1937, p. 135, pl. 17, fig. 20, 21.

*Bolivina tortuosa* H. B. BRADY (part), Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 420, pl. 52, fig. 33, 34 (not 31, 32). — EGGER (part), Abhandl. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 298. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1911, p. 317, pl. 10, fig. 3, 4; Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 66, pl. 5, fig. 1. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 49, pl. 9, fig. 5.

This form occurs rarely and at but few stations in the Belgian collections. The test is longer than in the typical form of the species.

***Bolivina spathulata* (WILLIAMSON).**

*Textularia variabilis* WILLIAMSON, var. *spathulata* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 76, pl. 6, fig. 164, 165.

*Bolivina spathulata* MACFADYEN, Geol. Survey Egypt, 1930 (1931), p. 57, pl. 4, fig. 20 *a, b*. — CUSHMAN, Special Publ. n° 9, Cushman Lab. Foram. Res., 1937, p. 162, pl. 15, fig. 20-24.

There are a number of flattened specimens with distinct, often limbate sutures, that may be placed under WILLIAMSON's species. It has been frequently recorded in this region as « *Bolivina dilatata* H. B. BRADY » but is not the same as BRADY's species. (For additional references see the last one given above, pp. 162, 163.)

***Bolivina* cf. *compacta* SIDEBOTTOM.**

(Pl. VI, fig. 18.)

*Bolivina robusta* H. B. BRADY, var. *compacta* SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 49, n° 5, 1905, p. 15, pl. 3, fig. 7.

*Bolivina compacta* CUSHMAN, Bull. 71, U. S. Nat. Mus., pt. 2, 1911, p. 36, text fig. 58; Bull. 100, vol. 4, 1921, p. 137, pl. 26, fig. 7; Publ. 311, Carnegie Instit. Washington, 1922, p. 26, pl. 1, fig. 10; Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 45; Publ. 342, Carnegie Instit. Washington, 1924, p. 18, pl. 5, fig. 1. — HERON-ALLEN and EARLAND, *Discovery* Rep'ts, vol. 4, 1932, p. 354.

There are a very few specimens that are referred with some doubt to the species described by SIDEBOTTOM from the Mediterranean. One of these is figured on our plate. They occur at but very few stations and then are rare.

***Bolivina* *albatrossi* CUSHMAN.**

*Bolivina albatrossi* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 31, pl. 6, fig. 4; Special Publ. n° 9, Cushman Lab. Foram. Res., 1937, p. 153, pl. 18, fig. 22-24.

*Bolivina textilarioides* HERON-ALLEN and EARLAND (not REUSS), Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 238, pl. 41, fig. 10-14 (?).

There are a very few specimens which seem to belong to this species. The initial end has a coarse, raised network which is wanting in the later chambers.

***Bolivina* cf. *laevigata* (WILLIAMSON).**

Very rare specimens in the Belgian material may belong to this species, known from about the British Isles. They may however be simply extreme forms of *B. variabilis* (WILLIAMSON).

***Bolivina* *difformis* (WILLIAMSON).**

(Pl. VI, fig. 19.)

A single specimen occurred in our material. It is common in some parts of the ocean off the British Isles. (For references and detailed distribution see CUSHMAN, Special Publ. N° 9, Cushman Lab. Foram. Res., 1937, pp. 164, 165.)

Genus ANGULOGERINA CUSHMAN, 1927.

**Angulogerina angulosa** (WILLIAMSON).

(Pl. VI, fig. 9, 10.)

*Uvigerina angulosa* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 67, pl. 5, fig. 140.

*Angulogerina angulosa* CUSHMAN, Contr. Cushman Lab. Foram. Res., vol. 3, 1927, p. 69.

(For additional references see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 4, 1923, pp. 170, 171.)

Test elongate, tapering toward either end, composed of numerous chambers, three making each whorl; chambers compressed at two sides, making a decided angle in the middle and making up a trifacial test, triangular in end view and section; wall more or less costate, usually the costae numerous and distinct; aperture with a short tubular neck and with a phialine lip usually more developed on the outer side.

This species described by WILLIAMSON from Recent British material has been widely recorded. It shows a wide range of variation in our material and is fairly common as it is about the British Isles and along the Western Coast of Europe. Many of the records from the Pacific and elsewhere belong to other species.

Genus ENTOSOLENIA EHRENBERG, 1848.

**Entosolenia lineata** WILLIAMSON.

(Pl. VII, fig. 1.)

*Entosolenia lineata* WILLIAMSON, Ann. Mag. Nat. Hist., ser. 2, vol. 1, 1848, p. 18, pl. 2, fig. 18.

This species is represented by single specimens at a number of stations. There is some variation in the coarseness of the linear ornamentation and in the shape but the general characters are fairly constant as is the basal spine.

**Entosolenia lucida** WILLIAMSON.

(Pl. VII, fig. 2.)

*Entosolenia marginata* (WALKER and BOYS), var. *lucida* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 10 pl. 1, fig. 22, 23.

This is a beautiful species with the horseshoe-like thickening of the test appearing as a milky-white band at either side of the test with the remainder clear. It occurs at a considerable number of localities but represented by but few specimens.

**Entosolenia quadrata WILLIAMSON.**

(Pl. VII, fig. 3.)

*Entosolenia marginata* (WALKER and BOYS), var. *quadrata* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 11, pl. 1, fig. 27.

This is a very rare species in the Belgian material, occurring at but three stations and then only as single specimens. The peculiar quadrate form is rather definite and the entosolenian tube is usually evident.

**Entosolenia ornata WILLIAMSON.**

(Pl. VII, fig. 4.)

*Entosolenia marginata* (WALKER and BOYS), var. *ornata* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 11, pl. 1, fig. 24.

*Lagena ornata* JONES, PARKER and H. B. BRADY, Pal. Soc., vol. 19, 1866, p. 43, pl. 1, fig. 29-31. — BALKWILL and WRIGHT, Proc. Roy. Irish Acad., ser. 2, vol. 3, 1882, p. 548. — H. B. BRADY, Journ. Roy. Micr. Soc., 1877, p. 907. — CHASTER, First Rep't Southport Soc. Nat. Sci., 1890-1891 (1892), p. 62, pl. 1, fig. 6. — WHITEAVES, Geol. Survey Canada, 1901, p. 10. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 88, pl. 7, fig. 8; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 252; Journ. Roy. Micr. Soc., 1916, p. 46; British Antarctic Exped., Zoology, vol. 6, 1922, p. 159. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 4, 1923, p. 44, pl. 8, fig. 6, 8. — HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50, 1930, p. 169; *Discovery* Rep'ts, vol. 4, 1932, p. 378.

Although very rare in the Belgian material, the specimens, one each at four stations, show the characteristic ornamentation of the outer flange. There is some variation in the general outline of the test, some specimens being almost circular while others are elliptical. The narrow entosolenian tube is typically curved.

**Entosolenia elliptica (SEGUENZA).**

(Pl. VII, fig. 5.)

*Fissurina elliptica* SEGUENZA, Foram. Mon. Mioc. Messina, 1862, p. 57, pl. 1, fig. 51.

The most common species of *Entosolenia* in the Belgian collections seems identical with that described and figured by SEGUENZA from Messina. The entosolenian tube is often long and slender as shown in our figure.

**Entosolenia annectens (BURROWS and HOLLAND).**

(Pl. VII, fig. 6.)

*Lagena annectens* BURROWS and HOLLAND, in JONES, PARKER and BRADY, Mon. Foram. Crag., Pal. Soc., pt. 2, 1895, p. 203, pl. 7, fig. 11.

This species is very rare but the figured specimen seems to belong here.

**Entosolenia pulchella** (H. B. BRADY).

(Pl. VII, fig. 7.)

*Vermiculium perlucidum* MONTAGU, Test. Brit., 1803, p. 525, pl. 14, fig. 3.*Lagena perlucida* BROWN, Illust. Conch. Gt. Britain, 1827, fly-leaf, pl. 1, fig. 29; ed. 2, 1844, p. 3, pl. 56, fig. 29. — SCHLUMBERGER, Feuille des Jeunes Naturalistes, ann. 13, 1882, pl. 1, fig. 2. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 78; Trans. Zool. Soc. London, vol. 20, 1915, p. 659; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 246; Journ. Roy. Micr. Soc., 1916, p. 45. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 4, 1923, p. 47, pl. 9, fig. 3. — HERON-ALLEN and EARLAND, *Discovery Rep'ts*, vol. 4, 1932, p. 381, pl. 11, fig. 33, 34. — CUSHMAN, Bull. 161, U. S. Nat. Mus., pt. 2, 1933, p. 35, pl. 9, fig. 1.*Lagena vulgaris* WILLIAMSON, var. *perlucida* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 5, pl. 1, fig. 7, 8.*Lagena orbignyana* (SEGUENZA), var. *pulchella* MILLETT, Journ. Roy. Micr. Soc., 1901, p. 627, pl. 14, fig. 21. — MILLETT, Rec. Foram. Galway, 1908, p. 6, pl. 2, fig. 13; pl. 3, fig. 11. — SIDEBOTTOM, Journ. Quekett Micr. Club, vol. 12, 1913, p. 195, pl. 17, fig. 13.

This is an interesting though rare species. The ornamentation of the central area is variable, appearing either as continuous vertical costae or broken into irregular pieces. Trigonal specimens seem to be common according to the records but were not found in the Belgian collections.

**Entosolenia inæquilateralis** (J. WRIGHT).

(Pl. VII, fig. 8.)

*Lagena marginata* (WALKER and BOYS), var. *inæquilateralis* J. WRIGHT, Proc. Belfast Nat. Field Club, 1884-1885, Appendix 9, 1886, p. 321, pl. 26, fig. 10 *a-c*.

Our figure shows a specimen with a wide flange and the opening at one side. This seems to belong in WRIGHT's species. It is very rare in the Belgian collections.

**Entosolenia marginata** (WALKER and BOYS) (?).

There are several specimens with entosolenian tubes and a flange at the periphery of varying widths that seem to be possible of inclusion in the above species but none of them is truly typical. They are very rare.

**Entosolenia striata** (WALKER and BOYS) (?).

(Pl. VII, fig. 9.)

The figured specimen is longer and the costae more definite than in *E. lineata* WILLIAMSON. It may belong within the limits of the above species.

**Entosolenia orbignyana** (SEGUENZA), var. **selseyensis** (HERON-ALLEN and EARLAND).  
(Pl. VII, fig. 10.)

*Lagena orbignyana* SEGUENZA, var. *selseyensis* HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1909, p. 426, pl. 17, fig. 1, 2.

The figured specimen seems identical with the type of this variety from off Selsey Bill, England. It is very rare in the Belgian material.

**Entosolenia lagenoides** WILLIAMSON.  
(Pl. VII, fig. 11.)

*Entosolenia marginata* (WALKER and BOYS), var. *lagenoides* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 11, pl. 1, fig. 25, 26.

*Lagena lagenoides* REUSS, Sitz. Akad. Wiss. Wien, vol. 46, pt. 1, 1862 (1863), p. 324, pl. 2, fig. 27, 28.

Specimens similar to that figured are very rare in the Belgian collections. They seem to be closely allied to WILLIAMSON'S species, the median keel being thin and somewhat serrate, with a greater or lesser development of tubules.

**Entosolenia globosa** (MONTAGU).

There are a very few specimens of more or less globular form and smooth surface with an entosolenian tube that probably should be placed under this species. They are rare and show considerable variation in size and shape.

#### FAMILY ROTALIIDÆ.

Genus SPIRILLINA EHRENBERG, 1841.

**Spirillina vivipara** EHRENBERG.  
(Pl. VII, fig. 12.)

*Spirillina vivipara* EHRENBERG, Abhandl. K. Akad. Wiss. Berlin, 1841, p. 422, pl. 3, sec. 7, fig. 41. (For additional references see Cushman, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, pp. 3, 4.)

Test typically free, rarely adherent, planispiral, consisting of proloculum and long coiled, tubular second chamber, the later coils often somewhat uneven and not entirely planispiral, the tubular chamber overlapping slightly more on one side than on the other, sometimes flattened, periphery rounded; wall calcareous, coarsely pitted, thin; suture depressed; aperture formed by the open end of the tube. Diameter up to 0,50-0,60 mm.



This is one of the commonest species of the genus in the Belgian collections. It shows some variation as it does in other areas tending toward *S. obconica* H. B. BRADY but the coils in the latter species are more uniform and the ventral side more umbilicate.

***Spirillina* cf. *vivipara* EHRENBERG var. *runiana* HERON-ALLEN and EARLAND.**

(Pl. VII, fig. 13.)

*Spirillina vivipara* EHRENBERG, var. *runiana* HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50, 1930, p. 179, pl. 4, fig. 51-53. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 5.

Our figured specimen has some of the characters of this variety, especially the depressions of the inner margin of the whorls but otherwise is not typical.

***Spirillina lucida* SIDEBOTTOM.**

(Pl. VII, fig. 14.)

*Spirillina lucida* SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 52, n° 13, 1908, p. 9, pl. 2, fig. 9. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 108, pl. 9, fig. 4, 5; Trans. Zool. Soc. London, vol. 20, 1915, p. 684; British Antarctic Exped., Zoology, vol. 6, 1922, p. 196. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 10. — BERMUDEZ, Mem. Soc. Cubana Hist. Nat., vol. 9, 1935, p. 199.

There are a number of specimens with acute periphery, umbilicate ventral side, the last whorl broad and strongly overlapping and very finely perforate that seem to fit well with the figures and description of this species described from the Mediterranean. It occurs at only a few stations. The records for this species are from very widely separated regions and are mostly unaccompanied by figures.

***Spirillina wrightii* HERON-ALLEN and EARLAND.**

(Pl. VII, fig. 16.)

*Spirillina wrightii* HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., vol. 50, 1930, p. 181, pl. 4, fig. 54-58; *Discovery Rept's*, vol. 10, 1934, p. 180, pl. 8, fig. 18, 19.

This species somewhat resembles the figure given by WILLIAMSON of *S. margaritacea* but the periphery is squarely truncate instead of rounded as WILLIAMSON'S species is supposed to be. Our specimens are much like the type figures from the specimens dredged off Plymouth, England. Our figured specimen has the last whorls smooth, and is somewhat different from the others in the Belgian collection in this respect.

**Spirillina cf. obconica** H. B. BRADY.

(Pl. VII, fig. 15.)

There are a few specimens that somewhat resemble this species. The coils are of rather uniform size and shape from both sides, the ventral side concave and the perforations coarse. They are not typical.

**Spirillina perforata** (SCHULTZE).

*Cornuspira perforata* SCHULTZE, Organ. Poly., 1854, p. 41, pl. 2, fig. 22.

*Spirillina perforata* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 92, pl. 7, fig. 202. — TERQUEM, Ess. Anim. Plage Dunkerque, 1875, p. 21, pl. 1, fig. 5. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 5, pl. 1, fig. 6, 7.

Test rather regularly planispiral, coils regularly increasing in diameter as added, not flattened, periphery rounded; suture distinct, depressed; wall coarsely and rather evenly pitted, the central portion sometimes with thickened areas of secondary deposit obscuring the earlier wall; aperture formed by the open end of the chamber. Diameter 0,45 mm.

This species is a distinctive one but rare in the Belgian collections. As shown in our figure there is a tendency to secondary thickening on the ventral side.

**Spirillina lateseptata** TERQUEM.

*Spirillina lateseptata* TERQUEM, Ess. Anim. Dunkerque, 1875, p. 21, pl. 1, fig. 6. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 6, pl. 1, fig. 12, 13; pl. 2, fig. 1.

*Spirillina vivipara* EHRENBERG, var. *carinata* HALKYARD, Trans. Manchester Micr. Soc., 1889, p. 69, pl. 2, fig. 6. — SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 52, n° 13, 1908, p. 8, pl. 2, fig. 4.

*Spirillina obconica* H. B. BRADY, var. *carinata* HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 109, pl. 9, fig. 6, 7; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 269; Journ. Roy. Micr. Soc., 1916, p. 49; British Antarctic Exped., Zoology, vol. 6, 1922, p. 195; Journ. Roy. Micr. Soc., 1930, p. 180.

Test planispiral, very much compressed, usually slightly elliptical in outline, periphery acute, often keeled and the keel broken into a series of distinct teeth; coiled chamber with the cavity of the chamber near the outer part of the coil, built out beyond the keel of the previous coil; aperture elliptical at the end of the tubular chamber. Diameter 0,20-0,30 mm.

This is apparently a localized species, occurring off the Coast of Belgium and in adjacent regions. The very transparent walls often give the appearance of sunken areas with the sutures extending above them a condition which also does occur. The keel when fully preserved is often very beautifully toothed but is so delicate that it is usually broken.

Genus PATELLINA WILLIAMSON, 1858.

**Patellina corrugata WILLIAMSON.**

(Pl. VII, fig. 17, 18.)

*Patellina corrugata* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 46, pl. 3, fig. 86-89.  
(For complete references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, pp. 11, 12.)

Test usually free, conical, or plano-convex; early portion composed of chambers spirally arranged, later ones elongating and finally becoming annular or nearly so in the last-formed portion of the test; chambers partially divided by internal septa which are visible from the exterior, showing clearly in the last-formed chambers from the ventral side; somewhat umbilicate ventrally; walls comparatively thin and translucent; aperture somewhat elongate situated at the inner border of the chamber. Diameter up to 0,65 mm.

This is a common species in the Belgian collections occurring at numerous stations. It is apparently best developed in the northern hemisphere, off the coasts of Western Europe and North America with some records from the Mediterranean.

Genus DISCORBIS LAMARCK, 1804.

**Discorbis nitida (WILLIAMSON).**

(Pl. VIII, fig. 1.)

*Rotalina nitida* WILLIAMSON, Rec. Foram. Gt. Britain, 1858, p. 54, pl. 4, fig. 106-108.

*Rotalia nitida* H. B. BRADY, Trans. Linn. Soc. Zool., vol. 24, 1864, p. 474; Nat. Hist. Trans. Northumberland and Durham, vol. 1, 1865 (1867), p. 105. — BALKWILL and WRIGHT, Trans. Roy. Irish Acad., vol. 28, Sci., 1885, p. 352. — SIDDALL, Proc. Lit. Philos. Soc. Liverpool, 1886, p. 71. — HALKYARD, Trans. Manchester Micr. Soc., 1889, p. 71, pl. 2, fig. 12. — MILLETT, Rec. Foram. Galway, 1908, p. 7.

*Discorbina nitida* WRIGHT, Ann. Mag. Nat. Hist., ser. 6, vol. 4, 1889, p. 449; Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 490. — CHASTER, First Rep't. Southport Soc. Nat. Sci., 1890-1891 (1892), p. 65. — WRIGHT, Irish Nat., vol. 9, 1900, p. 55. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 121; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 269, pl. 42, fig. 26-30; Journ. Roy. Micr. Soc., 1916, p. 49; 1930, p. 182.

*Discorbis nitida* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 26, pl. 6, fig. 1 a-c. — CUSHMAN and PARKER, Proc. U. S. Nat. Mus., vol. 80, Art. 3, 1931, p. 19, pl. 4, fig. 4 a-c. — HERON-ALLEN and EARLAND, *Discovery* Rep'ts, vol. 4, 1932, p. 412. — CUSHMAN, Special Publ. n° 5, Cushman Lab. Foram. Res., 1933, pl. 29, fig. 17 a-c.

Test plano-convex, making a low nearly symmetrical cone in side view, periphery subacute, with a narrow keel; chambers very distinct but not inflated, usually five or six in the last-formed whorl, very gradually and regularly increasing in size as added; sutures distinct, thickened on the dorsal side due to the

keel of the chamber, strongly curved on the dorsal side, but not depressed, ventrally radial, slightly depressed; wall smooth throughout very finely perforate; aperture at the base of the chamber near the umbilicus; color usually bluish-white.

This species was well figured by WILLIAMSON and is rather common in the Belgian collections showing some variation but on the whole is a well characterized species. There are numerous records for it off the British Isles and from the records it seems to have a wide distribution elsewhere.

### *Discorbis millettii* (J. WRIGHT).

*Discorbina millettii* WRIGHT, Rept. Belfast Nat. Field Club, ser. 2, vol. 3, n° 6, Appendix n° 2, 1910-1911 (1911), p. 13, pl. 2, fig. 14-17. — HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 121, pl. 10, fig. 5-7; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 270; Journ. Roy. Micr. Soc., 1916, p. 50; British Antarctic Exped., Zoology, vol. 6, 1922, p. 199; Bull. Soc. Sci. Nat. Corse, 1922, p. 134; Journ. Roy. Micr. Soc., vol. 50, 1930, p. 182.

*Discorbis millettii* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 24, pl. 5, fig. 3, 4.— HERON-ALLEN and EARLAND, *Discovery* Rep'ts, vol. 4, 1932 p. 413.

This species is common in the Belgian material. The dorsal surface is somewhat like that of *D. nitida* but the ventral side is ornamented with rows of fine bead-like protuberances arranged in radial lines. Nearly all the records are from off the British Isles and it occurs as a Pleistocene fossil in Ireland.

### *Discorbis globularis* (D'ORBIGNY).

(Pl. VIII, fig. 2.)

*Rosalina globularis* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 271, pl. 13, fig. 1, 2, Modèles n° 69.

*Discorbina globularis* CARPENTER, PARKER and JONES, Introd. Foram., 1862, p. 204, pl. 3, fig. 1.

*Discorbis globularis* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 22, pl. 4, fig. 9 a-c. (For additional references see this reference, p. 22.)

This is a common species off the British Isles but is rare in the Belgian material. The last two chambers make up a large part of the test on both dorsal and ventral sides.

### *Discorbis orbicularis* (TERQUEM).

*Rosalina orbicularis* TERQUEM, Anim. sur la Plage de Dunkerque, 1876, p. 75, pl. 9, fig. 4 a, b.

*Discorbis orbicularis* BERTHELIN, Foram. de Borgneuf et Pornichet, 1878, p. 39, n° 63. (For additional references see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, pp. 27, 28.)

This species was originally described from the coast of France and it is surprising that it is so rare in the Belgian collections. There are numerous records for it from off the British Isles and from the literature it would seem to be very widely distributed. The figures from widely remote regions however show that more than one species has been included under this name. The test consists of a low cone, circular in outline, the ventral side flattened or concave and the chambers very elongate, forming half the periphery of the test in the adult.

***Discorbis orbicularis* (TERQUEM), var. *selseyensis* (HERON-ALLEN and EARLAND).**  
(Pl. VIII, fig. 3.)

*Discorbina rosacea* D'ORBIGNY, var. *selseyensis* HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1911, p. 330, pl. 10, fig. 20, 21.

*Discorbis orbicularis* (TERQUEM), var. *selseyensis* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 29, pl. 7, fig. 1 a, b.

This variety differs from the typical form of the species in the radial corrugations on the ventral side. It is rare in the Belgian collections but the figured specimen seems to be typical.

***Discorbis mediterraneus* (D'ORBIGNY).**

*Rosalina mediterraneus* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 271, n° 2.

*Discorbina mediterraneus* FORNASINI, Mem. Accad. Sci. Istit. Bologna, ser. 6, vol. 3, 1906, p. 61, pl. 1, fig. 1.

*Discorbis mediterraneus* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 24, pl. 5, fig. 2 a-c.

There are rare specimens which may possibly be referred to this species but they are not typical.

***Discorbis bertheloti* (D'ORBIGNY).**

(Pl. VIII, fig. 5.)

*Rosalina bertheloti* D'ORBIGNY, in BARKER WEBB and BERTHELOT, Hist. Nat. Iles Canaries, 1839, vol. 2, pt. 2, « Foraminifères », p. 135, pl. 1, fig. 28-30.

*Discorbis bertheloti* CUSHMAN, Bull. 71, U. S. Nat. Mus., pt. 5, 1915, p. 20, pl. 7, fig. 3. (For further references see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, pp. 16, 17.)

There are numerous specimens similar to that figured on our plate that seem referable to this species described from off the Canary Islands. The variation in our specimens is not great. The test is somewhat oval, much compressed and scale-like, with the last-formed chambers rapidly increasing in size and width. It has been frequently recorded from off the British Isles.

**Discorbis parisiensis** (D'ORBIGNY) (?).

A very few specimens of which one is figured occur in the Belgian material. They resemble D'ORBIGNY'S species in some of their characters. They are unquestionably Recent specimens while the types came from the Eocene.

**Discorbis planorbis** (D'ORBIGNY) (?).

There are a very few specimens in the Belgian collection that seem to be similar to those recorded by HERON-ALLEN and EARLAND as « *Discorbina planorbis* (D'ORBIGNY) ». The type of D'ORBIGNY'S species is evidently an *Asterigera* and not identical with this species. Not enough specimens were obtained to definitely place the Recent form.

**Discorbis chasteri** (HERON-ALLEN and EARLAND),  
var. **bispinosa** (HERON-ALLEN and EARLAND).  
(Pl. VIII, fig. 4.)

*Discorbina chasteri* HERON-ALLEN and EARLAND, var. *bispinosa* HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 129, pl. 13, fig. 4; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 273; Journ. Roy. Micr. Soc., 1916, p. 50.

*Discorbis chasteri* (HERON-ALLEN and EARLAND), var. *bispinosa* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 20, pl. 4, fig. 5, 6.

This is a very peculiar small form, very rare in the Belgian collections. It is evidently the same as the above named form from comparison with specimens received from EARLAND. There are several records of its occurrence from off the British Isles.

« **Discorbis** (?) **rosacea** (D'ORBIGNY). »  
(Pl. VIII, fig. 6.)

Very rare specimens in the Belgian material seem to be similar to this species as referred to by numerous authors. Whether it is the same as D'ORBIGNY'S species which seems to be an *Amphistegina* is questionable. That species was described from the Miocene of the Bordeaux region. The chaotic state of the literature in regard to « *Discorbina rosacea* » needs a study of the original material of the many things that have been referred to this name.

**Discorbis peruviana** (D'ORBIGNY) (?).

Three specimens occurred in the Belgian collections which are similar to the form figured from off the British Isles but which is not the same as that described by D'ORBIGNY from the Coast of South America. More material is needed to definitely place it.

**Discorbis baccata** (HERON-ALLEN and EARLAND).

(Pl. VIII, fig. 7.)

*Discorbina baccata* HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 124, pl. 12, fig. 1-3; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 271; Journ. Roy. Micr. Soc., 1916, p. 50; 1930, p. 183.

*Discorbis baccata* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 15, pl. 3, fig. 1 a-c.

The single specimen figured seems referable to this species. The ventral side has a peculiar beaded appearance in the umbilical region and the remainder with radial corrugations.

**Discorbis clara** CUSHMAN n. sp.

(Pl. VIII, fig. 8.)

Test plano-convex, dorsal side moderately convex, ventral side flattened, periphery subacute, with a slight keel; chambers very distinct, about seven in the adult whorl, of uniform shape, increasing very gradually in size as added, on the ventral side, the earlier whorls appearing clearly through the thin, nearly transparent ventral wall; sutures distinctly limbate, slightly curved, not depressed, on the ventral side oblique, nearly tangential; wall smooth, coarsely perforate on the dorsal side, finely so on the ventral; aperture a low opening on the ventral margin of the last-formed chamber. Diameter 0,30 mm.; height 0,12 mm.

The holotype is from Station 3333 off the Coast of Belgium.

This is a very distinctive species differing from *D. nitida* in the coarsely perforate wall, larger number of chambers and the peculiar transparent character of the ventral side.

Genus LAMARCKINA BERTHELIN, 1881.

**Lamarckina haliotidea** (HERON-ALLEN and EARLAND).

*Pulvinulina haliotidea* HERON-ALLEN and EARLAND, Journ. Roy. Micr. Soc., 1911, p. 338, pl. 11, fig. 6-11; Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 136; Journ. Roy. Micr. Soc., 1916, p. 51; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 276; British Antarctic Exped., Zoology, vol. 6, 1922, p. 215; Journ. Roy. Micr. Soc., 1930, p. 189.

*Lamarckina haliotidea* CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 36, pl. 7, fig. 8, 9.

Test small, compressed, somewhat longer than broad, dorsal side gently convex, ventral side flattened or concave, umbilicate, periphery subacute; chambers distinct, usually five in the final whorl, the last one in the adult much the longest and on the ventral side extending backward in a large lobe; sutures

distinct, only slightly curved, not much depressed; wall smooth, ventral side polished; aperture on the inner margin of the ventral side of the chamber. Length 0,35 mm.; breadth 0,25-0,28 mm.; height 0,06 mm.

Several specimens of this interesting little species occur in the Belgian collections. These have been compared with specimens sent me by EARLAND and are typical. It seems to be a species confined to the waters off Western Europe as those recorded from the Antarctic are much larger and probably represent a different species.

Genus EPONIDES MONTFORT, 1808.

**Eponides concentrica** (PARKER and JONES).

(For references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, pp. 43, 44.)

The very few specimens in the Belgian material are not entirely typical and may not be identical.

**Eponides frigida** (CUSHMAN), var. **calida** CUSHMAN and COLE.

(Pl. IX, fig. 1.)

*Eponides frigida* (CUSHMAN), var. *calida* CUSHMAN and COLE, Contr. Cushman Lab. Foramin. Res., vol. 6, 1930, p. 98, pl. 13, fig. 13. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 47, pl. 10, fig. 3, 4.

There are a number of specimens that seem identical with this variety known from the cool waters of the Western Atlantic. They have probably been previously recorded as « *Pulvinulina karsteni* (REUSS) ». The dorsal side is smooth but the ventral side is thickened and fine papillae occur particularly over the sutures.

**Eponides repanda** (FICHTEL and MOLL).

(For references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, pp. 49, 50.)

The figured specimen shows the characters of this widely recorded species. It is the most common species of the genus in the Belgian collections. The central area of the ventral side is typically filled with clear shell material and thickened. The periphery has distinctly marked porous areas especially on the dorsal side.



**Eponides (?) tuberculata** (BALKWILL and WRIGHT).

(Pl. IX, fig. 2.)

*Discorbina tuberculata* BALKWILL and WRIGHT, Trans. Roy. Irish Acad., vol. 28, Sci., 1885, p. 350, pl. 13, fig. 28-30.

This is a very distinctive though small species recorded mostly from off the British Isles. Very typical specimens, one of which is figured, occur in the Belgian material but they are rare. The generic position of this species is in some doubt.

**Eponides (?) prageri** (HERON-ALLEN and EARLAND).

A very few specimens may possibly be referred to this species. It seems to be more closely allied to *Eponides* than to *Discorbis* but more and better specimens than those in the Belgian collections are necessary to definitely place it.

Genus GYROIDINA D'ORBIGNY, 1826.

**Gyroidina (?) sp. (?)**.

(Pl. IX, fig. 3.)

The figured specimen may represent a species of *Gyroidina* but such specimens are very rare and it is difficult to determine whether or not they are Recent or fossil. A figure is given for future reference.

Genus ROTALIA LAMARCK, 1804.

**Rotalia beccarii** (LINNAEUS).

(Pl. IX, fig. 4.)

This is probably the most abundant species in the Belgian collections and occurs at many stations. All stages in the development are present but adult specimens never seem to reach the dimensions of those of the shallow water of the Mediterranean. Many species are involved in the great number of references to this name but the typical form is very distinctive.

**Rotalia (?) perlucida** HERON-ALLEN and EARLAND.

(Pl. IX, fig. 6.)

*Rotalia perlucida* HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 139, pl. 13, fig. 7-9; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 277; Journ. Roy. Micr. Soc., 1916, p. 53. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 63, pl. 13, fig. 4 a-c.

This peculiar form occurs at several localities in the Belgian material. Its generic position is debatable. In some respects it seems more like a species of *Discorbis*. It is rare at the stations where it occurs.

Genus SIPHONINA REUSS, 1849.

**Siphonina reticulata** (CZJZEK) (?).

(Pl. IX, fig. 5.)

*Rotalina reticulata* CZJZEK, Haidinger's Nat. Abhandl., vol. 2, 1848, p. 145, pl. 13, fig. 7-8.

*Siphonina reticulata* BROWN, Lethaea Geognostica, ed. 3, vol. 3, 1853-1856, p. 227, pl. 35, fig. 23 a-c. — CUSHMAN, Proc. U. S. Nat. Mus., vol. 72, Art. 20, 1927, p. 7, pl. 1, fig. 1, 2; pl. 3, fig. 4; Bull. 104, pt. 8, 1931, p. 68, pl. 14, fig. 1 a-c.

*Siphonina fimbriata* REUSS, Denkschr. Akad. Wiss. Wien, 1849, p. 372, pl. 47, fig. 6.

Test nearly equally biconvex, somewhat compressed, periphery angled; usually four chambers in the last-formed volution, only slightly inflated; sutures depressed slightly on the ventral side, radial, on the dorsal side curved, strongly marked by the fimbriation of this periphery of the chambers; aperture elliptical, with a distinct lip and well marked, contracted neck. Diameter 0,50 mm.; thickness 0,25-0,30 mm.

Our specimens are few but of uniform character. In general they are like the species from the Miocene of the Vienna Basin and may be placed under CZJZEK's species. There are many records for this species and many of them are not identical with it. Those from off Western Europe are probably this species.

HERON-ALLEN and EARLAND (Journ. Roy. Micr. Soc., ser. 3, vol. 50, 1930, p. 188, pl. IV, fig. 62-64) have figured this form from off Plymouth, England as *Siphonina tubulosa* CUSHMAN. A comparison of our material from Belgium with the types of *S. tubulosa* from the Pacific shows that the two are very distinct. The ventral side particularly in *S. tubulosa* is covered with distinct tubules that are not present in the form from Western Europe and the peripheral ornamentation in the two is quite different.

Genus PULVINULINELLA CUSHMAN, 1926.

**Pulvinulinella** sp. (?).

(Pl. IX, fig. 7.)

There are several specimens similar to that figured which may belong to this genus. From the character of the test it is difficult to determine whether these represent Recent or fossil tests and one is here figured for future reference.

## FAMILY CASSIDULINIDÆ.

Genus CASSIDULINA D'ORBIGNY, 1826.

*Cassidulina lævigata* D'ORBIGNY.

(Pl. X, fig. 1.)

*Cassidulina lævigata* D'ORBIGNY, Ann. Sci. Nat., vol. 7, 1826, p. 282, pl. 15, fig. 4, 5; Modèles, n° 41. (For further references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, pp. 122, 123.)

Specimens referable to this species are very rare in the Belgian collection. The peripheral angle is acute to subacute, the sutures are distinctly limbate and the chambers little if at all inflated.

*Cassidulina crassa* D'ORBIGNY.

(Pl. X, fig. 2.)

*Cassidulina crassa* D'ORBIGNY, Foram. Amér. Mérid., 1839, p. 56, pl. 7, fig. 18-20. (For further references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, pp. 124, 125.)

Test subcircular, but oval in outline, biconvex, the peripheral border broadly rounded; chambers comparatively few, short, and inflated; wall calcareous, perforate, smooth; sutures distinct, somewhat depressed; aperture a long narrow slit just below and nearly parallel to the periphery of the test, often with a long tooth, partially filling the aperture; color white or light brown. Length 0,60-0,10 mm.

This is the most common species of the genus in the region. It is evidently the same as the form described by WILLIAMSON as *C. obtusa* (Rec. Foram. Gt. Britain, 1858, p. 69, pl. 6, fig. 143, 144) from English waters.

*Cassidulina subglobosa* H. B. BRADY.

(Pl. X, fig. 3.)

*Cassidulina subglobosa* H. B. BRADY, Quart. Journ. Micr. Sci., vol. 21, 1881, p. 60; Rep. Voy. Challenger, Zoology, vol. 9, 1884, p. 430, pl. 54, fig. 17 a-c. (For further references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 127.)

Test subglobular, inequilateral, with an oval outline, somewhat compressed on the two faces, peripheral border broadly rounded, slightly, if at all, lobulated; chambers comparatively few, inflated, wall calcareous, perforate, smooth; sutures slightly depressed, often indistinct; aperture fairly broad, short, loop-like or oval; color white or gray. Diameter 0,50-1,00 mm.

There are a few specimens in the Belgian collections which may be referred to this species but they are small and not well developed.

**Cassidulina nitidula** (CHASTER).

(Pl. X, fig. 4.)

*Pulvinulina nitidula* CHASTER, First Rep. Southport Soc. Nat. Sci., 1891 (1892), p. 66, pl. 1, fig. 17. — SIDEBOTTOM, Mem. Proc. Manchester Lit. Philos. Soc., vol. 53, 1909, p. 9, pl. 4, fig. 2.

*Cassidulina nitidula* HERON-ALLEN and EARLAND, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 70, pl. 5, fig. 6-9; Journ. Roy. Micr. Soc., 1916, p. 44; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 241. — CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 3, 1922, p. 126. — HERON-ALLEN and EARLAND, British Antarctic Exped., Zoology, vol. 6, 1922, p. 140; Journ. Roy. Micr. Soc., vol. 50, 1930, p. 83; *Discovery* Rep'ts, vol. 4, 1932, p. 357.

« Test small, much depressed, highly polished; convolutions about two in number, there being seven or eight segments in the last; superior surface slightly convex; sutures not depressed; inferior surface concave; aperture large and oblique; periphery acute. Diameter 1,25 mm. The test is so thin that the sutures on the inferior surface are seen through the shell and give it a pseudo-cassiduline appearance. »

The above is a copy of the original description. The species seems definitely to be a *Cassidulina* and occurs in the Belgian material in typical form. Most of the records for the species are from about the British Isles. There are other records from widely scattered areas but they are not accompanied by figures.

## FAMILY CHILOSTOMELLIDÆ.

Genus ALLOMORPHINA REUSS, 1850.

**Allomorphina** sp. (♀).

(Pl. X, fig. 5.)

The figured specimen may possibly have been derived from Cretaceous chalks. It is difficult from the single specimen to determine this from the test but it does not have the same appearance as the Recent ones of other groups. It is figured for reference.

## FAMILY GLOBIGERINIDÆ.

There are a very few specimens which seem to be living in this area. Specimens are very rare and may possibly be referred to *Globigerina bulloides* and *G. dutertrei* as usually considered. The species of the family need much revision. In a number of the bottom samples are Cretaceous species evidently transported from such exposures as those of the Chalk Cliffs of Dover, England or elsewhere. There are also specimens of *Orbulina* and *Globigerina* which have evidently been fossilized but are Tertiary rather than Cretaceous.

## FAMILY ANOMALINIDÆ.

Genus CIBICIDES MONTFORT, 1808.

**Cibicides lobatulus** (WALKER and JACOB).

(Pl. X, fig. 6.)

(For references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, pp. 118, 119.)

This is one of the widely recorded species of foraminifera and many things have been recorded under this name. Like many attached forms it is very variable in outline depending upon the shape and character of the surface on which it grows. There is also considerable variation in the height of the test and in the amount of limbation of the sutures. Specimens referable to it occur at a large number of the Belgian stations.

**Cibicides refulgens** MONTFORT.

(Pl. X, fig. 7.)

(For references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, pp. 116, 117.)

In typical specimens of this species the ventral side is conical and the dorsal side flattened. Such specimens are often nearly as deep as the diameter. From these typical specimens there is a gradation to specimens where it is difficult to separate them from *C. lobatulus*. These conical forms are less common in the Belgian material than are the more flattened ones.

**Cibicides ungerianus** (D'ORBIGNY) (?).

(Pl. X, fig. 8.)

The figured specimen represents a species that is fairly common in the Belgian bottom samples. The central part on the dorsal side has the sutures raised and in some specimens there are traces of small bead-like projections. The test is very coarsely perforate. These are not typical of D'ORBIGNY'S species as it occurs in the Miocene of the Vienna Basin and they are placed here with considerable doubt.

## FAMILY PLANORBULINIDÆ.

Genus PLANORBULINA D'ORBIGNY, 1826.

**Planorbulina mediterraneensis** D'ORBIGNY.

(Pl. X, fig. 9.)

(For references to this species see CUSHMAN, Bull. 104, U. S. Nat. Mus., pt. 8, 1931, p. 129.)

Very typical specimens occur at a number of the Belgian stations. Specimens are usually rare however. Like other attached forms the shape is often decidedly irregular.

Genus GYPSINA CARTER, 1877.

**Gypsina vesicularis** (PARKER and JONES).

(Pl. X, fig. 10.)

There are a very few specimens of irregular shape and size composed of globular chambers, coarsely perforate, and with the apertures as shown in our figured specimen. Such irregular forms have been placed under the above species. In some respects they resemble the roughened surface of *Acervulina inhærens* SCHULTZE.

DIRECTOR OF THE CUSHMAN LABORATORY FOR FORAMINIFERAL RESEARCH, SHARON, MASS., U.S.A



Stations.	
12	<i>Millettella</i> sp. (?).
57	<i>Spiroplectammina wrightii</i> .
101	<i>Gaudryina atlantica</i> .
178	<i>Eggerella scabra</i> .
179	<i>Quinqueloculina seminula</i> .
180	<i>Quinqueloculina subrotunda</i> .
181	<i>Quinqueloculina cliarensis</i> .
183	<i>Quinqueloculina dunkerquiata</i> .
189	<i>Quinqueloculina lata</i> .
300	<i>Quinqueloculina bicornis</i> .
347	<i>Quinqueloculina bicornis</i> var. <i>angulata</i> .
374	<i>Quinqueloculina</i> cf. <i>brongniartii</i> .
495	<i>Massilina secans</i> .
571	<i>Massilina annectens</i> .
588	<i>Spiroloculina planulata</i> .
700	<i>Ammomassilina</i> cf. <i>asperula</i> .
824	<i>Triloculina tricarinata</i> .
865	<i>Triloculina trigonula</i> .
1280	<i>Triloculina oblonga</i> .
1297	<i>Triloculina circularis</i> .
1466	<i>Pyrgo depressa</i> .
1487	<i>Cornuspira involvens</i> .
1542	<i>Spirophthalmidium acutimargo</i> .
1585	<i>Trochammina ochracea</i> .
1647	<i>Trochammina plicata</i> .
1680	<i>Trochammina inflata</i> .
1713	<i>Trochammina inflata</i> var. <i>macrescens</i> .
1744	<i>Trochammina inflata</i> var.
1785	<i>Trochammina rotaliformis</i> .
1786	<i>Trochammina squamata</i> .
1919	<i>Trochammina</i> sp. (?).
1968	<i>Lenticulina rotulata</i> .
2113	
2151	
2384	
2532	
2657	
2713	
2986	
3215	
3333	
3467	
3627	
3743	
3776	
3878	
3930	

SPECIES.







Stations.	SPECIES.	
12	.	<i>Discorbis orbicularis</i> .
57	.	<i>Discorbis orbicularis</i> var. <i>selseyensis</i> .
101	.	<i>Discorbis mediterranensis</i> .
178	.	<i>Discorbis bertheloti</i> .
179	.	<i>Discorbis parisiensis</i> .
180	X	<i>Discorbis planorbis</i>
181	X	<i>Discorbis chasteri</i> var. <i>bispinosa</i> .
183	.	<i>Discorbis (?) rosacea</i> .
189	.	<i>Discorbis peruviana</i> .
300	X	<i>Discorbis baccata</i> .
347	X	<i>Discorbis clara</i> n. sp.
374	.	<i>Lamarckina haliotideae</i> .
405	.	<i>Eponides frigida</i> var. <i>calida</i> .
571	.	<i>Eponides (?) tuberculata</i> .
588	X	<i>Eponides concentrica</i> .
700	X	<i>Eponides (?) prageri</i> .
824	.	<i>Eponides repanda</i> .
865	.	<i>Gyroidina (?) sp. (?)</i> .
1280	X	<i>Rotalia beccarii</i> .
1297	X	<i>Rotalia (?) perlucida</i> .
1466	X	<i>Siphonina reticulata</i> .
1487	X	<i>Pulvinulinella sp. (?)</i> .
1542	X	<i>Cassidulina laevigata</i> .
1585	X	<i>Cassidulina crassa</i> .
1647	X	<i>Cassidulina subglobosa</i> .
1680	X	<i>Cassidulina nitidula</i> .
1713	X	<i>Allomorphina sp. (?)</i> .
1744	X	<i>Cibicides lobatulus</i> .
1785	X	<i>Cibicides refulgens</i> .
1786	X	<i>Cibicides ungerianus</i> .
1919	X	<i>Planorbulina mediterranensis</i> .
1968	X	<i>Gypsina vesicularis</i> .
2113	X	
2151	X	
2384	.	
2532	.	
2657	.	
2713	X	
2986	.	
3215	.	
3333	X	
3467	X	
3627	X	
3743	X	
3776	.	
3878	.	
3930	.	

## ALPHABETICAL INDEX

### OF THE NAMES OF FAMILIES, GENERA, SPECIES AND VARIETIES (\*).

	Pages.		Pages.
<i>aculeata</i> (Bulimina) ... ..	31	<i>calida</i> (var. of <i>Eponides frigida</i> ) ... ..	46
<i>aculeata</i> (var. of <i>Polystomella macella</i> ) ...	27	<i>carinata</i> (var. of <i>Spirillina obconica</i> ) . ...	40
<i>aculeatum</i> (var. of <i>Elphidium macellum</i> ).	27	<i>carinata</i> (var. of <i>Spirillina vivipara</i> ) . ...	40
<i>acutimargo</i> ( <i>Spiroloculina</i> ) ... ..	16	Cassidulinidæ ... ..	49
<i>acutimargo</i> ( <i>Spirophthalmidium</i> ) . ... ..	16	<i>catenulata</i> (var. of <i>Entosolenia squamosa</i> ).	21
<i>albatrossi</i> (Bolivina) ... ..	34	<i>concentrica</i> ( <i>Eponides</i> ) . ... ..	46
Allomorphina ... ..	50	Cassidulina . ... ..	49
Ammomassilina . ... ..	13	Chilostomellidæ . ... ..	50
<i>amygdaloides</i> ( <i>Polymorphina</i> ) . ... ..	24	Cibicides ... ..	51
<i>angulata</i> (var. of <i>Quinqueloculina bicor-</i>		<i>circularis</i> ( <i>Triloculina</i> ) . ... ..	15
<i>nis</i> ) . ... ..	11	<i>clara</i> ( <i>Discorbis</i> ) ... ..	45
Angulogerina ... ..	35	<i>clavata</i> ( <i>Lagena</i> ) ... ..	22
<i>angulosa</i> (Angulogerina) ... ..	35	<i>clavata</i> ( <i>Oolina</i> ) ... ..	22
<i>angulosa</i> ( <i>Uvigerina</i> ) ... ..	35	<i>cliarensis</i> ( <i>Miliolina</i> ) ... ..	9
<i>annectens</i> ( <i>Entosolenia</i> ) ... ..	36	<i>cliarensis</i> ( <i>Quinqueloculina</i> ) ... ..	9
<i>annectens</i> ( <i>Lagena</i> ) ... ..	36	<i>compacta</i> (Bolivina) ... ..	34
<i>annectens</i> ( <i>Massilina</i> ) ... ..	12	<i>compacta</i> (var. of <i>Bolivina robusta</i> ) ... ..	34
Anomalinidæ ... ..	51	<i>concava</i> ( <i>Sigmomorphina</i> ) . ... ..	24
<i>asperula</i> (Ammomassilina) . ... ..	13	Cornuspira ... ..	16
<i>atlantica</i> (var. of <i>Bolivina tortuosa</i> ) ... ..	33	<i>corrugata</i> ( <i>Patellina</i> ) ... ..	41
<i>atlantica</i> ( <i>Gaudryina</i> ) ... ..	7	<i>crassa</i> ( <i>Cassidulina</i> ) ... ..	49
<i>atlantica</i> ( <i>Pseudogaudryina</i> ) ... ..	7	<i>decepiens</i> ( <i>Polystomella</i> ) ... ..	28
<i>atlantica</i> ( <i>Textularia</i> ) ... ..	7	<i>depressa</i> ( <i>Biloculina</i> ) ... ..	15
<i>baccata</i> ( <i>Discorbina</i> ) ... ..	45	<i>depressa</i> ( <i>Pyrgo</i> ) ... ..	15
<i>baccata</i> ( <i>Discorbis</i> ) . ... ..	45	<i>depressula</i> ( <i>Nonionina</i> ) ... ..	26
<i>beccarii</i> ( <i>Rotalia</i> ) ... ..	47	<i>depressulum</i> ( <i>Nonion</i> ) . ... ..	26
<i>bertheloti</i> ( <i>Discorbis</i> ) ... ..	43	<i>depressulus</i> ( <i>Nautilus</i> ) . ... ..	26
<i>bertheloti</i> ( <i>Rosalina</i> ) ... ..	43	<i>difformis</i> (Bolivina) ... ..	34
<i>bicornis</i> ( <i>Quinqueloculina</i> ) . ... ..	10	<i>dilatata</i> (Bolivina) . ... ..	33
<i>bicornis</i> ( <i>Quinqueloculina</i> ) . ... ..	10	<i>disciforme</i> ( <i>Vermiculum</i> ) ... ..	12
<i>bicornis</i> ( <i>Serpula</i> ) ... ..	10	<i>disciformis</i> (var. of <i>Miliolina seminulum</i> ).	12
<i>bicornis</i> ( <i>Miliolina</i> ) . ... ..	10	Discorbis ... ..	41
<i>bispinosa</i> (var. of <i>Discorbina chasteri</i> ) ...	44	<i>dunkerquiana</i> ( <i>Miliolina</i> ) ... ..	9
<i>bispinosa</i> (var. of <i>Discorbis chasteri</i> ) . ...	44	<i>dunkerquiana</i> ( <i>Quinqueloculina</i> ) ... ..	9
Bolivina . ... ..	31	Eggerella ... ..	7
<i>brongniartii</i> ( <i>Quinqueloculina</i> ) ... ..	11	<i>elegantissima</i> ( <i>Bulimina</i> ) ... ..	30
<i>brooklynense</i> ( <i>Elphidium</i> ) . ... ..	28	<i>elegantissima</i> ( <i>Buliminella</i> ) ... ..	30
Bulimina ... ..	30	<i>elliptica</i> ( <i>Entosolenia</i> ) . ... ..	36
Buliminella . ... ..	29	<i>elliptica</i> ( <i>Fissurina</i> ) ... ..	36
Buliminidæ . ... ..	29		

(\*) Synonyms are printed in italic as the names of varieties.

	Pages.		Pages.
<i>elongata</i> (Bulimina) ... ..	31	<i>lobatulus</i> (Cibicides) ... ..	51
<i>Elphidium</i> ... ..	27	<i>lucida</i> (Entosolenia) ... ..	35
<i>Entosolenia</i> . ... ..	35	<i>lucida</i> (var. of <i>Entosolenia marginata</i> ) ...	35
<i>Eponides</i> ... ..	46	<i>lucida</i> (Spirillina) ... ..	39
<i>excavata</i> ( <i>Polystomella</i> ) ... ..	28	<i>macellum</i> ( <i>Elphidium</i> ) . ... ..	27
<i>excavatum</i> ( <i>Elphidium</i> ) ... ..	28	<i>macellus</i> ( <i>Nautilus</i> ) . ... ..	27
<i>faba</i> ( <i>Nautilus</i> ) . ... ..	25	<i>macrescens</i> (var. of <i>Trochammina inflata</i> ). 19	
<i>fimbriata</i> ( <i>Siphonina</i> ) ... ..	48	<i>marginata</i> (Bulimina) ... ..	30
<i>florentinæ</i> ( <i>Elphidium</i> ) . ... ..	28	<i>marginata</i> (Entosolenia) ... ..	37
<i>Gaudryina</i> ... ..	7	<i>Massilina</i> ... ..	11
<i>gibba</i> ( <i>Globulina</i> ) ... ..	23	<i>mediterraneensis</i> ( <i>Discorbina</i> ) ... ..	43
<i>Glandulina</i> ... ..	25	<i>mediterraneensis</i> ( <i>Discorbis</i> ) ... ..	43
<i>Globigerinidæ</i> ... ..	50	<i>mediterraneensis</i> ( <i>Planorbulina</i> ) ... ..	52
<i>globosa</i> ( <i>Entosolenia</i> ) ... ..	38	<i>mediterraneensis</i> ( <i>Rosalina</i> ) ... ..	43
<i>Globulina</i> ... ..	23	<i>melo</i> ( <i>Lagena</i> ) ... ..	21
<i>globularis</i> ( <i>Discorbina</i> ) . ... ..	42	<i>melo</i> ( <i>Oolina</i> ) ... ..	21
<i>globularis</i> ( <i>Discorbis</i> ) ... ..	42	<i>Miliolidæ</i> ... ..	8
<i>globularis</i> ( <i>Rosalina</i> ) ... ..	42	<i>Millettella</i> ... ..	6
<i>Guttulina</i> ... ..	23	<i>millettii</i> ( <i>Discorbina</i> ) ... ..	42
<i>Gypsina</i> . ... ..	52	<i>millettii</i> ( <i>Discorbis</i> ) ... ..	42
<i>Gyroidina</i> ... ..	47	<i>minutissima</i> ( <i>Bulimina</i> ) ... ..	29
<i>haliotidea</i> ( <i>Lamarckina</i> ) ... ..	45	<i>minutissima</i> ( <i>Buliminella</i> ) . ... ..	29
<i>haliotidea</i> ( <i>Pulvinulina</i> ) ... ..	45	<i>myristiformis</i> (var. of <i>Globulina gibba</i> ) ...	24
<i>hexagona</i> ( <i>Lagena</i> ) . ... ..	22	<i>nitida</i> ( <i>Discorbis</i> ) ... ..	41
<i>inæquilateralis</i> ( <i>Entosolenia</i> ) ... ..	37	<i>nitida</i> ( <i>Rotalia</i> ) . ... ..	41
<i>inæquilateralis</i> (var. of <i>Lagena marginata</i> ). 37		<i>nitida</i> ( <i>Rotalina</i> ) ... ..	41
<i>incerta</i> (var. of <i>Polystomella striato-punctata</i> ) . ... ..	28	<i>nitidula</i> ( <i>Cassidulina</i> ) ... ..	50
<i>incerta</i> (var. of <i>Polystomella umbilicata</i> ). 28		<i>nitidula</i> ( <i>Pulvinulina</i> ) ... ..	50
<i>incertum</i> ( <i>Elphidium</i> ) ... ..	28	<i>Nonion</i> ... ..	25
<i>inflata</i> ( <i>Rotalina</i> ) ... ..	18	<i>Nonionidæ</i> ... ..	25
<i>inflata</i> ( <i>Trochammina</i> ) . ... ..	18	<i>obconica</i> ( <i>Spirillina</i> ) ... ..	40
<i>inflatus</i> ( <i>Nautilus</i> ) ... ..	18	<i>oblonga</i> ( <i>Miliolina</i> ) . ... ..	14
<i>inhærens</i> ( <i>Acervulina</i> ) . ... ..	52	<i>oblonga</i> (var. of <i>Miliolina seminulum</i> ) ...	15
<i>involvens</i> ( <i>Cornuspira</i> ) . ... ..	16	<i>oblonga</i> ( <i>Triloculina</i> ) ... ..	14
<i>involvens</i> ( <i>Operculina</i> ) . ... ..	16	<i>oblongum</i> ( <i>Vermiculum</i> ) ... ..	14
<i>karsteni</i> ( <i>Pulvinulina</i> ) . ... ..	46	<i>obtusa</i> ( <i>Cassidulina</i> ) ... ..	49
<i>lactea</i> ( <i>Polymorphina</i> ) . ... ..	24	<i>ochracea</i> ( <i>Rotalina</i> ) ... ..	17
<i>læve</i> ( <i>Vermiculum</i> ) . ... ..	22	<i>ochracea</i> ( <i>Trochammina</i> ) ... ..	17
<i>lævigata</i> ( <i>Bolivina</i> ) . ... ..	34	<i>Ophthalmidiidæ</i> ... ..	16
<i>lævigata</i> ( <i>Cassidulina</i> ) . ... ..	49	<i>orbicularis</i> ( <i>Discorbis</i> ) . ... ..	42
<i>lævis</i> ( <i>Lagena</i> ) . ... ..	22	<i>orbicularis</i> ( <i>Rosalina</i> ) . ... ..	42
<i>Lagena</i> ... ..	21	<i>ornata</i> ( <i>Entosolenia</i> ) ... ..	36
<i>Lagenidæ</i> ... ..	21	<i>ornata</i> (var. of <i>Entosolenia marginata</i> ) ...	36
<i>lagenoides</i> ( <i>Entosolenia</i> ) ... ..	38	<i>ornata</i> ( <i>Lagena</i> ) ... ..	36
<i>lagenoides</i> (var. of <i>Entosolenia marginata</i> ). 38		<i>ovalis</i> ( <i>Pseudopolymorphina</i> ) . ... ..	25
<i>lagenoides</i> ( <i>Lagena</i> ) . ... ..	38	<i>ovata</i> ( <i>Polymorphina</i> ) . ... ..	25
<i>Lamarckina</i> . ... ..	45	<i>parisiensis</i> ( <i>Discorbis</i> ) . ... ..	44
<i>lata</i> (var. of <i>Miliolina oblonga</i> ) ... ..	10	<i>Patellina</i> ... ..	41
<i>lata</i> ( <i>Quinqueloculina</i> ) . ... ..	10	<i>pauperata</i> ( <i>Nonionina</i> ) . ... ..	26
<i>lateseptata</i> ( <i>Spirillina</i> ) . ... ..	40	<i>pauperatum</i> ( <i>Nonion</i> ) ... ..	26
<i>Lenticulina</i> . ... ..	21	<i>perforata</i> ( <i>Cornuspira</i> ) . ... ..	40
<i>lidcense</i> ( <i>Elphidium</i> ) ... ..	29	<i>perforata</i> ( <i>Spirillina</i> ) ... ..	40
<i>lineata</i> ( <i>Entosolenia</i> ) ... ..	35	<i>perlucida</i> ( <i>Lagena</i> ) . ... ..	22
		<i>pertucida</i> ( <i>Lagena</i> ) . ... ..	37
		<i>pertucida</i> (var. of <i>Lagena vulgaris</i> ) ... ..	37

	Pages.		Pages.
perlucida (Rotalia) . . . . .	47	<i>selseyensis</i> (var. of <i>Lagena orbignyana</i> ).	38
<i>perlucidum</i> ( <i>Vermiculum</i> ) . . . . .	37	seminula (Quinqueloculina) . . . . .	8
peruviana (Discorbis) . . . . .	44	<i>seminulum</i> ( <i>Miliolina</i> ) . . . . .	8
planorbis (Discorbis) . . . . .	44	<i>seminulum</i> ( <i>Serpula</i> ) . . . . .	8
Planorbulina . . . . .	52	<i>Sigmomorphina</i> . . . . .	24
Planorbulinidæ . . . . .	52	Siphonina . . . . .	48
Planularia . . . . .	21	spathulata (Bolivina) . . . . .	33
planulata (Spiroloculina) . . . . .	13	<i>spathulata</i> (var. of <i>Textularia variabilis</i> ).	33
<i>plicata</i> ( <i>Bolivina</i> ) . . . . .	31	Spirillina . . . . .	38
<i>plicata</i> ( <i>Patellina</i> ) . . . . .	17	Spiroloculina . . . . .	13
<i>plicata</i> ( <i>Trochammina</i> ) . . . . .	17	Spirophthalmidium . . . . .	16
Polymorphinidæ . . . . .	23	Spiroplectammina . . . . .	6
<i>polystropha</i> ( <i>Verneuilina</i> ) . . . . .	7	squamata ( <i>Trochammina</i> ) . . . . .	20
prageri (Eponides) . . . . .	47	squamosa ( <i>Lagena</i> ) . . . . .	21
problema ( <i>Guttulina</i> ) . . . . .	23	<i>squamosum</i> ( <i>Vermiculum</i> ) . . . . .	21
Pseudogaudryina . . . . .	7	<i>stelligera</i> ( <i>Miliolina</i> ) . . . . .	9
pseudoplicata ( <i>Bolivina</i> ) . . . . .	31	striata ( <i>Entosolenia</i> ) . . . . .	37
Pseudopolymorphina . . . . .	25	<i>subangularis</i> ( <i>Bolivina</i> ) . . . . .	32
pulchella ( <i>Entosolenia</i> ) . . . . .	37	subglobosa ( <i>Cassidulina</i> ) . . . . .	49
<i>pulchella</i> (var. of <i>Lagena orbignyana</i> ) . . . . .	37	<i>subrotunda</i> ( <i>Miliolina</i> ) . . . . .	9
Pulvinulinella . . . . .	48	subrontunda ( <i>Quinqueloculina</i> ) . . . . .	9
Pyrgo . . . . .	15	<i>subrotundum</i> ( <i>Vermiculum</i> ) . . . . .	9
quadrata ( <i>Entosolenia</i> ) . . . . .	36	sulcata ( <i>Lagena</i> ) . . . . .	23
<i>quadrata</i> (var. of <i>Entosolenia marginata</i> ).	36	<i>textilarioides</i> ( <i>Bolivina</i> ) . . . . .	34
Quinqueloculina . . . . .	8	Textulariidæ . . . . .	6
refulgens ( <i>Cibicides</i> ) . . . . .	51	<i>tricarinata</i> ( <i>Miliolina</i> ) . . . . .	13, 14
repanda (Eponides) . . . . .	46	<i>tricarinata</i> ( <i>Triloculina</i> ) . . . . .	13
<i>reticulata</i> ( <i>Rotalia</i> ) . . . . .	48	<i>trigonula</i> ( <i>Quinqueloculina</i> ) . . . . .	9
<i>reticulata</i> ( <i>Siphonina</i> ) . . . . .	48	<i>trigonula</i> ( <i>Triloculina</i> ) . . . . .	14
<i>rosacea</i> ( <i>Discorbina</i> ) . . . . .	44	Triloculina . . . . .	13
<i>rosacea</i> ( <i>Discorbis</i> ) . . . . .	44	triquetra ( <i>Verneuilina</i> ) . . . . .	7
Rotalia . . . . .	47	Trochammina . . . . .	17
rotaliformis ( <i>Trochammina</i> ) . . . . .	20	Trochamminidæ . . . . .	17
Rotaliidæ . . . . .	38	tortuosa ( <i>Bolivina</i> ) . . . . .	33
rotulata ( <i>Lenticulina</i> ) . . . . .	21	<i>tuberculata</i> ( <i>Discorbina</i> ) . . . . .	47
<i>rugosa</i> ( <i>Gaudryina</i> ) . . . . .	7	<i>tuberculata</i> ( <i>Eponides</i> ) . . . . .	47
<i>runiana</i> (var. of <i>Spirillina vivipara</i> ) . . . . .	39	<i>umbilicatum</i> ( <i>Polystomella</i> ) . . . . .	28
Saccamminidæ . . . . .	6	<i>undulosa</i> ( <i>Polymorphina</i> ) . . . . .	24
<i>sagittula</i> ( <i>Spiroplecta</i> ) . . . . .	6	<i>undulosa</i> ( <i>Sigmomorphina</i> ) . . . . .	24
<i>scabra</i> ( <i>Bulimina</i> ) . . . . .	7	ungerianus ( <i>Cibicides</i> ) . . . . .	51
<i>scabra</i> ( <i>Eggerella</i> ) . . . . .	7	Valvulinidæ . . . . .	7
<i>scabra</i> ( <i>Textularia</i> ) . . . . .	7	<i>variabilis</i> ( <i>Bolivina</i> ) . . . . .	32
<i>scabra</i> ( <i>Verneuilina</i> ) . . . . .	8	<i>variabilis</i> ( <i>Textularia</i> ) . . . . .	32
<i>scapha</i> ( <i>Nautilus</i> ) . . . . .	25	Verneuilinidæ . . . . .	7
<i>scapha</i> ( <i>Nonionina</i> ) . . . . .	25	vesicularis ( <i>Gypsina</i> ) . . . . .	52
scaphum ( <i>Nonion</i> ) . . . . .	25	Virgulina . . . . .	31
schreibersiana ( <i>Virgulina</i> ) . . . . .	31	<i>vivipara</i> ( <i>Spirillina</i> ) . . . . .	38
secans ( <i>Massilina</i> ) . . . . .	11	<i>williamsoni</i> ( <i>Entosolenia</i> ) . . . . .	22
<i>secans</i> ( <i>Miliolina</i> ) . . . . .	12	<i>williamsoni</i> ( <i>Lagena</i> ) . . . . .	22
<i>secans</i> ( <i>Quinqueloculina</i> ) . . . . .	11	<i>williamsoni</i> ( <i>Sigmomorphina</i> ) . . . . .	24
<i>selseyensis</i> (var. of <i>Discorbina rosacea</i> ) . . . . .	43	wrightii ( <i>Spirillina</i> ) . . . . .	39
<i>selseyensis</i> (var. of <i>Discorbis orbicularis</i> ).	43	wrightii ( <i>Spiroplecta</i> ) . . . . .	6
<i>selseyensis</i> (var. of <i>Entosolenia orbignyana</i> ) . . . . .	38	wrightii ( <i>Spiroplectammina</i> ) . . . . .	6

## EXPLANATION OF PLATE I.

---

FIG. 1. — *Millettella* sp. (?). × 190. *a*, front view; *b*, side view.

FIG. 2-4. — *Spiroplectammina wrightii* A. SILVESTRI. Fig. 2, × 70. Fig. 3, × 145. *a*, front view; *b*, apertural view. Fig. 4, × 50. *a*, front view; *b*, apertural view.

FIG. 5. — *Gaudryina* (*Pseudogaudryina*) *atlantica* (BAILEY). × 40. *a*, front view; *b*, apertural view.

FIG. 6. — *Eggerella scabra* (WILLIAMSON). × 57. *a*, front view; *b*, apertural view.

FIG. 7. — *Quinqueloculina seminula* (LINNAEUS). × 80. *a*, *b*, opposite sides; *c*, apertural view.

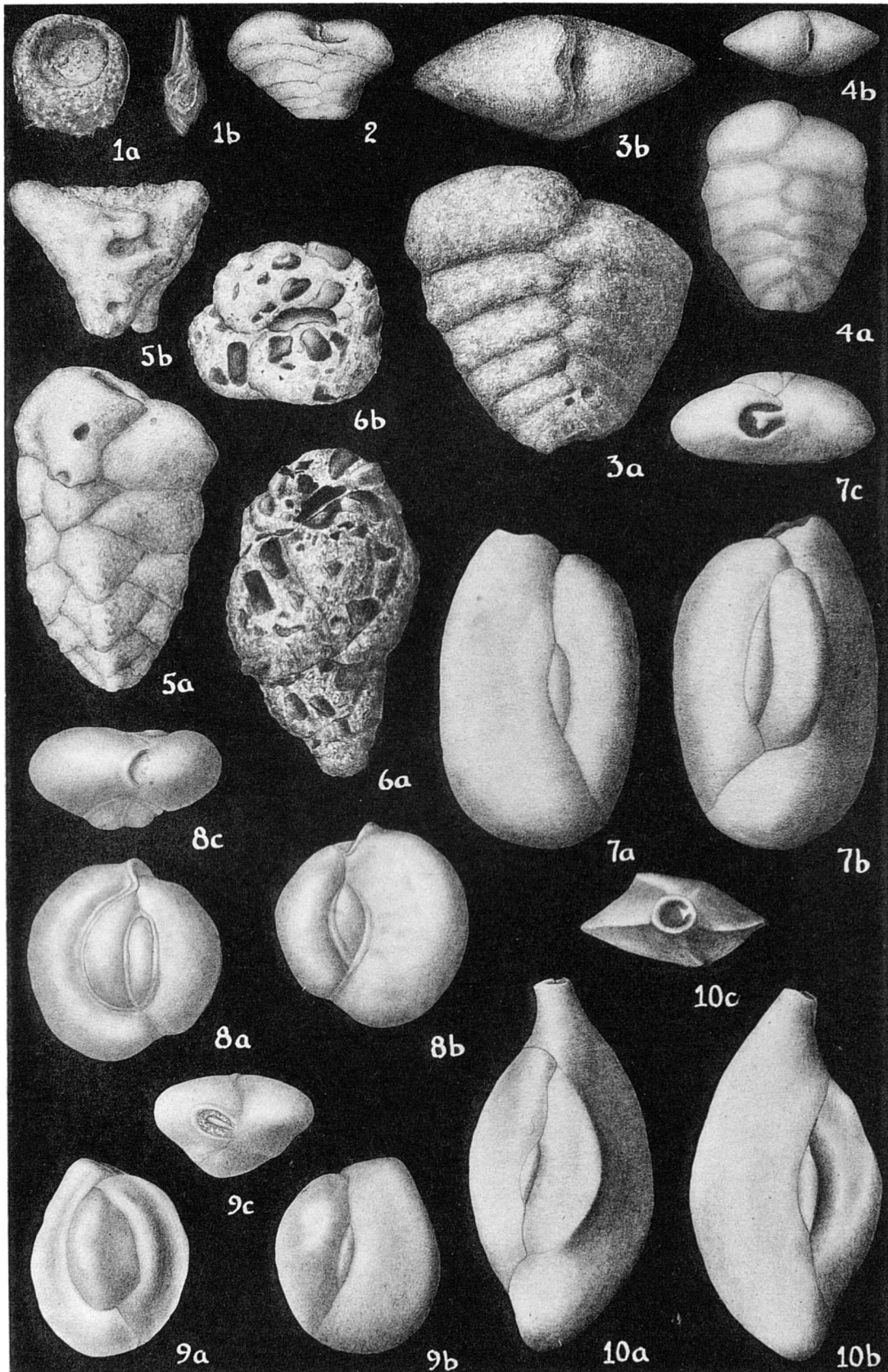
FIG. 8. — *Quinqueloculina subrotunda* (MONTAGU). × 70. *a*, *b*, opposite sides; *c*, apertural view.

FIG. 9. — *Quinqueloculina dunkerquiana* (HERON-ALLEN and EARLAND). × 80. *a*, *b*, opposite sides; *c*, apertural view.

FIG. 10. — *Quinqueloculina cliarensis* (HERON-ALLEN and EARLAND). × 80. *a*, *b*, opposite sides; *c*, apertural view.

---





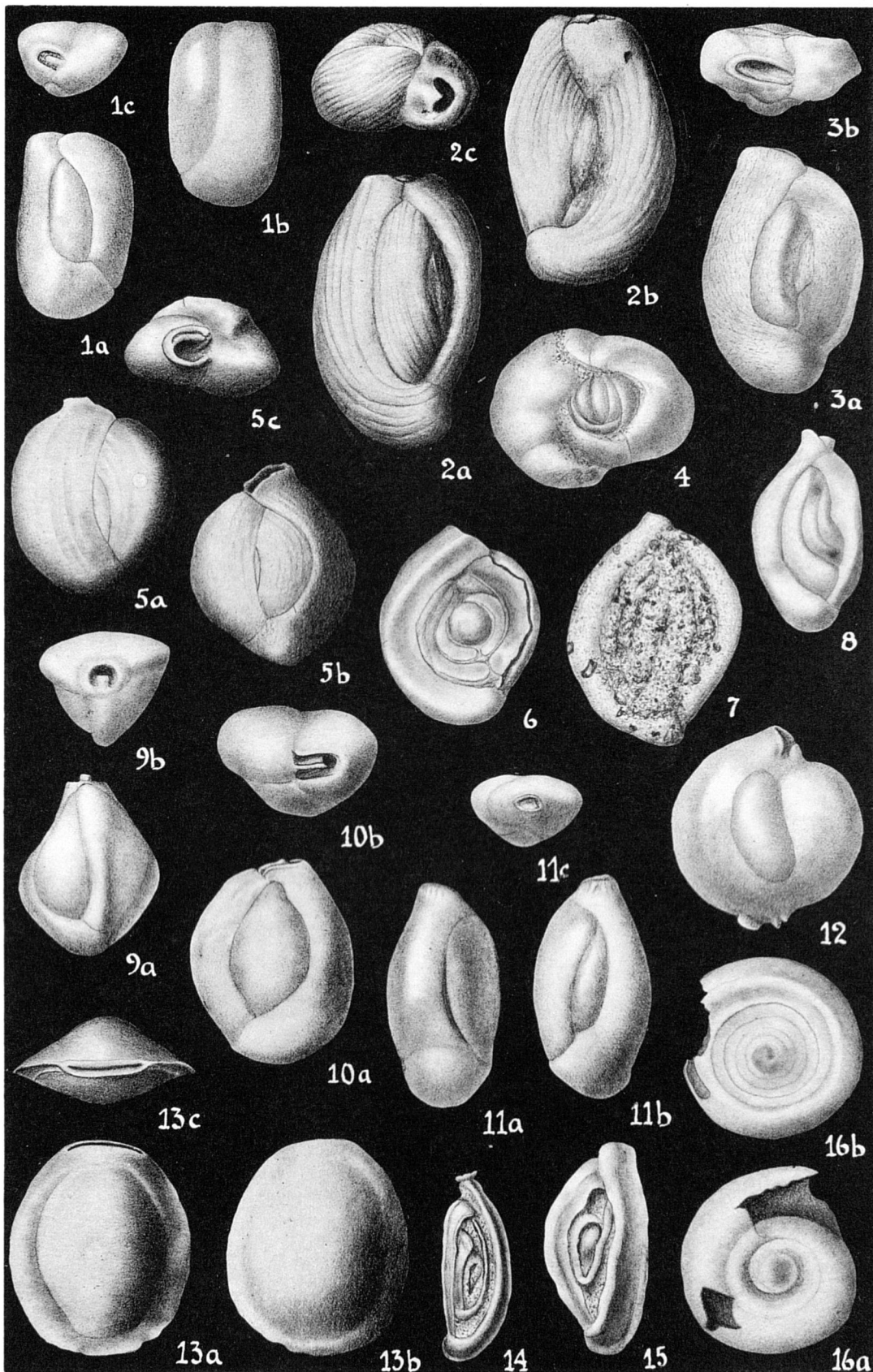
J. A. CUSHMAN. — Recent Belgian Foraminifera.

## EXPLANATION OF PLATE II.

---

- FIG. 1. — *Quinqueloculina lata* TERQUEM. × 80. *a, b*, opposite sides; *c*, apertural view.
- FIG. 2. — *Quinqueloculina bicornis* (WALKER and JACOB). × 80. *a, b*, opposite sides; *c*, apertural view.
- FIG. 3. — *Quinqueloculina bicornis* (WALKER and JACOB), var. *angulata* (WILLIAMSON). × 60. *a*, front view; *b*, apertural view.
- FIG. 4. — *Massilina secans* (D'ORBIGNY). × 70.
- FIG. 5. — *Quinqueloculina* cf. *brongnartii* D'ORBIGNY. × 80. *a, b*, opposite sides; *c*, apertural view.
- FIG. 6. — *Spiroloculina planulata* (LAMARCK). × 70.
- FIG. 7. — *Ammomassilina* cf. *asperula* (KARRER). × 100.
- FIG. 8. — *Massilina annectens* SCHLUMBERGER. × 125.
- FIG. 9. — *Triloculina tricarinata* D'ORBIGNY. × 70. *a*, front view; *b*, apertural view.
- FIG. 10. — *Triloculina trigonula* (LAMARCK). × 45. *a*, front view; *b*, apertural view.
- FIG. 11. — *Triloculina oblonga* (MONTAGU). × 100. *a, b*, opposite sides; *c*, apertural view.
- FIG. 12. — *Triloculina circularis* BORNEMAN. × 100.
- FIG. 13. — *Pyrpo depressa* (D'ORBIGNY). × 80. *a, b*, opposite sides; *c*, apertural view.
- FIG. 14, 15. — *Spirophthalmidium acutimargo* (H. B. BRADY). Fig. 14. × 73. Fig. 15, × 120.
- FIG. 16. — *Cornuspira involvens* (REUSS). × 140. *a, b*, different specimens.
-





J. A. CUSHMAN — Recent Belgian Foraminifera.

### EXPLANATION OF PLATE III.

---

FIG. 1. — *Trochammina ochracea* (WILLIAMSON). × 170. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.

FIG. 2. — *Trochammina plicata* (TERQUEM). × 170. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.

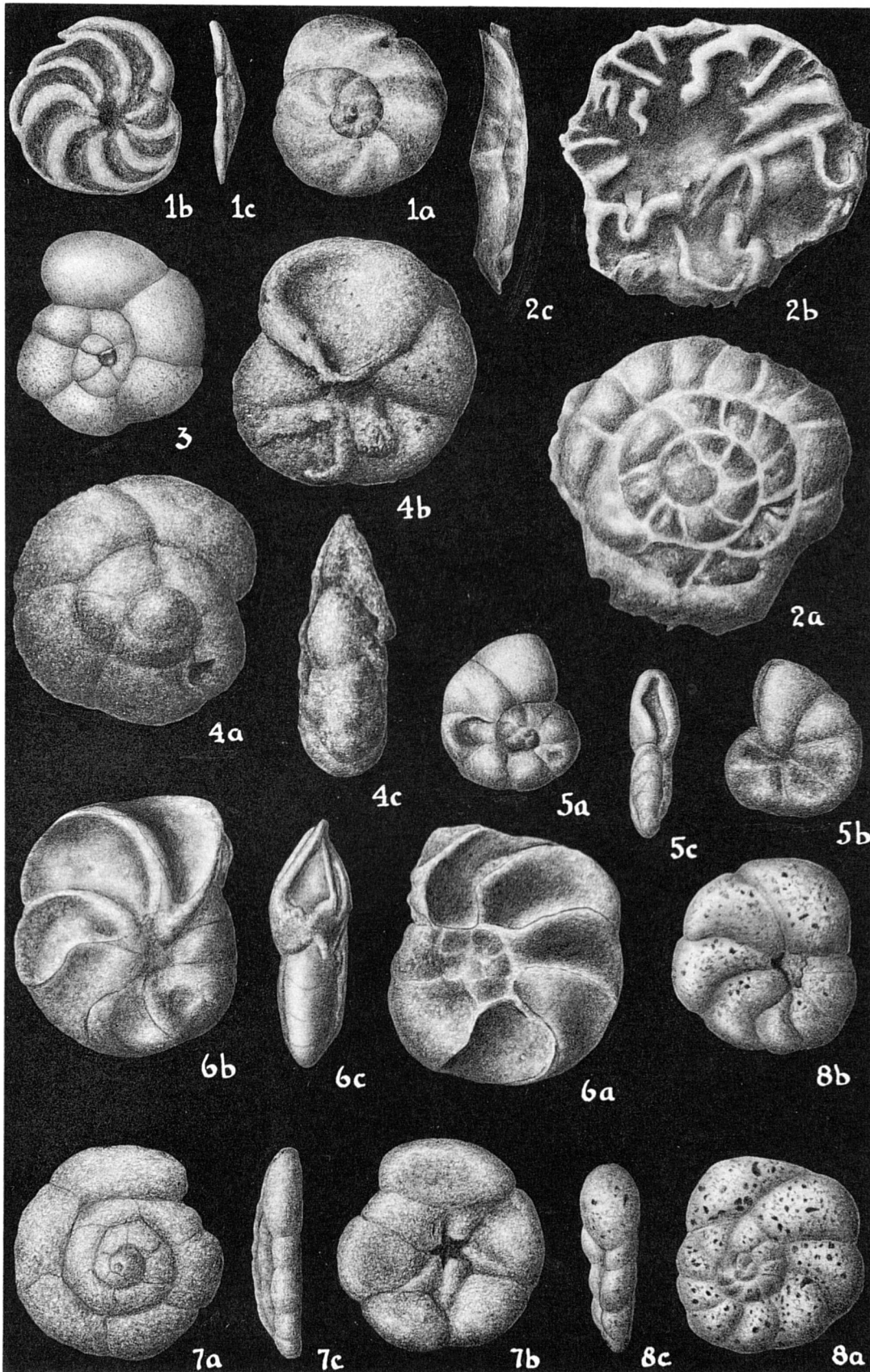
FIG. 3, 4. — *Trochammina inflata* (MONTAGU). Fig. 3. × 130. Fig. 4. × 100. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.

FIG. 5, 6. — *Trochammina inflata* (MONTAGU), var. *macrescens* H. B. BRADY. Fig. 5, Young specimen. × 115. Fig. 6, Adult. × 160. *a*, *a*, dorsal views; *b*, *b*, ventral views; *c*, *c*, apertural views.

FIG. 7. — *Trochammina inflata* (MONTAGU), var. × 165. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.

FIG. 8. — *Trochammina rotaliformis* J. WRIGHT. × 160. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.

---



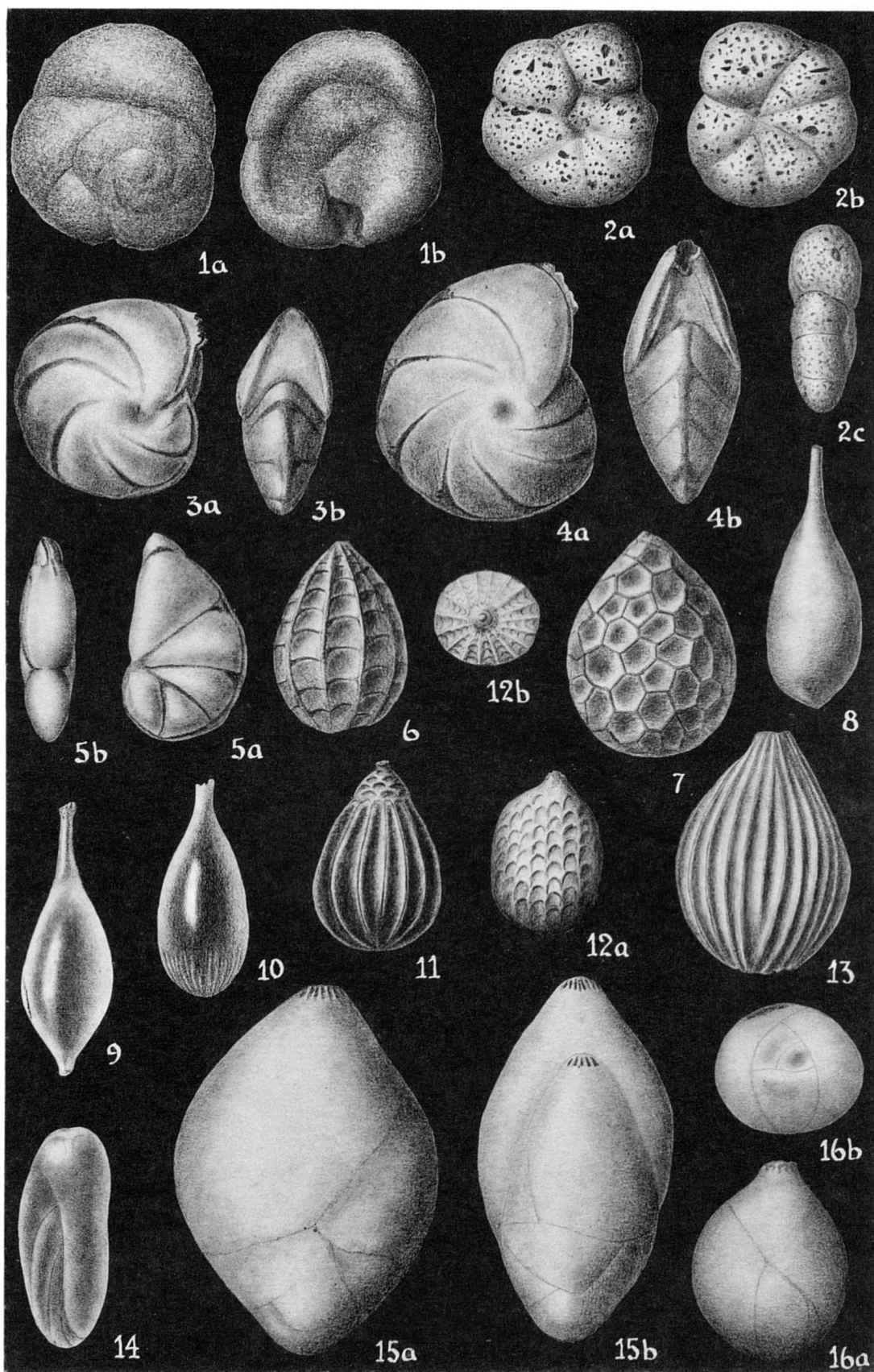
J. A. CUSHMAN. — Recent Belgian Foraminifera.

## EXPLANATION OF PLATE IV.

---

- FIG. 1. — *Trochammina squamata* JONES and PARKER (?). × 170. *a*, dorsal view; *b*, ventral view.
- FIG. 2. — *Trochammina* sp. (?). × 115. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 3, 4. — *Lenticulina rotulata* LAMARCK (?). Fig. 3, × 80. Fig. 4, × 60. *a*, *a*, side views; *b*, *b*, apertural views.
- FIG. 5. — *Planularia* sp. (?). × 105. *a*, side view; *b*, apertural view.
- FIG. 6. — *Lagena melo* (D'ORBIGNY). × 180.
- FIG. 7. — *Lagena hexagona* (WILLIAMSON). × 145.
- FIG. 8. — *Lagena lævis* (MONTAGU). × 107.
- FIG. 9. — *Lagena clavata* (D'ORBIGNY). × 100.
- FIG. 10. — *Lagena perlucida* WILLIAMSON. × 140.
- FIG. 11. — *Lagena williamsoni* (ALCOCK). × 150.
- FIG. 12. — *Lagena squamosa* (MONTAGU). × 100. *a*, front view; *b*, apertural view.
- FIG. 13. — *Lagena sulcata* (WALKER and JACOB). × 115.
- FIG. 14. — *Sigmomorphina williamsoni* (TERQUEM). × 120.
- FIG. 15. — *Pseudopolymorphina ovalis* CUSHMAN and OZAWA. × 50. *a*, front view; *b*, side view.
- FIG. 16. — *Globulina gibba* D'ORBIGNY. × 90. *a*, front view; *b*, basal view.
-



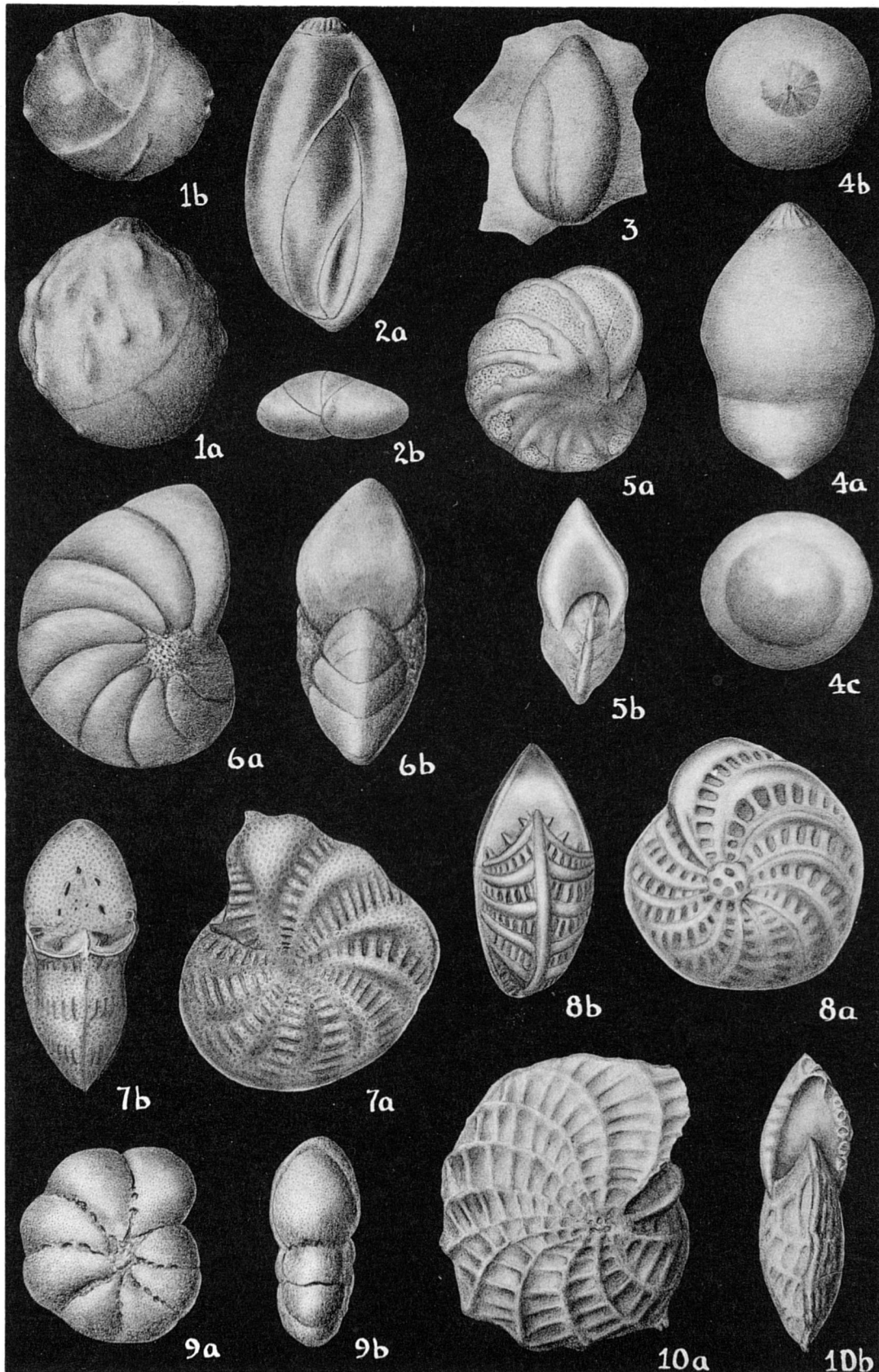


J. A. CUSHMAN. — Recent Belgian Foraminifera.

## EXPLANATION OF PLATE V.

---

- FIG. 1. — *Globulosa gibba* D'ORBIGNY, var. *myristiformis* (WILLIAMSON). × 90. *a*, front view; *b*, basal view.
- FIG. 2. — *Sigmomorphina undulosa* (TERQUEM). × 100. *a*, front view; *b*, basal view.
- FIG. 3. — *Sigmomorphina concava* (WILLIAMSON). × 100.
- FIG. 4. — *Glandulina* (?) sp. (?). × 100. *a*, front view; *b*, apertural view; *c*, basal view.
- FIG. 5. — *Nonion pauperatum* (BALKWILL and WRIGHT). × 100. *a*, side view; *b*, apertural view.
- FIG. 6. — *Nonion scaphum* (FICHTEL and MOLL). × 80. *a*, side view; *b*, apertural view.
- FIG. 7. — *Elphidium macellum* (FICHTEL and MOLL), var. × 100. *a*, side view; *b*, apertural view.
- FIG. 8. — *Elphidium macellum* (FICHTEL and MOLL). × 90. *a*, side view; *b*, apertural view.
- FIG. 9. — *Elphidium incertum* (WILLIAMSON). × 100. *a*, side view; *b*, apertural view.
- FIG. 10. — *Elphidium macellum* (FICHTEL and MOLL), var. *aculeatum* (SILVESTRI). × 80. *a*, side view; *b*, apertural view.
-



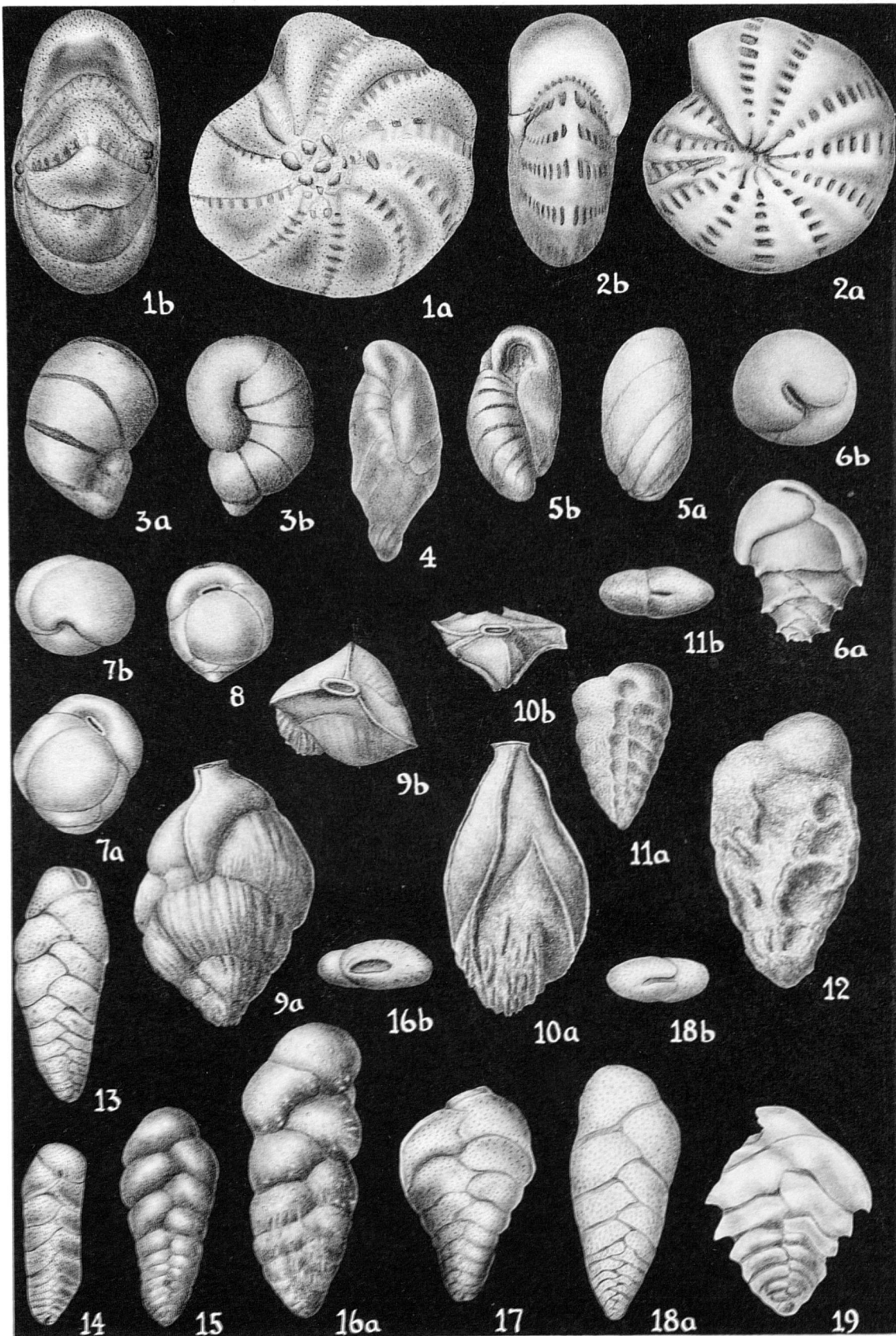
J. A. CUSHMAN. — Recent Belgian Foraminifera.

## EXPLANATION OF PLATE VI.

---

- FIG. 1. — *Elphidium lidoense* CUSHMAN. × 115. *a*, side view; *b*, apertural view.
- FIG. 2. — *Elphidium excavatum* (TERQUEM). × 100. *a*, side view; *b*, apertural view.
- FIG. 3. — *Buliminella minutissima* (J. WRIGHT). × 155. *a*, *b*, opposite sides.
- FIG. 4, 5. — *Buliminella elegantissima* (D'ORBIGNY). Fig. 4, × 100. Fig. 5, × 180. *a*, *b*, opposite sides.
- FIG. 6. — *Bulimina marginata* D'ORBIGNY. × 165. *a*, front view; *b*, apertural view.
- FIG. 7, 8. — *Bulimina elongata* D'ORBIGNY (?). × 115. Young stages. *a*, front view; *b*, apertural view.
- FIG. 9, 10. — *Angulogerina angulosa* (WILLIAMSON). × 170. *a*, *a*, front views; *b*, *b*, apertural views.
- FIG. 11, 12. — *Bolivina pseudoplicata* HERON-ALLEN and EARLAND. Fig. 11, × 100. *a*, front view; *b*, apertural view. Fig. 12, × 150.
- FIG. 13-16. — *Bolivina variabilis* (WILLIAMSON). Fig. 13, Fig. 14, × 80. Fig. 15, Fig. 16, × 180. *a*, front view; *b*, apertural view.
- FIG. 17. — *Bolivina tortuosa* H. B. BRADY, var. *atlantica* CUSHMAN. × 140.
- FIG. 18. — *Bolivina* cf. *compacta* SIDEBOTTOM. × 110. *a*, front view; *b*, apertural view.
- FIG. 19. — *Bolivina difformis* (WILLIAMSON). × 160.
-



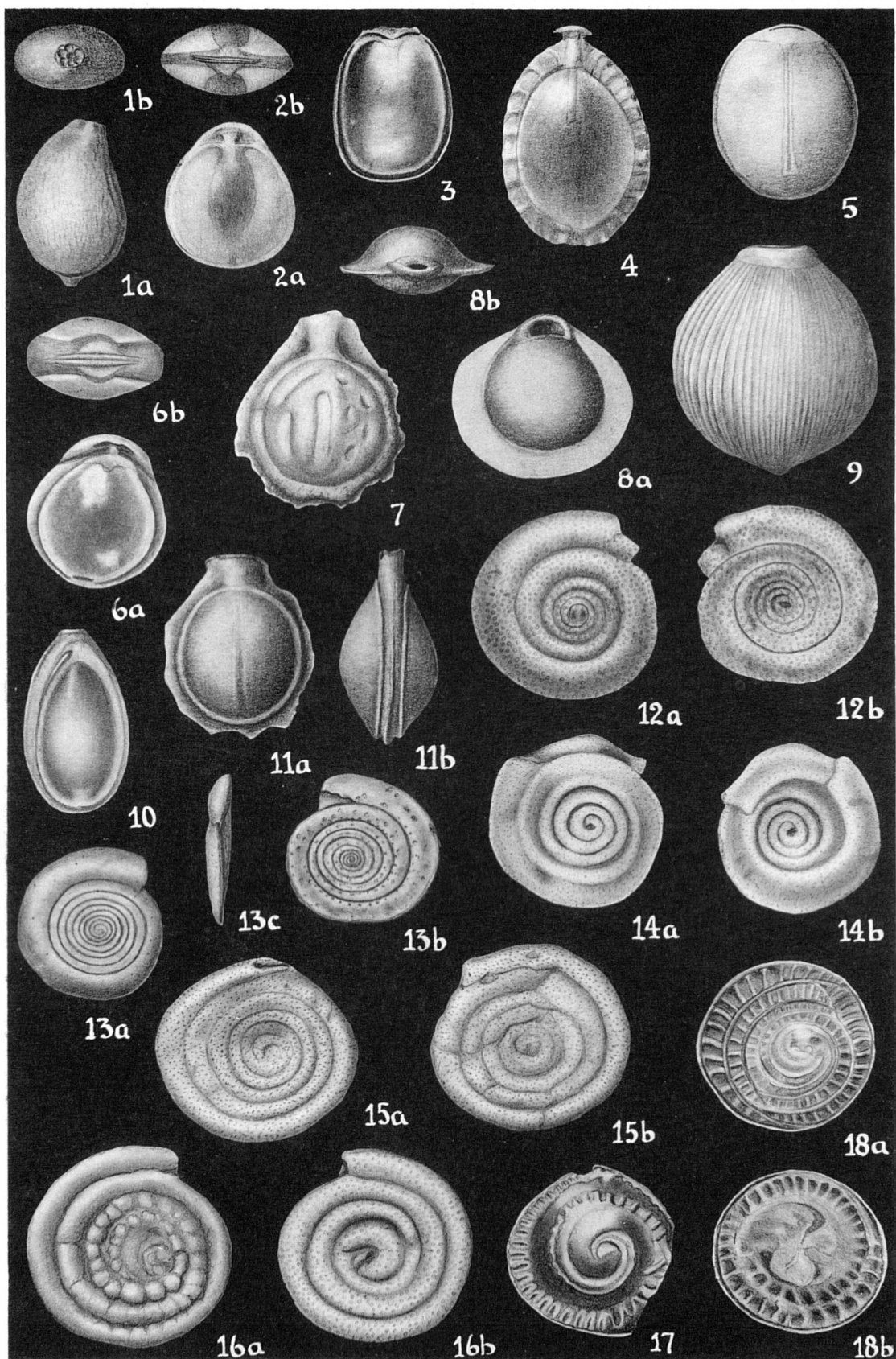


J. A. CUSHMAN. — Recent Belgian Foraminifera.

## EXPLANATION OF PLATE VII.

---

- FIG. 1. — *Entosolenia lineata* WILLIAMSON. × 160. *a*, front view; *b*, apertural view.
- FIG. 2. — *Entosolenia lucida* WILLIAMSON. × 100. *a*, front view; *b*, apertural view.
- FIG. 3. — *Entosolenia quadrata* WILLIAMSON. × 118.
- FIG. 4. — *Entosolenia ornata* WILLIAMSON. × 135.
- FIG. 5. — *Entosolenia elliptica* (SEGUENZA). × 175.
- FIG. 6. — *Entosolenia annectens* (BURROWS and HOLLAND). × 140. *a*, front view; *b*, apertural view.
- FIG. 7. — *Entosolenia pulchella* (H. B. BRADY). × 165.
- FIG. 8. — *Entosolenia inæquilateralis* (J. WRIGHT). × 160. *a*, front view; *b*, apertural view.
- FIG. 9. — *Entosolenia striata* (WALKER and BOYS) (?). × 100.
- FIG. 10. — *Entosolenia orbignyana* (SEGUENZA), var. *selseyensis* (HERON-ALLEN and EARLAND). × 125.
- FIG. 11. — *Entosolenia lagenoides* WILLIAMSON. × 170. *a*, front view; *b*, side view.
- FIG. 12. — *Spirillina vivipara* EHRENBERG. × 125. *a*, *b*, opposite sides.
- FIG. 13. — *Spirillina* cf. *vivipara* EHRENBERG, var. *runiana* HERON-ALLEN and EARLAND. × 100. *a*, *b*, opposite sides; *c*, peripheral view.
- FIG. 14. — *Spirillina lucida* SIDEBOTTOM. × 170. *a*, *b*, opposite sides.
- FIG. 15. — *Spirillina* cf. *obconica* H. B. BRADY. × 100. *a*, *b*, opposite sides.
- FIG. 16. — *Spirillina wrightii* HERON-ALLEN and EARLAND. × 130. *a*, *b*, opposite sides.
- FIG. 17, 18. — *Patellina corrugata* WILLIAMSON. Fig. 17, Young megalospheric form. × 170. Fig. 18, Older specimen. × 140. *a*, dorsal view; *b*, ventral view.
-



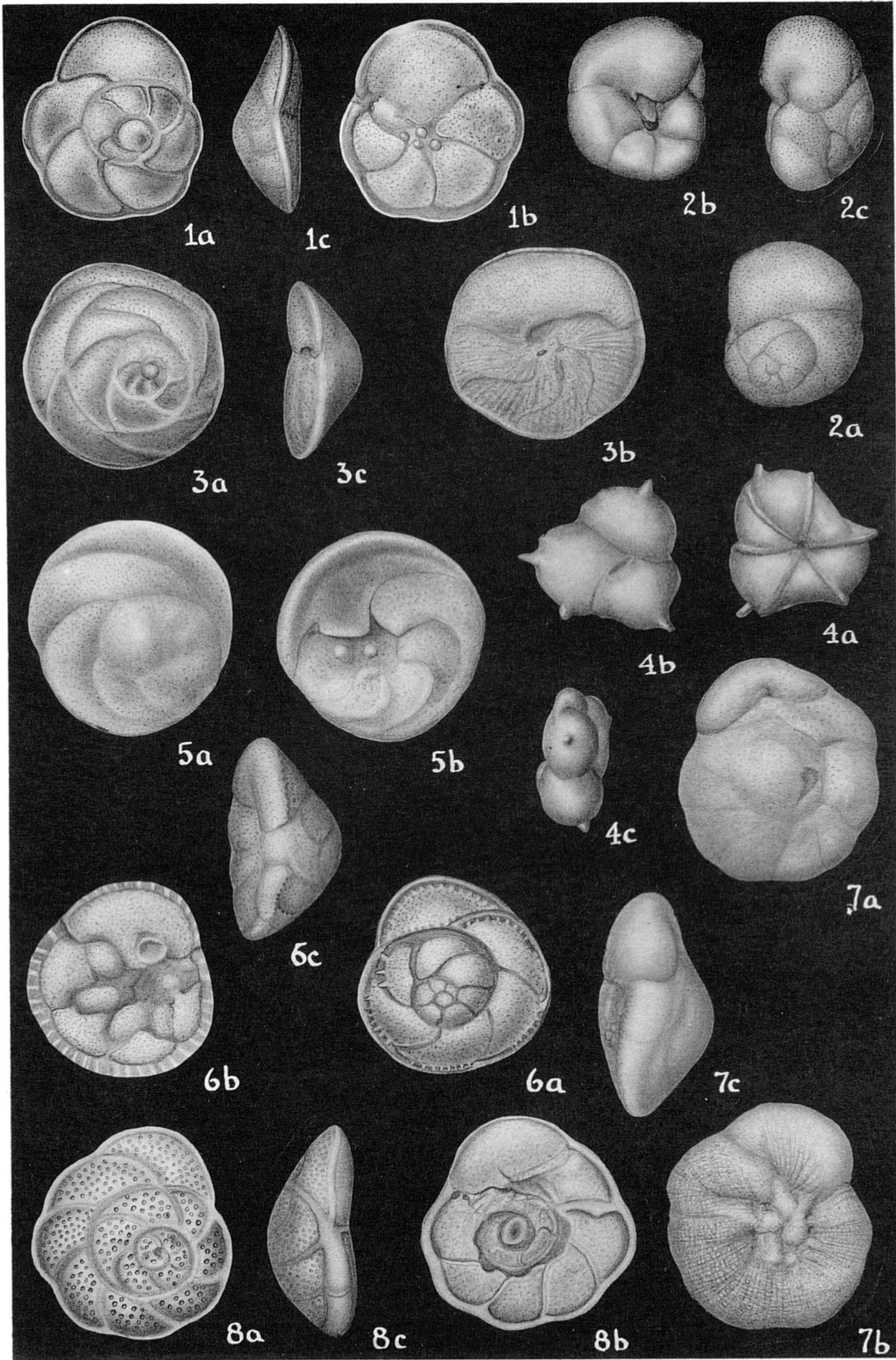
J. A. CUSHMAN. — Recent Belgian Foraminifera.



## EXPLANATION OF PLATE VIII.

---

- FIG. 1. — *Discorbis nitida* (WILLIAMSON) × 80. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 2. — *Discorbis globularis* (D'ORBIGNY). × 100. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 3. — *Discorbis orbicularis* (TERQUEM), var. *selseyensis* (HERON-ALLEN and EARLAND). × 85. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 4. — *Discorbis chasteri* (HERON-ALLEN and EARLAND), var. *bispinosa* (HERON-ALLEN and EARLAND). × 170. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 5. — *Discorbis bertheloti* (D'ORBIGNY). × 170. *a*, dorsal view; *b*, ventral view.
- FIG. 6. — « *Discorbis* (?) *rosacea* (D'ORBIGNY). » × 120. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 7. — *Discorbis baccata* (HERON-ALLEN and EARLAND). × 110. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 8. — *Discorbis clara* CUSHMAN, n. sp. × 120. *a*, dorsal view; *b*, ventral view; *c*, peripheral view. Holotype.
-

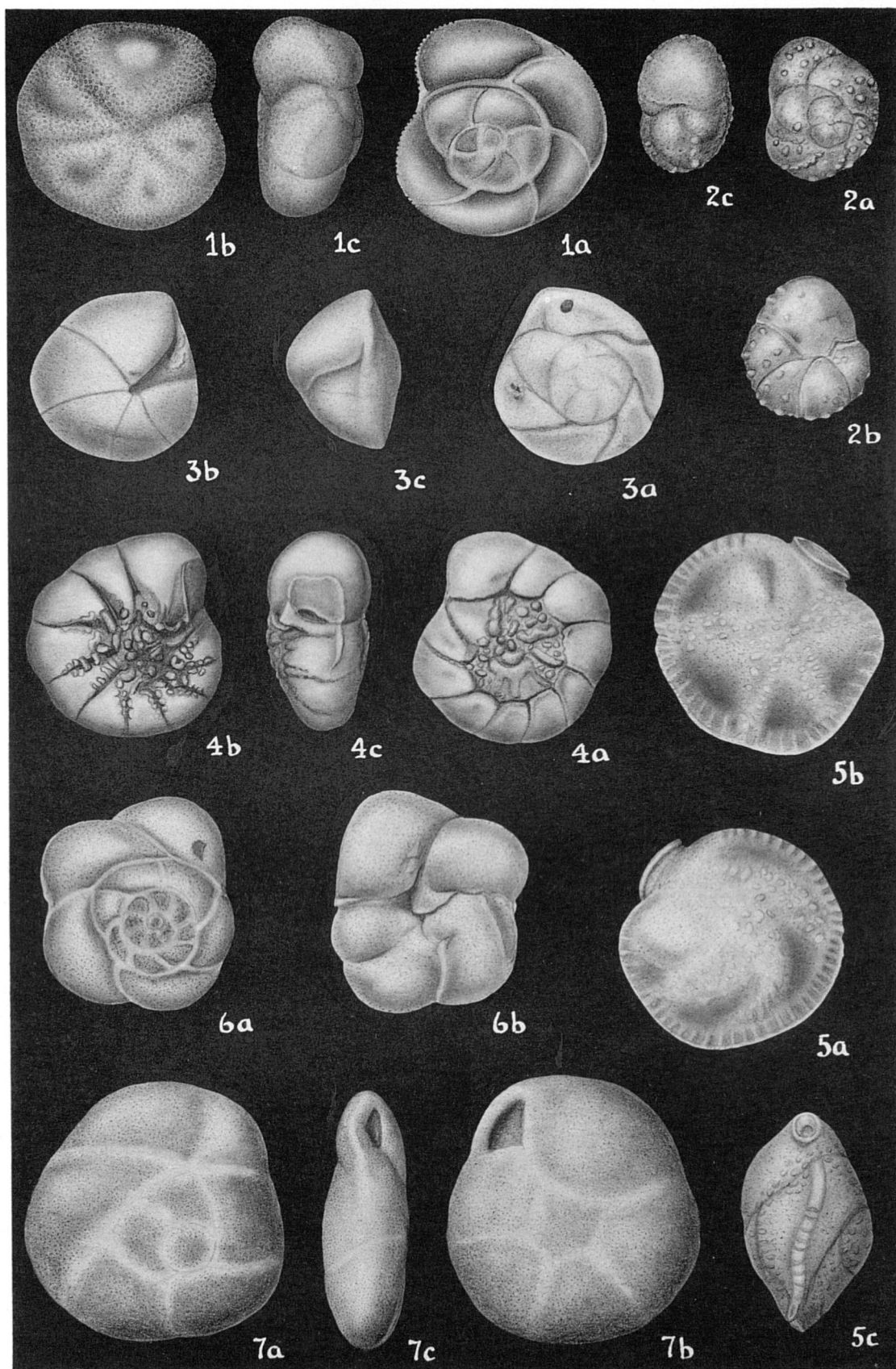


J. A. CUSHMAN — Recent Belgian Foraminifera.

## EXPLANATION OF PLATE IX.

---

- FIG. 1. — *Eponides frigida* (CUSHMAN), var. *calida* CUSHMAN and COLE. × 140. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 2. — *Eponides* (?) *tuberculata* (BALKWILL and WRIGHT). × 170. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 3. — *Gyroidina* (?) sp. (?). × 80. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 4. — *Rotalia beccarii* (LINNAEUS). × 47. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 5. — *Siphonina reticulata* (CZJZEK) (?). × 135. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 6. — *Rotalia* (?) *perlucida* HERON-ALLEN and EARLAND. × 75. *a*, dorsal view; *b*, ventral view.
- FIG. 7. — *Pulvinulinella* sp. (?). × 180. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
-



J. A. CUSHMAN. — Recent Belgian Foraminifera.



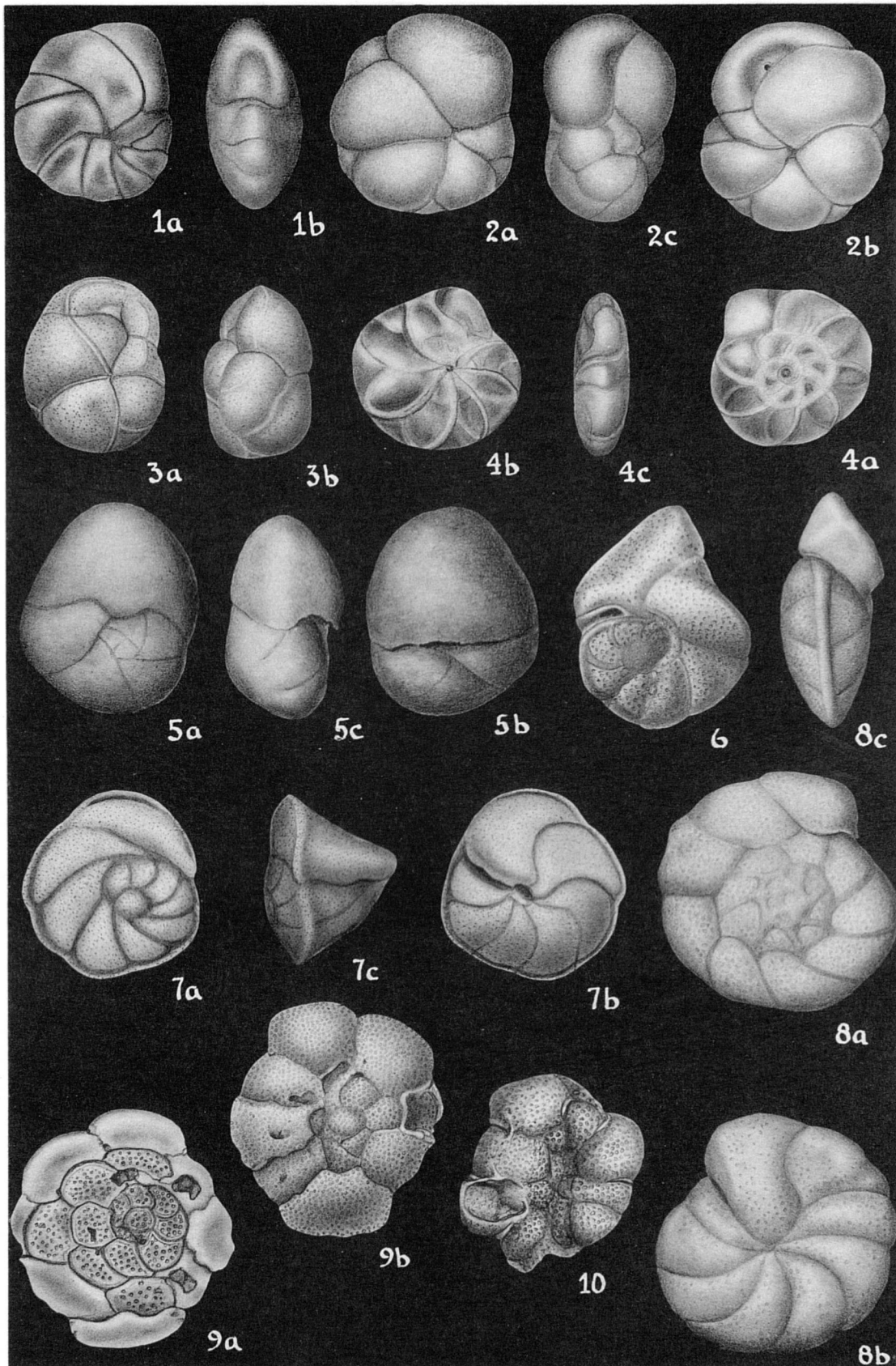
## EXPLANATION OF PLATE X.

---

- FIG. 1. — *Cassidulina lævigata* D'ORBIGNY. × 170. *a*, side view; *b*, peripheral view.
- FIG. 2. — *Cassidulina crassa* D'ORBIGNY. × 140. *a*, *b*, opposite sides; *c*, peripheral view.
- FIG. 3. — *Cassidulina subglobosa* H. B. BRADY. × 170. *a*, side view; *b*, peripheral view.
- FIG. 4. — *Cassidulina nitidula* (CHASTER). × 160. *a*, *b*, opposite sides; *c*, peripheral view.
- FIG. 5. — *Allomorphina* sp. (?). × 180. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 6. — *Cibicides lobatulus* (WALKER and JACOB). × 70.
- FIG. 7. — *Cibicides refulgens* MONTFORT. × 115. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 8. — *Cibicides ungerianus* (D'ORBIGNY) (?). × 100. *a*, dorsal view; *b*, ventral view; *c*, peripheral view.
- FIG. 9. — *Planorbulina mediterranensis* D'ORBIGNY. × 80. *a*, dorsal view; *b*, ventral view.
- FIG. 10. — *Gypsina vesicularis* (PARKER and JONES). × 43.

DIRECTOR OF THE CUSHMAN LABORATORY FOR FORAMINIFERAL RESEARCH, SHARON, MASS., U.S.A.

---



J. A. CUSHMAN. — Recent Belgian Foraminifera.