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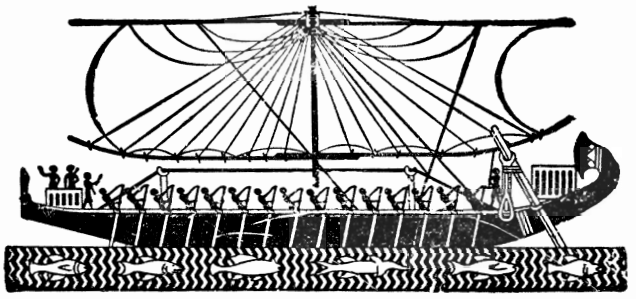
THE FISHERY GROUNDS NEAR ALEXANDRIA

XIX - MOLLUSCA (with 39 Charts)

BY
ADOLF STEUER
Rovigno d'Istria



Al-Ettemad Press, Abdin Cairo, 1939.

FOREWORD

While many groups of animals from the Fishery grounds near Alexandria were yet insufficiently known, there exist more or less rich lists of Mollusca since a rather long time. Nearly 50 years ago almost 100 species were already known from the Egyptian coast of the Mediterranean, to the greater part from Alexandria and Ramleh. (Carus 1893). 25 years ago Pallary (1912)(1) lists in his "Catalogue de mollusques", in which, however, Pteropods, Heteropods and Cephalopods are missing, 454 species, which are only about half of those known from Naples at the present date (according to Bellini 1929.) Though a number of species new for Alexandria will be cited in the following and the number of species will in future certainly still be enlarged, yet it seems of even now to result from the proportion of numbers that also the mollusc fauna the Eastern Mediterranean is not very rich in species.

The molluscs collected by me had to the greater part been defined by Mr. J.R. Le B. Tomlin (London), for which I thank him in this place most heartily. The notes taken from his list of species are marked with a "T". At my demand Mr. G.H. Crawford (London) had the kindness of collating a second list of species collected in every station.(2) I owe thanks, for a revision of the statements on the geographical distribution, to Dr. S. Jaeckel (Berlin). His notes are marked with "(J)".

The only species of Cephalopods fished in the Bay of Abukir was determined by colleogue Prof. J.G. Grimpe (Leipzig), who unfortunately died in the meantime ; the Heteropods and Pteropods were identified by myself. Besides, the two lists mentioned above had to be exactly compared and completed by notes from my journal of hauls. Moreover, I found later on in the sifted mud two small Scaphopods.

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(1) I am very much obliged to colleague H. Faouzi for lending me this treatise, here otherwise not to be attained.

(2) I am sorry to say that by the fault of a third person some mistakes are likely to have happened (see notes on *Arca* and *Lithophaga*), which could not perhaps more easily be corrected.

As there only exist mere lists of the mollusc fauna of the district investigated, I tried to add short ecological data, as far as it is possible to a non-specialist with insufficient means of bibliographical help. My collection having for the greater part immediately been sent to the British Museum, it was not possible to state later on which of the shells still contained the animals, a fact that would e.g be of importance for the judgement of the fauna of the harbour from the point of view of "biological water-analysis". For technical reasons, not all molluscs fished at each station could be preserved and kept, wherefore the data on distribution in the district investigated and the frequency of occurance cannot lay claim to great exactness and completeness.

PART I.

SYSTEMATIC LIST OF THE FORMS FOUND.

Classis LORICATA
Ordo Chitonida

FAM. LEPIDOCHITONIDAE

Middendorffia caprearum (Scacchi) (Fig. 1).

Locality : Eastern Harbour.

Habitat : On stones off the Laboratory; stenotop shallow water-form (according to Leloup and Volz. 1937).

Geographical distribution: Mediterranean and Adriatic; besides, it is recorded from Cadiz and Tanger and from the coast of Portugal (according to Carus 1893 p. 181, Pallary 1902 p. 29, Nobre 1936 p. 191. Leloup and Volz 1937) ; already known from Alexandria ("Plage de Ramleh : peu rare," Pallary 1912 p. 148).

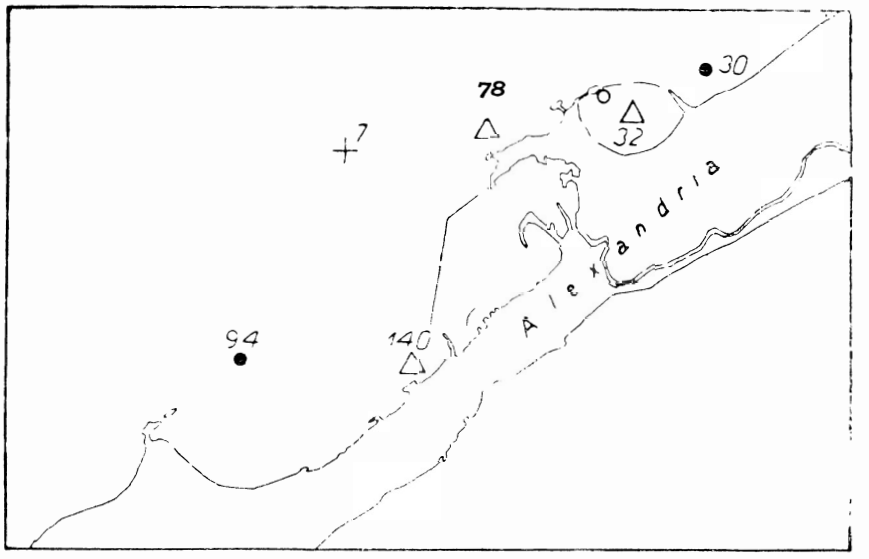

FIG. 1.

O *Middendorffia caprearum* (Sacchi)
● *Callochiton laevis* (Montagu)
+ *Acanthochitona fascicularis* (L.)
△ *Haliotis lamellosa* (Lamarck)

Callochiton laevis (Montagu) (Fig. 1).

Localities : St. 30 ; 7 fath. on Peyssonnelia.
St. 94 ; 4½ fath.

Habitat : On stony, algy bottom, especially on Peyssonnelia, an eurytop species (acc. to Leloup and Volz. 1937), living in depths of 9—36 m (acc. to Nierstrasz and Hoffmann 1929, p. 36).

Geographical distribution : Atlantic coasts of Europe from Norway and the Shetland Islands to Spain, Mediterranean and Adriatic (Nierstrasz and Hoffmann, 1929 Leloup and Volz, 1937), already known from Alexandria ("Plage de Ramleh : rare", Pallary, 1912 p. 149).

FAM. CRYPTOPLACIDAE.

Acanthochitona fascicularis (L.) (Fig. 1).

Locality : St. 7 ; 17 fath.

Habitat : On stony, algy bottom ; an eurytop species (acc. to Leloup and Volz, 1937), lives in depths of 0—261 m (Nierstrasz and Hoffmann, 1929 p. 37).

Geographical distribution : Atlantic coasts of Europe and Africa from Norway and the Shetland Islands to Morocco (Mogador) and (?) the Canaries, in the Mediterranean and the Adriatic (Nierstrasz and Hoffmann, 1929 p. 37; Leloup and Volz, 1937), already known from Alexandria ("Plage de Ramleh : rare", Pallary, 1912, p. 149).

Classis GASTROPODA

Subclassis PROSOBRANCHIA

Ordo Archaeogastropoda

FAM. HALIOTIDAE.

Haliotis lamellosa Lamarck (Fig. 1).

Remark : A form of *H. tuberculata* L.

Localities : St. 32, 5½ fath.
St. 78, 5-6 fath.
St. 140, 4-8 fath.

Habitat : On stony bottom, mixed also with sand and mud, begrown with algae and Posidonia-meadows in little depth at the coast, lives in the Adriatic near Rovigno in 1—25 m. (Coen and Vatova 1932).

Geographical distribution : Everywhere in the Mediterranean and in the Adriatic (Carus 1893, Coen 1933, Nobre 1931, p. 433, 1936, p. 179), note one

specimen from the coast of Portugal ; also in the Lusitanean Sea[1] (I), already known from Alexandria (Ramleh) (Pallary 1912, p. 144).

FAM. FISSURELLIDAE.

Emarginula huzardii Payr. (Fig. 2).

Locality : St. 61; 50 fath.

Habitat : On muddy bottom in greater depths evidently not frequent; also near Triest "vereinzelt," (Graeffe 1902, near Rovigno on muddy mussel-sand in 30—33 m (Coen and Vatova, 1932).

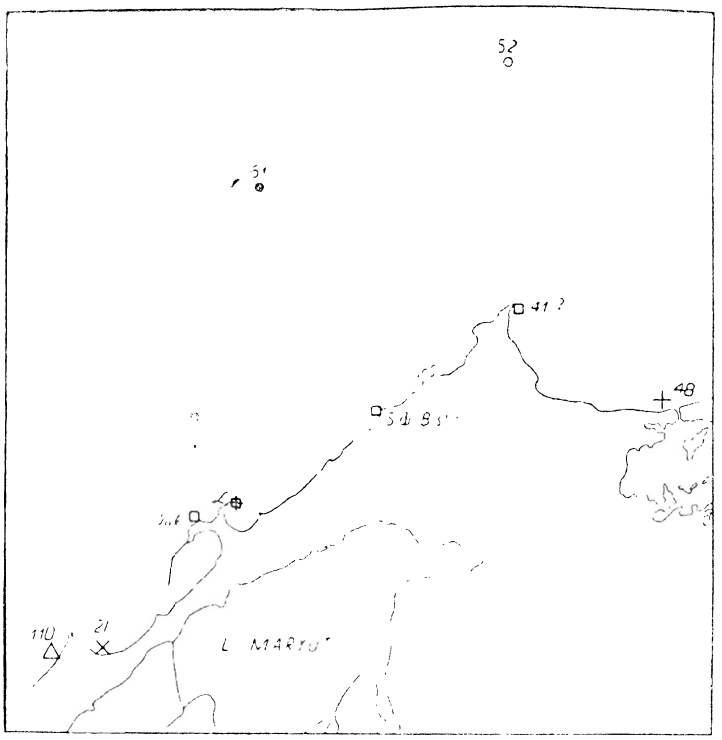

FIG. 2.

● *Emarginula huzardi* (Payr)
O *Emarginula cancellata* (Philippi)
+ *Diodora nubecula* (L.)
× *Diodora gibberula* (Lamarck)
□ *Patella caerulea* (L.)
△ *Patella lusitanica* (Gmelin)

Geographica distribution : In the Lusitanean Sea and everywhere in the Mediterranean and in the Eastern Adriatic (Carus 1893, Coen 1933), already known from Alexandria (Plage de Ramleh : très rare, Pallary, 1912 p. 146).

(1) After the old Roman province Lusitania (about recent Portugal); reaches from the Strait of Gibraltar to the western mouth of the English Channel (Ekman, 1935, p. 113).

Emarginula cancellata Philippi (Fig 2.)

Locality : St. 52 ; 22 fath.

Habitat : On "Phoronis-mud" evidently not frequent. Has been found alive in the Adriatic near Rovigno on stony mussel-sand in 34 m (Coen and Vatova, 1932) near Pelagosa on algy bottom in 128 m. alive (Sturany, 1896, p. 29),

Geographical distribution : Everywhere in the Mediterranean and in the Eastern Adriatic (Carus 1893, p. 240, Coen, 1933). Also in the West Indies (J).

Diodora nubecula (L.) (Fig. 2.)

Localities : Eastern Harbour, coast near the Laboratory.
St. 48.

Habitat : On stones and rocks near the coast in little depths, as near Naples (Lo Bianco, 1909 p. 636) Oligosaprob, little mesosaprob (according to Wilhelmi 1912, p. 145).

Geographical distribution . In the Lusitanean Sea, everywhere in the Mediterranean and in the Eastern Adriatic (Carus, 1893, p. 240, Coen, 1933). Already known from the surroundings of Alexandria (Plage de Ramleh : commun, Pallary, 1912 p. 145).

Diodora gibberula (Lamarck) (Fig. 2).

Locality : St. 21 ; 1½ fath.

Habitat . On shallow Amphioxus-sand. The species seems however to be eurytop and eurybath, occurring also on rocky ground (Coen and Vatova, 1932) and in greater depths (628m.) (Dautzenberg, 1927 p. 217).

Geographical distribution : In the Atlantic, southward to Madeira and Cape Verde, everywhere in the Mediterranean and in the Adriatic (Carus, 1893 p. 239, Dautzenberg, 1927 p. 217) ; already known from Alexandria (Plage de Ramleh : peu commun, Pallary 1912 p. 145).

FAM. PATELLIDAE.

Patella coerulea L. (Fig. 2).

Localities : Eastern Harbour coast near the Laboratory.
Sidi Bichr, on iron poles rammed into the ground,
Pok, (Crags off the barracks at Ras el Tin).
St. 41 ? (according to the collector's notes).

Habitat ; Everywhere common in the emerging litoral zone on crags, especially in protected places (Coen and Vatova, 1932), also near the mouths of

canals according to Wilhelmi (1912, p. 146), oligosaprob, feebly mesosaprob.

Geographical distribution : In the Lusitanean Sea (acc. to Carus 1893, p. 234), purely mediterranean (acc. to Lamy 1928). also in the Adriatic. Already known from the surroundings of Alexandria (Plage de Ramleh : excessivement commun ; Aboukir, Port-Said. En 1885, cette espèce commençait seulement à pénétrer dans le seuil du canal, Pallary, 1912 p. 147).

Patella lusitanica Gmelin (Fig. 2).

Locality : St. 110.

Habitat ; Crags of the emerging litoral zone, on places more exposed to rough sea (Coen and Vatova, 1932) , is also (acc. to Wilhelmi, 1912 p. 147) oligosaprob, little mesosaprob.

Geographical distribution : Altantic Ocean and everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 235), already known from Alexandria (Plage de Ramleh : pas rare, Pallary 1912 p. 147).

FAM. TROCHIDAE.

Calliostoma zizyphinum (L.) (Fig. 3).

Localities : St. 50 ; 9 fath.
St. 61 ; 50 fath.
St. 66 ; 20 fath.

Habitat : On stony sand and mud in different depths ; evidently eurytop (acc. to Graeffe, 1902 : on muddy ground, acc. to Coen and Vatova, 1932 : mostly on mussel-sand, acc. to Vatova, 1935 : on "hartem Sand") and eurybath (acc. to Coen and Vatova, 1932 ; in 34 m, acc, to Sturany, 1896 p. 29 : in 128 m).

Geographical distribution : Atlantic Ocean to Norway and England, everywhere in the Mediterranean and in the Adriatic. (Carus 1893 p.256, Dautzenberg, 1927). Already known from Alexandria (Pallary 1912 p. 142 : fide Jeffreys).

Calliostoma conulus (L.) (Fig.3).

Locality : St. 116 ; 35 fath.

Habitat : On sandy and muddy ground in the utmost west of the district investigated ; in the Adriatic on mussel-sand (Coen and Vatova, 1932), in deeper places more seldom than C. *zizyphinum* (Graeffe 1902). Perhaps katharob and stenohaline.

Geographical distribution : Atlantic Ocean from Portugal to the Makaronesian Islands,[1] everywhere in the Mediterranean and Adriatic (Carus, 1893 p. 256, Dautzenberg 1927).

Gibbula magus (L.) (Fig.3).

Locality : St. 7 ; 17 fath.

Habitat . On stony, algy bottom evidently not frequent. Eurytop (acc. to Lo Bianco 1909 p. 637 near Naples little frequent in Posidonia-meadows and on coralline banks; in the Adriatic acc. to Coen and Vatova 1932 usually on muddy, more rarely on rocky bottom or on sand, mussel-sand and coralline bottom, according to Graeffe, 1902, rather seldom on deeper places. Eurybath (from 15 m. acc. to Ankel, 1936 p. 37, to 101 m. acc. to Sturany 1896 p. 28).

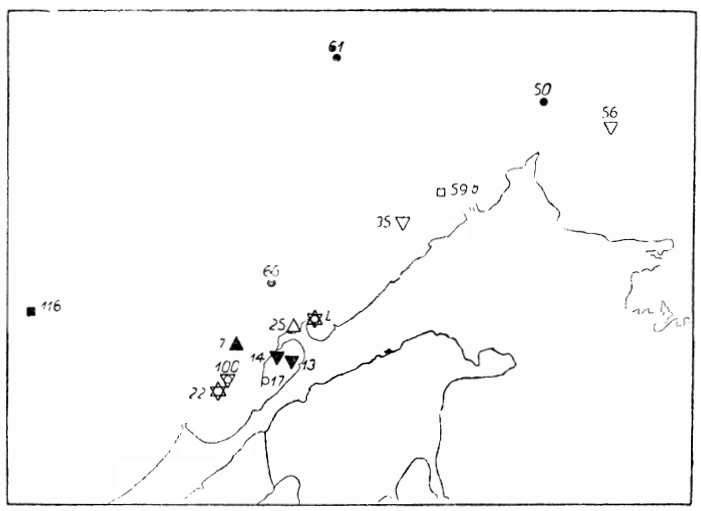

FIG. 3.

● *Calliostoma zizyphinum* (L.)
■ *Calliostoma conulus* (L.)
▲ *Gibbula magus* (L.)
▼ *Gibbula ardens* (Salis)
O *Gibbnla umbilicalis* (L.)
△ *Gibbula adansonii* (Payraudeau
▽ *Gibbula turbinoides* (Deshayes)
□ *Gibbula guttadauri* (Philippi)

Geographical distribution : Atlantic Ocean from the Shetland Islands, North Sea, Skagerak (Bohuslän) to the Makaronesian Islands, everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 250, Ankel, 1936). According to elder authorities it is likely to have been known from Alexandria too (Pallary 1912, p. 139).

(1) The Islands situated off Morocco and the Mauritanian district : Cape Verde and Canarian Islands, Madeira and the Azores (Ekman 1935, p. 113).

Gibbula ardens (Salis) (Fig. 3).

Localities : St. 13 ; 6 fath.
St. 14 ; 7 fath.

Habitat : In the Western Harbour only on sand and partly black mud in little depths, perhaps saprob, eurytop (acc. to Graeffe 1902 frequently near Triest on sandy seaweed-meadows, acc. to Coen and Vatova 1932 from muddy and sandy ground near Rovigno).

Georaphical distribution : In the Lusitanean Sea and everywhere in the Mediterranean and in the Eastern Adriatic (Carus 1893 p. 251, Coen 1933). Already known from Alexandria (Plage de Ramleh ; pas rare, Pallary 1912 p. 142).

Gibbula umbilicalis (L.) (Fig. 3).

Localities : Eastern Harbour near the bath, Petersen haul, 1—4 fath. (v. Vatova, 1935) ibid., Epifauna.
St. 17 ; 5-12 fath.
St. 100 ; 5½-6 fath.

Habitat : In the two harbours only and at the entrance of the Boghaz-pass on sandy and (partly black) muddy ground with algae.

Geographical distribution: Lusitanean Sea and everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 251). Already known from the surroundings of Alexandria, (Plage de Ramleh et du Mex, Pallary 1912 p 141).

Gibbula adansonii (Payraudeau).

Localities : Eastern Harbour near the bath, Epifauna.
St. 22 ; 7 fath.
St. 25.

Habitat : In the Eastern Harbour, the Anfouchi Bay and in the Great Pass on rocky sand bottom overgrown with algae, as (acc. to Graeffe, 1902) near Triest.

Geographical distribution : Mediterranean and Eastern Adriatic (Carus, 1893 p. 249 and Coen 1933 as well as in the Black Sea. (J) Already known from the surroundings of Alexandria (Plage de Ramleh et du Mex : pas rare, Pallary 1912 p. 140).

Gibbula turbinoides (Deshayes) (Fig 3).

Remark : Merely a form of the preceding species (J).

Localities : Eastern Harbour near the bath, Petersen haul ; 1—4 fath. (v. Vatova, 1935).
St. 22; 7 fath.

St. 35; 7 fath.
St. 56; 4 fath.
St. 100; 5½-6 fath.

Habitat : From the Great Pass to the Bay of Aboukir from about 1 — 7 fath. on sandy ground begrown with plants, apparently stenotop and stenobath.

Geographical distribution : Mediterranean and Adriatic (Carus 1893, p. 249). Already known from Alexandria (Plage de Ramleh : pas rare, Pallary 1912, p. 140).

Gibbula (*Forskalena*) *guttadauri* (Philippi) (Fig. 3).

Locality : St. 59[b]; 15 fath.

Habitat : On coarse Amphioxus-sand not frequent. Also near Triest "sehr selten in gröberen Tiefen" (Graeffe), near Rovigno on stony mussel-sand and Arca-bottom in 14-30 m. (Coen and Vatova 1932).

Geographieal distribution : Mediterranean and Adriatic (Carus 1893 p. 253), viz. Sicily and Dalmatia (J). Already known from Alexandria (un exemplaire trouvé dans les intestins d'un poisson, Pallary 1912 p. 139).

Cantharidus (*Jujubinus*) *matoni* (Payraudeau) (Fig. 4).

Localities : St. 14 ; 7 fath.
St. 22 ; 7 fath.
St. 32 ; 5½ fath.
St. 35 ; 7 fath.
St. 100 ; 5½ — 6 fath.

Habitat : In the Bay of Dikheila (Great Pass and Entrance to the Boghaz Pass), in the Western and Eastern Harbour and off Sidi Bishr in coarse sand and blackmud in about 5—7 fath.. Occurs also (acc. to Dautzenberg 1927) at the Azores on black mud and in sand; it reaches there great depth (1846 m.) Acc. to Issel (1912) it is a characteristic form of the Posidonia-meadows in the Gulf of Genova.

Geographical distribution : Atlantic ocean from England to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Dautzenberg and Fischer 1906) as well as in the Black Sea at the southern coast of the Crimea (Middendorf 1847 p. 82). Already known from Alexandria (Plage de Ramleh : commun, Pallary 1912 p. 144).

Cantharidus (Jujubinus) igneus (Monterosato) (Fig. 4).

Localities : St. 50; 9 fath.
St. 61 ; 50 fath.
St. 77 ; 7 fath.

Habitat : In the western part of the district investigated only ; on stony sand — and mud-bottom begrown with algae in 7—50 fath.

Geographical distribution : In the Mediterranean and in the Southern Adriatic (Sturany 1896 p. 28; Coen, 1933).

Monodonta (Osilinus) turbiformis (Salis) (Fig. 4).

Locality : Sidi Bishr.

Habitat : On stones of the coast : edible (Pallary 1912 p. 138).

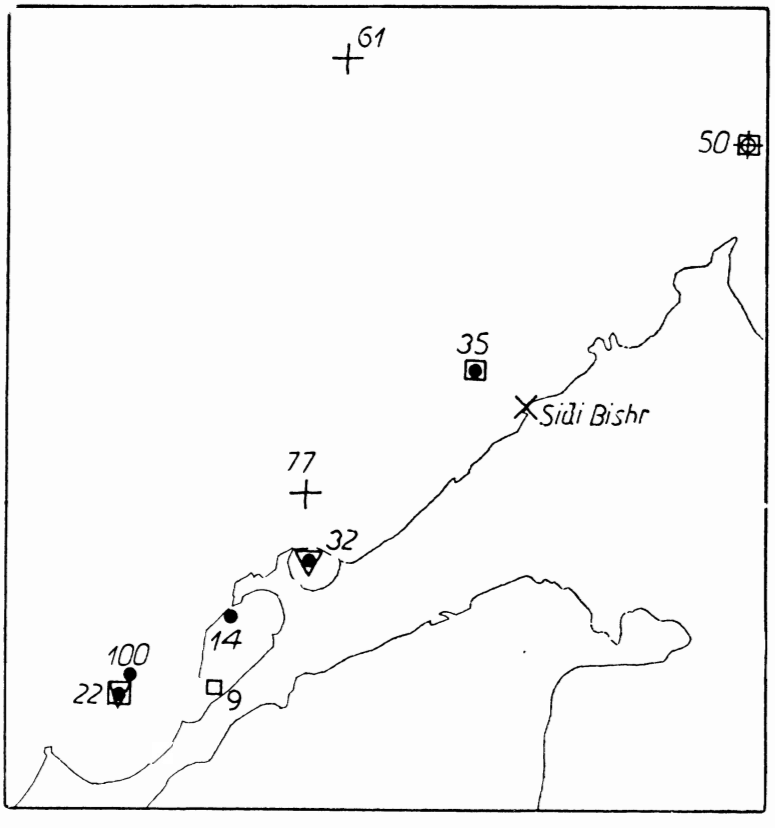

FIG. 4.

● *Cantharidus matoni* (Payraudeau)
+ *Cantharidus igneus* (Monterosato)
× *Monodonta turbiformis* (Salis)
× *Monodonta turbinata* (Born)
O *Clanculus corallinus* (Gmelin)
□ *Clanculus cruciatus* (L.)
▽ *Clanculus jussieui* (Payraudeau)

Geographical distribution : Lusitanean Sea, Mediterranean and Adriatic (Carus 1893 p. 248). Already known from the surroundings of Alexandria (Plage de Ramleh et du Mex : sur les roches à fleur d'eau : très commun, Pallary 1912 p. 138).

Monodonta (*Osilinus*) *turbinata* (Born) (Fig. 4).

Locality : Sidi Bishr.

Habitat : On iron poles rammed into the sea bottom. In the Adriatic in the emerging litoral zone (Coen and Vatova 1932), common between algae of the costal zone, also in seaweed-meadows (Graeffe 1902). Edible (Pallary 1912 p. 138).

Geographical distribution : Lusitanean Sea, everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 248), Already known from the surroundings of Alexandria (Plage de Ramleh et du Mex : sur les rochers à fleur d'eau. Très commun, Pallary 1912 p. 138)

Clanculus corallinus (Gmelin) (Fig. 4).

Locality : St. 50 ; 9 fath.

Habitat : On stony Amphioxus-sand. In the Adriatic "unter hohe liegenden Steinen nahe der Küste" (Graeffe 1902), in 12-20 m. (Carus 1893 p. 246); belongs in Naples to the "forme immigrate dal sudo ad affinità meridionale" (Bellini 1929 p. 12).

Geographical distribution : Everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 246). Already known from Alexandria (Plage de Ramleh: peu rare, Pallary 1912 p. 137).

Clanculus cruciatus (L.) (Fig. 4).

Localities : St. 9 ; 7 fath.
St. 22 ; 7 fath.
St. 35 ; 7 fath.
St. 50 ; 9 fath.

Habitat : From the Great Pass of the Bay of Dekheli to the Bay of Abukir along the coast mostly on stony (seldom on muddy) sand bottom in little depth, as in the Adriatic (acc. to Graeffe 1902, Coen and Vatova 1932).

Geographical distribution : Everywhere in the Méditerranean and in the Adriatic (Carus 1893 p. 246). Acc. to Nobre (1936 p. 158, 344) also at the coasts of Portugal and Africa. Already known from Alexandria (Plage de Ramléh : pas rare, Pallary 1912 p. 137).

Clanculus jussieui (Payraudeau) (Fig. 4).

Localities : St 22 ; 7 fath.
St. 32 ; 5½ fath.

Habitat : In the Great Pass and in the Eastern Harbour only on stony sand begrown with algae as in the Adriatic (Graeffe 1902).

Geographical distribution : Everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 246). Already known from Alexandria (Plage de Ramleh: commun, Pallary 1912 p. 138).

FAM. TURBINIDE

Leptothyra sanguinea (L.) (Fig. 5)

Localities : St. 2 ; 25 fath.
St. 3 ; 34 fath.
St. 61 ; 50 fath.
St. 72 ; 30 fath.

Habitat : Only on the stony or muddy Halimeda-bottom drawing northward from the Eastern Harbour in greater depth, as in the Northern Adriatic (Graeffe 1902).

Geographical distribution : In the Lusitanean Sea and everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 244). Already known from Alexandria (Plage de Ramleh : très rare, Pallary 1912 p. 137).

Astraea (Bolma) rugosa (L.) (Fig. 5).

Locality : St. 40 ; 8 fath.
St. 61 ; 50 fath.
St. 63 ; 74-85 fath. (only one operculum).

Habitat : On stony and mud bottom; also in greater depths.

Geographical distribution : In the Lusitanean Sea and everywhere in the Mediterranean and in the Adriatic. (Carus 1893 p. 245, acc. to Thiele 1935 p. 1130 only in the Mediterranean !) Acc. to Pilsby also from the Makaronesian Island, but in the collection in Berlin, only from the Mediterranean (J). Already known from Alexandria (Plage de Ramleh : rare, Pallary 1912 p. 137).

Tricolia speciosa (Megerle) (Fig. 5).

Localities : St. 22 ; 7 fath.
St. 25.
St. 32 ; 5½ fath.
St. 136 ; 5-6 fath.

Habitat : Only in the Eastern Harbour, the Anfouchi Bay and the Bay of Dekheli on sandy bottoms begrown with plants in little depths as in the northern Adriatic (Graeffe 1902, Coen and Vatova 1932). According to Issel (1912) principally to be found on the epiphyts growing on Posidonia-leaves in the Gulf of Genova.

Geographical distribution : Everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 243) as well as in the Black Sea at the southern coast of the Crimea (Middendorff 1847 p. 87). Already known from Alexandria (Plages des environs et par 15 brasses, Pallary 1912 p. 136).

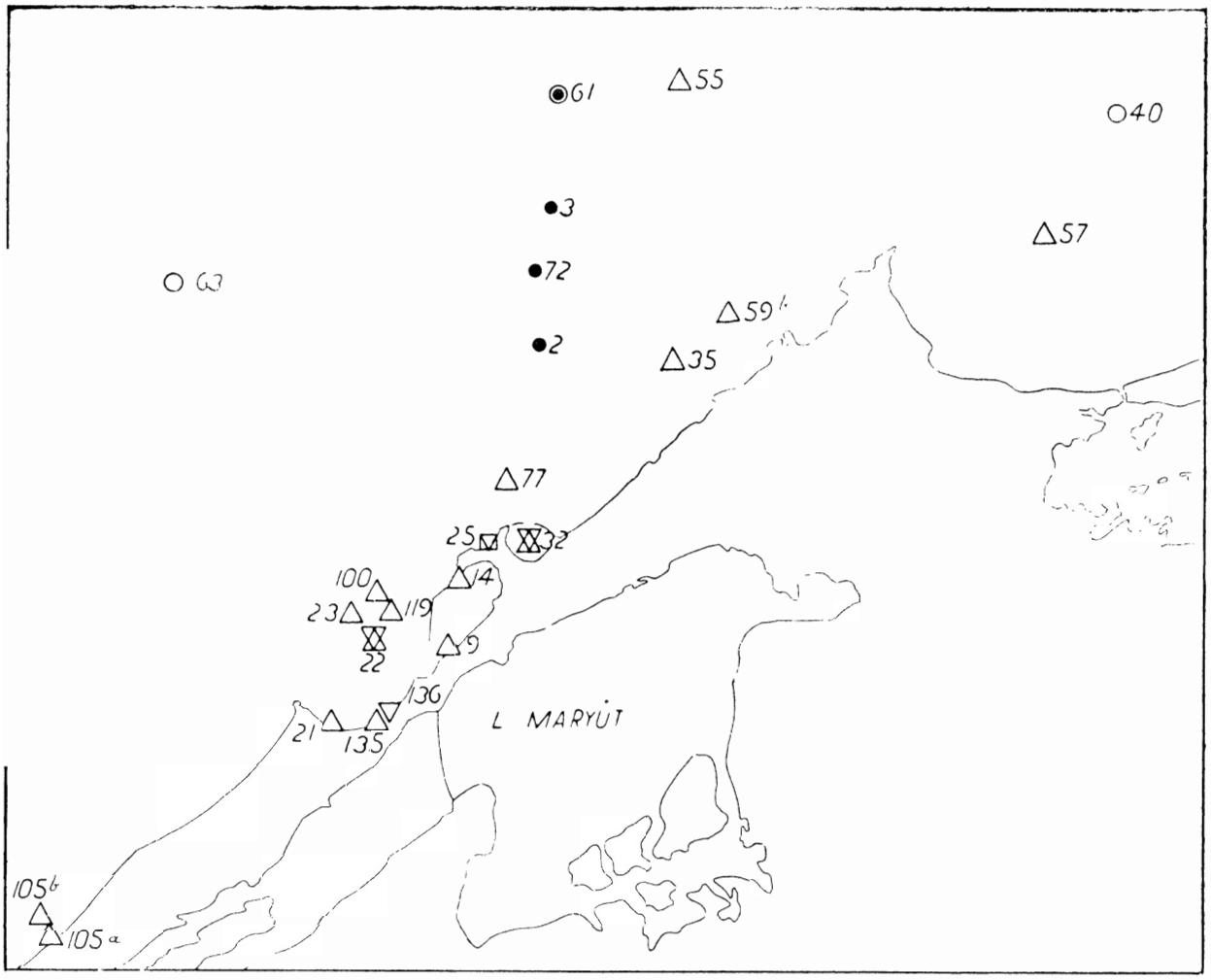

FIG. 5.

● *Leptothyra sanguinea* (L.)
O *Astraea rugosa* (L.)
▽ *Tricolia speciosa* (Megerle)
△ *Tricolia pullus* (L.)
□ *Tricolia tenuis* (Michaud)

Tricolia pullus (L.) (Fig. 5)

Localities : St. 9 ; 7 fath.
St. 14 ; 7 fath.
St. 21 ; 1½ fath.
St. 22 ; 7 fath.
St. 23 ; 5-7 fath.
St. 32 ; 5½ fath.
St. 35 ; 7 fath.
St. 55 ; 40 fath.
St. 57 ; 3 fath.
St. 59b ; 15 fath.
St. 77 ; 7 fath.
St. 100 ; 5½.
St. 105a ; b ; 4 - 6 fath.
St. 119 ; 5½.
St. 135 ; 4 fath.

Habitat : Everywhere in the district investigated, principally near land, especially in the range of the harbours on different bottoms, usually sandy ground, begrown with plants down to 15 fathoms only. Also in the northern seas "litoral unterhalb der Tidenregion, Laminarienzone, bis 30 m." (Ankel 1936, p. 38).

Geographical distribution : Atlantic ocean from England to the Makaronesian Islands (Canaries), everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 243, Ankel 1936 p. 38) as well as in the Black Sea at the southern coast of the Crimea (Middendorff 1847 p. 88). At the Egyptian coast found by Savigny and later by Pallary (1912 p. 136). (Port d'Alexandrie par 15 brasses. Plage de Ramleh, Abukir : très commun).

Tricolia tenuis (Michaud) (Fig. 5).

Locality : St. 25.

Habitat : Once only in the Anfouchi-Bay on shallow sandy ground begrown with algae.

Geographical distribution : In the Lusitanean Sea and everywhere in the Mediterranean and in the Eastern Adriatic (Carus 1893 p. 244, Coen 1933). Already known from the surroundings of Alexandria (Plage de Ramleh, Abukir : pas rare, Pallary 1912 p. 136).

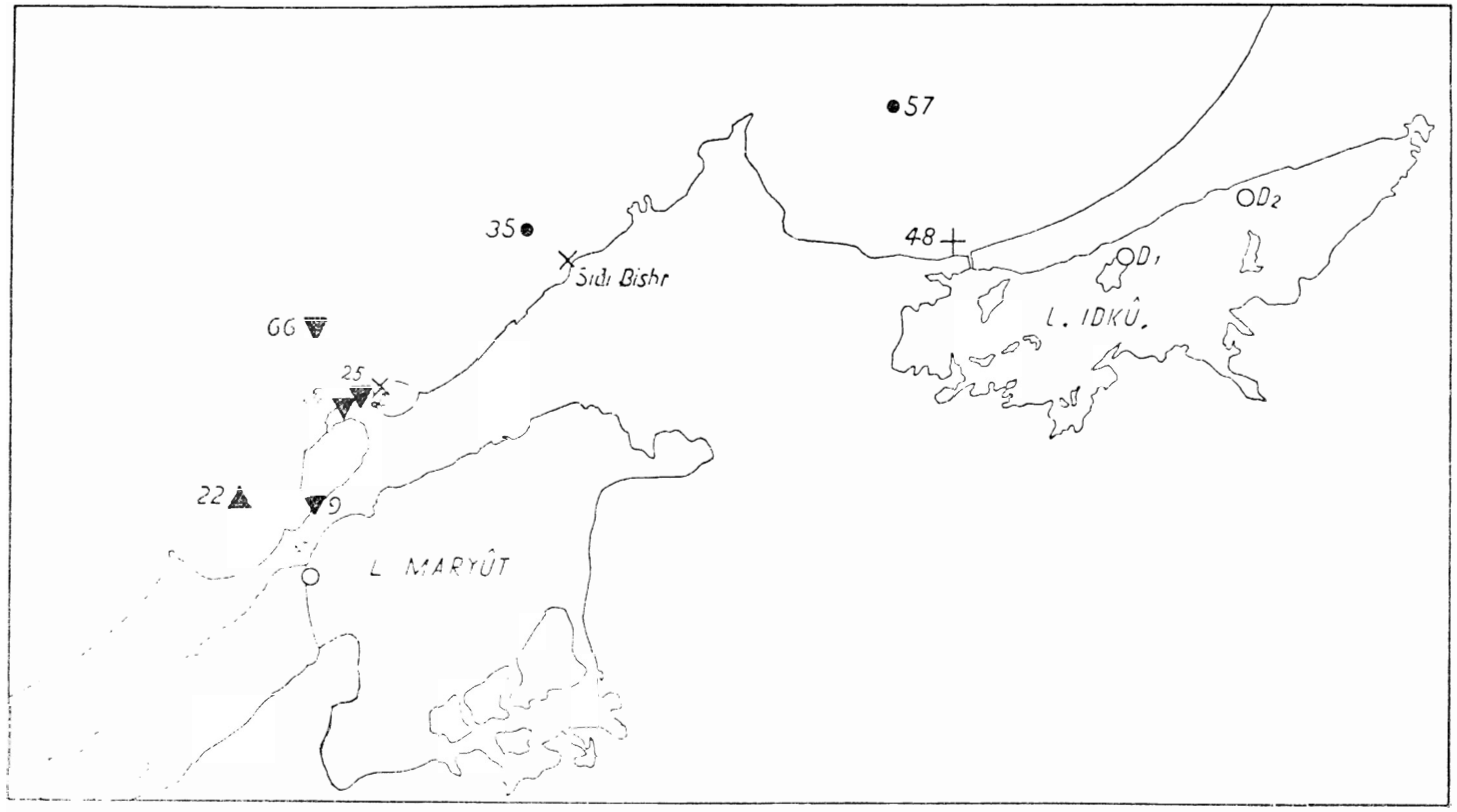

FIG. 6

+ *Pila ovata* (Oliv.)
× *Littorina punctata* (Gmelin)
O *Hydrobia musaënsis* (Frauenfeld)
● *Alvania cimex* (L.)
▼ *Rissoa variabilis* (Megerle)
▲ *Rissoa auriscalpium* (L.)

Ordo : Mesogastropoda FAM. PILIDAE.

Pila ovata (Oliv). (Fig. 6).

Locality : St. 48.

Habitat : Has been found only near Edku-bridge on shallow sandy bottom.

Geographical distribution : Very common in upper and lower Egypt, Nubia, Abyssinia and the great lakes of Central Africa. (T.).

FAM. LITTORINIDAE.

Littorina punctata (Gmelin) (Fig. 6).

Localities : Eastern Harbour near the Marine Laboratory.
Sidi Bishr.

Habitat : On stones of the litoral region, the species seemed to me to be more frequent on the coast more exposed to the surf than in the more quiet water of the Eastern Harbour, and in the Arsenal basin of the western Harbour where I looked for it in vain.

Geographical distribution : Lusitanean Sea southward on the African coast to Loanda (Martens and Thiele 1903 p. 20), in single specimens in the Mediterranean (Kobelt IV, 1908 p. 69), for "this is a West African species" (Tomlin 1927 p. 296). Known from the Egyptian coast already since Lischke and Weinkauff (Carus 1893 p. 351). Recorded by Pallary (1912 p, 116) (Plage de Ramleh et du Mex, sur les rochers à fleur d'eau. Aboukir, Port Said : excessivement commun.)

FAM. HYDROBIIDAE.

Hydrobia musaënsis (Frauenfeld) (Fig. 6).

Localities : Lake Edku, near Edku village (D^2).
Lake Edku, near the island Derfil (D^1).
Lake Mariotis, near the Fish Experimental Station (F).

Habitat : On partly black, muddy ground of the lakes.

Geographical distribution : Off the coasts of the Red Sea and seldom in the Mediterranean (Malta) (Carus 1893 p. 315).

FAM. RISSOIDAE.

Alvania cimex (L.) (Fig. 6).

Localities : St. 35 ; 7 fath.
St. 57 ; 3 fath.

Habitat : Off Sidi Bishr and in the Bay of Abukir on stony sand bottom begrown with plants as in the northern Adriatic (Graeffe 1902 and Coen and Vatova 1932).

Geographical distribution : In the middle Atlantic (Portugal acc. to Nobre 1931), everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 331). Already known from the surroundings of Alexandria (Plage de Ramleh, Aboukir, exessivement abondant, in var. *lactea* Philippi et *minor* Locard ; très commun. Sidi Gaber, Ramleh, Pallary 1912 pallary p. 117).

Rissoa variabilis (Megerle) (Fig. 6).

Localities : St. 9, 7 fath.
St. 25,
Po.
St. 66, 20 fath.

Habitat : Only in the environs of the harbours between coast-algae usually in little depths as in the western Adriatic (Graeffe 1902, Coen and Vatova 1932). Acc. to Issel (1912) it is a characteristic form of the Posidonia-meadows near Genova.

Geographical distribution : In the Lusitanian Sea, everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 317). Already known from Alexandria (Pallary 1912, p. 118).

Rissoa (Zippora) auriscalpium (L.) (Fig. 6).

Locality : St. 22 ; 7 fath.

Habitat : Only in the Great Pass on rocky, sandy bottom begrown with Caulerpa and Posidonia. Also near Triest "selten in tieferen Ufergründen der Küste" (Graeffe 1902).

Geographical distribution : Everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 322). Already known from Alexandria (Plage de Ramleh : pas rare. Un exemplaire vivant dragué dans le Port-Neuf, vers la pointe de Pharos, par 15 brasses, Pallary 1912 p. 120).

FAM. TURRITELLIDAE.

Turritella communis (Risso) (Fig. 7).

Localities : St. 27; 70 fath.
St. 53; 33 fath.
St. 54; 55 fath.
St. 55; 40 fath.
St. 61; 50 fath.
St. 63; 74-85 fath.
St. 68; 37 fath.
St. 69; 48 fath.
St. 72; 30 fath.

Habitat : As in the northern Adriatic (Graeffe 1902, Coen and Vatova 1932) and in the northern seas (Ankel 1936 p. 47) apparently a stenoec characteristic form of deeper (30-80 fath.) muddy, respectively marshy bottoms; in the northern Adriatic characteristic form of the "Turritella-assoziation (T.)" (Vatova 1936).

Geographical distribution : In the Atlantic on the European coasts northward to England, Ireland and Norway; everywhere in the Mediterranean and the Adriatic (Carus 1893 p. 354, Ankel 1936). Already known from Alexandria (Plage de Ramleh : peu commun, Pallary 1912 p. 115).

FAM. ARCHITECTONICIDAE.

Heliacus moniliferus (Brown) (Fig. 7).

Locality : St. 63; 74-85 fath.

Habitat : Was fished only once far from the coast, in deeper, stony mud — and sand-bottoms. Near Palermo, too, in greater depths (90 m.) found by Monterosato (acc. to Carus 1893 p. 348)

Geographical distribution : In the Lusitanian Sea and in a few places of the Mediterranean (Carus 1893 p. 348).

FAM. VERMETIDAE.

Vermetus (Petaloconchus) subcancellatus (Bivona) (Fig. 7).

Locality : St. 136; 5-6 fath.

Habitat : Was fished only once on Amphioxus-sand begrown with algae in little depth.

Geographical distribution: Mediterranean and Adriatic (Carus 1893 p. 356). Already known from Alexandria (Plage de Ramleh, Port-Vieux sur les vieux bois, Pallary 1912 p. 115).

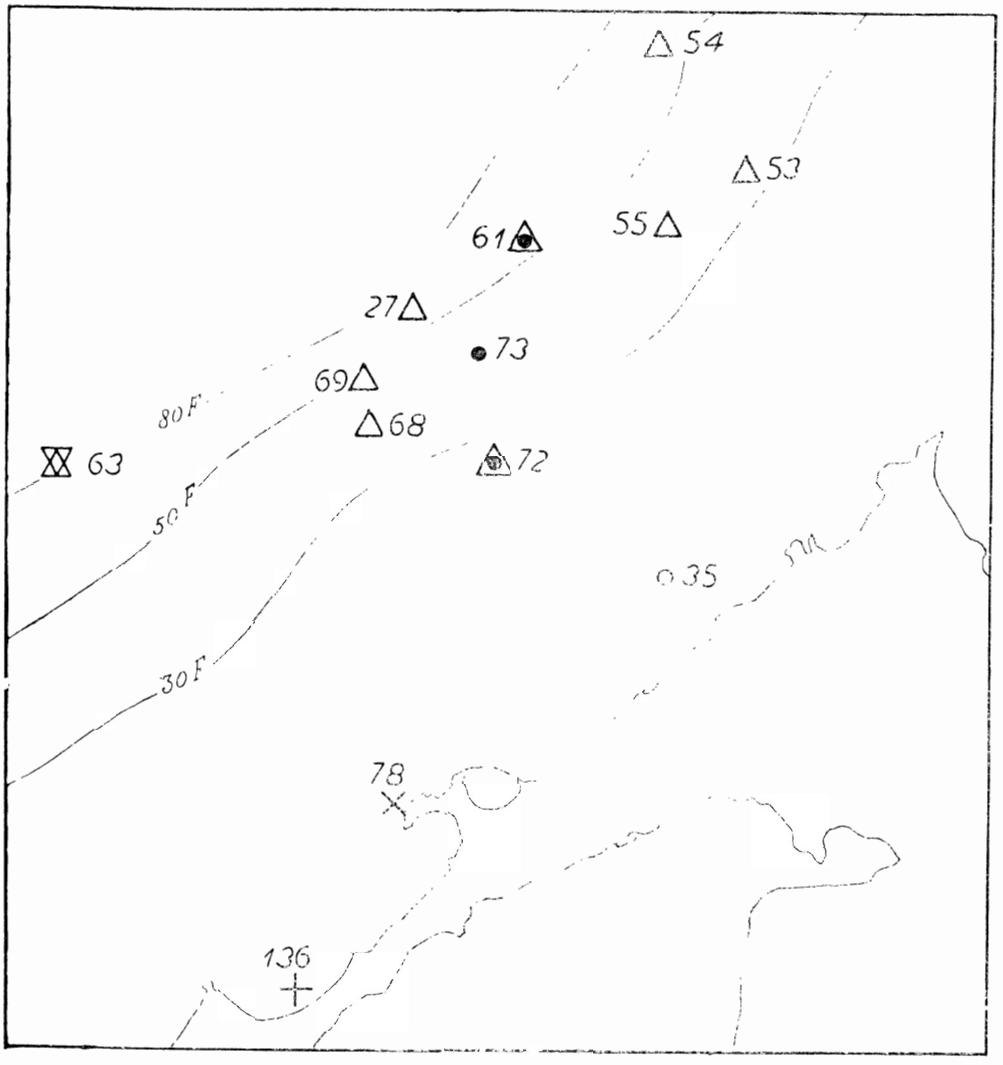

FIG. 7.

△ *Turritella communis* (Risso)
▽ *Heliacus moniliferus* (Brown)
+ *Vermetus subcancellatus* (Bivona)
× *Vermetus triqueter* (Bivona)
O *Vermetus arenarius* (L.)
● *Siliquaria obtusa* (Schumacher)

Vermetus (*Bivonia*) *triqueter* (Bivona) (Fig 7).

Locality : St. 78, 5—6 fath.

Habitat : On stony bottom begrown with plants near the coast of the Western Harbour. Occurs also near Triest "auf Steinen, Muschelschalen in Küstennähe vor", (Graeffe 1902).

Geographical distribution : Mediterranean and Adriatic (Carus 1893 p. 357), according to Nobre (1936 p. 344) also off the coast of Portugal. Already known from Alexandria (Plage de Ramleh, Pallary 1912 p. 114).

Vermetus (*Serpulorbis*) *arenarius* L. (Fig. 7.)

Locality : St. 35 ; 7 fath.

Habitat : On stony Aphioxus-sand begrown with plants near the coast. According to Wilhelmi (1912 p. 147) oligosaprob,

Geographical distribution : In the Lusitanean Sea and everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 355)

Siliquaria obtusa Schumacher (Fig. 7).

Localities : St. 61; 50 fath.
St. 72; 30 fath.
St. 73; 38 fath.

Habitat : On the stony or muddy Halimeda-bottom only, situated off the Eastern Harbour in about 30-50 fathoms.

Geographical distribution : Atlantic Ocean (Cape Verde Islands), Mediterranean and eastern Adriatic. (Dautzenberg and Fischer 1906 p. 45, Coen 1933) Belongs according to Bellini (1929 p. 12) in Naples to the "forme immigrate dal sudo ad affinitá meridionali". Already known from Alexandria (Pallary 1912 p. 115).

FAM. THIARIDAE.

Thiara (Melanoides) tuberculata (Müller) (Fig. 8).

Localities : St. 48.
Lake Edku, near Edku village (D^2)
Lake Mariotis.

Habitat : In Lake Edku and Mariotis on partly black, muddy bottom begrown with plants, off Lake Edku on shallow sandy ground.

Geographical distribution : North-, East - and West - Africa, in the Bitter and Timsah Lakes, in the Small Syrte, Gulf of Gabes, in the Nyassa-Lake in Madagascar, in Syria, Ceylon, Persia, Arabia, Mesopotamia Siam, India, Java, Formosa, China, Queensland (Tomlin 1927 p. 316, Seurat 1929 p. 54).

FAM. POTAMIDIDAE.

Pirenella conica (Blainville) (Fig. 8).

Localities : St. 22 ; 7 fath.
St. 48 ; off Lake Edku.
St. 49 ; Lake Edku.
Lake Edku ; Isle Derfil (D_1).
Lake Mariotis.

Habitat : Seems to be distributed all round Lakes Mariut and Edku; was also found at the communication of Lake Edku with the sea as well as in the Great Pass. The species lives "mit Vorliebe im Brackwasser, aber auch in Salinen und stark gesalzenen Lagunen" (Kobelt, IV. 1908 p. 129). "Reshire on mud-flats" (Tomlin 1927 p. 296).
In any case very euryhaline.

Geographical distribution : Besides the Mediterranean and the eastern Adriatic (Carus 1893 p. 360, Coen 1933) also known from the Red Sea, Indian Ocean. Was repeteadly found in Egypt, e. g. near Port-Said, in Lake Menzaleh and in the Suez Canal (Tomlin 1927 p. 296), in oasis Ammon (Siwa Oasis) in a salt marsh (Kobelt 1908 p. 129), in Lake Mariut and near Mex "dans les mares à eau sursaturée...." (Pallary 1912 p. 111).

FAM. CERITHIIDAE.

Bittium Latreillii (Payraudeau) (Fig. 8).

Localities : St. 2 ; 25 fath.
St. 35 ; 7 fath.
St. 57 ; 3 fath. (determiantion doubtful).
St. 60 ; 33 fath.
St. 62 ; 28 fath.
St. 67 ; 22 fath.
St. 76 ; 11 fath.
St. 100 ; 5½-6 fath.
St. 102 ; 5-6 fath.

Habitat : Widely spread in the district investigated on stony sand or mud—bottom begrown with plants, to depths of more than 30 fath Occurs in the Tyrrhenain Sea "in der Laminarienzone" down to 50 m. (Kobelt IV, 1908 p. 102).

Geographical distribution : In the Lusitanean and Black Sea (J.), in the Mediterranean and in the Adriatic (Carus 1893 p. 361, Coen 1933). Already known from Alexandria (Ramleh et Sidi Gaber, Pallary 1912 p. 110).

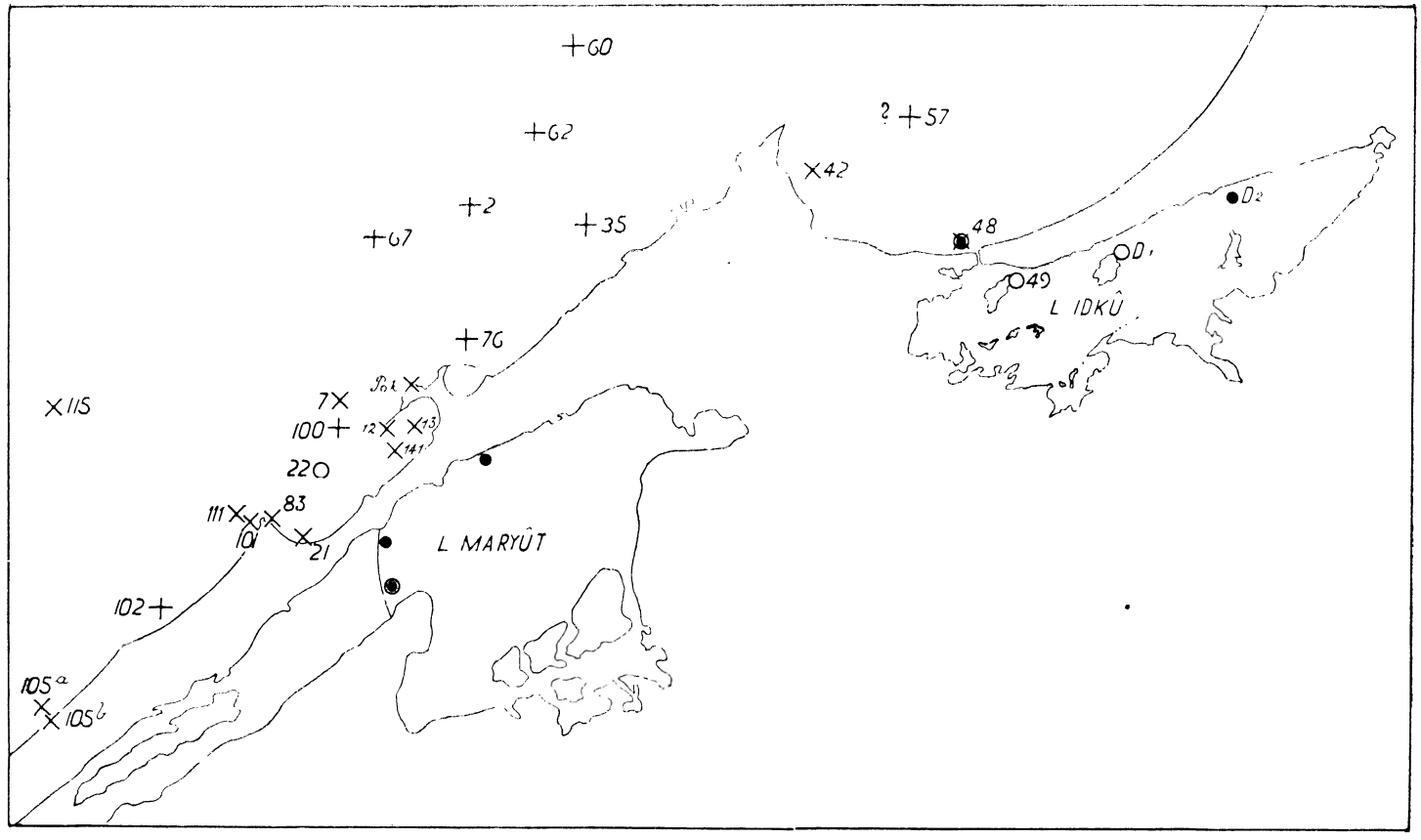

FIG. 8

● *Thiara tuberculata* ülle

O *Pirenella conica* (Blainville)

+ *Bittium Latreillii* (Payraudeau)

× *Cerithium vulgatum* (Bruguière)

Cerithium (Vulgocerithium) vulgatum Bruguière (Fig. 8).

Remark : "Besides the typical forms, specimens were taken which seem to be referable to var. *tuberculata* Philippi and to var. *hirta* B.D. & D. (T.)

Localities : St. 7 ; 17 fath.
St. 12 ; 3 fath. (*Cerithium* sp. ?)
St. 13b ; 6 fath.
St. 21 ; 1 ½ fath.
Pok. ; according to the collector's notes.
St. 42 ; according to the collector's notes.
St. 48.
St. 83 ; (C. (V.) V. var. *tuberculata* Phil. with the Pagurids *Clibanarius misanthropus* (Risso) acc. to Balss (1936 p. 19).
St. 101 ; 5½ fath. (C (V.) v. var. *hirta* B. D. & D.)
St. 105 a, b ; 4-6 fath.
St. 111 ; 10 fath. (C. (V.) v. var. *hirta* B. D. & D.)
St. 115 ; 30 fath. (C. (V.) v. var. *hirta* B. D. & D.)
St. 141 ; 8 fath.

Habitat : Common in the whole district investigated, particularely in the range of the Western Harbour in small depths, in greater depths and in both *varieties* cited, in the west only ; in the Bay of Abukir as well as in the estuary of Lake Edku. "Liebt die Nähe brackigen und süszen Wassers" (Graeffe 1902), is decidedly euryhaline. Occurs in the Western Harbour also on black mud ; oligosaprob (acc. to Wilhelmi 1912 p. 145).

Geographical distribution : In the Lusitanean Sea southward to Senegal, northern limit uncertain (Kobelt IV. 1908 p. 86, according to other authors "espèce douteuse dand l'Atlantique" (Lamy, date ?) or bipolar, viz. also in South-West Africa (Ekman 1935 p. 277), Nobre (1931 p.135, 1936 p. 95) cites it from Portugal. Everywhere in the *litoral* of the Mediterranean and of the Adriatic as well as in the Black Sea (Carus 1893 p. 358, Middendroff 1 47). Already known from the surroundings of Alexandria ". . . . commune sur les rochers à fleur d'eau. Ramleh, Aboukir, Mex. Sur les bords du Mareotis on trouve des formes habituelles aux eaux saumâtres. . . . ." (Pallary 1912 p. 109).

FAM. TRIPHORIDAE.

Triphora perversa (L.) (Fig. 9).

Localities : St. 32 ; 5½ fath.
St. 57 ; 3 fath.
St. 61 ; 50 fath.
St. 73 ; 38 fath.

Habitat : On muddy and sandy grounds with or without growth of plants in greater depth also. Reaches down to 94 m. in the Adriatic (Sturany 1896 p. 28), in the northern Seas deeper (acc. to Ankel 1936 p. 48 down to 200 m).

Geographical distribution : In the Atlantic from Norway and the Shetlands to the Makaronesian Islands, everywhere in the Mediterranean and in the Adriatic as well as in the Black Sea (Carus 1893 p. 362, Middendorff 1847 p. 48, Ankel 1936 p. 48). Already known from Alexandria "Plage de Ramleh : commun. Sidi Gaber" (Pallary 1912 pharo p. 108).

FAM. JANTHINIDAE.

Janthina bicolor Menke. (Fig. 9).

Localities : St. 48, cast ashore ; acc. to the collector's notes. near the Pharo (Ph.), at the outer side. cast ashore.

Habitat : The species was never found swimming free in the sea.

Geographical distribution : In the Atlantic, in the Mediterranean and in the eastern Adriatic (Carus 1893 p. 298, Coen 1933). Already known from Alexandria, Abukir and Port Said (Pallary 1912 p. 128).

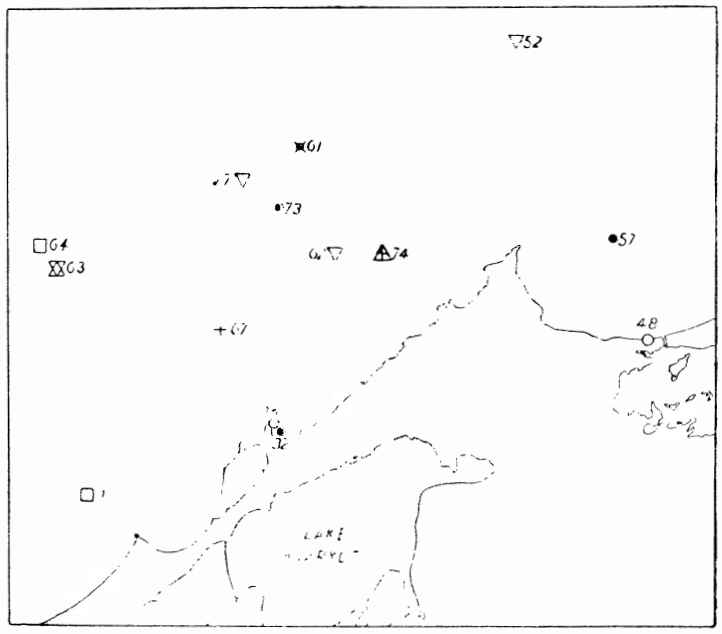

FIG. 9.

● *Triphora perversa* (L)
O *Janthina bicolor* (Menke)
+ *Strombiformis glaber* (da Costa)
X *Menestho humboldti* (Risso) var. *sulcata* (B. D. et. D.)
△ *Aporrhais pes-pelecani* (L)
▽ *Aporrhais serresianus* (Michaud)
□ *Atlanta lesueuri* (Soul.)

FAM. MELANELLIDAE.

Strombiformis glaber da Costa (Fig. 9).

Localities : St. 67 ; 22 fath.
St. 47 ; 33 fath.

Habitat : On muddy bottom more than 20 fathoms deep. Reaches also in the northern seas "bis etwa 200m." (Ankel 1936 p. 50).

Geographical distribution: In the Atlantic from the Shetlands to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Ankel 1936 p. 50, Carus 1893 p. 290, Coen 1933).

FAM. PYRAMIDELLIDAE.

Menestho humboldti (Risso) var. *sulcata* B. D. & D. (Fig. 9).

Locality : St. 61 ; 50 fath.

Habitat : Was fished once only on muddy ground in greater depths.

Geographical distribution : In the Atlantic southward to the Makaronesian Islands, in the Mediterranean and in the eastern Adriatic (Carus 1893, p. 265). Already known from Alexandria (Plage de Ramleh rare). (Pallary 1912 p. 133).

FAM. APORRHAIDAE.

Aporrhais pes-pelecani (L.) (Fig. 9).

Localities : St. 63 ; 74-85 fath.
St. 74 ; 23 fath.

Habitat : Not frequent on stony or sandy mud-or slime-bottom in 20-80 fathoms. On similar bottoms also in the Adriatic (Graeffe 1902, Vatova 1935) and in the northern seas ; there in depths of 9-190m. (Ankel 1936 p. 57). According to Yonge (1937 p. 689) the species occurs off the Norwegian coasts "in comparatively firm muddy gravel bottoms" "at a depth of some 20 metres". According to Spaerck (1936 p. 139) and others it belongs to the boreal-mediterranean soft-bottom or Amphiura-association.

Geographical distribution : Atlantic Ocean from Iceland and Finmarken to Gibraltar, everywhere in the Mediterranean, in the Adriatic and in the Marmara-Sea. (Ankel 1936 p. 57, Coen 1933, Sturany 1895 p. 120). According to Pallary (1912 p. 108) already known from Port Said (Dragué dans les grands fonds : peu commun).

Aporrhais serresianus (Michaud) (Fig. 9).

Localities : St. 27 ; 70 fath.
St. 52 ; 22 fath.
St. 62 ; 28 fath.
St. 63 ; 74-85 fath.

Habitat : Only on muddy ground from 20-80 fathoms. Besides in the Mediterranean mostly on muddy ground down to 808m. (Sturany 1896 p. 12). According to Yonge (1937 p. 689. 699) off the Norwegian coast "an inhabitant of deeper water than *A. pes-pelecani*" and "of softer bottoms of fine mud".

Geographical distribution : In the Atlantic near the Shetlands and off the Norwegian coast, off the Portuguese coast, seldom in greater depths (Nobre 1931 p. 133), in the Mediterranean and in the Adriatic (Ankel 1936 p. 58, Coen 1933).

FAM. ATLANTIDAE.

Atlanta lesueuri Soul. (Fig. 9).

Localities : St. 1 ; planctonic 1.IV, and 3.VIII. 1933. (*Atlanta* sp. ?)
St. 64 ; in sifted bottom-mud from a depth of 110 fathoms.

Remark : The shells of the two planctonic juvenile stages had dissolved in Formaldehyde so that a determination was impossible. In the shell almost 4. 5 mm. large from the muddy ground of 110m. oblique crests were to be recognized rather distinctly, by which according to Tesch (1906 p. 8) this species can easily be distinguished. Very likely it is often mistaken with other species.

Habitat : Very likely these Heteropods are very rare guests in summer and autumn while they are most ferequently to be found at this season of the year near Messina (acc. to Issel 1915 p. 20). It is striking that both localites are situated in the utmost west, respectively in the open sea (comp. Steuer 1935 p. 5).

Geographical distribution : Up to this time this species has been found in the Atlantic, in the Mediterranean and in the Adriatic (Tesch 1906, Issel 1915, Kalkschmid 1916 p. 20).

FAM. NATICIDAE.

Natica hebraea (Mart). (Fig. 10).

Localities : Eastern Harbour near the Laboratory; Petersen-haul (vid. Vatova 1935)
St. 35 ; 7 fath.

Habitat : Was found in the Eastern Harbour and off Mountazah on sandy bottom begrown with plants in little depth, as in the Adriatic (Coen and Vatova 1932) ; reaches near Naples a depth of 60 metres and is said to be oligosaprob (feebly mesosaprob) (acc. to Wilhelmi 1912 p. 146).

Geographical distribution : In the Atlantic near the Makaronesian Islands (Cape Verde Islands), in the Mediterranean and in the Adriatic (Carus 1893 p. 301, Dautzenberg & Fischer, 1906 p. 52, Coen 1933). Already known from Alexandria (Port-Vieux à quelques brasses de profondeur. Plage de Ramleh). (Pallary 1912 p. 126).

Natica millepunctata Lamarck (Fig. 10).

Localities : Eastern Harbour near the bath (L.)
St. 7 ; 17 fath.
St. 48 ;
St. 61 ; 50 fath.
St. 63 ; 74-85 fath.
St. 64 ; 110 fath.
St. 74 ; 23 fath.

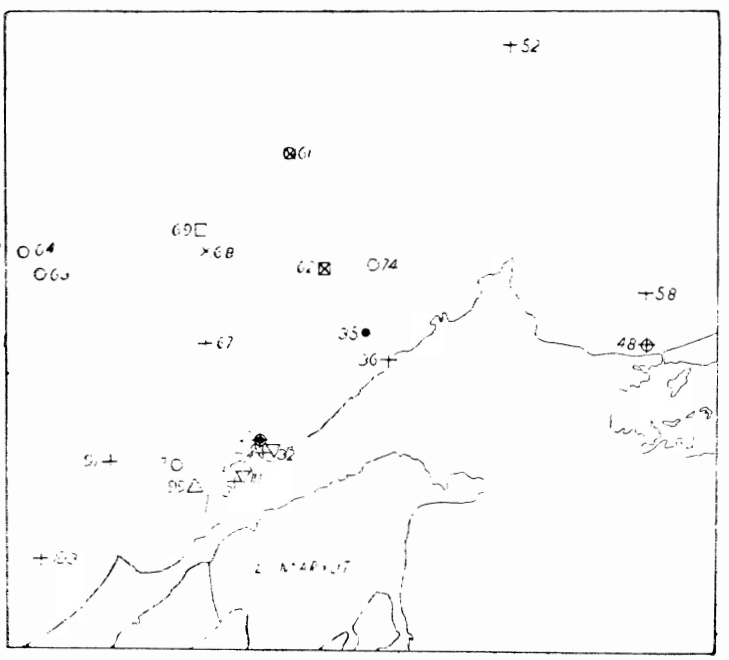

FIG. 10.

● *Natica hebraea* (Mart.)
O *Natica millepunctata* (Lamarck)
△ *Natica dillwynii* (Payraudeau)
× *Polynices alderi* (Forbes) var. *elata* (B. D. & D.)
□ *Natica flammulata* (Requien)
▽ *Polynices intricatus* (Donovan)
+ *Polynices josephinus* (Risso)

Habitat : On stony, sand-or mud-bottoms with or without algae from the coast to greater depths, in the eastern Mediterranean (acc. to Sturany 1896 p.9) down to 680 m. According to Wilhelmi (1912 p. 146) oligosaprob (feebly mesosaprob).

Geographical distribution : In the Lusitanean Sea (Kobelt 1901 p. 76), southward to the Makaronesian Islands (Canaries), everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 301). Already known from Alexandria (Plage de Ramleh. Port Said as var. *punctatissima* (Pallary : Mex). (Pallary 1912 p. 125).

Natica dillwynii Payraudeau (Fig. 10).

Locality : St. 99 ; 5½ fath.

Habitat : Was found once only off the breakwater (W. El Aramil) between algae and Posidonia on stony bottom in little depth.

Geographical distribution : In the Lusitanean Sea, West Africa and the West Indies, at the eastern coast of America to Cape Hatteras, in the Mediterranean and in the Adriatic (Carus 1893 p. 302, Kobelt 1901 p.82, Coen 1933). Already known from Alexandria (Plage de Ramleh : rare). (Pallary 1912 p. 125).

Natica flammulata Requien (Fig. 10).

Localities : St. 62 ; 28 fath.
St. 69 ; 48 fath.

Habitat : On muddy bottom between 30 and 50 fathoms ; not frequent.

Geographical distribution : In the warmer Atlantic, e.g. according to Nobre (1931 p. 174) at the Portuguese coast, everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 305, Kobelt 1901 p. 79, Coen 1933). Already known from Alexandria (Plage de Ramleh : rare). (Pallary 1912 p. 126).

Polinices (Payraudeautia) intricatus (Donovan) (Fig. 10).

Localities : St. 11 ; 6 fath.
St. 32 ; 5½ fath.

Habitat : Was found in the two harbours only on mundy and sandy bottom. Reaches (according to Weinkauff 1868 p. 255) down to 60 fath. Perhaps saprob..

Geographical distribution : In the Lusitanean Sea, southward to the Makaronesian Islands (Azores), everywhere in the Mediterranean and in the

Adriatic (Carus 1893 p. 303, Kobelt 1901 p. 103, Coen 1933). Already known from Alexandria (Plage de Ramleh : rare). (Pallary 1912 p. 126).

Polinices (Neverita) josephinia (Risso) (Fig. 10).

Localities : Eastern Harbour ; Petersen-haul (vid. Vatova 1935).
Eastern Harbour, near the bath (L.)
St. 4 ; 3 fath.
St 13b ; 6 fath.
St. 36 ; 3 fath.
St. 48 ;
St. 52 ; 22 fath.
St. 58 ; 4 fath.
St. 67 ; 22 fath.
St. 91 ; 20 fath.
St. 103 : 16 fath.

Habitat : Widely spread on sandy, more rare on muddy bottom, usually in greater depths down to 22 fath. ; also in brackish water. Acc. to Weinkauff (1868 p 256) "häufig in Brackwasser, seltener im Meere". Reached the Timsah-Lake in 1885 (Pallary 1912 p. 127). According to Wilhelmi (1912 p. 146). oligosaprob, feebly mesosapaob.

Geographical distribution : Everywhere in the Mediterranean and in the Adriatic, seems not or hardly to surpass Gibralter (Carus 1893 p. 304, Kobelt 1901 p. 105, Coen 1933). Already known from Egypt Alexandria, (Port-Neuf, Plage de Ramleh : très commun), Port-Said. Suez-Canal, Lake Timsah, Menzaleh-Lake" (Pallary 1912 p. 127, Tomlin 1927 p. 297). Collected in great quantities at the beach of Port Said (J.).

Polinices (Lunatia) alderi (Forbes) var. *elata* B.D. & D. (Fig. 10).

Localities : St. 61 ; 50 fath.
St. 62 ; 28 fath.
St. 68 ; 37 fath.

Habitat : In muddy and slimy bottom about 30-50 fathoms deep.

Geographical distribution : In the Atlantic from middle-Norway (Lofoten) and the Faroer southward to Africa (Ankel 1936 p. 54) everywhere in the Mediterranen and in the western Adriatic (Coen 1933).

FAM. CYPRAEIDAE

Cypraea spurca L. (Fig. 11).

Localities : St. 51 ; 13 fath.
St 73 ; 38 fath.

Habitat : In muddy and sandy bottom; according to the collector's notes very likely of a wider distribution frootter on the grounds near Alexandria.

Geographical distribution : In the Atlantic from the British Channel to Senegambia, the Islands in the Gulf of Guinea, Ascension, St. Helena, in the Mediterranean and in the East Adriatic (Vayssière 1929, Martens-Thiele 1903, Coen 1933). Already known from Egypt (Plage de Ramleh, forme typique : commun) (Carus 1893 p. 370, Pallary 1912 p. 107).

Trivia pulex (Dillwyn) (Fig. 11).

Locality : St. 32 ; 5½ fath.

Habitat : Was taken in the Eastern Harbour only.

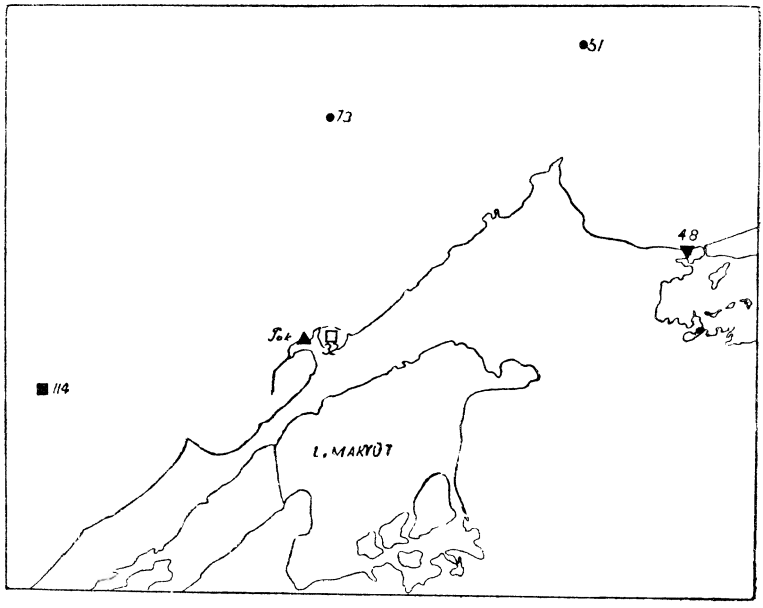

FIG. 11.

● *Cypraea spurca* (L.) ▲ *Charonia reticulata* (Blainville)

□ *Trivia pulex* (Dillwyn) ▼ *Tonna galea* (L.)

■ *Cassidaria echinophora* (L.)

Geographical distribution ; In the southern of the Lusitanean Sea, e.g. according to Nobre (1931 p. 131) not frequent off the Portuguese coast, in the Mediterranean and in the eastern Adriatic (Kobelt 1908, Coen 1933). Already known from Alexandria (plage de Ramleh) (Carus 1893 p. 371, Pallary 1912 p. 107).

FAM. CASSIDIDAE.

Cassidaria echinophora (L.) (Fig. 11).

Locality : St. 114 ; 25 fath.

Hapitat : Only in the utmost west of the district investigated on stony sand- and mud-bottom begrown with algae like in the Adriatic (Graeffe 1902).

Geographical distribution : "Eine echt mittelmeerische Art", everywhere in the Mediterranean and in the Adriatic (Kobelt 1901 p. 69, Coen 1933). According to Nobre (1931 p. 127) it also occurs off the Portuguese coast. Already known ("rare") from Alexandria (Pallary 1912 p. 105).

FAM. CYMATIIDAE.

Charonia (Colubraria) reticulata (Blainville) (Fig. 11).

Locality : Pok.

Habitat : Was found on the crags situated off the Anfouchi Bay only.

Geographical distribution : Mediterranean and Adriatic (Kobelt 1901 p. 15, Coen 1933). Already known from Alexandria (Plage de Ramleh : rare. Habite les grands fonds). (Carus 1893 p. 377, Pallary 1912 p. 104).

FAM. TONNIDAE.

Tonna galea (L.) (Fig. 11).

Locality : St. 48 ; ashore.

Habitat : Only one shell cast ashore was found on the beach of Abukir near Edku Bridge. The Cambridge Expedition also found one shell only in Lake Menzaleh (Tomlin 1937 p. 294) and near Naples and Genova this species became more scarce (according to Lo Bianco 1909 p. 636 and Issel 1918 p. 372).

Geographical distribution : In the Atlantic, e.g. off the Portuguese coast (Nobre 1931 p. 128, 1936 p. 91), southward to the Canaries and also off the American coast (Brasil, West Indies), everywhere in the Mediterranean and in the Adriatic (Kobelt 1901 p. 73, Tomlin 1927 p. 294, Coen 1933, Ekman 1935 p. 90). Already known from the Egyptian coast (Plage de Ramleh, Rosette, Damiette, Port Said : rare). (Carus 1893 p. 373, Pallary 1912 p. 106).

Ordo. STENOGLOSSA.

FAM. MURICIDAE.

Murex (Bolinus) brandaris L. (Fig. 12).

Localities : St. 7 ; 17 fath.
St. 48 ; cast ashore.
St. 52 ; 22 fath.

St 62 ; 28 fath.
St. 66 ; 20 fath.
St. 75 ; 25 fath.
St. 76 ; 11 fath.

Habitat : On muddy, more seldom on sandy bottom of about 10-30 fathom. According to Wilhelmi (1912 p. 146) oligo-to feebly mesosaprob.

Geographical distribution : In the Atlantic southward to the Canaries, everywhere in the Mediterranean and in the Adriatic (Kobelt 1887 p. 5, Coen 1933). Already known from the Egyptian coast (Dragué dans le Port-Vieux, Plage de Ramleh, Aboukir, Port Said. Commun). (Carus 1893 p. 381, Pallary 1912 p. 99).

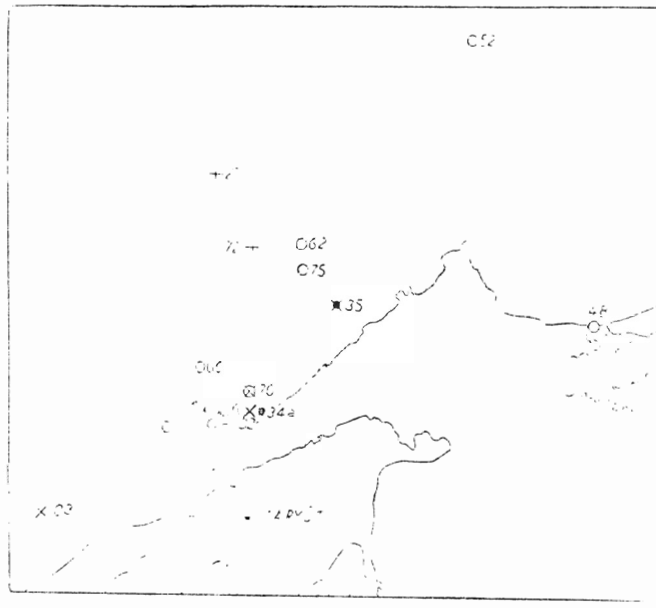

FIG. 12.

O *Murex brandaris* (L.) X *Tritonalia blainvillii* (Payraudeau)
+ *Typhis sowerbii* (Broderip) ● *Tritonalia edwardsii* (Payraudeau)

Murex (*Trunclaria*) *trunculus* L. (Fig. 13).

Localities : Eastern Harbour ; Petersen haul (*vid.* Vatova 1935).
Eastern Harbour ; near the bath (L.)
St. 4 ; 3 fath.
St. 5 ; 2-3½ fath.
St. 11 ; 6 fath.
St. 13b; 6 fath.
St. 14 ; 7 fath.
St. 21 ; 1½ fath.
St. 31 ; 2¼ fath.

St. 32 ; 5½ fath.
St. 34b ;
Pok.
St. 66 ; 20 fath.
St. 76 ; 11 fath.
St. 90 ; 18 fath.
St. 99 ; 5½ fath.
St. 111 ; 10 fath.
St. 140 ; 4-8 fath. (acc. to the collector's notes).

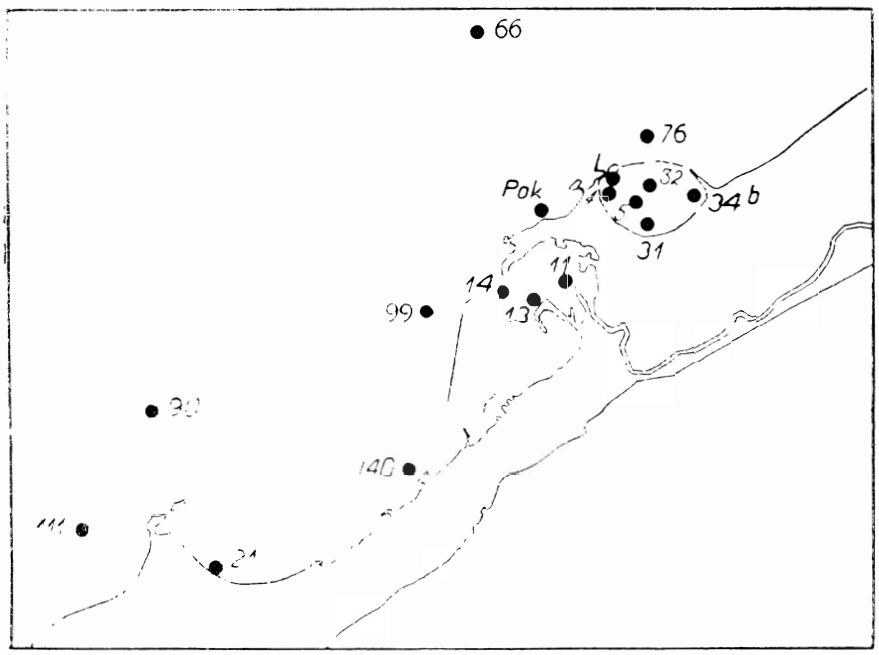

FIG. 13.

● *Murex trunculus* (L.)

Habitat : Was chiefly found in the district of the two harbours on sandy and muddy bottom (in the harbours several times on black mud.) more rarely on stony bottom, like in the Adriatic (Coen and Vatova 1932). According to Wilhelmi (1912 p. 146) oligo-feebly mesosaprob, dangerous for oyster-cultures (Bellini 1929 p. 37). "Elle est consommée en Egypte, en Tunisie, en Algérie etc .... mais peu ou point en Syrie" (Gruvel 1931 p. 124).

Geographical distribution : In the Atlantic not as far down as the Gulf of Biscaya. Nobre (1931 p. 113, 1936 p. 82) however found it, like the preceeding species off the Portuguese coast, southward to the Canaries. Everywhere in the Mediterranean and in the Adriatic (Lamy, date ?, Kobelt

1887 p. 8). Already known from the Egyptian coast (Alexandrie, commun ; on le pêche dans le Vieux-Port, Ramleh, Port Said). (Carus 1893 p. 382, Pallary 1912 p. 100).

Typhis (Typhinellus) sowerbii Broderip (Fig. 12).

Localities : St. 27 ; 70 fath.
St. 72 ; 30 fath.

Habitat : On muddy bottom mixed with sand (mussel-sand) in 30-70 fathoms.

Geographical distribution : Everwhere in the Mediterranean and in the Adriatic (Kobelt 1887 p. 23, Coen 1933). Belongs, according to Bellini (1929 p. 37) to the "forme immigrate dal sud o ad affinità meridionali". Already known from Alexandria (Dragué à quelques brasses de profondeur dans le Port-Vieux. Plage de Ramleh : rare). (Pallary 1912 p. 99).

Tritonalia Blainvillii (Payraudeau) (Fig. 12).

Localities : St. 32 ; 5½ fath.
St. 35 ; 7 fath.
St. Pok.
St. 76 ; 11 fath.
St. 103; 16 fath.

Habitat : On crags, stony sandbottoms begrown with algae down to 16 fath. as in the Adriatic (Graeffe 1902, Coen and Vatova 1932).

Geographical distribution : In the Atlantic northward not as far as the Gulf of Biscaya, southward to the Gulf of Guinea. Everywhere in the Mediterranean and in the Adriatic (Kobelt 1887 p. 16). Already known from the Egyptian coast (Alexandrie, Plage de Ramleh : commun). (Pallary 1912 p. 100).

Tritonalia edwardsii (Payraudeau). (Fig. 12).

Localities : St. 34a ;
St. 35 ; 7 fath.

Habitat : On stony, sandy bottom begrown with plants near Silsila and off Sidi Bishr only down to 7 fathoms, like near Triest (Graeffe 1902 : "an Steinen zwischen Algen der Küstenzone").

Geographical distribution : In the Atlantic from the Bay of Biscaya southward to Madeira and the Canaries, everywhere in the Mediterranean and in the Adriatic (Kobelt 1887 p.18) Already known from the Egyptian coast (Plage de Ramleh, Aboukir : commun. Port Said, "P.8") (Pallary 1912 p. 98. Tomlin 1927 p. 294).

FAM. PYRENIDAE.

Columbella rustica (L.) (Fig. 14).

Localities : Sidi Bishr.
St. 12 ; 3 fath.
St. 14 ; 7 fath.
St. 17 ; 5-12 fath.
St. 21 ; 1½ fath.
St. 22 ; 7 fath.
St. 35 ;
St. 33b;
St. 35 ; 7 fath.
Pok.
St. 50 ; 9 fath.

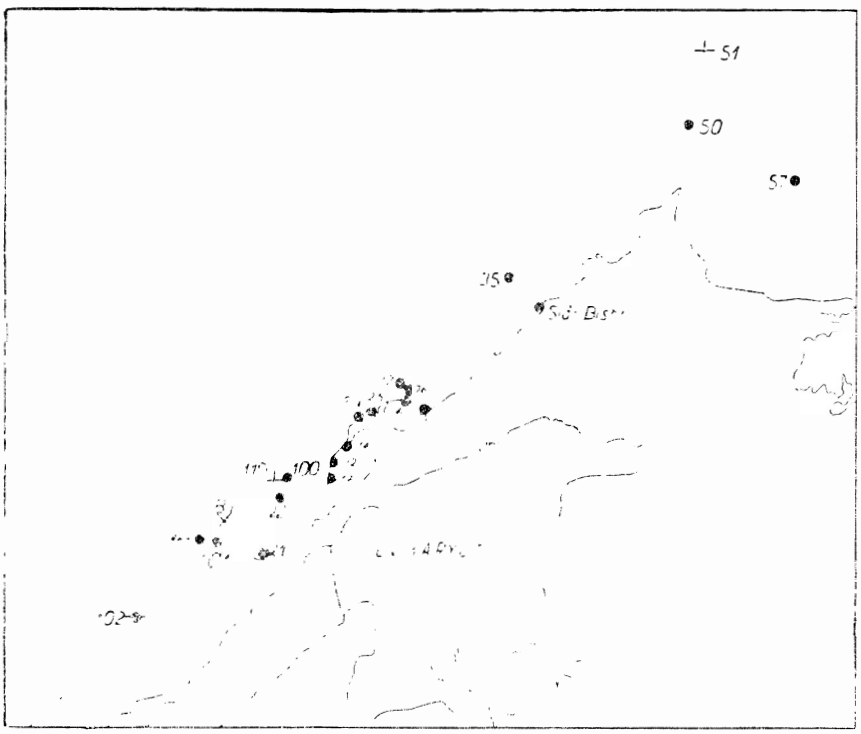

FIG. 14.

● *Columbella rustica* (L.) × *Pyrene scripta* (L.)
+ *Euthria cornea* (L.)

St. 57 ; 3 fath.
St. 76 ; 11 fath.
St. 77 ; 7 fath.

St. 100 ; 5 ½-6 fath.
St. 101 ; 5 ½ fath.
St. 102 ; 5-6 fath.
St. 111 ; 10 fath.
St. 145 ; 10-11 fath.

Habitat : Everywhere near the coast principally on stony bottom begrown with algae Caulerpa and seaweed as near Triest (Graeffe 1902) and in the Gulf on Genova (Issel 1912).

Geographical distribution : In the Atlantic southward from Portugal (Madeira, Canaries) to the Gulf of guinea; everywhere in the Mediterranean and in the Adriatic as well as in the Black Sea (Carus 1893 p. 388, Kobelt 1901 p. 32, Tomlin 1927 p. 293). Already known from the Egyptian coast (Alexandrie, Plage de Ramleh, Aboukir, Port Said : commun). (Carus 1893 p. 388, Pallary 1912 p. 98, Tomlin 1927 p. 293).

Pyrene (*Mitrella*) *scripta* (L.) (Fig. 14).

Locality : St. 81 ; 6 fath.

Habitat : Found once only on stony, sandy bottom begrown with plants in 6 fathoms off Dikheila, like in Triest (Graeffe 1902) "eher selten".

Geographical distribution : Everywhere in the Mediterranean, in the Adriatic and in the Black Sea (Carus 1893 p. 389). Already known from Alexandria (Plage de Ramleh : pas rare) (Pallary 1912 p. 98).

FAM. BUCCINIDAE.

Euthria cornea (L.) (Fig. 14).

Localities : St. 51 ; 13 fath.
St. 102 ; 5-6 fath.
St. 119 ; 5½ fath.

Habitat : On sandy, stony bottom begrown with plants. According to Wilhelmi oligosaprob (1912 p. 145).

Geographical distribution : Reaches in the Atlantic down to South-Africa ; everywere in the Mediterranean and in the Adriatic (Carus 1893 p. 401, Thiele 1931 p. 312). Already known from Alexandria (Dragué dans le Port-Vieux, Plage de Ramleh : pas rare). (Pallary 1912 p. 92).

Pisania maculosa Lamarck. (Fig. 15).

Localities : Eastern Harbour near the Laboratory.
Sidi Bishr.

St. 34 a.
Pok.

Habitat : Only in the district of the Eastern Harbour from Anfouchi Bay to Sidi Bishr on crags and stones between algae and Posidonia of the coastal zone, like near Triest (Graeffe 1902).

Geographial distribution : In the Atlantic southward to the Azores. Everywhere in the Mediterranean and in the Adriatic (Kobelt 1887 p. 93, Carus 1893 p. 402). Already known from Alexandria (Plage de Ramleh et du Mex, sur les rochers à fleur d'eau : commun). (Pallary 1912 p. 91).

Cantharus (Pollia) d'Orbignyi (Payraudeau). (Fig. 15).

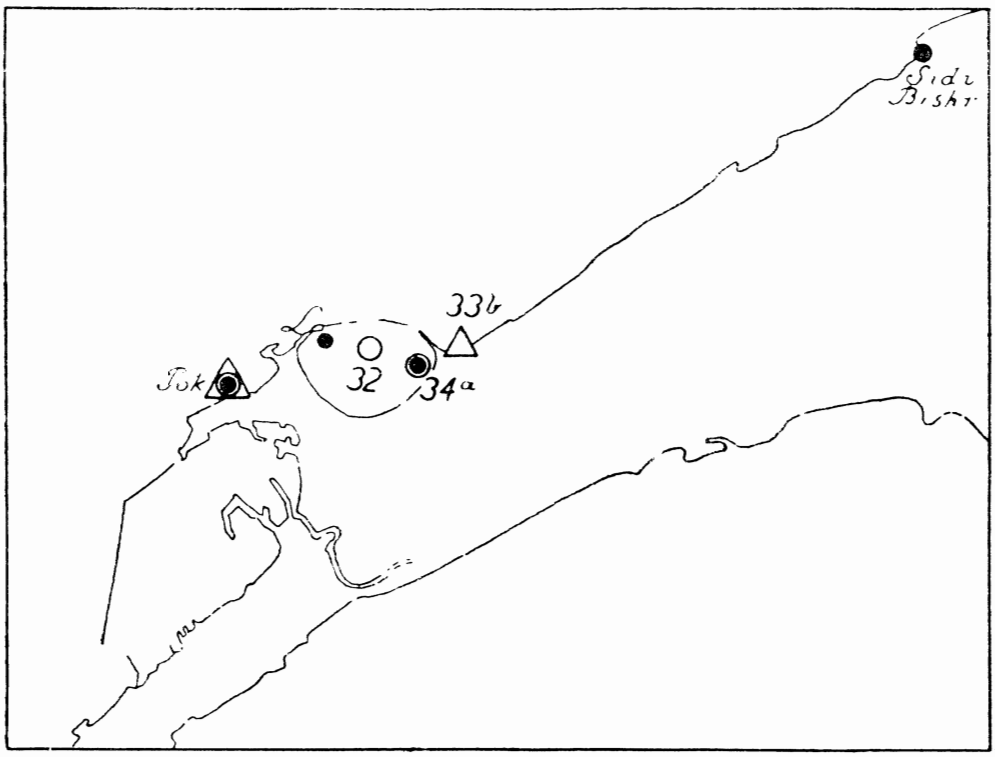

FIG. 15

● *Pisania maculosa* (Lamark) O *Cantharus d'Orbignyi* (Payraudeau)
△ *Pollia picta* (Scacchi)

Localities : St. 32 ; 5½ fath.
St. 34a.
Pok.

Habital : Only in the Eastern Harbour and in the Anfouchi Bey on crags and begrown with plants.

Geographical distribution : In the Atlantic off the African coast down to Senegal; everywhere in the Mediterranean and in the eastern Adriatic (Kobelt 1887 p. 95, Carus 1893 p. 402, Coen 1933). Already known from the Egyptian coast (Dragué dans le Port-Vieux, Plage de Ramleh, Port Said. Commun). (Pallary 1912, p. 91).

Pollia picta (Scacchi) (Fig. 15).

Loclaities : St. 33b.
Pok.

Habitat : Was found on the crags of Anfouchi Bay only and on the stony, shallow sand-ground near Silsila.

Geographical distribution : In the Mediterranean and in the eastern Adriatic in single specimens and scarce (Kobelt 1887 p. 96, Coen 1933). In Berlin Museum, too, only Mediterranean findings (J.). Already known from Alexandria (Dragué dans le Port-Vieux, Plage de Ramleh, Mandara). (Pallary 1912 p. 92.)

FAM. NASSARIIDAE.

Nassarius mutabilis (L.) var. *minor* Monterosato (Fig. 16).

Localities : St. 5 ; 2—3½ fath.
St. 12 ; 3 fath.
St. 13b; 6 fath.
St. 31 ; 2 1/4 fath.
St. 33b;
St. 39 ; 17 fath.

Habitat : Exclusively on sandy bottom as in Naples (Lo Bianco 1909 p. 639) and in the Adriatic (Graeffe 1902, Coen and Vatova 1932). According to Wilhelmi (1912 p. 146) oligosaprob to feebly mesosaprob.

Geographical distribution : In the Atlantic from Portugal to the Canaries, everywhere in the Mediterranean, in the Adriatic and in the Black Sea (Kobelt 1887 p. 124). Already known from Egypt (Dragué dans le Port-Neuf, à quelques mètres de profondeur. Commune. Damiette, Port Said. D'après M. Tillier cette espèce était en 1885 arrivée au Lac Timsah). (Pallary 1912 p. 93).

Nassarius (Arcularia) gibbosulus (L.) (Fig. 16).

Localities : St. 33b.
St. 36 ; 3 fath.
St. 48.

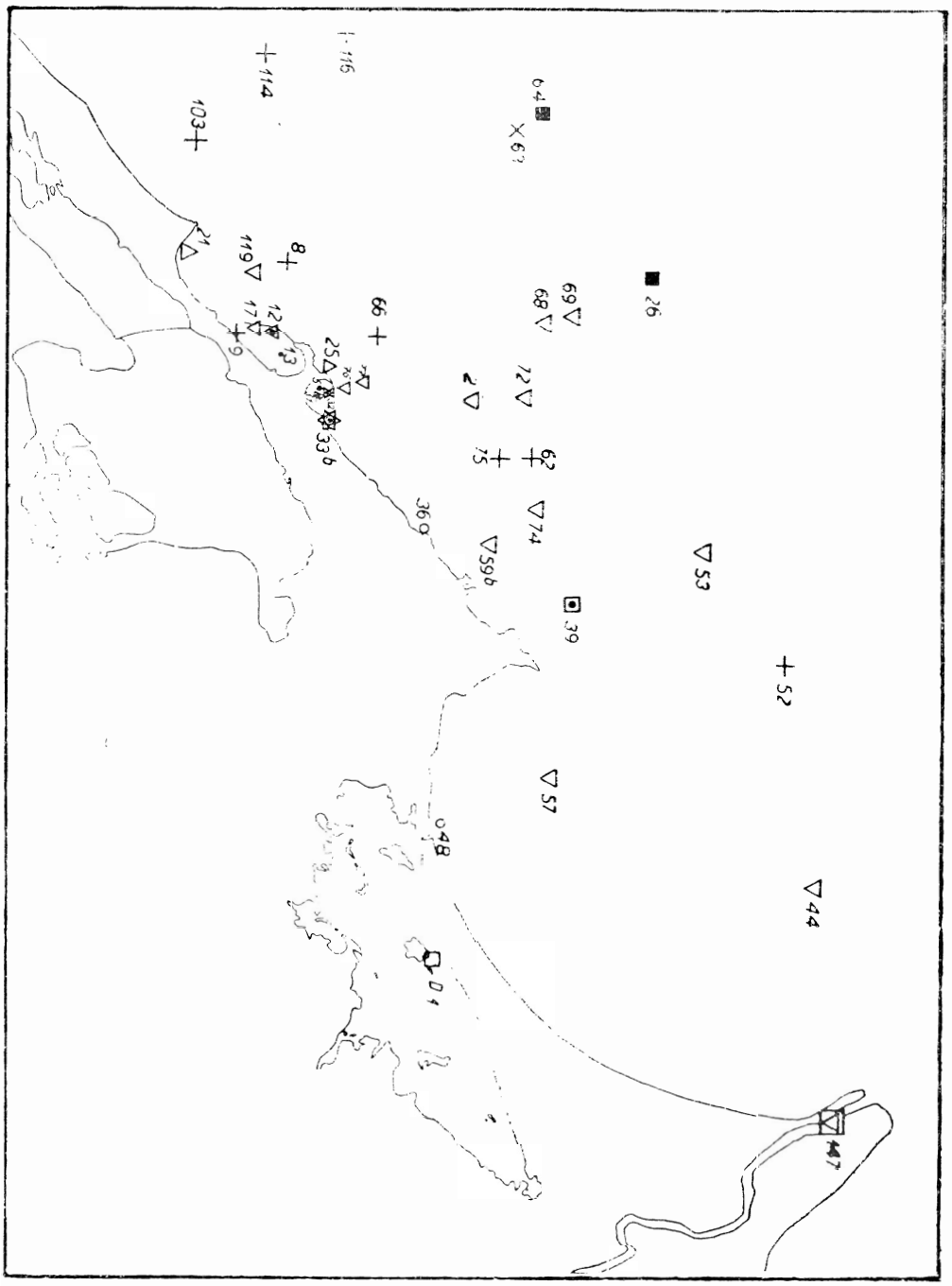

FIG. 16.

● *Nassarius mutabilis* (L.) var. *minor* (Monterosato).
O *Nassarius gibbosulus* (L.) ▽ *Nassarius incrassatus* (Strom).
■ *Nassarius corniculus* (Olivi) + *Nassarius pygmaeus* (Lamarck).
△ *Nassarius costulatus* (Renier) × *Nassarius* sp.
□ *Nassarius reticulatus* (L.) var. *nitidus* (Jeffreys).

Habitat : Only on sandy bottom near Silsila, Sidi Bishr and in the Edku Channel.

Geographical distribution : In the Mediterranean and Adriatic. In Berlin Museum also findings from the Red Sea and Madagascar (J.) Already known from Alexandria (Dragué à quelques brasses de profondeur sur les fonds de sable dans le Port-Neuf. Ramleh). (Carus 1893 p. 392, Pallary 1912 p. 96.

Nassarius (*Amyclina*) *corniculus* (Olivi). (Fig. 16).

Localities : St. 26 ; 126 fath.
St. 64 ; 110 fath.

Habitat : According to the two findings this species occurs in muddy bottom deeper than 100 fathoms ; which however does *not* agree with the statements given hitherto (see Graeffe 1902, Lo Bianco 1909). According to Wilhelmi 1912 p. 146) it is very frequent near Naples, especially in the harbours and bays, where the water moves little. He calls it oligosaprob to feebly mesosaprob.

Geographical distribution : In the Atlantic from Portugal (Nobre 1931 p. 105, 1936 p. 76) southward to Mogador on the coast of Morocco; everywhere in the Mediterranean, in the Adriatic and in the Black Sea (Kobelt 1887 p. 160, Carus 1893 p. 397, Coen 1933). Already known from Alexandria (Plage de Ramleh commun). (Pallary 1912 p. 97).

Nassarius (Telasco) costulatus (Renier).
var. *ruscurianus* Monterosato and var. *pulcheraimus* B. D. & D. (Fig. 16).

Localities : St. 21 ; 1½ fath.
St. 25 ;
St. 31 ; 2 1/4 fath.
St. 32 ; 5½ fath
St. 33b.

Habitat : Only in the district of the harbours on shallow sandy bottom as in the Adriatic (Graeffe 1902).

Geographical distribution : In the Atlantic southward to the Makaronesian Islands, everywhere in the Mediterranean and in the eastern Adriatic (Kobelt 1887 p. 150, Dautzenberg & Ficher 1906 p. 27. Coen 1933). Already known from Alexandria (Ramleh). (Carus 1893 p. 395).

Nassarius (*Hima*) *incrassatus* (Ström) (Fig. 16).

Localities : St. 2 ; 25 fath.
St. 12 ; 3 fath.
St. 17 ; 5-12 fath.
St. 32 ; 5½ fath.
St. 3b.

St. 44 ; 10 fath.
St. 53 ; 33 fath.
St. 57 ; 3 fath.
St. 59b; 15 fath.
St. 68 ; 37 fath.
St. 69 ; 48 fath.
St. 72 ; 30 fath.
St. 74 ; 23 fath.
St. 76 ; 11 fath.
St. 77 ; 7 fath.
St. 119; 5 ½ fath.
St. 147; 1.7 fath.

Habitat : Widely spread on slime-,mud- and sand-bottoms down toward 50 fathoms, also on black mud. Evidently euryhaline (Finding in the mouth of the Nile.)

Geographical distribution : In the Atlantic from Iceland and Finmarken to the Makaronesian Islands, everywhere in the Mediterranean, in the Adriatic and in the Black Sea (Carus 1893 p. 394, Ankel 1936 p. 61). Already known from the Egyptian coast (Plage de Ramleh, Aboukir : très commun. Port Said). (Pallary 1912 p. 95, Tomlin 1927 p. 293).

Nassarius (Hima) reticulatus (L.) var *nitidns* Jeffreys. (Fig. 16).

Localities : St. 39 ; 17 fath.
St. 147 ; 1.7 fath.
St. D_1 ; Lake Edku. Isle Derfil.

Habitat : In Lake Edku, and the mouth of the Nile but also off Abukir on muddy, respectively slimy sand bottom as in the northern seas (according to Ankel 1936 p. 60 : "Mit Vorliebe auf sandigen und sandig-schlickigen Gründen des Wattenmeeres"). In brackish water to 15 °/oo salinity (Ankel, ibid. p. 71). Euryhaline, acc. to Wilhelmi (1912 p. 146 oligosaprob to feebly mesosaprob. According to Bellini (1929 p. 35) dangerous for oyster-cultures.

Geographical distribution : In the Atlantic from Norway (Drontheim) and the Shetlands to Gibraltar, everywhere in the Mediterranean, in the Adriatic and in the Black Sea (Ankel 1936 p. 60). Already known from Egypt (Plage de Ramleh, Aboukir : pas rare. Lake Mariotis. Port-Said and entrance to Canal). (Pallary 1912 p. 93, 94, 71, Tomlin 1927 p. 293).

Nassarius (Hima) pygmaeus (Lamarck) (Fig. 16).

Localities : St. 8 ; 15 fath.

St. 9 ; 7 fath.
St. 52 ; 22 fath.
St. 62 ; 28 fath.
St. 66 ; 20 fath.
St. 75 ; 25 fath.
St. 103 ; 16 fath.
St. 114 ; 25 fath.
St. 116 ; 35 fath.

Habitat : Stenotop mud- (respectively slime-) as in the Adriatic (Graeffe 1902, Coen and Vatova 1932) from 7-35 fath. Occurs also in the north — as a southern form — "nicht an der Küste sondern im tieferen Wasser von 10-200 m". (Ankel 1936 p. 61).

Geographical distribution : In the Atlantic from the south of England and Norway southward, everywhere in the Mediterranean and in the Adriatic (Ankel 1936 p. 61, Coen 1933). Already known from Alexandria (Plage de Ramleh : très rare). (Pallary 1912 p. 95).

Nassarius sp. (Fig. 16).

Locality : St. 63.

Habitat : One species unfortunately not identified was fished on stony, coarse sand, mixed with a little mud in 74-85 fath.

FAM. FASCIOLARIIDAE.

Fusinus (Aptyxis) syracusanus (L.) (Fig. 17).

Localities : St. 35 ; 7 fath.
St. 66 ; 20 fath.

Habitat : Was taken only off the Anfouchi Bay and off Sidi Bishr on stony sand-and mud-bottom begrown with plants in 7 and 20 fathoms as in the Adriatic (vid. Graeffe 1902, Coen and Vatova 1932) and else where in the Mediterranean (Kobelt 1887 p. 52). According to Wilhelmi (1912 p. 145) oligosaprob.

Geographical distribution : Everywhere in the Mediterranean and in the Adriatic (Kobelt 1887 p. 52, Carus 1893 p. 404, Coen 1933). Already known from Alexandria (Dragué dans le Vieux-Port, sur les fonds vaseux, par 6 brasses. Pas rare). (Pallary 1912 p. 90).

Fusinus (Aptyxis) rostratus (Olivi) (Fig. 17).

Locality : St. 62 ; 28 fath.

Habitat : Was found only once on muddy bottom. Elsewhere, also "nirgends häufig" (acc. to Kobelt 1887 p. 54).

Geographical distribution : Atlantic southward to the Makaronesian Islands (Canaries), everywhere in the Mediterranean and in the Adriatic (Kobelt 1887 p. 54, Carus 1893 p. 404, Coen 1933). Already known from Alexandria (Plage de Ramleh : peu commun). (Pallary 1912 p. 90).

FAM. MITRIDAE.

Pusia (Pusiolina) tricolor (Gmelin) (Fig. 17).

Locality : St. 100 ; 5½ - 6 fath.

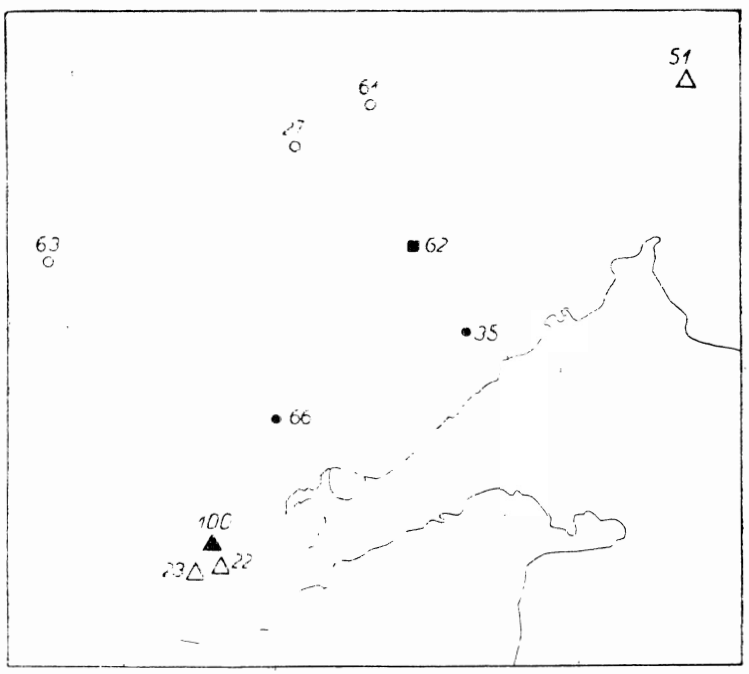

FIG. 17.

● *Fusinus syracusanus* (L.) ▲ *Pusia tricolor* (Gmelin)

■ *Fusinus rostratus* (Olivi) △ *Mitra cornicula* (L.)

O *Marginella mitrella* (Risso)

Habitat : Was found only once at the entrance of harbour Pass on mussel-sand begrown with algae. Occurs also off the Syrian coast (Moazzo 1931) on sandy bottom and near Triest (Graeffe 1902) "unter Steinen und an Algen".

Geographical distribution : In the Mediterranean, "die Strasse von Gibraltar kaum überschreitend" and in the Adriatic (Carus 1893 p. 408, Kobelt 1910 p. 54, Thiele 1931 p. 337, Coen 1933).

Mitra (Fuscomitra) cornicula (L). (Fig. 17).

Localities : St. 22 ; 7 fath.
St. 23 ; 5-7 fath.
St. 51 ; 13 fath.

Habitat : Off and in the great harbour Pass and in the Bay of Aboukir on sandy bottom begrown with plants.

Geographical distribution : In the Atlantic Ocean southward to the Makaronesian Islands, everywhere in the Mediterranean and in the eastern Adriatic (Kobelt 1901 p. 51, Dautzenberg & Fischer 1906 Coen 1933). Already known from Alexandria (Plage de Ramleh : commu n). (Carus 1893 p. 407, Pallary 1912 p. 87).

FAM. MARGINELLIDAE.

Marginella (Volvarina) mitrella Risso (Fig. 17).

Localities : St. 27 ; 70 fath.
St. 61 ; 50 fath.
St. 63 ; 74-85 fath.

Habitatat : Found on muddy bottom only in about 50-80 fathoms. According to Kobelt (1901 p. 59) "nirgends häufig".

Geographical distribution : In the Atlantic off the West-African coast (Cape Mogador), in the Mediterranean and in the East Adriatic (Carus 1893 p. 410, Thiele 1925 p. 193, Coen 1933).

FAM. TURRIDAE.

Turris indica Röding (Fig. 18).

Locality : Eastern Harbour near the bath (L.)

Habitat : A fine fresh but dead specimen .... how it came there one can only surmise, as it is a species of the Indian Ocean. (T.) Immigrants from the Indian Ocean have repeatedly been found in the harbours of Alexandria (vid. Balss 1936, Fauvel 1937).

Geographical distribution ; Wide-spread Indo-Pacific. Red Sea, India, Malacca, Philippines, Japan, tropical Australia, Polynesia (T.).

Drillia (Crassopleura) maravignae (Bivona). (Fig. (18).

Locality : St. 27 ; 70 fath.

Habtiat : Was found only once on muddy bottom in 70 fathoms. According to Kobelt (1905 p. 226) "in Sammlungen äusserst selten".

Geographical distribution : In the Lusitanean Sea southward to the Canaries, in the Mediterranean and in the Adriatic (Weinkauff 1868 p. 122, Carus 1893 p. 414, Kobelt 1905 p. 226), according to newer references (Thiele 1931 p. 357) only in the Mediterranean, Nobre (1931 p. 75) however mentions it for the Poruguese coast.

Philbertia (Leufroyia) leufroyi (Michaud). (Fig. 18).

Locality : St. 27 ; 70 fath.

Habitat : Was found only once on muddy bottom in 70 fathoms. According to Ankel (1936 p. 75) "ausgesprochen eurybath", can occur on stony bottom (Ankel 1936 p. 75), on muddy sand (Dautzenberg 1927 p. 38) or on beach-sand (Graeffe 1902), is evidently also eurytop.

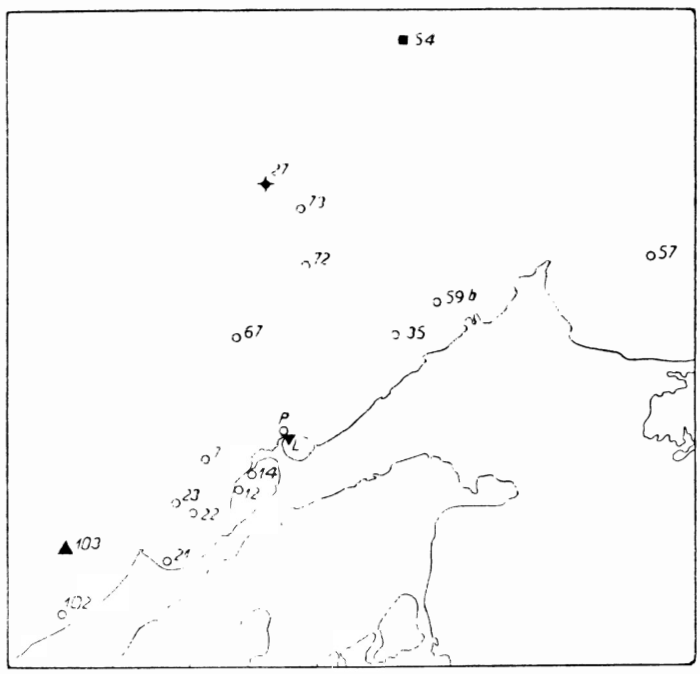

FIG. 18.

▼ *Turris indica* (Röding) ■ *Cythara scabrida* (Monterosato)
● *Drillia maravignae* (Bivona) ▲ *Cythara laevigata* (Philippi)
+ *Philbertia leufroyi* (Michaud) O *Conus mediterraneus* (Bruguière)

Geographical distribution : In the Atlantic from the Shetland Islands and the Norwegian coast (Bergen) southward to the Canaries, in the Mediterranean and in the Adriatic (Carus 1893 p. 428, Coen 1933, Ankel 1936 p. 63).

Cythara (Mangelia) scabrida (Monterosato) (Fig. 18).

Locality : St. 54 ; 55 fath.

Habitat : Was found only once on muddy bottom.

Geographical distribution : Mediterranean and Adriatic (Kobelt 1905 p. 337, Graeffe 1902).

Cythara (Mangelia) lævigata (Philippi) (Fig. 18).

Locality : St. 103 ; 16 fath.

Habitat ; Was found only once in the western part of the district investigated on sandy and muddy bottom begrown with Caulerpa.

Geographical distribution : In the Lusitanean Sea from the Channel-Islands southward, everywhere in the Mediterranean and in the eastern Adriatic. Already known from Alexandria (Carus 1893 p. 421, Kobelt 1905 p. 376, Coen 1933).

FAM. CONIDAE.

Conus mediterraneus Bruguière var. *oblongus* B. D. & D. (Fig. 18).

Localities : St. 7 ; 17 fath.
St. 12 ; 3 fath.
St. 14 ; 7 fath.
St. 21 ; 1½ fath.
St. 22 ; 7 fath.
St. 23 ; 5-7 fath.
St. 35 ; 7 fath.
St. 57 ; 3 fath.
St. 59b ; 15 fath.
St. 67 ; 22 fath.
Pharo (P), outer side, shell cast ashore. Very large (T).
St. 72 ; 30 fath.
St. 73 ; 38 fath.
St.102 ; 5-6 fath.

Habitat : Widely spread from the coast down to about 40 fathoms on stony sand-or mud-bottom.

Geographical distribution : In the Atlantic Ocean from Portugal to the Canaries, in the Mediterranean, the Adriatic and in the Black Sea (southern coast of the Crimea). (Weinkauff 1868 p. 147, Carus 1893 p. 431, Kobelt 1908 p.3, Coen 1933). Already known from the surroundings of Alexandria (Plage de Ramleh et du Mex, Aboukir : très commun. Dragué dans le Port-Neuf d'Alexandrie) (Pallary 1912 p.82.)

Subclassis PISTHOBRANCHIA.

Ordo PLEUROCOELA

FAM. ACTEONIDAE.

Acteon tornatilis (L.) (Fig. 19).

Locality : St. 64 ; 110 fath.

Habitat : Was found only once in strikingly great depth on muddy bottom mixed with coarse sand. Lives according to Graeffe (1902) in the Ulva-vegetation of the coast, according to Lo Bianco (1909) near Naples on sand bottom in a depth of 5-10 m. Is according to Wilhelmi (1912 p. 113) oligosaprob to feebly mesosaprob.

Geographical distribution : In the Atlantic from Iceland, the Lofoten and Norway to Morokko, in the Mediterranean and in the Adriatic (Weinkauff 1868 p. 203, Carus 1893, Hoffmann 1926, Coen 1933, Thiele 1936 p. 1135). Already known from the Egyptian coast (Plage de Ramleh, Damiette et Port Said). (Pallary 1912 p. 77).

FAM. RINGICULIDAE.

Ringicula auriculata (Ménard). (Fig. 19).

Localities : St. 142 ; 10 fath.
St. 147 ; 1-7 fath.

Habitat : Was found once in black mud in the entrance to the Western Harbour and once in the mud of the mouth of the Nile.

Geographical distribution : In the Atlantic from Portugal to the Makaronesian Islands, in the Mediterranean, in the Adriatic, in the Marmara Sea and in the Red Sea (Weinkauff 1868 p. 205, Carus 1893 p. 192, Sturany 1895 p. 120, Coen 1933). Already known from Alexandria (Plage de Ramleh : rare). (Pallary 1912 p. 80).

FAM. BULLIDAE.

Bulla striata Bruguière (Fig. 19).

Localities : St. 4 ; 3 fath.
St. 13b ; 6 fath.
St. 14 ; 7 fath
St. 15 ; 6 fath.
St. 17 ; 5-12 fath.

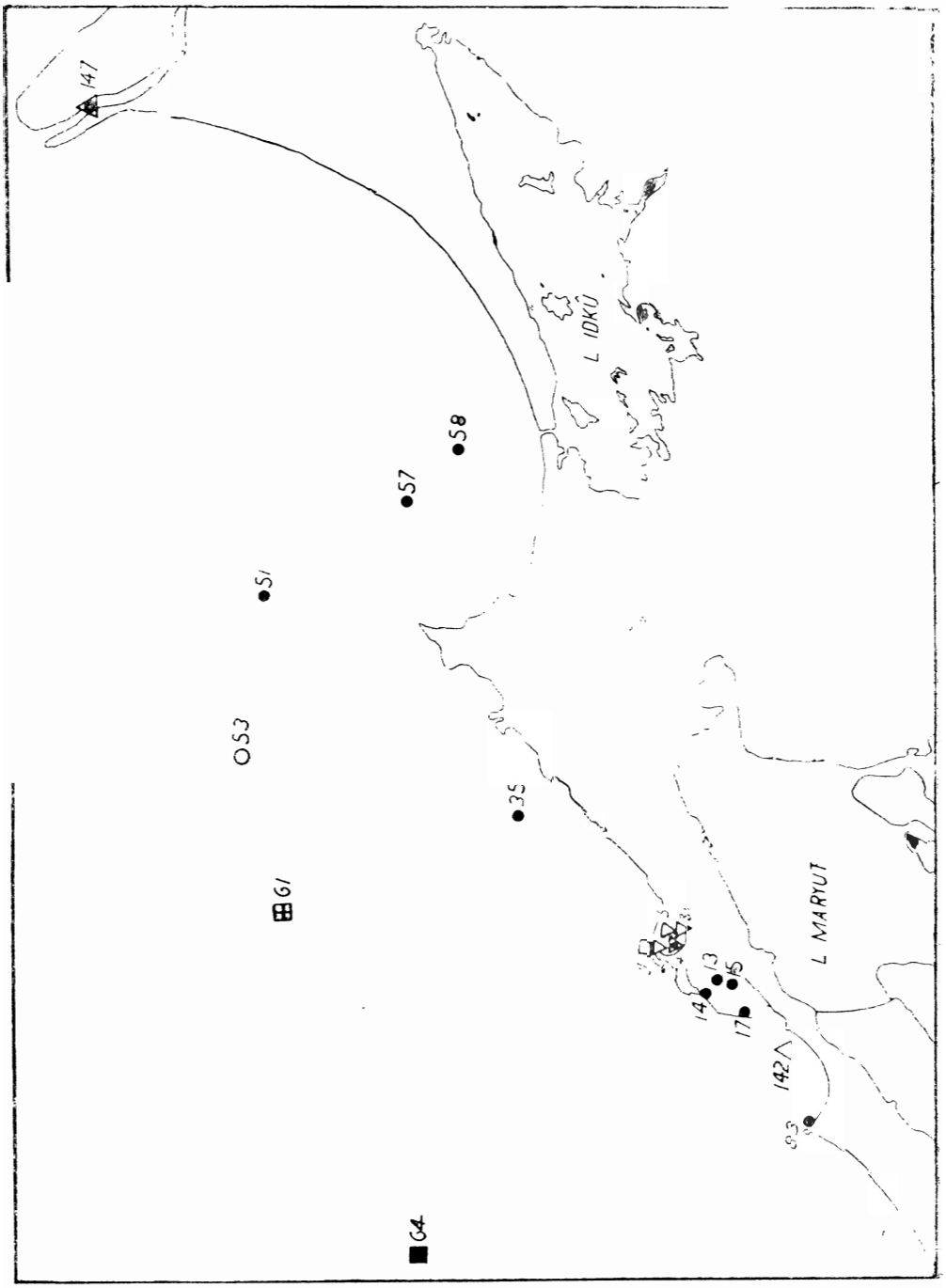

FIG. 19.

■ *Acteon tornatilis* (L.) □ *Haminoea hydatis* (L.)

△ *Ringicula auriculata* (Ménard) + *Akera bullata* (Müller)

● *Bulla striata* (Bruguiére) O *Cylichna cylindracea* (Pennant)

▽ *Philine aperta* (L.)

St. 35 ; 7 fath.
St. 51 ; 13 fath.
St. 57 ; 3 fath.
St. 58 ; 4 fath.
St. 83 ;
St.147 ; 1-7 fath.

Habitat : Widely spread on sandy and muddy bottom (also black mud), down towards 15 fathoms. Is according to Wilhelmi (1912 p. 143) feebly mesosaprob.

Geographical distribution : In the Atlantic from Portugal to Morocco and the West-Indies (J), in the Mediterranean and in the Adriatic (Weinkauff 1868 p. 191, Carus 1893 p. 189, Coen 1933). Already known from the Egyptian coast (dragueé dans le Vieux-Port par 15 brasses, Port-Neuf, Plage de Ramleh, Aboukir, Port Said. Commune. En 1885, cette espèce arrivait jusqu'au lac Timsah). (Pallary 1912 p. 78).

FAM. ATYIDAE.

Haminea hydatis (L.). (Fig. 19).

Localities : St. 61 ; 50 fath.
Pharo, outer side.

Habitat : Was collected once only from the coast and once in strikingly great depth on muddy bottom. Occurs otherwise in 10—30 m. only on Zostera meadows. (Vayssiére 1932).

Geographical distribution ; In the Atlantic southward from England, in the Mediterranean and in the Adriatic (Weinkauff 1868 p. 188, Carus 1893 p. 190 Coen 1933). Already known from Alexandria (Plage de Ramleh : très commune). (Pallary 1912 p. 79).

FAM. AKERIDAE.

Akera bullata Müller (Fig. 19).

Locality : St. 61 ; 50 fath.

Habitat : Was found only once on muddy bottom in greater depths. The genus lives "meist auf schlammigem Boden" (Thiele 1935 p. 1136). The species is according to Wilhelmi (1912 p. 143) oligosaprob, feebly mesosaprob.

Geographical distribution : In the Atlantic from Norway southward to Madeira, in the Mediterranean and in the Adriatic (Weinkauff 1868 p. 185. Carus 1893 p. 191, Hoffmann 1926, Coen 1933).

FAM. SCAPHANDRIDAE.

Cylichna cylindracea (Pennant) (Fig. 19).

Locality : St. 53 ; 33 fath.

Habitat : Once only on muddy bottom, which this species seems to prefer. (vid. Graeffe 1902, Dautzenberg 1927 p. 14).

Geographical distribution : In the Atlantic from Norway to the Makaronesian Islands, Gulf of Guinea, Tristan de Cunha, St. Helena, besides in the Mediterranean and in the Adriatic (Weinkauff 1868 p. 194, Carus 1893 p, 188, Thiele 1925 p. 275, Hoffmann 1926, Coen 1933).

FAM. PHILINIDAE.

Philine aperta (L.). (Fig. 19).

Localities : Eastern Harbour; Petersen haul as "*Philine* sp." (vid. Vatova 1935).
St. 4 ; 3 fath.
St. 5 ; 2-3 $^1/_2$ fath.
St. 31 ; 2 1/4 fath. (according to the collector's notes.

Habitat : Was fished in the Eastern Harbour only in several places on sandy bottom, as in Naples (Lo Binaco 1909 p. 631), in little depth. Graeffe only (1902) cites for Triest muddy bottoms. The species is according to Wilhelmi (1912 p. 144) oligosaprob.

Geographical distribution : In the Atlantic from the Arctic and Norway southward to the Cape Verde Islands, in the Mediterranean and in the Adriatic, besides in South-and East-Africa and near the Philippines (Weinkauff 1868 p. 181, Carus 1893 p. 193, Hoffmann 1926, Bellini 1929 p. 27, Coen 1933). Already known from Alexandria (Plage de Ramleh : rare) (Pallary 1912 p. 80).

One Opisthobranchian not identified (Fam. *Aglajidae* ?), about 3mm. long (according to the collector's notes).

Locality : St. 45 ; 9 fath. 15. X.

Ordo PTEROPODA.

FAM. CAVOLINIIDAE.

Creseis virgula Rang (Fig. 20).

Localities : a) planctonic :

St. I ; 1 specimen. 15. V. 1933.
St. X (=26) ; 24. IX. 1933 ; 4 spec.

St. III. 11. X. 1933 ; 5 spec.
St. XIV. (=54) ; qualitative, on the surface ; 26. X. 1933, 13 spec.
St XIV (=54) ; quantitative from 30 fath. ; 26. X. 1933, 13 spec.

b) in sifted mud :
St. 62 ; 31. X. 1933.

Habitat : The species occurred in one catch only in May, besides in autumn, from the end of September to the end of October, most frequently in the end of October, and was observed at first in the open sea. October 11th. only it was fished also near the coast, never was it met with in the two harbours.

Geographical distribution : Frequent in tropic and subtropic seas, in single specimens in the North Atlantic to 60° n. lat. (acc. to Tesch 1913 p. 24, 25), also in the Mediterranean and in the Adriatic (Carus 1893 p. 441, Steuer 1911). The species was already known from the surroundings of Alexandria (as *Clio conica* Eschsch.) (Oberwimmer 1898 p. 580).

Creseis acicula Rang (Fig 20).

Localities : a) Planctonic :
St. I ; 3. VIII. 1933 : 2 specimens.

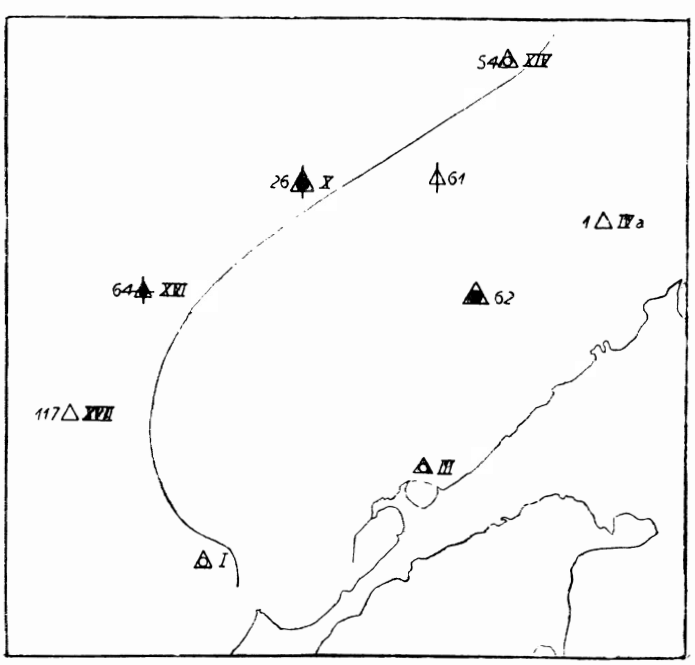

FIG. 20.

O *Creseis virgula* (Rang) ● *Styliola subula* (Quoy et Gaimard)
△ *Creseis acicula* (Rang) | *Clio pyramidata* (L.)
— *Cavolinia tridentata* (Forsk.)

St. IVa ; (=1) ; 3. IX.1933 ; 1 spec.
St. III ; 11.X.1933 ; 1 spec.
St. XIV (=54) ; quantitative from 30 fath. ; 26.X. 933 ; 1 spec.
St. XVI (=64) ; 1.XI.1933 ; 15 spec.
St. XVII (=117) ; 11.XI.1933 ; 5 spec.

b) in sifted mud.
St. 26 ; 24.IX.1933.
St. 61 ; 30.X.1933.
St. 62 ; 31.X.1933.
St. 64 ; 1.XI.1933.

Habitat : This species occurred — as in the Gulf of Triest— (vid. Graeffe 1902) only in the summer — and autumn — plankton from the beginning of August to the middle of November, most frequently in the beginning of October in the open sea.

Geographical distribution : Frequent in all warm seas, also in the districts of transition, northward to about 48° n. lat., widely spread in the Mediterranean and in the Adriatic (Carus 1893 p. 441, Tesch 1913 p. 25, Steuer 1911). The species was already known from the surroundings of Alexandria (Oberwimmer 1898 p. 580).

Styliola subula (Quoy et Gaimard) (Fig. 20).

Localities : In sifted mud :
St. 26 ; 24.IX.1933
St. 62 ; 31.X.1933
St. 64 ; 1.XI.1933

Habitat : Rests of shells were found in 3 mud-samples only, from 28 and 126 fathoms.

Geographical distribution : In tropic and subtropic seas, in the westermost districts round the Equator however much more rare; in the Mediterranean rather frequent, also in the southern Adriatic (Tesch 1913 p. 27, Carus 1893 p. 441, Steuer 1911). The species was already known from the surroundings of Alexandria (Oberwimmer 1898 p. 580).

Clio pyramidata L. (Fig. 20).

Localities : In sifted mud :
St. 26 ; 24.IX.1933.
St. 61 ; 30. X.1933.
St. 64 ; 1. X.1933.

Remarks : The animals very likely belong without exception to the subspecies *lanceolata* (Lesueur).

Habitat : Rests of shells were only found in mud- samples from a depth of 50—126 fathoms.

Geographical distribution : Frequent in the warmer parts of the oceans from about 40° n. lat. to 30° s. lat., also in the West Pacific and in the Mediterranean as well as in the southern Adriatic (Carus 1893 p. 442, Steuer 1911, Tesch 1913 p. 36). The species was already known from the surroundings of Alexandria (Oberwimmer 1898 p. 580).

Cavolinia tridentata (Forsk.) (Fig. 20).

Locality : In sifted mud :
St. 64 ; I.XI.1933

Habitat : One single shell was found in mud of 110 fathoms depth. In Naples, too, this species is characteristic of the benthonic plankton of the open sea far from the coast (according to Bellini 1929 p. 10).

Geographical distribution : In the warmer parts of the Oceans, especially in the Atlantic between 40° n. lat. to 40° s. lat., frequent in the Mediterranean and repeatedly found in the Adriatic (Carus 1893 p. 442, Steuer 1911, Tesch 1913 p. 50). The species was already recorded "nördlich von Alexandrien" by the Pola-Expedition (Oberwimmer 1898 p. 579).

Ordo SACOGLOSSA

FAM. OXYNOIDAE

Oxynoe olivacea Rafinesque. (Fig. 21).

Localities : St. 25.
St. 35 ; 7 fathoms.

Habitat : On sandy bottoms begrown with algae and meadows of seaweeds down to 7 fathoms.

Geographical distribution : In the Mediterranean (Weinkauff 1868 p. 180, Carus 1893 p. 198). Already known from Alexandria (Dragué à 15 brasses dans le fucus du Port-Vieux et du Port-Neuf). (Pallary 1912 p. 81).

FAM. ELYSIIDAE.

Elysia viridis (Montagu). (Fig. 21).

Remark : Definition not quite certain.

Locality : St. 77 ; 7 fathoms.

Habitat : The species was found once only on stony sand - and mud - bottom bergown with algae. It occurs also elsewhere in the Mediterranean (Graeffe 1902, Lo Bianco 1909) in the coastal zone begrown with algae.

Geographical distribution. In the Atlantic southward from the Murman-coast to Portugal, in the Mediterranean and in the eastern Adriatic (Carus 1893 p. 229, Hoffmann 1926, Coen 1933, Thiele 1935 p. 1136).

Ordo ACOELA.

FAM. PLEUROBRANCHIDAE

Pleurobranchus sp. (Fig. 21).

Remark : Too badly preserved to identify (T.) Was red when alive.

Locality : St. 94 ; 4½ fath.

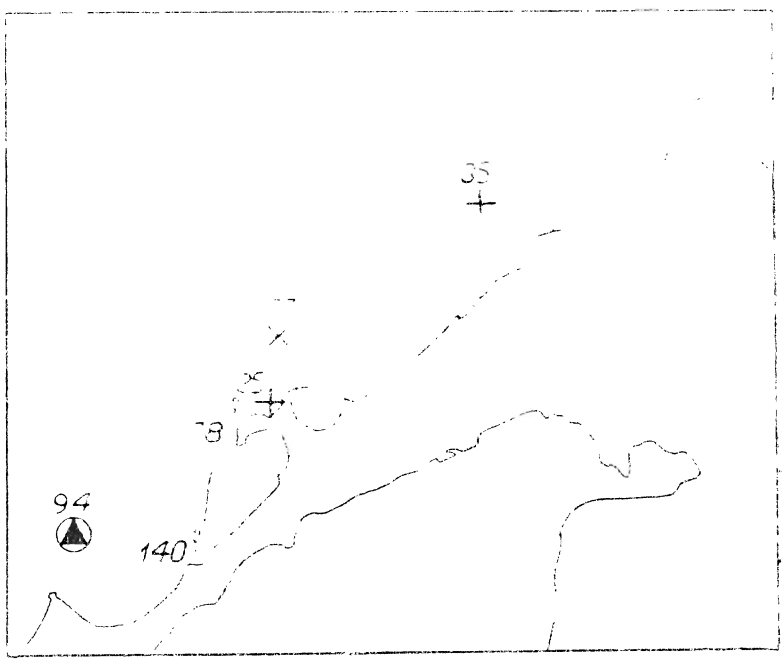

FIG. 21.

+ *Oxynoe olivacea* Rafinesque
× *Elysia viridis* (Montagu)
▲ *Pleurobranchus* sp.
O *Peltodoris atromaculata* Bergh
? Nudibranchia

Habitat : The animal was found near El Mejul on stony bottom begrown with algae and Posidonia.

FAM. DORIDIDAE

Peltodoris atromaculata Bergh (Fig 21).

Remark : I am indebted to Mr. Winckworth for identifying this species (T.)

Locality : St. 94 ; 4½ fath.

Habitat: This fine Nudibranchian was fished at the same place as the preceding Pleurobranchus-species. Is near Naples (acc. to Lo Bianco 1909) rare on mussel- and coralline-bottom in 40 m.

Geographical distribution: Mediterranean (Carus 1893 p. 219).

Nudibranchia, not identified (Fig. 21).

Locality: St. 78; 5—6 fath.
St. 140; 4—8 fath. (was red when alive).

Habitat: Two further Nudibranchia were found off Ras-el-Tin and off Mex on stony, sandy algae- and Posidonia-bottom.

Subclassis PULMONATA

Ordo BASOMMATOPHORA

FAM. PLANORBIDAE

Planorbis sp. (Fig. 22).

Locality: Lake Edku, near village Edku.

Classis SCAPHOPODA.

FAM. SIPHONODENTALIIDAE.

Cadulus politus (Searles Wood). (Fig. 22).

Locality: St. 61; 50 fath.

Habitat: A small, empty shell was found additionally in a sifted mud sample out of 50 fathoms.

Geographical distribution: Atlantic ocean, Mediterranean and Adriatic (Carus 1893 p. 176, 177, Stock 1934).

Cadulus jeffreysi Monterosato (Fig. 22).

Remark: According to the description given by van Benthem Jutting (1926 p. 71) the few shells found belong to this species and not to *C. subfusiformis* (M. Sars) for: the shell is in the middle a little more swollen than at this one, the oral opening is not circular but oval, the (dry) shell seems smooth, milky-white, its height is 3 mm.

Localities: St. 26; 126 fath.
St. 64; 110 fath.

Habitat: This species, too, was additionally found in sifted mud-samples from depths of more than 100 fathoms only in few specimens.

Geographical distribution: According to van Benthem Jutting (1926 p. 72) the species occurs at the English coast, at both coasts of the North-Atlantic, in the Mediterranean, also in the South-Atlantic (St. Helena). Bellini (1929 p. 62), however, makes the remark, that this species, very rare in the Gulf of Naples, was often confused with *C. subfusiformis* (M. Sars)

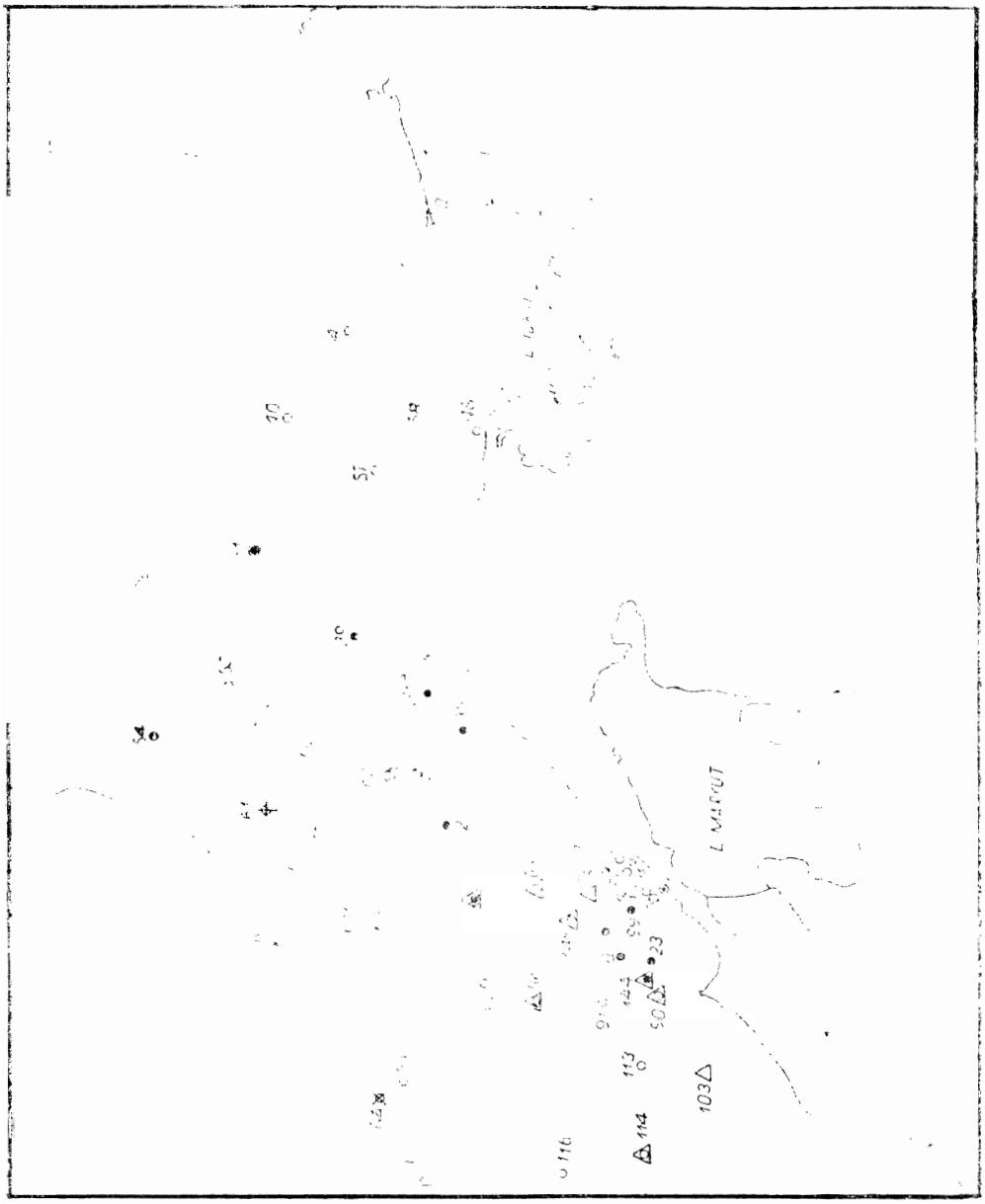

FIG. 22.

▽ *Planorbis* sp.
+ *Cadulus politus* (Searles Wood)
× *Cadulus Jeffreysi* Monterosato
○ *Dentalium dentale* L.
● *Dentalium vulgare* da costa
△ *Dentalium rubescens* Deshayes

of the Atlantic coasts of Europe and North-America ; van Benthem Jutting (loc. cite.), too, mentions as locality of *C. subfusiformis* the European northern seas (Shetlands, Norwegian coast, Dröbak, Hardangerfjord, Hasvig Lofoten, Bukken, Korsfjord), as well as the Bay of Biscay and the Mediterranean, Storck (1934 p. 10) cites the species (according to Graeffe 1902) also from the Adriatic.

FAM. DENTALIIDAE.

Dentalium (*Antalis*) *dentale* L. (with forma *inaequicostatum* Dautz) (Fig. 22).

Localities : St. 9 ; 7 fath.
St. 10 ; 6 fath. (empty shells).
St. 11 ; 6 fath. (alive).
St. 12 ; 3 fath.
St. 13b; 6 fath.
St. 14 ; 7 fath.
St. 15 ; 6 fath.
St. 17 ; 5-12 fath.
St. 27 ; 70 fath. (with Pagurids).
St. 40 ; 8 fath.
St. 47 ; 6 fath.
St. 48 ; 1,4-2 fath.
St. 51 ; 13 fath.
St. 52 ; 22 fath.
St. 53 ; 33 fath.
St. 54 ; 55 fath.
St. 55 ; 4 fath (alive).
St. 57 ; 3 fath.
St. 58 ; 4 fath.
St. 59a; 17 fath.
St. 60 ; 33 fath.
St. 61 ; 50 fath.
St. 62 ; 28 fath.
St. 63 ; 74-85 fath.
St. 64 ;110 fath.
St. 65 ; 33 fath.
St. 66 ; 20 fath.
St. 67 ; 22 fath.
St. 68 ; 37 fath.
St. 69 ; 48 fath.
St. 72 ; 30 fath.
St. 72 ; 30 fath.
St. 73 ; 38 fath.

St. 74 ; 23 fath.
St. 75 ; 25 fath.
St. 90 ; 20 fath.
St. 91 ; 20 fath.
St. 92 ; 24.5 fath.
St 113 : 20 fath. (alive).
St.114 ; 25 fath.
St.119 ; 35 fath.
St.145 ; 21 fath

Habitat : In the whole district investigated from the coast to a depth of more than 100 fathoms, especially frequent in the Western Harbour on sandy and muddy bottom, where living animals were also found on black mud in the Western Harbour (St.11). Indeed Wilhelmi (1912 p. 66) once mentions *Dentalium dentale* as leading form for little to moderately polluted water, elsewhere he always gives (very likely by mistake !) *D. dentale* (= *vulgare*).

Geographical distribution : In the Atlantic from Spain and Portugal to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Weinkauff 1868 p. 420, Carus 1898 p. 174, Stock 1934). The species reaches according to Bellini (1929p. 61) as far as the Cape of Good Hope. Already known form Alexandria (Pallary 1912 p. 149).

Dentalium (*Antalis*) *vulgare* da Costa (Fig. 22)

Localities : St. 2 ; 25 fath
St. 7 ; 17 fath.
St. 8 ; 15 fath. (shells only acc. to the collector's notes)
St. 9 ; 7 fath. (alive ?)
St 23 ; 5-7 fath.
St. 35 ; 7 fath.
St. 39 ; 17 fath.
St. 51 ; 13 fath.
St 59b ; 15 fath.
St. 67 ; 22 fath.
St. 99 ; 5½ fath.
St. 144 ; 18 fath.

Habitat : In 5-25 fathoms mostly on sandy bottom, which is decidedly preferred by this species (vid. Dautzenberg 1927 p. 233), off the coast of Abukir to Alexandria, besides, off the Western Harbour and at its entrance.

Geographical distribution : From the Atlantic coast of western Europe (Ireland, Belgian coast) southward, Mediterranean and Adriatic (van Benthem Jutting 1926 p. 69, Dautzenberg 1927 p. 233, Stork 1934 p. 8). Already known from Alexandria (Plage de Ramleh) (Pallary 1912 p. 149).

Dentalium (Laevidentalium) rubescens Deshayes (Fig. 22).

Localities : St. 62 ; 28 fath.
St. 66 ; 20 fath.
St. 67 ; 22 fath.
St. 75 ; 25 fath.
St. 79 ; 14 fath. (alive).
St. 90 ; 18 fath.
St. 92 ; 24.5 fath.
St. 103 ; 16 fath.
St. 114 ; 25 fath.
St 144 ; 18 fath.
St. 145 ; 21 fath.

Habitat : On muddy and sandy bottoms situated off the coast in about 15 — 30 fathoms, only in the western part of the district investigated.

Geographical distribution : Mediterranean and Adriatic (Carus 1893 p 175, Stork 1934 p.7). Already known from Alexandria (Plage de Ramleh). (Pallary 1912 p. 150).

Classis BIVALVIA

Ordo TAXODONTA

FAM. NUCULIDAE.

Nucula nucleus (L.) (Fig. 23).

Localities : St. 1 ; 21 fath. (1 shell according to the collector's notes)
St. 2 ; 25 fath. (shells " " " " ")
St. 7 ; 17 fath.
St. 26 ; 126 fath.
St. 27 ; 70 fath.
St. 28 ; 10-12 fath.
St. 32 ; 5½ fath.
St. 51 ; 13 fath.
St. 54 ; 55 fath.
St. 59 b ; 15 fath.
St. 61 ; 50 fath.
St. 67 ; 22 fath.

Habitat : On stony sand-and mud-bottom from 10 to more than 100 fathoms.

Geographical distribution : In the Atlantic from the Norwegian coast south-

ward everywhere in the Mediterranean and in the Adriatic, in South Africa from the Great Fish Bay southward. (Weinkauff 1867 p. 204, Carus 1893 p. 93, Haas 1926 p. 40, Thiele 1931 p. 195). Already known from Alexandria (Dragué dans le Port-Vieux, Ramleh : rare). (Pallary 1912 p. 160).

FAM. NUCULANIDAE.

Nuculana (Lembulus) pella (L.) (Fig. 23).

Localities : St. 66 ; 20 fath.
St. 67 ; 22 fath.
St. 75 ; 25 fath.

Habitat : Not frequent on sand or mud in the central part of the district invistigated.

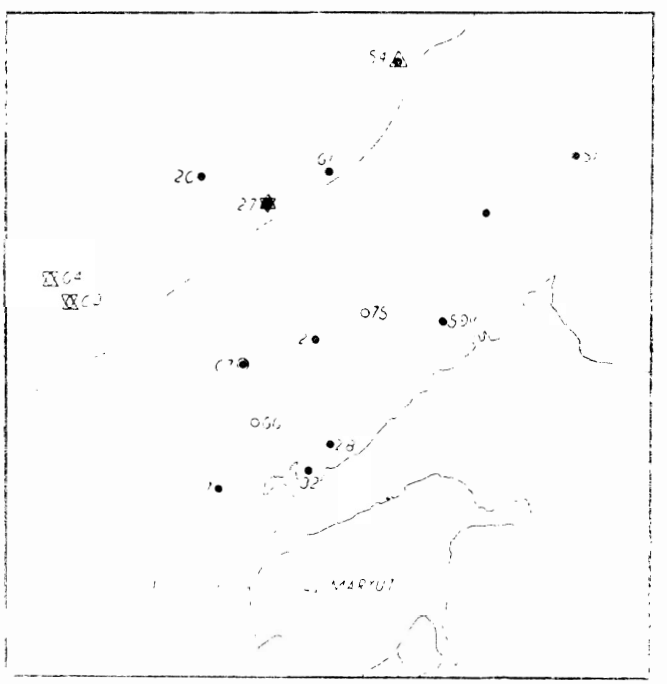

FIG. 23.

● *Nucula nucleus* (L.)
O *Nuculana pella* (L.)
△ *Nuculana sulcata* (Risso)
▽ *Nuculana commutata* (Philippi)

Geographical distribution : In the Atlantic (South Spain, mouth of the Congo), Japan, Mediterranean, Adriatic (Weinkauff 1876, p. 209, Carus 1893 p. 95, Bellini 1929 p. 69, Thiele 1931). Already known from Alexandria (Port-Vieux, Plage de Ramleh : peu rare). (Pallary 1912 p. 161).

Nuculana sulcata (Risso) (Fig. 23).

Localities : St. 27 ; 70 fath.
St. 54 ; 55 fath.
St. 63 ; 74-85 fath.
St. 64 ; 110 fath.

Habitat : Was found in greater depths of 50 to 100 fathoms only in mud mixed with sand, which agrees with the statements given up to now (Dautzenberg 1927 p. 288, Coen and Vatova 1932, Vatova 1933). Only Graeffe (1902) cites for Triest shallow water "wo zostera wächst. auf sandigem Grunde".

Geographical distribution : In the Atlantic from Norway to Guinea, everywhere in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 202. Carus 1893 p. 92. Haas 1925 p. 40). Already known from Alexandria (Port-Vieux, Plage de Ramleh : peu commun). (Pallary 1912 p. 160).

Nuculana commutata (Philippi) (Fig. 23).

Localities : St. 27 ; 70 fath.
St. 63 ; 74-85 fath.
St. 64 ; 110 fath.

Habitat : Was found like the preceding species only in greater depths from 70-110 fathoms in muddy bottoms (mixed with sand).

Geographical distribution : In the Atlantic from the French coast to the mouth of the Congo, everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. 95, Dautzenberg 1927 p. 289, Thiele 1931 p. 201).

FAM. ARCIDAE.

Arca diluvii Lamarck (Fig. 24).

Localities : St. 27 ; 70 fath
St. 52 ; 22 fath.
St. 61 ; 50 fath
St. 63 ; 74-85 fath.
St. 64 ; 110 fath.
St.103 ; 16 fath

Habitat : On muddy bottom mixed with sand in about 15-110 fathoms.

Geographical distribution : In the Atlantic (Portugal, Madeira), Mediterranean and Marmara Sea (Weinkauff 1867 p. 198, Carus 1893 p. 88, Sturany 1895, Nobre 1931).

Arca (Barbatia) barbata L. (Fig. 24).

Localities : St. 9 ; 7 fath.
St. 21 ; 1½ fath.

St. 28 ; 10-12 fath.
St. 29 ; 7 fath.
St. 30 ; 7 fath.
St. 32 ; 5½ fath.
St. 35 ; 7 fath.
St. 40 ; 8 fath.
St. 51 ; 13 fath.
St. 102 ; 5-6 fath.
St. 140 ; 4-8 fath.

Habitat : On stony, muddy or sandy bottom in about 1-13 fathoms widely spread in the district investigated.

Geographical distribution : In the Atlantic (Portugal "rara", West Africa), Mediterranean and in the Adriatic (Weinkauff 1868 p. 194, Carus 1893 p. 88,Nobre 1931 p. 301, 1936 p. 223). Already known from the Egyptian coast (Plage de Ramleh et du Mex : commun. Abukir, Port-Said) (Pallary 1912 p. 158).

Arca (*Navicula*) *noae* L. (Fig. 24).

Localities : St. 7 ; 17 fath.
St. 62 ; 28 fath.
St. 110 ; washed ashore.

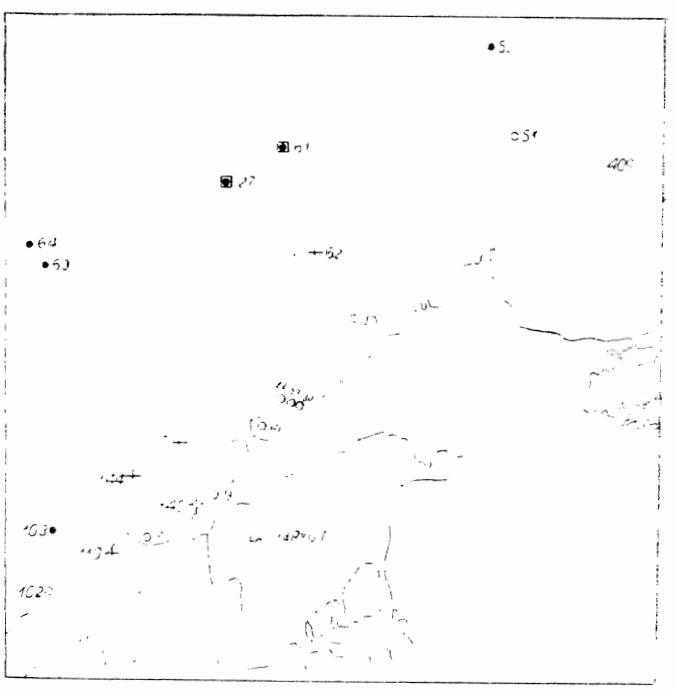

FIG. 24.

● *Arca diluvii* Lamarck
O *Arca barbata* L.
+ *Arca noae* L.
□ *Arca lactea* L.

St. 140 ; 4-8 fath.
St. 144 ; 18 fath.

Habitat : During the collection, I had already noticed that there were merely empty shells of small animals in the utmost west of the district investigated (Steuer1935 p. 14). It is significant that the finding of St. 62 is missing in my notes ; very likely a mistake occurred afterwards. One large, living specimen however was brought into the Laboratory on November 3rd by fishermen from Mersa Matruh. (3. XI. 26 fath). The empty shells had for the greater part been found on stony sand bottom ; at St. 62 however there was muddy bottom. In the North Adriatic, too, (Vatova 1928 p. 313) the "fondi rocciosi-detritici" are prevailing (60%), while there were found but 14% on muddy bottom.

Geographical distribution : In the Atlantic, at the American coast (North Caroline, Antilles), at the African coast to S. Tomé, everywhere in the Mediterranean and in the Adriatic (Carus 1898 p. 87, Bellini 1929, Nobre 1931 p. 302. Ekman 1935 p. 90). The species is already known from the Egyptian coast, for Pallary says (1912 p. 158) : "Sur les rochers presqu' à fleur d'eau du rivage de Ramleh et du Mex. Port-Said : commun. Signalé en 1905, comme s'engageant dans le canal." Tomlin (1927) however does not mention it for the Canal.

Arca (*Trigonodesma*) *Lactea* L. (Fig. 24).

Localities : St. 27 ; 70 fath.
St. 61 ; 50 fath.

Habitat : Seldom on muddy bottoms in greater depths.

Geographical distribution ; In the Atlantic from the North Sea down to the Makaronesian Islands and the mouth of the Congo, everywhere in the Mediterranean and in the Marmara-Sea and in the Adriatic (Carus 1893 p. 88, Sturany 1895 p. 120, Haas 1926 p. 41, Thiele 1931 p. 173), according to Bellini (1929 p. 68) also in the Red Sea. Already known from the Egyptian coast (Plage de Ramleh, commun ; Aboukir). (Pallary 1912 p. 159).

FAM. GLYCYMERIDAE.

Glycmeris pilosus (L.) var *lineatus* Phil. (Fig. 25).

Remark : A flatter form of this species also occurred, which I take to be the var. *lineatus* Phil. It is well described and figured by Pallary 1912 p. 159 Plates 17, 18). (T) According to Dautzenberg (1927, p. 283) "*Pectunculus glycimeris*" is limited to the ocean, "var. *pilosa*" rather to the Mediterranean.

Localities : St. 7 ; 17 fath. var. *lin.*
St. 8 ; 15 fath. var. *lin.*
St. 27 ; 70 fath.

St. 28 ; 10-12 fath.
St. 29 ; 7 fath.
St. 35 ; 7 fath. var. *lin.*

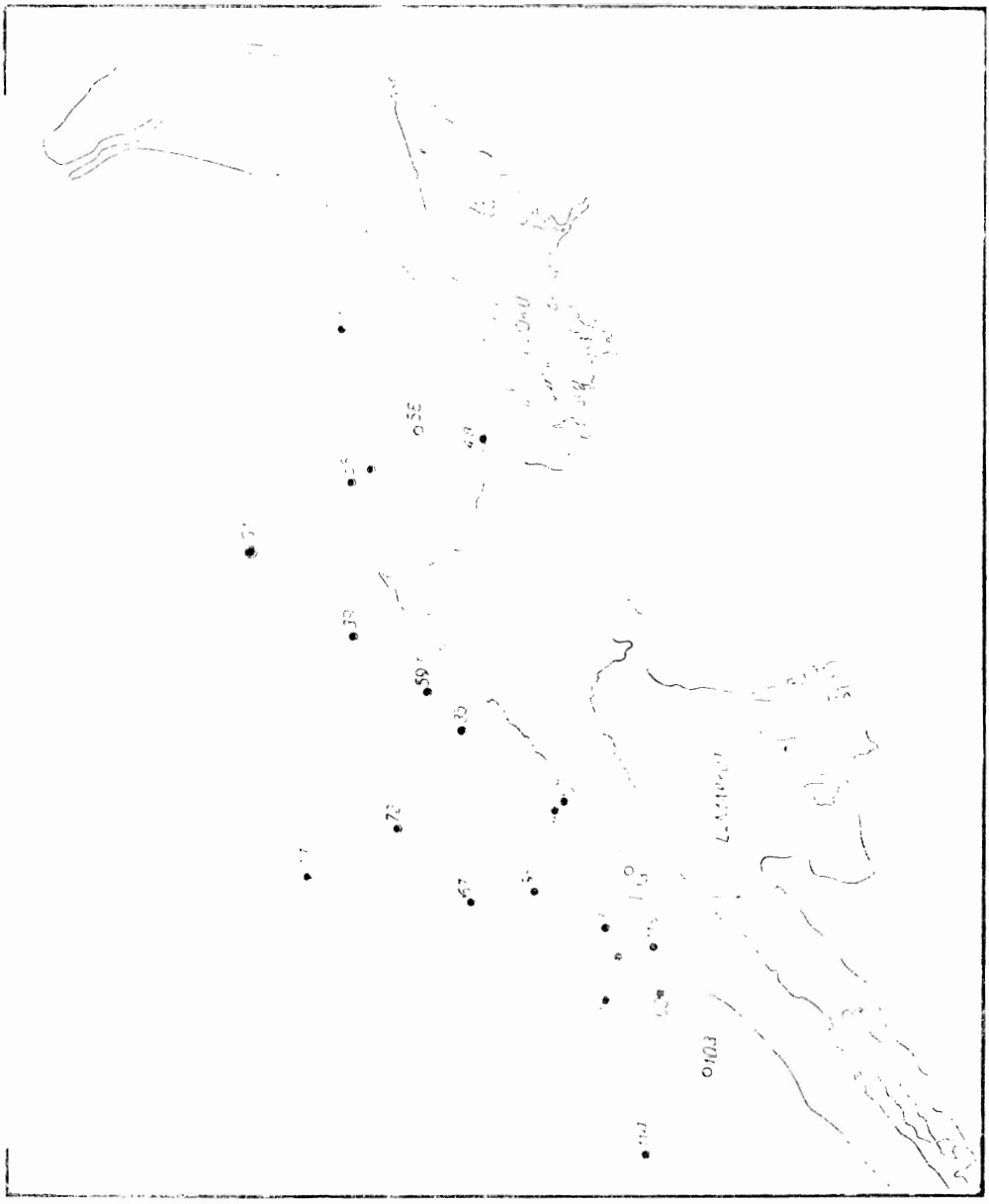

FIG. 25.

● *Glycymeris pilosus* (L.) O *Glycymeris violacescens* (Lamarck)

St. 39 ; 17 fath.
St. 47 ; 6 fath.
St. 48 ; cast ashore ; according to the collector's notes.
St. 51 ; 13 fath.
St. 56 ; 4 fath. juv. perhaps the var. *lineatus* Phil
St. 57 ; 3 fath.
St. 59b; 15 fath.
St. 66 ; 20 fath.
St. 67 ; 22 fath.
St. 72 ; 30 fath.
St. 90 ; 18 fath. acc. to the collector's notes.
St. 91 ; 20 fath.
St. 114 ; 25 fath.
St. 119 ; 5½ fath.

Habitat : Widely spread almost only on stony, sandy bottom in 4-70 fathoms, with var. *lineatus* Phil. in 4-17 fathoms. It would be especially desirable to know for this species the number of the living specimens found; Vatova (1928 p. 315) had collected living animals near Rovigno at only 3% of all stations !

Geographical distribution : In the Atlantic from the Norwegian coast to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Carus 1893 p. 90, Haas 1926 p. 41). Already known from Alexandria (Plage de Ramleh). (Pallary 1912 p. 159).

Glycymeris violacescens (Lamarck). (Fig. 25).

Localities : St. 13b; 6 fath.
St. 51 ; 13 fath.
St. 58 ; 4 fath.
St.103 ; 16 fath.
Eastern coast of Abukir Bay, washed ashore.

Habitat : The species was not frequent and was only found on sandy bottom in common depths.

Geographical distribution : In the Lusitanian Sea, in the Mediterranean and in the Adriatic (Carus 1893 p. 91). Already known from Alexandria (Espèce comestible très recherchée. Port-Vieux, Plage de Ramleh : commun). (Pallary 1912 p. 160).

Ordo ANISOMYARIA.

FAM. MYTILIDAE.

Modiolus barbatus (L.) (Fig. 26).

Localities : St. 24; 10 fath.
St. 32; 5½ fath.

Habitat : This representative of Adriatic epifauna-association was only met with in and off the Eastern Harbour on stony bottom in about 5-10 fathoms.

Geographical distribution : In the Atlantic from England down to the mouth of the Congo, everywhere in the Mediterranean and in the Adriatic (Carus 1893 p. Haas 1926 p. 42. Thiele 1931 p. 169), Japan (Bellini 1929 p. 67). Already known from the Egyptian coast, viz : "Alexandrie, Ramleh, Port-Said. Commun sur les rochers à quelques mètre de profondeur. Espèce comestible. En 1905 il est signalé commes'engageant dans la tête du Canal par MM. Tillier et Bavary. Cependant je l'ai vu dans la collection Vassel, indiqué comme abondant à Suez en 1886". (Pallary 1912 p. 156).

Modiolus adriaticus (Lamarck) (Fig. 26)

Localities : Eastern Harbour ; near the bath (L.)
St. 13b; 6 fath.
St. 21 ; 1½ fath.
St. 30 ; 7 fath.
St. 52 ; 22 fath.
St. 57 ; 3 fatt.
St. 58 ; 5-6 fath.
St.115 ; 30 fath.

Habitat : Not frequent and dispersed all over the district investigated, especially in the two harbours down to 30 fathoms.

Geographical distribution : In the Atlantic from England down to the Makaronesian Islands (Canaries). In the Mediterranean, in the Adriatic and in the Black Sea (Weinkauff 1868 p. 216, Carus 1893 p. 83, Haas 1926 p. 42).

Musculus sulcatus (Risso) (Fig. 26).

Localities : St. 32 ; 5½ fath.
St. 48 ; cast ashore.

Habitat : Was found alive once only viz. in the Eastern Harbour together with *Modiolus barbatus* (L). vid. Pallary 1912 p. 157). Near Naples, too, according to Bellini (1929 p. 67) it is not frequent.

Geographical distribution : In the Atlantic from the Bay of Biscay to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 219, Carus 1893 p. 38 Haas 1926 p. 42). Already known from Alexandria. (Pallary 1912 p. 157).

Lithophaga lithophaga (L.) (Fig 26).

Localities : Eastern Harbour ; near the bath. (L.)
St. 17 ; from stones off the outer side of the breakwater (in the list of stations was written by mistake St. 10).
St. 20 ; (according to the collector's notes).
St. 76 ; („ „ „ „ „).
St. 77 ; 7 fathoms.

St. 78 : 5-6 fath.
St. 111 ; 10 fath.
St. 121 ; 5½ fath.
St. 146 ; 10-11 fath.

Habitat : Chiefly frequent in the two harbours. According to Wilhelmi (1912 p. 141) this species is oligosaprob.

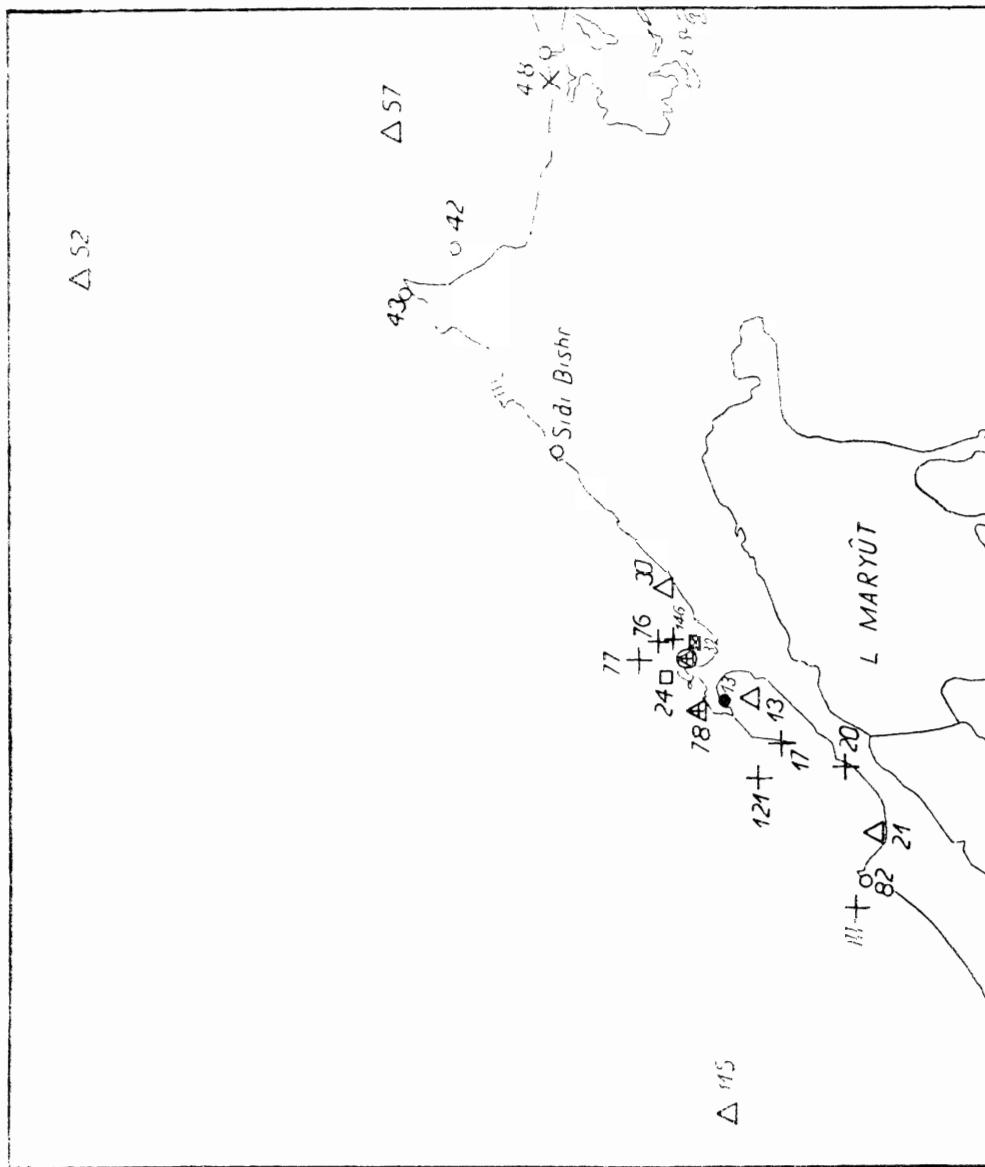

FIG. 26.

□ *Modiolus barbatus* (L.)
△ *Modiolus adriaticus* (Lamarck)
× *Musculus sulcatus* (Risso)
+ *Lithophaga lithophaga* (L.)
● *Mytilus galloprovincialis*.
O *Brachidontes minimus* (Poli)

Geographical distribution: Only in the Mediterranean and in the Adriatic (Ekman 1935 p. 119). Nobre (1936 p. 221) however cites it also for Portugal. Already known from Alexandria (Plage de Ramleh; peu commun). (Pallary 1912 p. 157). "Sur les marchés égyptiens et, en particulier, celui d'Alexandrie tous les mollusques sont largement représentés". (Gruvel 1931 p. 124).

Mytilus galloprovincialis Lamarck (Fig. 26)

Locality: St. 13a; Western Harbour Arsenal-basin.

Habitat; After rather long, vain researches the crew of El Hoot could bring me some small specimens from the Arsenal-basin (vid. Steuer 1935 p. 14). "Sur les côtes nord-africaines les bancs de moules sont rares, peu importants et fort disséminés". (Berner 1935 p. 7 note). The species is according to Wilhelmi (1912 p. 141) oligo—to mesosaprob

Geographical distribution: Is (according to Ekman 1935 p. 119) merely mediterranean-atlantic, "vit plus spécialement dans la Méditerannée, bien que certaines de ses variétés existent aussi sur les côtes atlantiques" (Lamy 1929). From the Portuguese coast Nobre (1931 p. 294, 295) cites *M. galloprovincialis* Lmk. and *M. edulis* Linn.". . . . beide können sicher nebeneinander in dem Uebergangsgebiet vorkommen." (Runnstroem 1929 p. 24). Lives according to Bellini (1929 p. 66) also in the Japanese Seas. Already known from the Egyptian coast (Alexandrie, Port-Said). Signalé en 1905, comme s'engageant dans le canal (Pallary 1912 p. 155), The Cambridge-Expedition however did not find it there.

Brachidontes (Mytilaster) minimus (Poli). (Fig. 26).

Localities: Eastern Harbour; near the Laboratory.
Sidi Bishr.
St. 42; some on stones acc. to the collector's notes.
St. 43; according to the collector's notes.
St. 45; (St. 58 of the list of stations is very likely a misprint). Note of the collector.
St. 82; according to the collector's notes.

Habitat: Everywhere on rocks of the emerging littoral zone. Occurs near Naples (acc. to Bellini 1929 p. 67) at the coasts of the calm not open sea. According to my observations this species occurred more frequently and in greater quantities at the *outer* side of the Pharo and near Sidi-Bishr, that is in relatively more agitated water, while I could observe it in smaller numbers in the more quiet water of the Eastern Harbour, at the *inner* side of the Pharo. It is according to Wilhelmi (1912 p. 141) oligo— to mesosaprob.

Geographical distribution : In the Atlantic, at the Portuguese coast (Norbe 1931 p. 296), in the Mediterranean and in the Adriatic (Carus 1893 p. 81). Already known from Alexandria (Plage de Ramleh : sur les rochers à fleur d'eau, très commun). (Pallary 1912 p. 155).

FAM. PTERIIDAE.

Pinctada vulgaris (Schumacher) (Fig. 27).

Localities : Eastern Harbour ; near the bath.
St. 4 ; 3 fath.
St. 6 ; 3 fath.
St. 7 ; 17 fath.
St. 13b ; 6 fath.
St. 31 ; 2¼ fath.
St. 42 ; acc. to the collector's notes.
St. 43 ; acc. to the collector's notes.
St. 59a ; 17 fath.

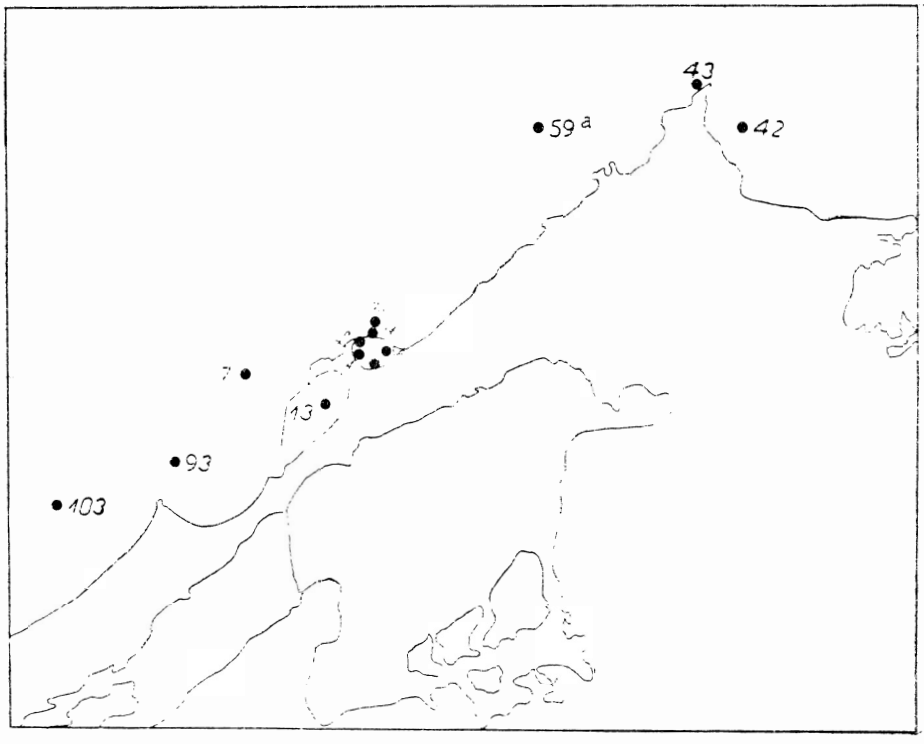

FIG. 27.

● *Pinctada vulgaris* (Schumacher)

St. 76 ; 11 fath.
St. 93 ; 9 fath.
St.103 ; 16 fath.
St.146 ; 10-11 fath.

Habitat : Widely spread on stones, rocks and crags, principally in and off the Eastern Harbour, down to 17 fathoms

Geographical distribution : Malay Pen., Torres Straits, Sydney and West Australia, Ceylon, S. India, Maldives, Persian Gulf, Red Sea, common, Mauritius, South Africa, New Guinea, Japan (?), New Zealand ; very common on the Mediterranean littoral of Egypt ; Malta, Tunis (Tomlin 1927 p. 301), Syria (Gruvel 1931 p. 123, 451).

FAM. PINNIDAE.

Pinna pectinata L. (Fig. 28).

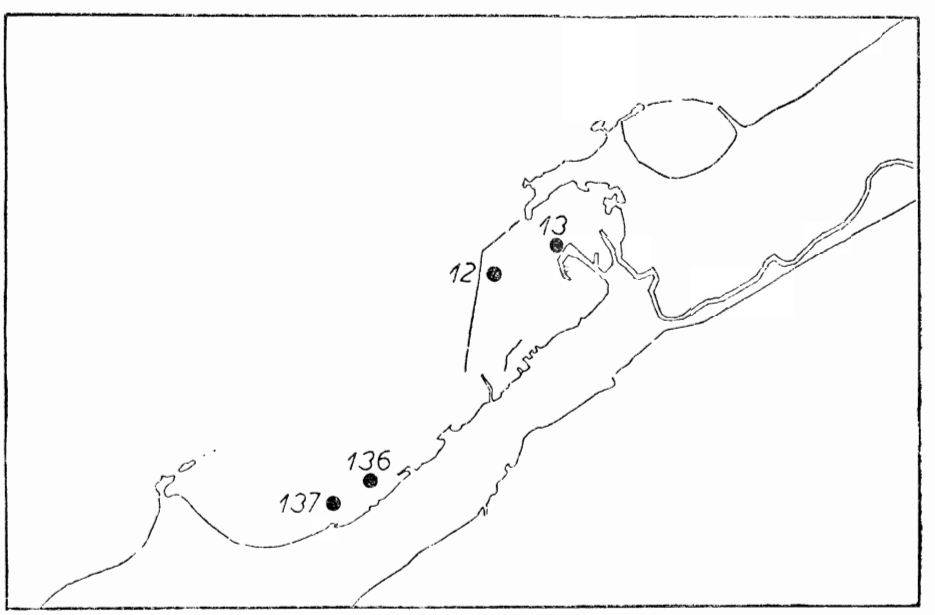

FIG. 28.

● *Pinna pectinata* L.

Localities : St. 12 ; 3 fath. Acc. to the collector's notes.
St.13b ; 6 fath.
St.136 ; 5-6 fath.
St.137 ; 4-5 fath. 2 fragments only.

Habitat : Living mussels were not found ; all localities are situated partly on sandy bottom mixed with mud in and off the Western Harbour.

Geographical distribution : In the Atlantic southward from England, in the Mediterranean and in the Adriatic (Weinkauff 1876 p. 232); Carus 1893 p. 80).
Already known from Alexandria (Pallary 1912 p. 155).

FAM. PECTINIDAE.

Pecten jacobaeus L. (Fig. 29).

Locality : St. 27 ; 70 fath.

Habitat : One shell only was dredged on muddy bottom in greater depths. At the Syrian coast, too, it seems (according to Moazzo 1931 and Gruvel 1931) to be very rare. It is according to Wilhelmi (1912 p. 142) oligo-to feebly mesosaprob.

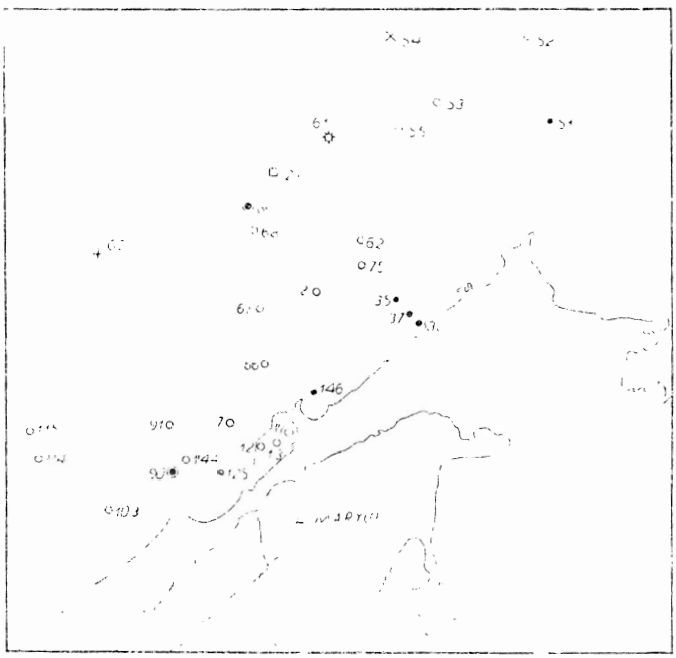

FIG. 29.

Pecten jacobaeus L. ┼ *Chlamys multistriata* (Poli)
● *Chlamys varia* (L.) × *Chlamys opercularis* (L.)
O *Chlamys glabra* (L.)

Geographical distribution : Mediterranean and Adriatic (Carus 1893 p. 71, Ekman 1935 p. 119). Nobre (1931 p. 283) cites a single specimen from the Portuguese coast. "Deve ser rara" (Nobre 1936 p. 209). Already known from Alexandria (. . . . rapporté par les pêcheurs. Valves roulées rares sur la plage du Mex). (Pallary 1912 p. 154).

Chlamys varia (L.) (Fig 29).

Localities : St. 35 ; 7 fath
St. 36 ; 3 fath.
St. 37 ; 3½-4 fath. (accord. to the collector's notes.)
St. 51 ; 13 fath.
St. 69 ; 48 fath.
St. 90 ; 18 fath.
St.125 ; 6 fath.
St.140 ; 10-11 fath.

Habitat : Widely spread in all zones in the district investigated, "toutes les zones" (Lamy 1930), down to almost 50 fathoms. Is according to Wilhelmi (1912 p. 142) oligosaprob.

Geographical distribution : From the arctic Atlantic southwad to the Makaronesian Islands, in the Mediterranean and Adriatic (Carus 1893 p. 71, Haas 1926 p. 41). Is (according to Ekman 1935 p 161) a mediterranean-boreal element, in the north in great need of warmth "Les exemplaires mediterranéens atteignent une taille plus grande et sont ordinairement pourvus d'aspérités plus fortes" (Lamy 1930). Already known from the Egyptian coast (Plage de Ramleh : très commun. Port-Said, indiqué en 1905, comme pénétrant dans le canal). (Pallary 1912 p. 153). The Cambridge-Expedition did not find the species in the Canal.

Chlamys multistriata (Poli). (Fig. 29).

Localities : St. 61; 50 fath.
St. 63; 74-85 fath.

Habitat : Twice only on stony mud-bottom, mixed with sand in depths of about 5 -80 fathoms.

Geographical distribution : In the Atlantic from Norway at least to the Makaronesian Islands, Mediterranean and Adriatic (Carus 1893 p. 76, Dautzenberg & Fischer 1906 p. 67). Already known from the Egyptian coast (Plage de Ramleh, Port Said). (Pallary 1912 p. 152).

Chlamys (Aequipecten) opercularis (L.) (Fig. 29).

Localities : St. 54; 55 fath.
St. 61; 50 fath.

Habitat : Has been fished twice on muddy bottom only in about 50 fathoms.

Geographical distribution : In the Atlantic from Norway and the Faroer down to the Makaronesian Islands; in the Mediterranean and in the Adriatic as well as in the Marmara Sea (Carus 18 3 p. 72, Sturany 1895, Dautzenberg & Fischer 1912 p. 346). Already known from Alexandria (Ramleh). (Pallary 1912 p. 153).

Chlamys glabra (L.) (Fig. 29)

Localities : St. 2 ; 25 fath.
St. 7 ; 17 fath.
St. 11 ; 6 fath.
St. 12 ; 3 fath.
St. 13b; 6 fath.
St. 52 ; 22 fath.
St 53 ; 33 fath.
St. 55 ; 4 fath
St. 61 ; 50 fath.
St. 62 ; 28 fath.
St. 66 ; 20 fath.
St. 67 ; 22 fath.
St. 68 ; 37 fath.
St. 69 ; 48 fath.
St. 75 ; 25 fath.
St. 90 ; 18 fath.
St. 91 ; 20 fath.
St.103 ; 16 fath.
St.114 ; 25 fath.
St.115 ; 30 fath.
St.144 ; 18 fath.

Habitat : In the whole district investigated, also in the Western Harbour, usually on muddy bottom of 3-50 fathoms.

Geographical distribution : Atlantic (Portugal), Mediterranean, Adriatic and Black Sea (Southern coast of the Crimea). (Carus 1893 p. 73, Middendorff 1847 III 9., Nobre 1931 p. 286, 1936 p. 211). Already known from Alexandria (Commun à Alexandrie ou il est vendu comme comestible). (Pallary 1912 p. 153).

Chlamys proteus (Sowerby). (Fig. 30).

Locality : St. 91 ; 20 fath.

Habitat : Was dredged only once northward from Dekheila on muddy Caulerpa-bottom.

Geographical distribution : Eastern Adriatic (Carus 1893, Coen 1933).

Chlamys flexuosa (Poli). (Fig. 30).

Localities : St. 7 ; 17 fath.
St. 26 ; 126 fath. (shell only).
St. 61 ; 50 fath.
St. 66 ; 20 fath.
St. 67 ; 22 fath.

St. 68 ; 37 fath.
St. 69 ; 48 fath.
St. 90 ; 18 fath.
St. 92 ; 24½ fath.
St. 114 ; 25 fath.

Habitat : Principally in the middle part of the district investigated on muddy Caulerpa-bottom in 17-50 fathoms. One shell was fished in a greater depth.

Geographical distribution : In the Atlantic (Portugal), in the Mediterranean and in the Adriatic (Carus 1893 p. 74 ; Nobre 1931 p. 288, 1936 p. 212).

Chlamys pes-felis (L.) (Fig. 30).

Localities : St. 61 ; 50 fath.
St. 73 ; 38 fath.

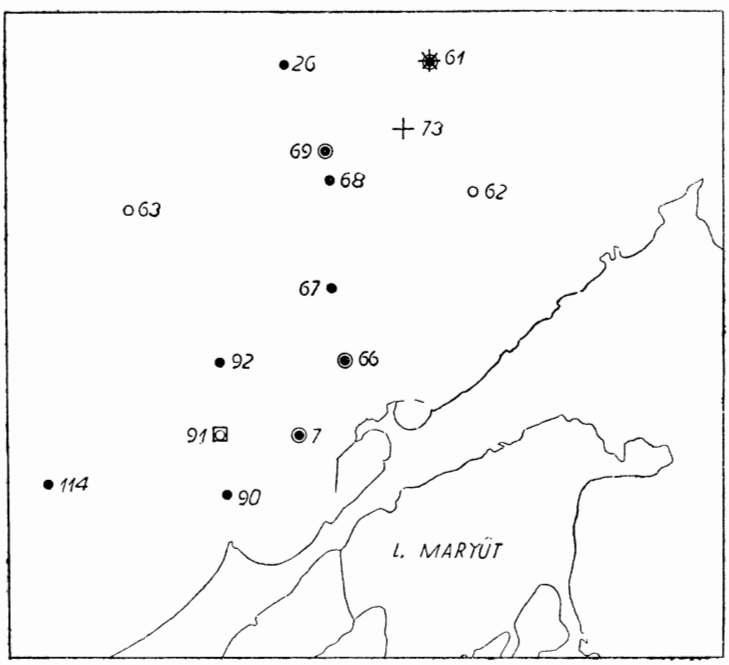

FIG. 30.

□ *Chlamys proteus* (Sowerby) + *Chlamys pes-felis* (L.)
● *Chlamys flexuosa* (Poli) O *Propeamussium hyalinum* (Poli)
× *Propeamussium incomparabile* (Risso)

Habitat : Was found twice only on muddy bottom in about 40-50 fathoms. Bellini (1929 p. 12) counts it among the abyssal mussels of the Gulf of Naples.

Geographical distribution : In the Atlantic at the West-African coast and at the Makaronesian Islands, in the Mediterranean and in the eastern Adriatic (Carus 1893 p. 71, Dautzenberg 1927, Coen 1933).

Propeamussium (Lissopecten) hyalinum (Poli) (Fig. 30).

Localities : St. 7 ; 17 fath.
St. 61 ; 50 fath.
St. 62 ; 28 fath.
St. 63 ; 74-85 fath.
St. 66 ; 20 fath.
St. 69 ; 48 fath.
St. 91 ; 29 fath.
St. 148 ; 2 fath. (very doubtful, therefore not noted in the chart ; very likely an error in writing).

Habitat : Only in the western part of the district investigated, for the greater part on stony or sandy mud-bottom in about 20 to 80 fathoms.

Geographical distribution : Atlantic (Portugal), Mediterranean and Adriatic (Carus 1893 p. 76, Nobre 931 p. 434, 1936 p. 214). Already known from Alexandria (Plage de Ramleh : rare) Pallary 1912 p. 153).

Propeamussium (Palliolum) incomparabile (Risso) (Fig. 30).

Locality : St. 61 ; 50 fath.

Habitat : As near Naples (Bellini 1929 p. 8) this species has also been found in the "oberen, von 80—150 m. reichenden Abschnitt der Brachiopodenzone".

Geographical distribution : From the arctic Atlantic to the Makaronesian Islands, in the Mediterranean and Adriatic (Haas 1926 p. 41).

FAM. LIMIDAE.

Lima (Mantellum) hians (Gmelin) (Fig. 31).

Localities : St. 71 ; 23 fath.
St. 121 ; 5½ fath.

Habitat : Was found only twice on stony Caulerpa-bottom northward from the Eastern Harbour and off the entrance to the Western Harbour. It is according to Wilhelmi (1912 p. 141) oligosabrob, according to Vatova (1936) in the Adriatic a characteristic from of an Epifauna-Association, viz. the *Lima fragilis hians*—Association (L. fr. h.).

Geographical distribution : From the arctic Atlantic to the Makaronesian Islands, at the North-American eastern coast to the Gulf of Mexico, everywhere in the Mediterranean and in the Adriatic (Haas 1926 p. 40—41). Already known from Alexandria (Plage de Ramleh : peu commun). (Pallary 1912 p. 152).

Lima (Mantellum) inflata Lamarck (Fig. 31).

Locality : St. 78 ; 5-6 fath.

Habitat: Was found only once, but alive (according to the collector's notes) on stony bottom begrown with algae, and as near Naples (acc. to Lo Bianco 1909 p. 620) Posidonia-meadows in moderate depth. This species, too, is according to Wilhelmi (1912 p. 141) oligosaprob.

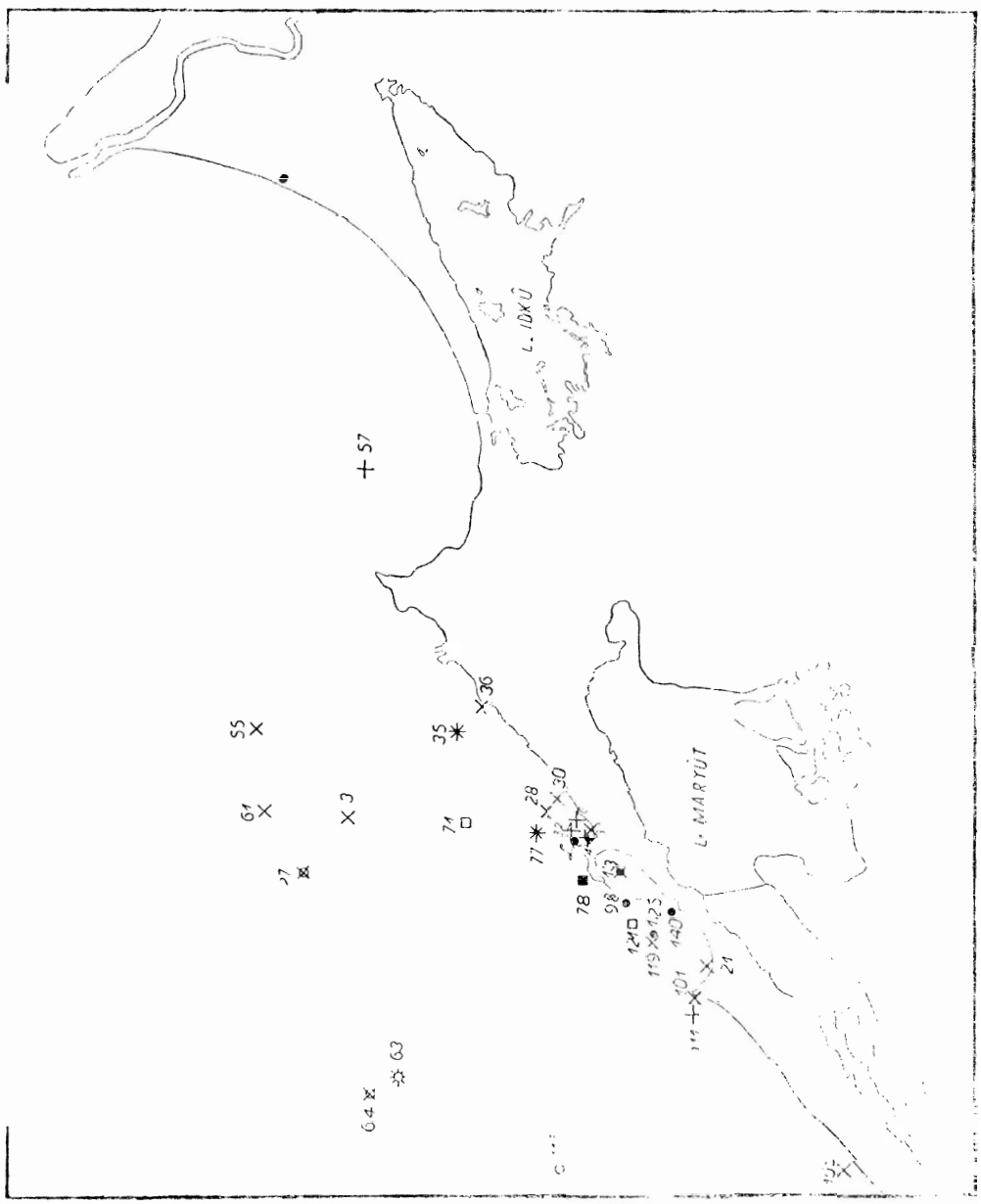

FIG. 31.

Lima hians (Gmelin)
Lima inflata Lamarck
Ostrea edulis L.
Astarte fusca Poli
Cardita antiquata (L.)
Beguina trapezia (L.)

Geographical distribution : Atlantic from England to the Makaronesian Islands, Mediterranean and Adriatic (Weikauff 1867 p. 241, Carus 1893 p. 68, Dautzenberg & Fischer 1906 p. 66). Already known from Alexandria (Plage de Ramleh : commun). (Pallary 1912 p. 152).

FAM. OSTREIDAE

Ostrea edulis L. (Fig. 31)

Remark : I follow Pallary in recording this shell as *edulis* L. (T.)

Localities : Eastern Harbour : near the Laboratory (L.)
St. 4 ; 3 fath.
St. 13b; 6 fath.
St. 98 ; 4 fath. (acc. to the collector's notes).
St.125 ; 6 fath.
St.140 ; 4-8 fath.
Eastern coast of the Bay of Abukir, washed ashore.

Habitat : Was principally found in the district of the two harbours in the Ulva-Coralline-zone, on rocks, like elsewhere (e. g. Naples) on submerged objects, beside on sandy bottom in moderate depth. The species is acc. to Wilhelmi (1912 p. 142) oligo-to feebly mesosaprob.

Geographical distribution : In the Atlantic at the western coast of Europe southward from Norway, in the Mediterranean and in the Adriatic (Haas 1926 p. 40-41), a lusitanean-mediterranean-boreal element according to Ekman (1935 p. 151, 194). Already known from the Egyptian coast (Plage de Ramleh, Port Said). (Pallary 1912 p. 150).

Ordo EULAMELLIBRANCHIATA.

Subordo HETERODONTA.

FAM. ASTARTIDAE.

Astarte fisca Poli (Fig. 31).

Localities : St. 27; 70 fath.
St. 63; 74-85 fath.
St. 64;110 fath
St.116;35 fath.

Habitat : On muddy bottom mixed with sand and stones in 35 to more than 100 fathoms, as in the southern Adriatic (Sturany 1896 p. 30).

Geographical distribution : In the Atlantic (Canaries), in the Mediterranean and in the eastern Adriatic (Weinkauff 1867 p. 124, Carus 1893 p. 101, Coen 1933).

FAM. CARDITIDAE.

Cardita antiquata (L.) (Fig. 31).

Remark : There is a difference of opinion amongst authors, whether *antiquata* L. is the mediterranean species or not ; I followed B.D.D. (= Bucquoy, Dautzenberg et G. Dollfus 1882-1898) II 222 (T).

Localities : St. 4 ; 3 fath.
St. 6 ; 3 fath.
St. 32 ; 5½ fath.
St. 35 ; 7 fath.
St. 57 ; 8 fath.
St. 63 ; 74-85 fath.
St. 77 ; 7 fath.
St.111 ;10 fath.

Habitat: On stony sandbottom from 3 to about 80 fathoms; frequent, especially in the Eastern Harbour. The species is according to Bisacchi (1928 p. 373) a characteristic form for the sandbottoms near Rhodes.

Geograpaical distribution : In the Lusitanian Sea, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 153, Carus 1893 p. 99). Already known from Alexandria (Plage de Ramleh, Port-Vieux : commun) (Pallary 1912 p. 161).

Beguina (Glans) trapezia (L.) (Fig. 31).

Localities : St. 3 ; 34 fath.
St.13b ; 6 fath.
St. 21 ; 1½ fath.
St. 27 ; 70 fath.
St. 28 ; 10-12 fath.
St. 30 ; [illegible] fath.
St. 31 ; 2 ¼ fath.
St. 35 ; 7 fath.
St. 36 ; 3 fath.
St. 55 ; 40 fath.
St. 61 ; 50 fath.
St. 63 ; 74-85 fath.
St. 64 ; 110 fath.
St. 77 ; 7 fath
St.101 ; 5½ fath.
St.105 ; 6 fath.
St.119 ; 5½ fath.

Habitat : Mostly on (stony) sandbottom as in the Adriatic (Coen and Vatova 1932) or on mudbottom, not only in the littoral district as at the Syrian coast (acc. to Moazzo 1913) but also in depths to more than 100 fathoms.

Geographical distribution : In the Lusitanian Sea, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 154, Carus 1893 p. 99). Already kown from Alexandria (Plage de Ramleh : pas rare). (Palary 1912 p. 161).

FAM. CORBICULIDAE

Corbicula consobrina Cailliaud (Fig. 32).

Localities : Lake Mariotis
Lake Edku, D2
St. 147 ; mouth of the Nile.

Habitat : The species was found in bottom mud of Lake Mariotis and Lake Edku as well as at the mouth of the Nile near the Bughaz.

Geographical distribution : This is esseentially a Nilotic species. It is very probable that its range is much wider than that but at present the specific limits in *Corbicula* are but little understood (T.). According to Paillard (1934) it is already known from the Palaeolithic of Egypt.

FAM. UNGULINIDAE.

Diplodonta rotundata (Montagu). (Fig. 32).

Localities : St. 2 ; 25 fath.
St. 52 ; 22 fath.
St. 54 ; 55 fath.
St. 90 ; 18 fath.
St. 92 ; 24.5 fath.
St. 103 ; 16 fath.

Habitat : Mostly on muddy, respectively slimy bottom as in the Adriatic (Coen and Vatova 1932, Vatova 1935) to more than 50 fathoms.

Geographical distribution : In the Atlantic from England to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Dautzenberg et Fischer 1906 p. 88, Haas 1926 p 42—43), also in the Red Sea (J.). Already known from the Egyptian coast (Port d'Alexandrie, Plage de Ramleh, Port Said ; rare. Signalé en 1905 dans le petit Lac Amer où il est assez commun). (Pallary 1912 p. 173).

FAM. LUCINIDAE

Loripes lacteus Poli (Fig. 32).

Localities : St. 11 ; 6 fath.
St. 12 ; 3 fath

St. 13 b ; 6 fath.
St. 14 ; 7 fath.
St. 58 ; 4 fath.

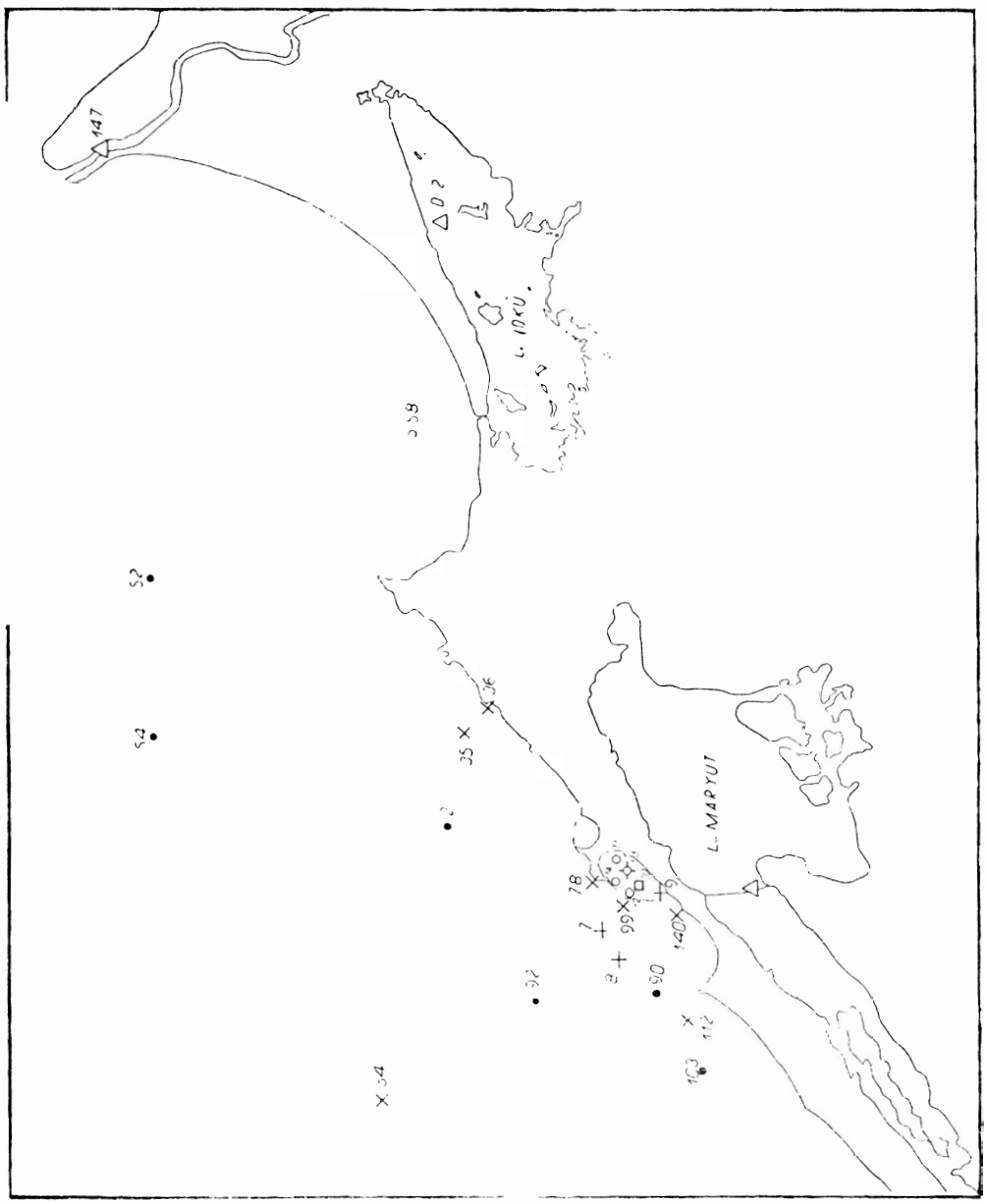

FIG. 32.

△ *Corbicula consobrina* Cailliaud
● *Diplodonta rotundata* (Montagu)
O *Loripes lacteus* Poli
□ *Loripes desmaresti* (Payraudeau)
+ *Codakia reticulata* (Poli)
× *Chama gryphoides* Lamarck

Habitat : In the Western Harbour and off the mouth of Lake Edku on sandy and muddy bottom (also black mud) as near Naples (Lo Bianco 1909) in 3—7 fathoms. Is according to Wilhelmi (1912 p. 141) oligo— to feebly mesasaprob.

Geographical distribution : In the Atlantic from England to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Haas 1926 p. 42—43). Already known from Alexandria (Alexandrie, très abondant sur les bords du Lac Mareotis, Plage de Ramleh : commun). (Pallary 1912 p. 181). (Fig 32)

Loripes desmaresti (Payraudeau).

Locality : St. 10 ; 6 fath.

Habitat : Was found only once in the Eastern Harbour on muddy and sandy bottom with Caulerpa.

Geographical distribution : In the Atlantic from England to the Makaronesian Islands, in the Mediterranean and in the Eastern Adriatic (Weinkauff 1867 p. 166, Coen 1933). Already known from the Harbour of Alexandria (Pallary 1912 p. 181).

Codakia (Jagonia) reticulata (Poli). (Fig. 32).

Localities : St. 7 ; 17 fath.
St. 8 ; 15 fath.
St. 9 ; 7 fath.
St. 13b; 6 fath.

Habitat : Was dredged in and off the Western Harbour on stony, sandy, muddy bottom (also on black mud) in moderate depth.

Geographical distribution : In the Atlantic frow France to Guinea, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 1.0). Already known from the Egyptian coast (Alexandrie dans le Port, Ramleh, Aboukir). (Pallary 1912 p. 181).

FAM. CHAMIDAE.

Chama gryphoides Lamarck. (Fig. 32).

Localities : St. 35; 7 fath.
St. 36; 3 fath.
St 64;110 fath.
St. 78; 5-6 fath.
St. 99; 5½ fath.
St. 112; 15 fath.
St. 140; 4-8 fath.

Habitat : Mostly on stony sand-and mudbottom from 3 to more than 100 fath.

Geographieal distribution : In the Atlantic from Portugal to the Makaronesian Islands and South Africa, in the Mediterranean and in the Adriatic. Already known from Egypt (Ramleh, sur les roches à fleur d'eau, Suez Canal. Lake Timsah, Gulf of Suez). Carus 1893 p 115, Dautzenberg et Fischer 1906 p. 81, Tomlin 1927 p. 305, Thiele 1931 p 226, Pallary 1912 p. 165.

FAM. CARDIIDAE

Cardium (Rudicardium) rusticum L. (Fig. 33).

Locality : St. 13 ; 6 fath.
Eastern coast of the Bay of Abukir, cast ashore.

Habitat : Was dredged only once in the Western Harbour on somewhat "muddy bottom" as in Naples. According to Wilhelmi (1912 p. 140) oligo-to feebly mesosaprop ; in the muddy sandbottoms of the polluted harbour of Genova (acc. to Issel 1918 p. 393) it is already extinct.

Geographical distribution : In the Atlantic from England to the Makaronesian Islands. in the Mediterranean and in the Adriatic. Already known from Egypt (Ramleh). (Weinkauff 1867 p. 136, Carus 1893 p. 112).

Cardium (Rudicardium) paucicostatum Sowerby (Fig. 33).

Localities : St. 9 ; 7 fath.
St. 10 ; 6 fath.
St. 12 ; 3 fath.
St.13b ; 6 fath.
St. 27 ; 70 fath.
St. 52 ; 22 fath.
St. 54 ; 55 fath.
St. 55 ; 40 fath.
St. 63 ; 74-85 fath.
St. 68 ; 37 fath.
St. 92 ; 24.5 fath.
St.145 ; 21 fath.

Habitat : Usually on muddy bottoms in the Western Harbour and in the open sea down to about 80 fathoms.

Geographical distribution : In the Atlantic southward from England, and in the Mediterranean and in the Adriatic (Carus 1893 p. 111, Coen 1933). Was already known from Alexandria (Pallary 1912 p. 165).

Cardium (*Cerastoderma*) *edule* L. (Fig. 33).

Localities : St. 13b ; 6 fath.
St. 14 ; 7 fath.
St. 17 ; 5-12 fath.

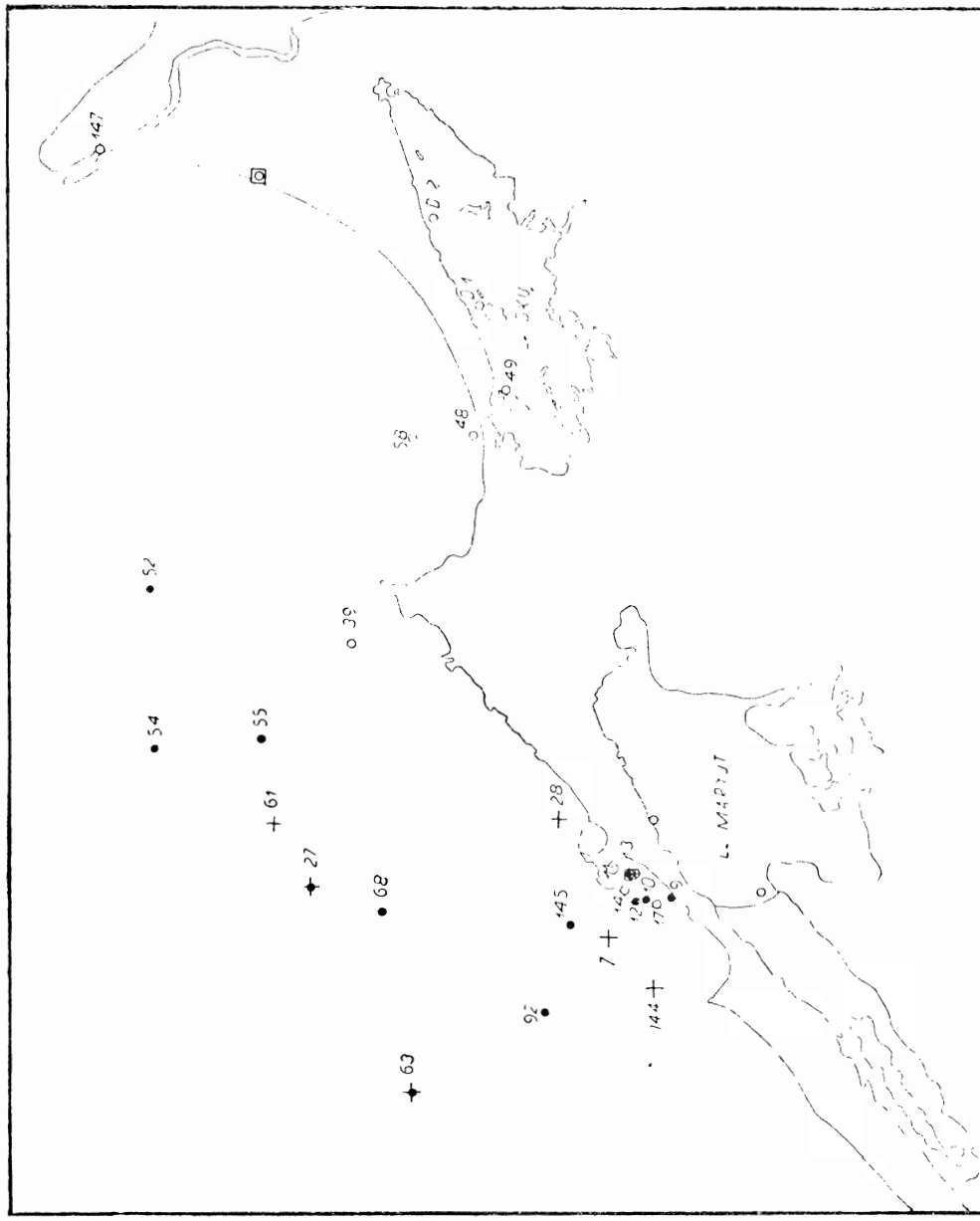

FIG. 33.

□ *Cardium rusticum* L.
● *Cardium paucicostatum* Sowerby
O *Cardium edule* L.
⌣ *Cardium exiguum* Gmelin
+ *Cardium papillosum* Poli

St. 39 ; 17 fath.
St. 48 ;
St. 49 ;
St. 58 ; 4 fath.
St.147 ; mouth of the Nile.
Lake Mariotis ; Lake Edku near village (D2).
Lake Edku near the Isle Derfil (D1).
Eastern coast of the Bay of Abukir, washed ashore.

Habitat : This "sehr euryhaline" species (Ekman 1935 p. 185) is widely spread near the coast, in Lake Mariotis and Lake Edku as well as at the mouth of the Nile, on sandy and muddy bottom, in the Western Harbour also on black mud, in moderate depth ; Lamy (1930) calls it "espèce essentiellement littorale, dont l'habitat en profondeur ne dépasse pas une vingtaine de mètres".

Geographical distribution : From the arctic Atlantic, from Iceland and Finmarken, from the north and Baltic Seas, the Gulf of Finland and the Gulf of Bothnia to the Makaronesian Islands, in the Mediterranean, the Adriatic, the Black Sea, in the Caspian Sea and the Aral Sea (Carus 1893 p 112, Haas 1926 p 44—45, Tomlin 1927 p. 304). Ekman (1935 p. 189) calls it "lusitanisch-boreal-subarktisch." Is already known from Egypt, e.g. from Alexandria (Port-Vieux), from where Pallary (1912 p. 164) cites the following varieties : var. *glauca* Poiret from Port-Said, var. *altior* B.D.D. and var. *mareotica* Pallary from Lake Mariotis, var. *Lamarcki* Reeve from Abukir and "lagune près Ramleh", var. *isthmica* Issel from Ramleh (dans une lagune). Besides it is recorded from Lake Menzaleh and from the Canal (Tomlin 1927 p. 304).

Cardium (*Parvicardium*) *exiguum* Gmelin (Fig 33).

Localities : St. 11 ; 6 fath.
St. 13b ; 6 fath.

Habitat : Was dredged only in the Western Harbour on sandy and (partly back) muddy bottom in 6 fathoms.

Geographical distribution : In the Atlantic northward (according to Haas 1626 p 44) to England only, in the Mediterranean, in the Adriatic and in the Black Sea (Middendorff 1847 p. 37, Weinkauff 1867 p. 141, Carus 1893 p. 113).

Cardium (*Parvicardium*) *papillosum* Poli. (Fig 33).

Localities : St. 7 ; 17 fath.
St. 13b; 6 fath.
St. 27 ; 70 fath.
St. 28 ; 10-12 fath.

St. 61 ; 50 fath.
St. 63 ; 74-85 fath.
St.144 ; 18 fath.

Habitat : On stony, sandy, but also on muddy bottoms near the coast, as well as far from the coast in greater depths.

Geographical distribution : In the Atlantic from England to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 138, Carus 1893 p. 113).

FAM. VENERIDAE.

Gafrarium (*Circe*) *minimum* (Mont). (Fig. 34).

Locality : St. 17 ; 7 fath.

Habitat : This evidently rare species was fished only once from the Western Harbour on stony Caulerpa-bottom.

Geographical distribution : In the Atlantic from Norway to the Makaronesian Islands, in the Mediterranean, in the Adriatic and in the Marmara Sea (Dautzenberg et Fischer 1906 p. 82, Sturany 1895 p. 120). Already known from Alaxandria (Port-Vieux, Plage de Ramleh : rare). (Pallary 1912 p. 167).

Pitar Rudis (Poli). (Fig. 34)

Localities : St. 27; 70 fath.
St. 36; 3 fath.
St. 61; 50 fath.
St. 63; 74-85 fath.

Habitat : Not frequent near the coast and far from the coast in deeper bottoms

Geographical distribution : In the Atlantic (Canaries), in the Mediterranean, in the Adriatic, in the Marmara Sea and in the Black Sea (Weinkauff 1867, p. 117, Middendorff 1847, p. 55, Carus 1893 p. 118). Already known from Alexandria (Plage de Ramleh : rare). (Pallary 1912 p. 167).

Pitar (*Macrocallista*) *chione* (L.) (Fig. 34).

Localities : St. 7; 17 fath.
St.112; 15 fath.

Habitat : Was found in the western part of the district investigated near Dekheli and in the Western Harbour on stony, sandy bottom in about 15 fathoms, somewhat like near Triest (Graeffe 1902).

Geographical distribution : In the Atlantic from Norway to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 116, Carus 1893 p. 117, Haas 1926 p. 44—45). Was already known

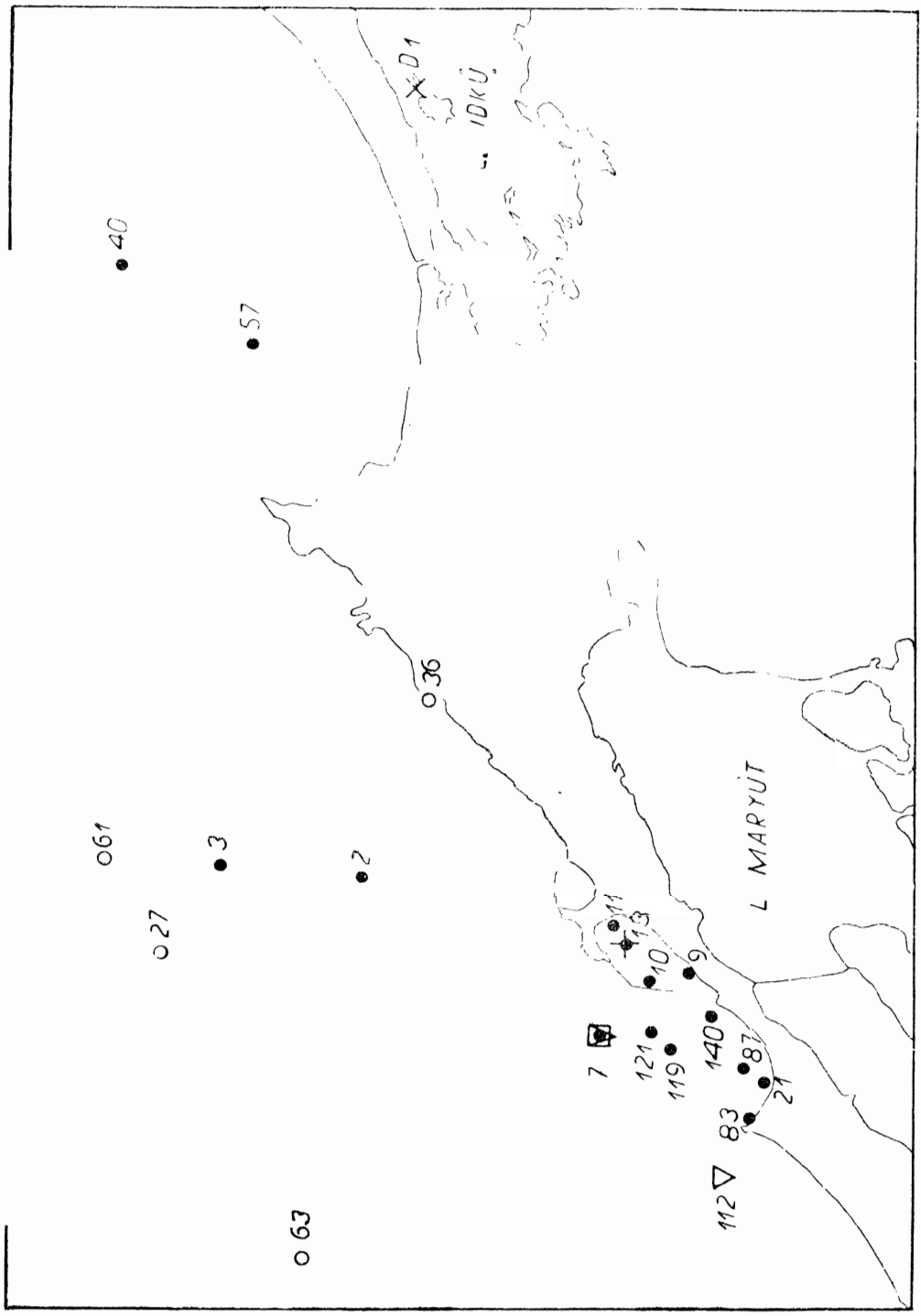

FIG. 34.

□ *Gafrarium minimum* (Mont.)
O *Pitar rudis* (Poli)
▽ *Pitar chione* (L.)
+ *Dosinia exoleta* (L.)
× *Dosinia lupinus* (Poli)
● *Venus verrucosa* (L.)

from Alexandria (Dragué dans le Port-Vieux, Ramleh). (Pallary 1912 p. 116).

Dosinia (*Orbiculus*) *exoleta* (L.) (Fig. 34).

Locality : 13b ; 6 fath.

Habitat : This evidently stenotop sandform was dredged once only in the West Port. It is according to Wilhelmi (1912 p. 140) oligosaprob.

Geographical distribution : In the Atlantic at the European western coasts of Norway southward, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 120, Carus 1893 p. 119, Haas 1926 p. 44—45). Already known from Alexandria (Port-Neuf, sur les fonds sablonneux. Plage de Ramleh : pas rare). (Pallary 1912 p. 167).

Dosinia lupinus (Poli). (Fig. 34)

Locality : Lake Edku near the Isle Derfil (Dl).

Habitat : This evidently euryhaline form was fond once only in Lake Edku near the Isle Derfil on muddy bottom.

Geographical distribution : In the arctic Atlantic, at the western European coast, in the Mediterranean and in the Adriatic (Carus 1893, p. 120, Haas 1926 p. 44, 45). Already known from Egypt (Plage de Ramleh : rare, Aboukir, Port Said, Lac de Timsah). (Pallary. 1912 p. 167).

Venus verrucosa L. (Fig. 34).

Localities : St. 2 ; 25 fath.
St. 3 ; more than 34 fath.
St. 7 ; 17 fath.
St. 9 ; 7 fath
St. 10 ; 6 fath.
St. 11 ; 6 fath.
St.13b ; 6 fath.
St. 21 ; 1½ fath.
St. 40; 8 fath.
St. 57; 3 fath.
St. 83;
St. 87; 4 fath.
St. 119; 5½ fath.
St. 121; 5½ fath.
St. 140; 4-8 fath.

Habitat : This characteristic form of Vatova's (1936) "Chiona verrucosa (Ch. v.)-association" is widely spread in the district investigated, especially frequent in the surroundings of the Western Harbour, down to 34 fathoms.

It is according to Wilhelmi (1912 p. 143) oligo-to feebly mesosaprob, was also dredged in the Western Harbour (St. 11) in black mud.

Geographical distribution : In the Atlantic from England to the Makaronesian Islands and South-West Africa, as well as South-Africa, (J); therefore called by Ekman (1935 p. 277) "bipolar"; besides in the Mediterranean and in the Adriatic (Carus 1893 p. 121, Haas 1926 p. 44,45). Already known from the Egyptian coast (Alexandria, Port-Vieux, Ramleh, Port-Said : commune. Espèce commune très appreciée. En 1885, cette espèce commençait à s'engeger dans le canal). (Pallary 1912 p. 168).

Venus (Chamelea) gallina L (Fig. 34).

Localities : St. 56; 4 fath.
St. 58; 4 fath.

Habitat : This stenotop sandform and characteristic form of the "*Chione gallina* (Ch.g.)—association (Vatova 1936), respectively of the "*Venus-gallina* Gemeinschaft" (Haas 1926 p. 79) was found in the Bay of Aboukir only. It is according to Wilhelmi (1912 p. 143) oligo to feebly mesosaprop.

Geographical distribution : In the Arctic Atlantic, at the European western coasts, in the Mediterranean, in the Adriatic, in the Black Sea and in the Caspian Sea. Was already known from Egypt (Plage de Ramleh : peu commune Port-Said. Espèce comestible vendue sous le nom de Clovisse. En 1905, cette espèce arrivait au lac Timsah). (Pallary 1912 p. 168).

Venus (Timoclea) ovata Pennant. (Fig. 35).

Locality : St. 63; 74-85 fath.

Habitat : This evidently not frequent species was found only once on stony sandy mud-bottom in greater depths.

Geographical distribution : In the arctic Atlantic, at the western coast of Europe from Norway southward to the Makaronesian Islands, in the Mediterranean, in the eastern Adriatic and in the Marmara Sea (Weinkauff 1867 p. 114, Carus 1893 p. 122, Sturany 1895 p. 120, Haas 1926 p. 44, 45, Coen 1933). Already known from Alexandria (Port-Vieux : rare). (Pallary 1912 p. 169).

Paphia catenifera (Lamarck). (Fig. 35).

Localities : Eastern Harbour near the Laboratory(L.) Petersen-haul,107 specimens, for *Tapes aureus* Gm. var. *catenifera* Lam. (vid. Vatova 1935).
St. 4; 3 fath.
St. 13; 6 fath.
St. 21; 1½ fath.
St. 31; 2¼ fath
St. 58; 4 fath.

St. 119; 5½ fath.
Lake Mareotis.

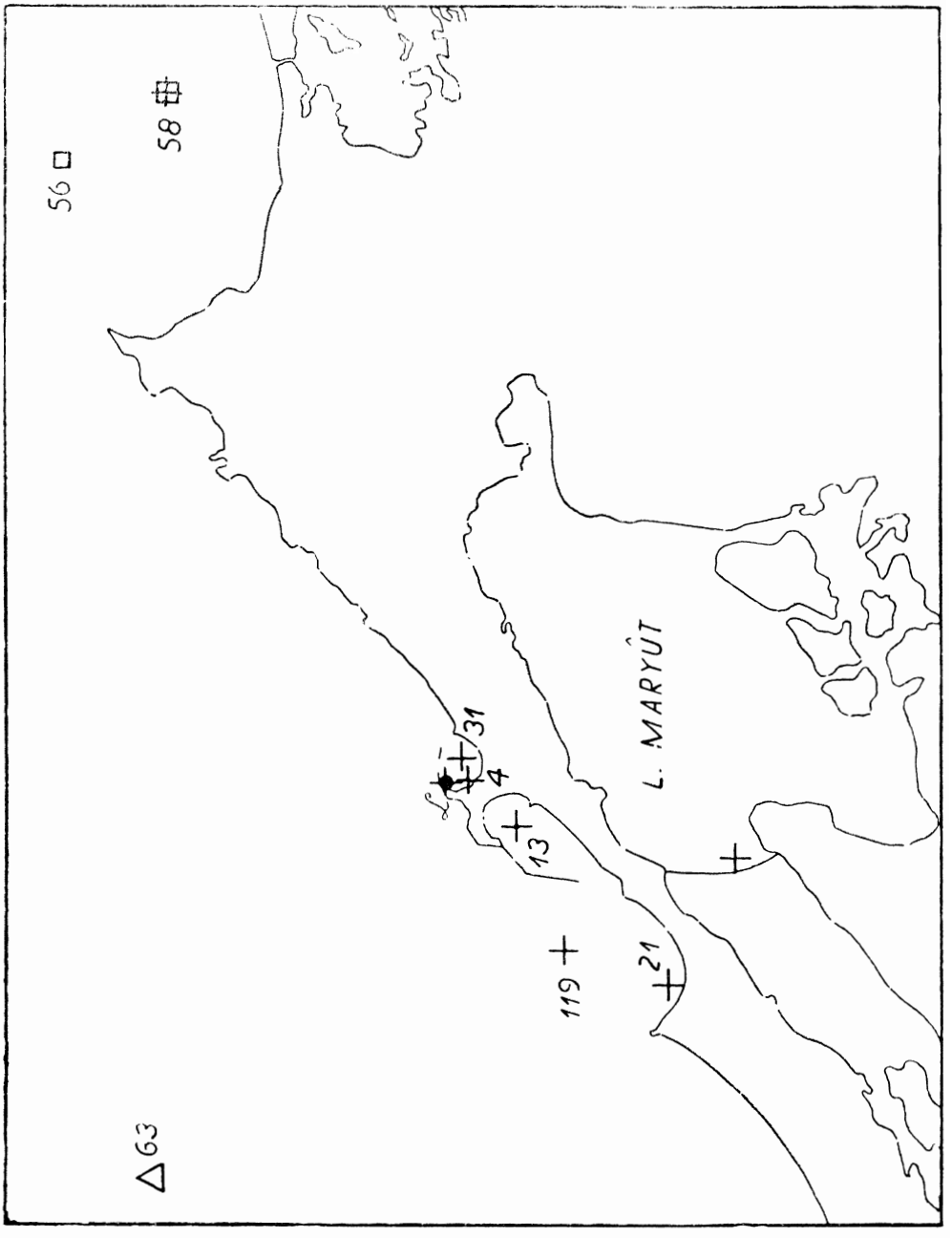

FIG. 35.

□ *Venus gallina* L.
△ *Venus ovata* Pennant
+ *Paphia catenifera* (Lamarck)
● *Irus irus* (L.)
● *Petricola lithophaga* (Retzius)

Habitat : Was found in the Bay of Aboukir, off the mouth of Lake Edku, in the range of the two harbours, in moderate depths as well as in Lake Mareotis. Is evidently euryhaline and according to Wilhelmi (1912 p. 143) feebly mesosaprob.

Geographical distribution : In the Atlantic southward from the English Channel, everywhere in the Mediterranean and in the Adriatic. Was already known from Egypt (Carus 1893 p. 126).

Irus irus(L.) (Fig. 35).

Locality : Eastern Harbour off the Laboratory (L.)

Habitat : Was found only once on stones in the Eastern Harbour at the coast.

Geographical distribution : In the Atlantic from England to the Makaronesian Islands, in the Mediterranean, the Adriatic and in the Black Sea (Weinkauff 1867 p. 91, Carus 1893 p. 128). Already known from Alexandria (Plage de Ramleh : commun). (Pallary 1912, p. 172).

FAM. PETRICOLIDAE.

Petricola lithophaga (Retzius). (Fig. 35).

Locality : Eastern Harbour near the bath (L.)

Habitat : Like the preceding species, recorded from one locality only; occurs however most certainly everywhere at the rocky coast.

Geographical distribution : In the Lusitanian Sea southward from France, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 90, Carus 1893 p. 129, Tomlin 1927 p. 306) as well as in the Black Sea (Berlin Museum acc. to J.). Already known from the Egyptian coast (Alexandria, Suez Canal). (Pallary 1912 p. 172 Tomlin 1927 p. 306).

FAM. MACTRIDAE.

Mactra corallina L. (Fig. 36).

Localities : St. 13; 6 fath.
St. 45; 9 fath.
St. 47; 6 fath.
St. 48; fath.
St. 147; 1.7 fath.

Habitat : This evidently euryhaline species lives in small depths principally in the Bay of Aboukir, at the mouth of the Nile near the Bughaz, but also in the Western Harbour. It is, according to Wilhelmi (1912 p. 141 as *M. stultorum* L.) oligo-to feebly mesosaprob.

Geographical distribution : "*M. corallina* typique très commun sur le littoral Méditerranéan ; var. *stultorum* très abondante sur toutes les plages de la Manche, de L'Océan et de la Méditerranée ; var. *atlantica* cantonnée sur les côtes de la Mer du Nord, de l'Océan et de la Manche" (Ed. Lamy 1931). According to Tomlin (1927 p. 308) also known from the Black Sea. Already known from Egypt (Plage de Ramleh, Port-Said, Lake Timsah ; Little Bitter Lake. En 1885, cette espèce arrivait au seuil de Chalouf. Elle doit être actuellement arrivée à Suez). (Pallary 1912 p. 177, Tomlin 1927 p. 308.)

FAM. DONACIDAE.

Donax (Serrula) trunculus (L.) (Fig. 36).

Localities : St.13b ; 6 fath.
St. 51 ; 13 fath
Eastern coast of the Bay of Aboukir, washed ashore.

Habitat : On sandy bottom (Ed. Lamy 1929) in moderate depth.

Geographical distribution : In the Atlantic at the coasts of western Europe from the North Sea to the Makaronesian Islands, in the Mediterranean and in the Adriatic as well as in the Black Sea. Is brought from the Red Sea (Gulf of Suez) to the Suez market. (Weinkauff 1867 p. 61, Carus 1893 p. 133, Haas 1926 p. 46, Tomlin 1927 p. 307). Already known from the Egyptian coast (Alexandrie, Port-Neuf, Ramleh, Port-Said : comestible), (Pallary 1912 p. 173).

Donax (Serrula) variegatus (Gmelin) (Fig. 36).

Localities : St. 35 ; 7 fath.
St. 50 ; 9 fath.
St. 56 ; 4 fath.
St. 81 ; 6 fath.
St. 86 ; 5 fath.
St.100 ; 5½-6 fath.
St.119 ; 5½ fath
St.125 ; 6 fath.
St.140 ; 4-8 fath.

Habitat : The species seems to be a characteristic form of the Amphioxus-sand.

Geographical distribution : In the Atlantic southward from England, in the Mediterranean and in the Adriatic (Carus 1893 p. 134). Was already known from Alexandria (Port-Neuf, Ramleh). (Pallary 1912 p. 174).

Donax (Serrula) semistriatus Poli (partly var. *alba* Monterosato) (Fig. 36.)

Localities : St.33b ;
St. 36 ; 3 fath.

St. 58 ; 4 fath.

St.105 ; 6 fath.

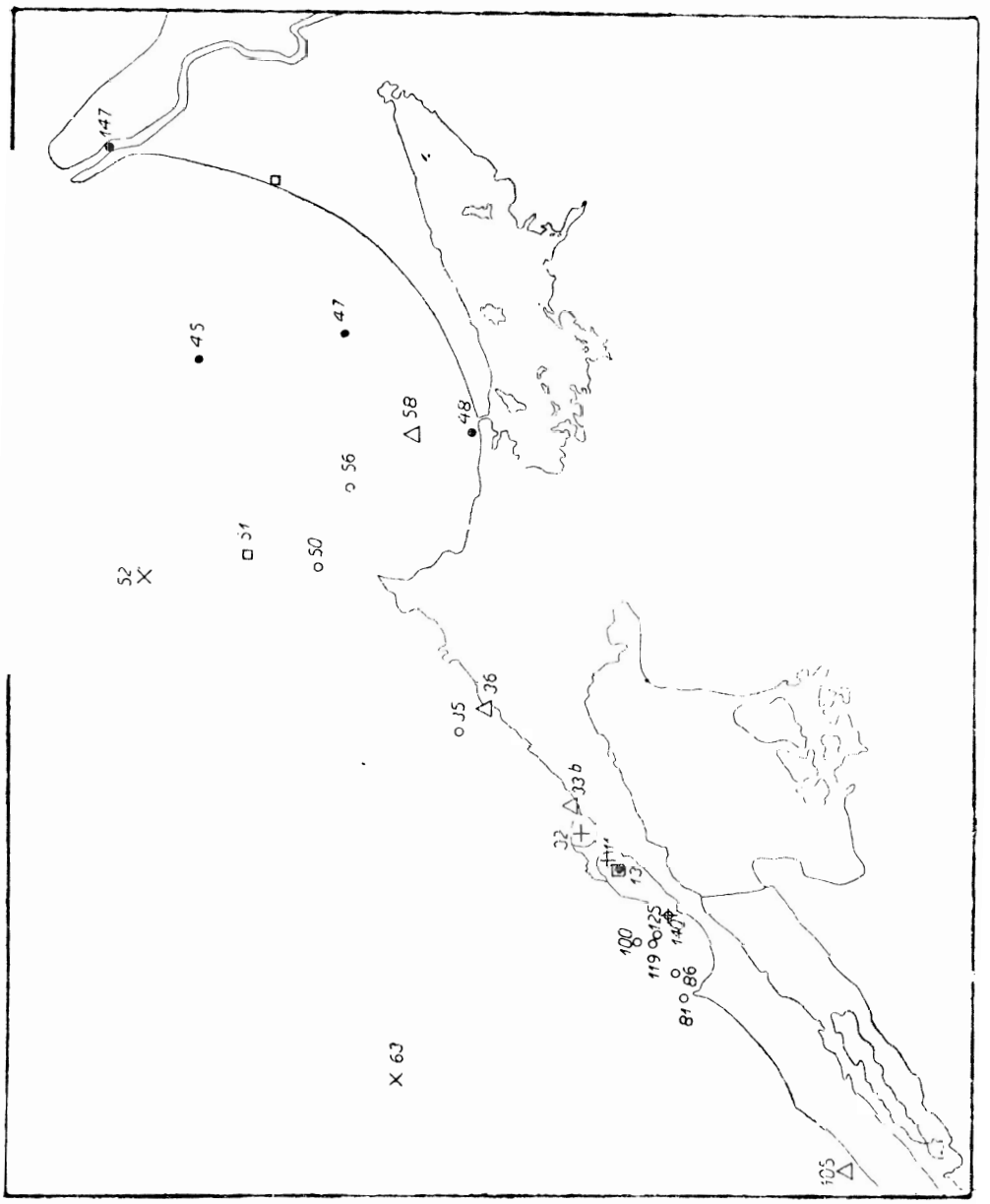

FIG. 36.

● *Mactra corallina* (L.)

□ *Donax trunculus* (L.)

O *Donax variegatus* (Gmelin)

△ *Donax semistriatus* Poli

+ *Gari depressa* (Pennant)

× *Solecurtus chamasolen* (da Costa)

Habitat ; This species seems to occur, like in Triest (Graeffe 1902) and Genova (Issel 1918 p. 392) in the fine sand of the coast only.

Geographical distribution : In the Atlantic (at the western coasts of Europe) (southward from England) in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 64, Carus 1893 p. 133, Coen 1933). Already known from the Egyptian coast (Alexandrie, Port-Neuf, Port-Said). (Pallary 1912 p. 174).

FAM. GARIDAE.

Gari depressa (Pennant).. (Fig. 36.)

Localities : St. 11 ; 6 fath.
St. 32 ; 5½ fath
St. 140 ; 4-8 fath.

Habitat: Was collected only in the Eastern and Western Harbour and in the latter on sandy and muddy bottom (also on black mud) in little depth. According to Wilhelmi (1912 p. 143) several "Tellina-species" are olig- to feebly mesosaprob. Haas (1926 p. 46) gives as vertical distribution 5-10 m ; so the species may be called stenobath.

Geographical distribution : In the Atlantic from England and Norway to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Haas 1926 p. 46, Coen 1933).

Solecurtus chamasolen (de Costa). (Fig. 36).

Localities : St. 37; 3½-4 fath. (very doubtful on account of being badly labelled; therefore not marked in the map).
St. 52; 22 fath.
St. 63; 74-85 fath.

Habitat : Was found with certainty on muddy bottom only, which it prefers; also in the Adriatic (Vatova 1928 p. 337), in depths of about 20-80 fathoms.

Geographical distribution : In the Atlantic from the North Sea to the Makaronesian Islands, in the Mediterranean and in the Adriatic (Carus 1893 p. 138, Haas p. 64).

FAM. SEMELIDAE.

Abra prismatica (Montagu). (Fig. 37).

Locality : St. 55; 40 fath.

Habitat : Was found only once in greater depths on muddy bottom.

Geographical distribution : From the arctic Atlantic southward off the coasts of western Europe, in the Mediterranean and in the Adriatic as well as

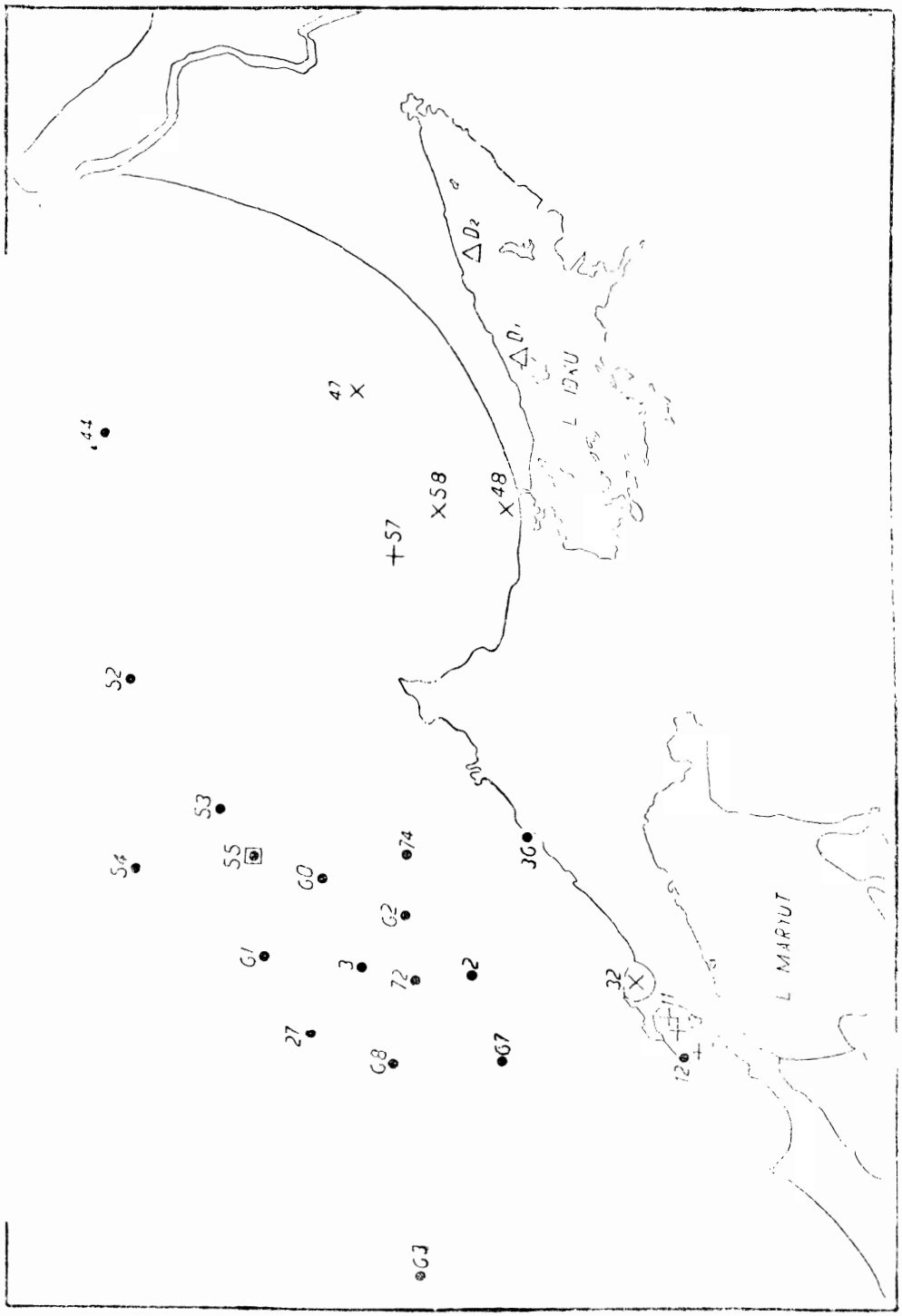

FIG. 37.

□ *Abra prismatica* (Montagu)

● *Abra ovata* (Philippi)

△ *Scrobicularia cottardi* (Payraudeau)

+ *Gastrana fragilis* (L.)

× *Macoma cumana* (Costa)

in the Marmara Sea (Carus 1893 p. 164, Haas 1926 p. 46, Coen 1933). Already known from the Egyptian coast without locality cited (Pallary 1912 p. 184).

Abra ovata (Philippi). (Fig. 37).

Localities : St. 2; 25 fath.
St. 3; 34 fath.
St. 12; 3 fath
St. 27; 70 fath.
St. 36; 3 fath.
St. 44; 10 fath.
St. 52; 22 fath.
St. 53; 33 fath.
St. 54; 55 fath.
St. 55; 40 fath.
St. 60; 33 fath.
St. 61; 50 fath.
St. 62; 28 fath.
St. 63; 74-85 fath.
St. 67; 22 fath.
St. 68; 37 fath.
St. 72; 30 fath.
St. 74; 23 fath.
Lake Mareotis.

Habitat : The species was found eastward from 29° 50′ mostly on muddy bottom ; according to its occurance in Lake Mareotis, it is euryhaline.

Geographical distribution : In the Mediterranean, in the Adriatic and in the Black Sea (Middendorff 1847 p. 64, Weinkauff 1867 p. 56, Carus 1893 p. 164, Coen 1933).

Scrobicularia cottardi (Payraudeau). (Fig. 37).

Localities : Lake Edku, near village Edku (D2).
Lake Edku, near Isle Derfil (D1).

Habitat : This species living in the Adriatic on sandy bottoms near the coast (Graeffe 1902, Coen and Vatova 1932) was fished in Lake Edku only on muddy ground and is most certainly euryhaline.

Geographical distribution : Mediterranean and eastern Adriatic (Carus 1893 p. 162, Coen 1933). Was found in the Suez Canal by Tomlin (1927 p. 309).

FAM. TELLINIDAE.

Gastrana fragilis (L.). (Fig. 37).

Localities : St. 10 ; 6 fath.
St. 11 ; 6 fath.
St. 13b; 6 fath.
St. 57 ; 3 fath.

Habitat : Was collected only from the Western Harbour and in the Bay of Abukir on sandy and muddy bottom (also on black mud) in 3-6 fathoms.

Geographical distribution : In the Atlantic off the western coast of Europe from England southward to Morokko, in the Mediterranean and in the Adriatic (Weinkauff 1869 p. 60, Carus 1893 p. 161, Haas 1926 p. 44, 45, Coen 1933).

Nacoma cumana (Costa). (Fig. 37).

Localities : St. 32; 5½ fath.
St. 47; 6 fath.
St. 48;
St. 58; 4 fath.

Habitat : Was found only in the Eastern Harbour and in the Bay of Abukir near land and in little depth on sandy bottom.

Geographical distribution : In the Atlantic off the western coast of Europe from Portugal to Morokko, estuary of the Congo, South-Africa (J.), Mediterranean, eastern Adriatic (Weinkauff 1867 p. 73, Carus 1893 p. 161, Thiele 1931 p. 238, Coen 1933). Already known from Egypt (Alexandrie, Port-Neuf, sur les fonds sablonneux. Plage de Ramleh, Port-Said : commun. En 1885, cette espèce arrivait au seuil du Sérapeum). (Pallary 1912 p. 183, Tomlin 1927 p. 309).

Tellina pulchella Lamarck.

Localities : St. 2 ; 25 fath.
St. 6 ; 3 fath.
St. 7 ; 17 fath.
St. 11 ; 6 fath.
St. 57 ; 3 fath.
St. 66 ; 20 fath.
St. 67 ; 22 fath.
St. 112 ; 15 fath.
St. 141 ; 8 fath.

Habitat : Widely spread in the district investigated on sandy and muddy

bottoms, also repeatedly in the Western Harbour on black mud, from 3—25 fathoms. Is evidently also oligosaprob (vid. remark at *Gari depressa*).

Geographical distribution : In the Atlantic off the Portuguese and north-west African coast (Cape Bojador), in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 86, Carus 1893 p. 155, Coen 1933, Nobre 1936 p. 291 Thiele 1931 p. 235). Already known from the Egyptian coast (Plage de Ramleh, Port-Said). (Pallary 1912 p. 186).

Tellina distorta Poli. (Fig. 38).

Localities : St. 9 ; 7 fath.
St. 14 ; 7 fath.
St. 47 ; 6 fath.
St. 51 ; 13 fath.
St. 67 ; 22 fath.
St. 105 ; 6 fath.

Habitat : This characteristic form a mediterranean "Weichbodengemeinschaft" (Spärck 1936 p. 141), viz. the "Tellina-association" (Tl.) of the northern Adriatic (Vatova 1936) occurs all over the district investigated on sandy and muddy bottoms (also on black mud, vid. the above remark) in moderate depth.

Geographical distribution : In the Atlantic off the Portuguese coast near the Makaronesian Islands, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 83, Carus 1893 p. 157, Coen 1933, Nobre 1931 p. 383, 1936 p. 286). Already known from Alexandria (Plage de Ramleh : commun). (Pallary 1912 p. 182).

Tellina serrata Renier. (Fig. 38).

Localities : St. 2 ; 25 fath.
St. 3 ; 34 fath.
St. 54 ; 55 fath.
St. 61 ; 50 fath.
St. 62 ; 28 fath.
St. 67 ; 22 fath.
St. 69 ; 48 fath.
St. 72 ; 30 fath.
St. 73 ; 38 fath.

Habitat : The localities are situated in the middle part of the district investigated for the greater part on muddy bottom from about 20 to 55 fathoms.

Geographical distribution : In the Atlantic from the Spanish and Portuguese coast to the Makaronesian Islands (Canaries), in the Mediterranean,

the Adriatic and the Marmara Sea (Weinkauff 1867 p. 86, Carus 1893 p. 156, Coen 1933).

Angulus (*Mærella*) *donacina* (L.) (Fig. 38).

Locality : St. 13b ; 6 fath.

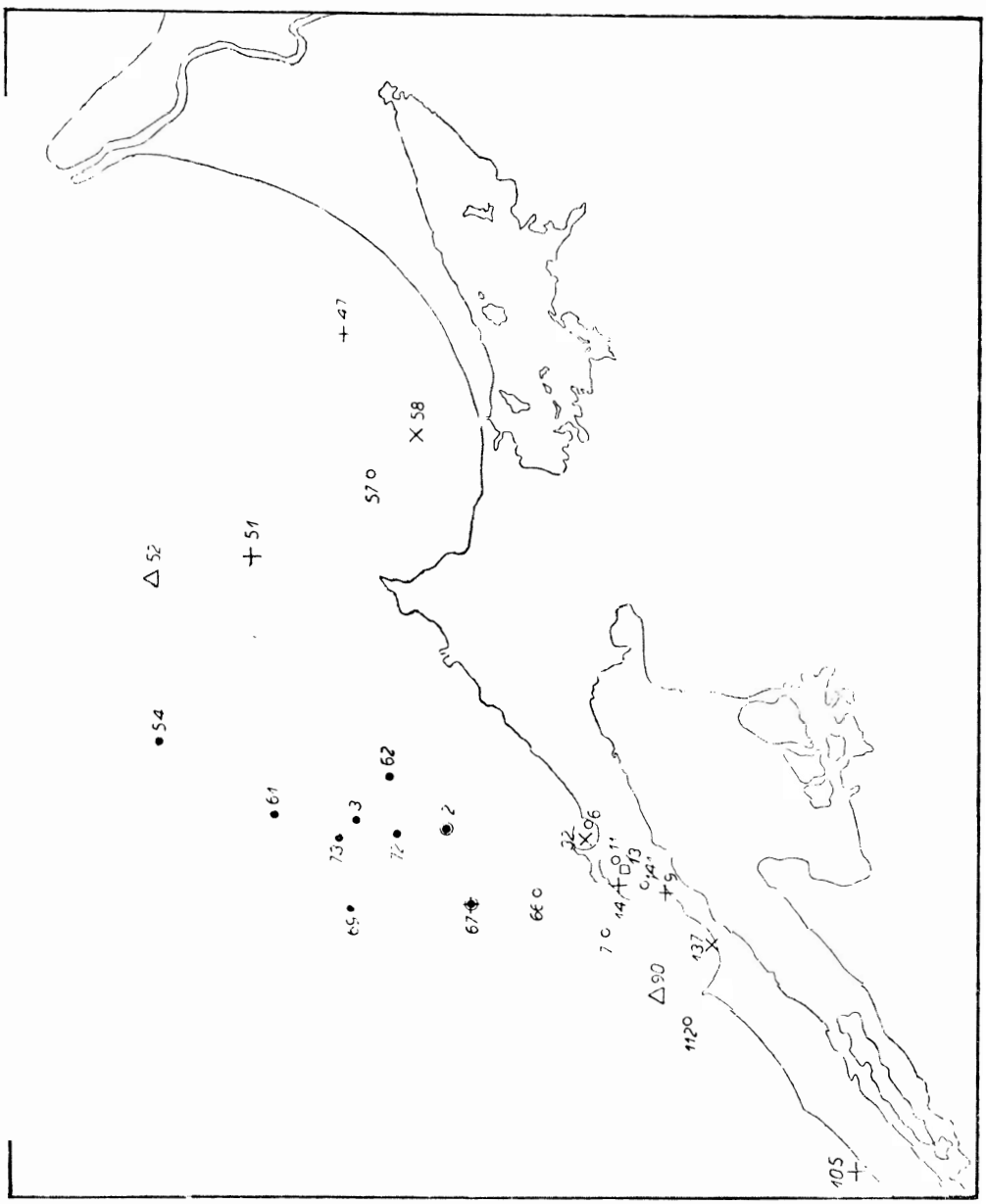

FIG. 38.

O *Tellina pulchella* Lamarck

+ *Tellina distorta* Poli

● *Tellina serrata* Renier

□ *Angulus donacina* (L.)

× *Angulus planatus* (L.)

△ *Angulus nitidus* (Poli)

Habitat : This evidently rare species was fished only once in the Western Harbour in little depth on somewhat muddy sand-bottom. Occurs on similar beds also near Naples and in the Adriatic (Spärk 1931, Vatova 1935).

Geographical distribution : In the Atlantic from England to the Makaronesian Islands, in the Mediterranean, the Adriatic, the Marmara-Sea and in the Black Sea (Weinkauff 1867 p. 84, Carus 1893 p. 156, Haas 1926 p. 44, 45, Coen 1933). Already known from Alexandria (Plage de Ramleh : rare). (Pallary 1912 p. 182).

Angulus (Peronidia) planatus (L.) (Fig. 38).

Localities : St. 32 ; 5½ fath
St. 58 ; 4 fath.
St. 137 ; 4 – 5 fath.

Habitat : This very likely stenotop sand-inhabitant was found off the Western Harbour; in the Eastern Harbour and in the Bay of Abukir in little depths. The Species is according to Wilhelmi (1912 p.143) oligo-to mesosaprob.

Geographical distribution : In the Atlantic off the western Coast of Europe (Portugal), in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 76, Carus 1893 p. 158, Coen 1933).Already known from the Egyptian coast (Alexandrie, Port-Said). (Pallary 1912 p. 183).

Angulus (Peronidia) nitidus (Poli). (Fig. 38).

Localities : St. 52 ; 22 fath.
St. 90 ; 18 fath.

Habitat : This species was found only twice in moderate depth on muddy (respectively marshy) bottom, like in the Adriatic (Graeffe 1902, Coen and Vatova 1932).

Geographical distribution : In the Lusitanean Sea, in the Mediterranean and in the Adriatic (Weinkauff 1867 p. 75, Carus 1893, p. 157, Coen 1933). Was already known from the Egyptian coast (Alexandrie. Port Said). (Pallary 1912 p. 183).

Subordo A D A P E D O N T A

FAM. SOLENIDAE.

Solen marginatus Montagu. (Fig. 39.)

Localities : St.13b ; 6 fath.
St. 48 ; cast ashore (according to the collector's notes.)
St. 58 ; 4 fathoms ; Part of a shell (acc. to the coll. notes),

Habitat : This well-known stenotop sand-form probably occurs everywhere in the fine coast-sand. I could get it from the Western Harbour and found

parts of shells in the Bay of Abukir. It is according to Wilhelmi (1912 p. 142) oligo-to feebly mesosaprob.

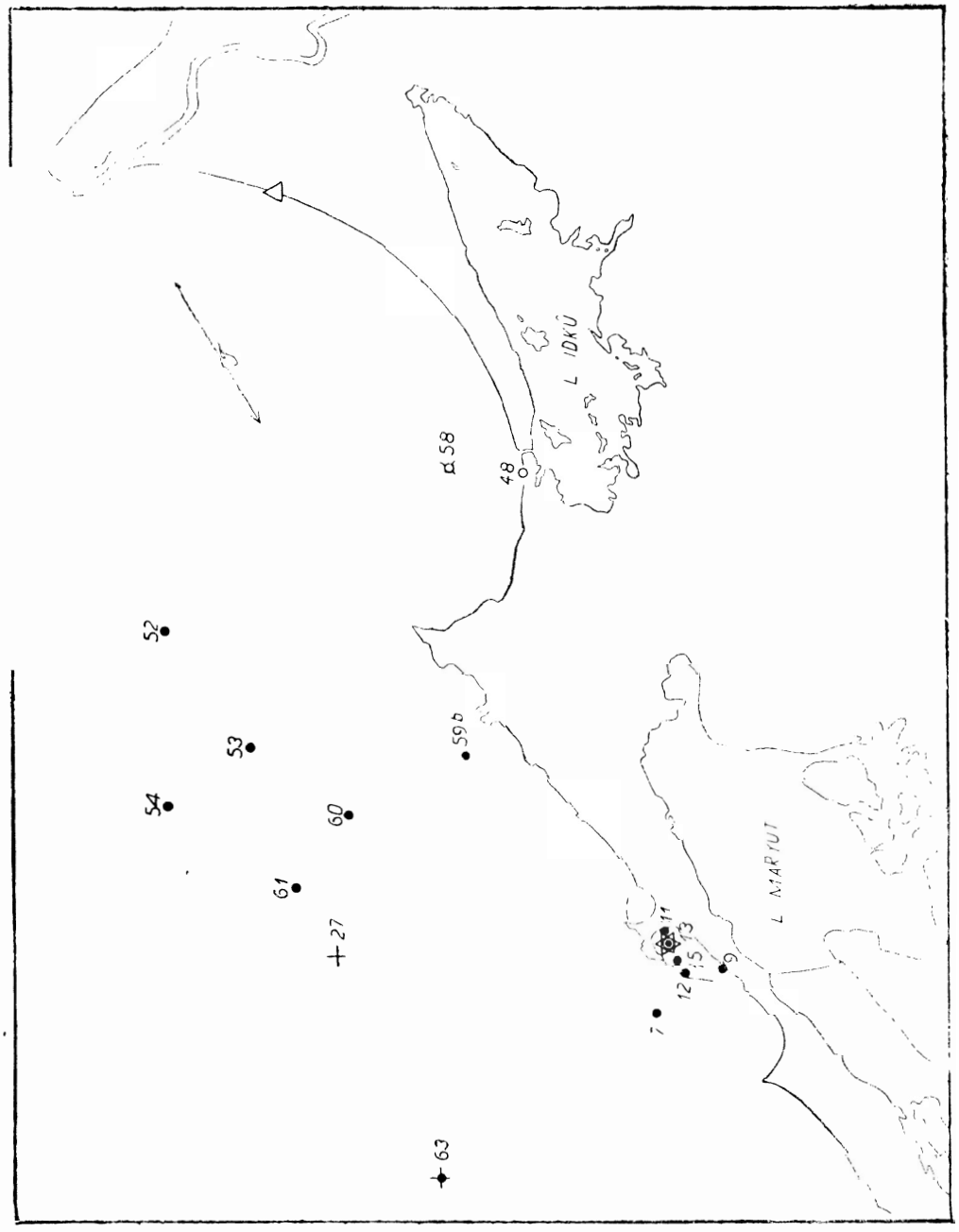

FIG 39.

O *Solen marginatus* Montagu
● *Aloidis gibba* (Ol.)
△ *Barnea candida* (L.)
▽ *Pholas dactylus* L.
× *Pandora margaritacea* Lamarck
+ *Cuspidaria rostrata* (Spengler)
I *Sepia officinalis* L.

Geographical distribution : In the Atlantic from the North Sea (Scandinavia) to the Makaronesian Islands; In the Mediterranean and Adriatic as well as in the Black Sea (Middendorff 1847 p.79,Weinkauff 1867 p.10, Carus 1893p.139, Haas 1926 p.46, 47, Tomlin 1927 p.307).Already known from Egypt (Alexandrie, Port-Said. Ce mollusque est en voie d'émigration vers la mer Rouge; le Docteur Keller signalait en juin 1882 sa présence dans le lac Timsah. MM. Tillier et Bavay, en 1905, l'indiquaient comme ne dépassant pas le Sérapeum. (Pallary 1912 p. 176).

FAM. ALOIDIDAE.

Aloidis gibba (01.) var. *rosea* (Brown). (Fig).

Localities : St. 7 ; 17 fath.
St. 9 ; 7 fath.
St. 11 ; 6 fath.
St. 12 ; 3 fath.
St.13b ; 6 fath.
St. 15 ; 6 fath.
St. 52 ; 22 fath.
St. 53 ; 33 fath.
St. 54 ; 55 fath.
St 59b ; 15 fath.
St. 60 ; 33 fath.
St. 61 ; 50 fath.
St. 63 ; 74-85 fath.

Habitat : This evidently eurytop species was dredged from different beds, also on black mud,in the Western Harbour as well as in greater depths down to 80 fathoms.

Geographical distribution : In the Atlantic from the Norwegian coast, the outer Baltic Sea to the Makaronesian Islands, in the Mediterranean, the Adriatic and the Marmara Sea (Weinkauff 1867 p. 25, Carus 1893 p. 145, Haas 1926 p. 46, 47 Coen 1933).

FAM. PHOLADIDAE.

Barnea candida (L.) (Fig. 39)

Localities : St.13b ; 6 fath.
Eastern coast of the Bay of Abukir, washed ashore.

Habitat : The species was established from the Western Harbour only, is however certainly widely spread in the district investigated.

Geographical distribution : In the Atlantic from the North Sea, the Baltic Sea to the Makaronesian Islands, in the Mediterranean, in the

Adriatic and in the Black Sea (Weinkauff 1867 p. 7, Carus 1893 p. 149, Haas 1926 p. 46, 47, Coen 1933). Already known from the Egyptian coast (Plage de Ramleh, Damiette, Port-Said. Cette espèce est en voie de migration vers la mer Rouge; Keller la signalait en 1882 dans la portion du canal qui traverse El Guisr. M. M. Tillier et Bavay ne mentionnent pas cette espèce dans leur note). (Pallary 1912 p. 179). The Cambridge-Expedition, too, did not find it in the Canal (vid note on the following species).

Pholas dactylus L. (Fig 39).

Locality : St. 13b ; 6 fath.

Habitat : This species, too, though noted from the Western Harbour only, is certainly present everywhere at the rocky coast.

Geographical distribution : In the Atlantic at the western coast of Europe southward from the North Sea, in the Mediterranean, the Adriatic (Weinkauff 1867 p. 6, Carus 1893 p. 149, Haas 1926 p. 46, Coen 1933). Already known from Egypt (Plage de Ramleh, Damiette, Port-Said. Cette espèce est maintenant établie dans tout le canal). (Pallary 1912 p. 179). The Cambridge Expedition, however, did not find it in the Canal "although a special search was made in the Canal banks at El Guisr (km. 72)". (Fox 1926 p. 29).

Subordo ANOMALODESMATA

FAM. PANDORIDAE.

Pandora margaritacea Lamarck. (Fig. 39)

Locality : St. 58 ; 4 fath.

Habitat : Was fished once only in the Bay of Abukir on sondy bottom in moderate depth.

Geographical distribution : In the Atlantic at the western coasts of Europe southward from the North Sea, in the Mediterranean and in the Adriatic (Haas 1926 p. 42, 43, Coen 1933).

FAM. CUSPIDARIIDAE.

Caspidaria rostrata (Spengler) (Fig. 39).

Localities : St. 27 ; 70 fath.
St. 63 ; 47—85 fath.

Habitat : This species, listed among the abyssal mussels of the Gulf of Naples By Bellini (1929 p. 12) was found in greater depths on muddy bottoms like in Triest (Graeffe 1902).

Geographical distribution : From the arctic Atlantic southward to the Makaronesian Islands, at the eastern coast of North-America, in the Antilles-Sea, in the Gulf of Mexico, in the Mediterranean and in the Adriatic (Carus 1893 p. 166, Haas 1926 p. 42, Coen 1933).

Classis CEPHALOPODA

Subclassis DIBRANCHIA

Ordo DECAPODA

FAM. SEPIIDAE.

Sepia officinalis L. *veranyi* (P. Fischer M. S.) Lagatu 1888 (Fig 39) "Forma A" Cuénot 1933 p. 337).

Remarks : 2 ♂ 1 ♀ showed the following measures :

♀ adult :	ventral length of the mantle	: 93 mm.
	length of the shell	: 100 mm.
♂ adult :	ventral length of the mantle	: 69 mm.
	dorsal » » » »	: 79.5 mm.
	length of the shell	: 76.5 mm.
♂ juv. :	ventral length of the mantle	: 35 mm. (G.)

Locality : Bay of Aboukir, 10 fath.

Habitat : The animals had been found in a trawl in the Bay of Abukir on sandy mud, of which a good deal was found in the pallial cavity of the ♀ . In Naples, too, they occur "auf sandigem und schlammigem Grunde in einer Tiefe von wenigen bis 100 m." and are according to Wilhelmi (1912 p. 148) oligo- to feebly mesosaprob.

Geographical distribution : In the Atlantic from the Channel to the Makaronesian Islands (Azores), in the Mediterranean and in the Adriatic (Cuénot 1933). Veranyi is "die auch im Westbecken des Mittelmeeres anscheinend häufigere Rasse, bei der der gestreifte Teil des Schulps weit mehr als die Hälfte der Schulpventralseite einnimmt". (Grimpe in litt.) This race was (according to Cuénot) already known from Port-Said.

PART II.

LIST OF STATIONS AND THE MOLLUSCA FOUND AT THEM

Plankton-station 1 off Dekhela ; 1. IV. — 3. VIII.

Gastropoda : Atlanta sp. (1. IV., 3. VIII.)
Creseis virgula Rang (15. V.)
Creseis acicula Rang (3. VIII.)
Creseis acicula Rang (15. VIII.)

Eastern Harbour, on stones off the Laboratory, 30. VIII.

Loricata : Middendorffia caprearum (Scacchi)

Gastropoda : Diodora nubeculea (L.)
Patella coerulea L.
Littorina punctata (Gmelin)
Pisania maculosa Lamarck.

Eastern Harbour near the bath, sandy bottom begrown with Caulerpa, 1.4 fath., 2.IX. Petersen-haul (vid. Vatova 1935)

Gastropoda : Gibbula umbilicalis (L.) 3 juv.
Gibbula turbinoides (Deshayes) 2 juv.
Natica hebraea (Mart.) 1 spec.
Polinices (Neverita) josephinia (Risso) 1 spec.
Murex (Truncularia) trunculus L. 1 spec.
Philine sp. (probably aperta (L.)). 1 spec.

Bivalvia : Paphia catenifera (Lamarck) 8 ad. 89 med. 10 juv.

Station 1: Stony mud-bottom, 21 fath. 3. IX. (Plankton-staton: IVa)

Gastropoda : Creseis acicula Rang (in the plankton)

Bivalvia : Nucula nucleus (L.) one shell (acc. to the collector's notes).

Trawl in the Bay of Abukir, 10 fath, 3. IX. on sandy mud begrown with algae.

Cephalopoda: Sepia officinalis L. veranyi (P. Fischer M. S.) Lagatu 1888.

Eastern Harbour near the bath. 4. IX.

Gastropoda : Gibbula umbilicalis (L.)
Gibbula adansonii (Payraudeau)
Natica millepunctata Lamarck
Polinices (Neverita) josephinia (Risso)

Murex (Truncularia) trunculus L.
Turris indica Röding.

Eastern Harbour, Ulva-Coralline-zone,on rocks, 5. IX.

Bivalvia : Ostrea edulis L.

Station 2, sandy, muddy Halimeda-bottom, 25 fath. 6 IX

Gastropoda : Leptothyra sanguinea (L.)
Bittium latreillii (Payraudeau).
Nassarius (Hima) incrassatus (Ström).
Scaphopoda : Dentalium vulgare de Costa.
Bivalvia : Nucula nucleus (L.)
Chlamis glabra (L.)
Diplodonta rotundata (Montagu).
Venus verrucosa L.
Abra ovata (Phil.)
Tellina pulchella Lamarck.
Tellina serrata Renier.

Station 3. Muddy Halimeda-Caulerpa-bottom, more than 34 fath. 6.IX.

Gastropoda : Leptothyra sanguinea (L.)
Bivalvia : Beguina (Glans) trapezia (L.)
Venus verrucosa L.
Abra ovata (Phil.)
Tellina serrata Renier.

Sidi Bishr, Zone of algae on rocks (Patellae and Monodontae were also fastened to the iron-poles) 9.IX.

Gastropoda : Patella coerulea L.
Monodonta (Osilinus) turbiformis (Salis).
Monodonta (Osilinus) turbinata (Born).
Littorina punctata (Gmelin).
Columbella rusticata (L.)
Pisania maculosa Lamarck.
Bivalvia : Brachidontes (Mytilaster) minimus (Poli).

Eastern Harbour, on the hull of a ship 10. IX.

Bivalvia : Ostrea edulis L.

Eastern Harbour, near the bath, 10. IX.

Bivalvia : Modiolus adriaticus (Lamarck).
Lithophaga lithophaga (L.)
Pinctada vulgaris (Schumacher).

Petricola lithophaga Retz

Station 4. Eastern Harbour, sandy bottom begrown with Caulerpa, 3 fath., II.IX.

Gastropoda : Polinices (Neverita) josephinia (Risso).
Murex (Truncularia) trunculus L.
Bulla striata Bruguière.
Philine aperta (L.)

Bivalvia : Pinctada vulgaris (Schumacher).
Ostrea edulis L.
Cardita antiquata (L.)
Paphia catenifera (Lamarck).

Station 5. Eastern Harbour, sandy bottom begrown with Caulerpa and Codium, 2-3½ fath.II.IX.

Gastropoda : Murex (Truncularia) trunculus L.
Nassarius mutabilis (L.)
Philine aperta (L.)

Station 6. Eastern Harbour, stony Caulerpa-bottom, 3 fath.II.IX

Bivalvia : Pinctada vulgaris (Schumacher)
Cardita antiquata (L.)
Tellina pulchella Lamarck

Lake Mareotis, near the Fish Experimental Station 12. IX.

Gastropoda : Hydrobia musaensis Frauenf.
Thiara (Melanoides) tuberculata (Müller).

Lake Mareotis, from the "Fornaio di graio" and the fishmarket towards the middle of the lake in the bottom-mud, 14. IX.

Gastropoda : Thiara (Melanoides) tuberculata (Müller).

Bivalvia : Cardium (Cerastoderma) edule L.
Abra ovata (Phil.)

Station 7. Stony Caulerpa-bottom, 17. fath 16. IX.

Loricata : Acanthochiton fascicularis (L.)

Gastropoda : Gibbula magus (L.)
Cerithium (Vulgocerithium) vulgatum Brug.
Natica millepunctata Lamarck.
Murex (Bolinus) brandaris L.
Conus mediterraneus Brug.

Scaphopoda : Dentalium vulgare da Costa.

Bivalvia : Nucula nucleus (L.)

Arca (Navicula) noae L.
Glycymeris pilosus (L.) var. lineatus Phil.
Pinctada vulgaris (Schumacher).
Chlamys glabra (L.)
Chlamys flexuosa (Poli)
Propeamussium (Lissopecten) hyalinum (Poli)
Codakia (Jagonia) reticulata (Poli)
Cardium (Parvicardium) papillosum Poli
Gafrarium (Circe) minimum (Montagu)
Pitar (Macrocallista) chione (L.)
Venus verrucosa L.
Tellina pulchella Lamarck
Aloidis gibba (Ol.) var. rosea (Brown)

Station 8. Stony Caulerpa-and Halimeda-bottom, 15 fath. 16.IX.

Gastropoda : Nassarius (Hima) pygmaeus (Lamarck)

Scaphopoda : Dentalium vulgare da Costa

Bivalvia : Glycymeris pilosus (L.) var. lineatus Phil.
Codakia (Jagonia) reticulata (Poli)

Station 9. Western Harbour, almost azoic mud. 7 fath. 17.IX.

Gastropoda : Clanclus cruciatus (L.)
Tricolia pullus (L.)
Rissoa variabilis (Megerle)
Nassarius (Hima) pygmaeus (Lamarck)

Scaphopoda : Dentalium dentale L. (perhaps the form inaequicostatum Dautz)
Dentalium vulgare da Costa

Bivalvia : Arca (Barbatia) barbata L.
Codakia (Jagonia) reticulata (Poli)
Cardium (Rudicardium) paucicostatum Sowerby
Venus verrucosa L.
Tellina distorta Poil
Aloidis gibba (Ol.) var. rosea (Brown)

Station 10. Western Harbour, Sandy mud begrown with Caulerpa. 6 fath. 17.IX.

Scaphopoda : Dentalium dentale L. (some of them may be inaequicostatum Dautz)

Bivalvia : Loripes desmaresti (Payr.)
Cardium (Rudicardium) paucicostatum Sowerby (alive according to the collector's notes)

Venus verrucosa L.
Gastrane fragilis (L.)
Lithophaga lithophaga (L.) (probably belonging to station 17).

Station 11. Western Harbour. Smelling, black mud without algae, 6 fath. 18. IX.

Gastropoda : Polinices (Payraudeautia) intricatus (Donavan)
Murex (Truncularia) trunculus L.
Scaphopoda : Dentalium dentale L. (alive !)
Bivalvia : Chlamys glabra (L.)
Loripes lacteus Poli
Cardium (Parvicardium) exiguum Gmelin
Venus verrucosa L.
Gari depressa (Pennant)
Gastrana fragilis (L.)
Tellinia pulchella Lamarck
Aloidis gibba (Ol.) var. rosea (Brown)

Station 12. Western Harbour. Sand with some mud. Caulerpa with little Posidonia and Codium tom. 3 fath. 18. IX.

Gastropoda : Cerithium sp.
Columbella rustica (L.)
Nassarius mutabilis (L.)
Nassarius (Hima) incrassatus (Ström)
Conus mediterraneus Brug.
Scaphopoda : Dentalium dentale L.
Bivalvia : Pinna Pectinata L. (Rests of shells acc. to the collector's notes.
Chlamys glabra (L.)
Loripes lacteus Poli.
Cardium (Rudicardium) paucicostatnm Sowerby
Abra ovata (Phil.)
Vloidis gibba (Ol.) var. rosea (Brown)

Western Harbour Arsenal Basin, 19. IX.

Bivalvia : Mytilus galloprovincialis Lamarck.

Station 13. Western Harbour. Muddy sand, 6 fath. 19. IX

Gastropoda : Cibbula ardens (Salis).
Cerithium (Vulgocerithium) vulgatum Brug.
Polinices (Neverita) josephinia (Risso).
Murex (Truncularia) trunculus L.
Nassarius mutabilis (L.) var. minor Mont.

Bulla striata Brug.

Scaphopoda : Dentalium dentale L.

Bivalvia : Glycymeris violacescens (Lamarck).
Modiolus adriaticus (Lamarck).
Pinctada vulgaris (Schumacher).
Pinna pectinata L.
Chlamys glabra (L.)
Ostrea edulis L.
Beguina (Glans) trapezia (L.)
Loripes lacteus Poli
Codakia (Jagonia) reticulata (Poli)
Cardium (Rudicardium) rusticum L.
Cardium (Rudicardium) paucicostatum Sowerby
Cardium (Cerastoderma) edule L.
Cardium (Parvicardium) exiguum Gmelin
Cardium (Parvicardium) papillosum Poli
Dosinia (Orbiculus) exoleta (L.)
Venus verrucosa L.
Paphia catenifera (Lamarck)
Mactra corallina L.
Donax (Serrula) trunculus (L.)
Gastrana fragilis (L.)
Angulus (Moerella) donacina (L.)
Solen marginatus Montagu
Aloidis gibba (Ol.) var. rosea (Brown)
Pholas dactylus L.
Barnea candida (L.)

Station 14. Western Harbour. Sandy, black mud with little Caulerpa and brown-algae. 7 fath. 19. IX.

Gastropoda : Gibbula ardens (Salis)
Cantharidus (Jujubinus) matoni (Payr.)
Tricolia pullus (L.)
Murex (Truncularia) trunculus L.
Columbella rustica (L.)
Conus mediterraneus Brug.
Bulla striata Brug.

Scaphopoda: Dentalium dentale L.

Bivalvia : Loripes lacteus Poli
Cardium (Cerastoderma) edule L.
Tellina distorta Poli.

Station 15. Western Harbour. Sandy bottom, 6 fath. 19. IX.

Gastropoda : Bulla striata Brug.

Scaphopoda : Dentalium dentale L.

Bivalvia : Aloidis gibba (Ol.) var. rosea (Brown).

Station 17. Western Harbour. Sand and black] mud, little Caulerpa, 5 – 12 fath. 19. IX.

Gastropoda : Gibbula umbilicalis (L.)
Columbella rustica (L.)
Nassarius (Hima) incrassatus (Strôm)
Bulla striata Brug.

Scaphopoda : Dentalium dentale L.

Bivalvia : Lithophaga lithophga (L.) ; had just been collected by fishermen at the outer side of the break-water (vid. remark at st. 10) !
Cardium (Cerastoderma) edule L.

Station 20. off Mex. Sandy, shallow seaweed-meadows, 20 IX.

Bivalvia : Lithophaga lithophaga (L.)

Station 21. Amphioxussand begrown with Caulerpa and Posidonia. 1½ fathoms 20. IX.

Gastropoda : Diodora gibberula (Lamarck).
Tricolia pullus (L.)
Cerithium (Vulgocerithium) vulgatum Brug.
Murex (Truncularia) trunculus L.
Columbella rustica (L.)
Nassarius (Telasco) costulatus (Renier).
Conus mediterraneus Brug.

Bivalvia : Arca (Barbatia) barbata L.
Modiolus adriaticus (Lamarck).
Beguina (Glans) trapezia (L.)
Venus verrucosa L.
Paphia catenifera (Lamarck).

Station 22. In the Great Pass. Rocky yellow sand begrown with Posidonia and algae. 7 fath. 20. IX.

Gastropoda : Gibbula adansonii (Payr).
Gibbula turbinoides (Deshayes).
Cantharidus (Jujubinus) matoni (Payr.)
Clanculus cruciatus (L.)
Clanculus jussieui (Payr.)
Tricolia speciosa (Megerle)

Tricolia pullus (L.)
Rissoa (Zippora) auriscalpium (L.)
Pirenella conica (Blainville).
Columbella rustica (L.)
Mitra (Fuscomitra) cornicula (L.)
Conus mediterraneus Brug.

Station 23. Yellow Amphioxus-sand begrown with Halimeda. 5-7 fath. 20. IX.

Gastropoda : Tricolia pullus (L.)
Mitra (Fuscomitra) cornicula (L.)
Conus mediterraneus Brug.

Scaphopoda : Dentalium vulgare da Costo.

Station 24. Stony Caulerpa-and Halimeda bottom. 10 fath 21.IX.

Bivalvia : Modiolus barbatus (L.)

Station 25. Shallow sand-bottom with seaweed, Caulerpa, Ulva. 21. IX.

Gastropoda : Gibbula adansonii (Payr.)
Tricolia speciosa (Megerle).
Tricolia tenuis (Michaud).
Rissoa variabilis (Megerle).
Columbella rustica (L.)
Nassarius (Telasco) costulatus (Renier).
Oxynoe olivacea Rafinesque.

Station 26. Soft, yellowish Pteropod-mud. 126 fath. 24. IX. (Plankton-station X).

Gastropoda : Nassarius (Amyclina) corniculum (Olivi).
Creseis virgula Rang (in the plankton).
Creseis acicula Rang (in the plankton).
Styliola subulà (Quoi et Gaimard).
Clio pyramidata L.

Scaphopoda : Cadulus jeffreysi Monterosato.

Bivalvia : Nucula nucleus (L.)
Chlamys flexuosa (Poli) shell only.

Station 27. Mud with mollusk-shells 70 fath. 24. IX

Gastropods : Turritella communis Risso.
Aporrhais serresianus (Michaud).
Typhis (Typhinellus) sowerbii Broderip.

Marginella (Volvarina) mitrella Risso.
Drillia (Crassopleura) maravignae (Bivona).
Philbertia (Leufroyia) leufroyi (Michaud).

Scaphopoda : Dentalium dentale L. (with Pagurids)

Bivalvia : Nucula nucleus (L.)
Nuculana sulcata (Risso).
Nuculana commutata (Philippi).
Arca diluvii Lamarck.
Arca (Trigonodesma) lactea L.
Glycymeris pilosus (L.)
Pecten jacobaeus L. (shell only).
Astrate fusca Poli.
Beguina (Glans) trapezia (L.)
Cardium (Rudicardium) paucicostatum Sowerby.
Cardium (Parvicardium) papillosum Poli.
Pitar rudis (Poli.)
Abra ovata (Phil.)
Cuspidaria rostrata (Spengler).

Station 28. Stony Caulerpa-, Halimeda-bottom, 10-12 fath. 25.IX.

Bivalvia : Nucula nucleus (L.)
Arca (Barbatia) barbata L.
Glycymeris pilosus (L.)
Beguina (Glans) trapezia (L.)
Cardium (Parvicardium) papillosum Poli.

Station 29 Stony Caulerpa-bottom, 7 fath. 25.IX.

Bivalvia : Arca (Barbatia) barbata L.
Glycymeris pilosus (L.)

Station 30. Stony Caulerpa-bottom, 7 fath. 25.IX.

Loricata : Callochiton laevis (Montagu)

Bivalvia : Arca (Barbatia) barbata L.
Modiolus adriaticus (Lamarck)
Beguina (Glans) trapezia (L.)

Station 31. Eastern Harbour. Sandy Caulerpa-bottom. 2¼ fath 27.IX.

Gastropoda : Murex (Truncularia) trunculus L.
Nassarius mutabilis (L.)
Nassarius (Telasco) costulatus (Renier)
Philine aperta (L.) according to the collector's notes.

Bivalvia : Pinctada vulgaris (Schumacher)
Beguina (Glans) trapezia (L.)
Paphia catenifera (Lamarck).

Station 32. Eastern Harbour. Coarse, stony bottom with little mud and Caulerpa. 5½ fath. 27.IX.

Gastropoda : Haliotis lamellosa Lamarck.
Cantharidus (Jujubinus) matoni (Payr.)
Clanculus jussieui (Payr.)
Tricolia speciosa (Megerle)
Tricolia pullus (L.)
Triphora perversa (L.)
Polinices (Payraudeautia) intricata (Donavan)
Trivia pulex (Dillwyn)
Murex (Truncularia) trunculus L.
Tritonalia blainvillii (Payr.)
Cantharus (Pollia) d'orbignii (Payr.)
Nassarius (Telasco) costulatus (Renier)
Nassarius (Hima) incrassatus (Ström)

Bivalvia : Nucula nucleus (L.)
Arca (Barbatia) barbata L.
Modiolus barbatus (L.)
Musculus sulcatus (Risso)
Cardita antiquata L.
Gari depressa (Pennant)
Macoma cumana (Costa)
Angulus (Peronidia) planatus (L.)

Lake Mareotis, on muddy bottom 28.IX.(Cl=0.38°/₀₀; S=1,52°/₀₀).

Gastropoda : Thiara (Melanoides) tuberculata (Müller)
Pirenella conica (Blainville)

Bivalvia : Corbicula consobrina Cailliaud
Cardium (Cerastoderma) edule L.
Paphia catenifera (Lamarck).

Station DI. Lake Edku, near the Isle Derfil on black mud. I.X. (Cl = 1.55°/₀₀ S = 2.83°/₀₀).

Gastropoda : Hydrobia musaensis Frauenfeld
Pirenella conica (Blainville)
Nassarius reticulatus (L.) var. nitida Jeffreys

Bivalvia : Cardium (Cerastoderma) edule L.
Dosinia lupinus (Poli)

Scrobicularia cottardi (Payr.)

Station 33b, off Silsila ; shallow sandbottom, 2.X.

Gastropoda : Columbella rustica (L.)
Pollia picta (Scacchi)
Nassarius mutabilis (L.) var minor Mont.
Nassarius (Arcularia) gibbosulus (L.)
Nassarius (Telasco) costulatus (Renier)
Nassarius (Hima) incrassatus (Strom)

Bivalvia : Donax (Serrula) semistriatus Poli var. alba Mont.

Station 34a. Eastern Harbour off Silsila. Shallow, sandy bottom begrown with Codium and Caulerpa. 4.X.

Gastropoda : Tritonalia edwardsii (Payr.)
Pisania maculosa Lamarck
Cantharus (Pollia) d'orbignyi (Payr.)

Station 34b. Eastern Harbour, off Silsila, sand begrown with Caulerpa. 4.X.

Gastropoda : Murex (Trunculus) trunculus L.

Station 35. Stony, coarse Amphioxus-sand begrown with Caulerpa, Halimeda and Posidonia. 7 fath. 7.X.

Gastropoda : Gibbula turbinoides (Deshayes)
Cantharidus (Jujubinus) matoni (Payr.)
Clanculus cruciatus (L.)
Tricolia pullus (L.)
Alvania cimex (L.)
Vermetus (Serpulorbis) arenarius L.
Bittium latreillii (Payr.)
Natica hebraea (Mart.)
Tritonalia blainvillii (Payr.)
Tritonalia edwardsii (Payr.)
Columbella rustica (L.)
Fusinus (Aptyxis) syracusanus (L.)
Conus mediterraneus Brug.
Bulla striata Brug.
Oxynoe olivacea Rafinesque.

Scaphopoda : Dentalium vulgare da Costa (shell only)

Bivalvia : Arca (Barbatia) barbata L.
Glycymeris pilosus (L.) var lineatus Phil.
Chlamys varia (L.)
Cardita antiquata (L.)
Beguina (Glans) trapezia (L.)

Chama gryphoides Lamarck.
Donax (Serrula) variegatus (Gmelin).

Station 36. Fine sand, 3 fath. 7. X.

Gastropoda : Polinices (Neverita) josephinia (Risso).
Nassarius (Arcularia) gibbosulus (L.)
Bivalvia : Chlamys varia (L.)
Beguina (Glans) trapezia (L.)
Chama gryphoides Lamarck.
Pitar rudis (Poli)
Donax (Serrula) semistriatus Poli.
Abra ovata (Phil.)

Station 37. Sandy bottom begrown with Caulerpa. 3½-4 fath. 7. X.

Bivalvia : Chlamys varia (L.) (? according to the collector's notes.)
Solecurtus chamasolen (da Costa). (Locality very doubtful on account of bad labelling.)

Po = Shallow Posidonia-bottom near the barracks at Ras-el-Tin 10. X.

Gastropoda : Rissoa variabilis (Megerle)

Pok = Crags off "Po" with Halimeda-Caulerpa-and Sargassum bottom. 10. X.

Gastropoda : Patella coerulea L.
Cerithium (Vulgocerithium) vulgatam Brug. (Shells with Pagurids Clibanarius misanthropus (Risso) ; vid. Balss 1936.)
Charonia (Colubraria) reticulata (Blainville).
Murex (Truncularia) trunculus L.
Tritonalia blainvillii (Payr.)
Columbella rustica (L.)
Pisania maculosa Lamarck.
Cantharus (Pollia) d'orbignyi (Payr.)
Pollia picta (Scacchi).

Plankton-Station III off the Eastern Harbour. 11. X.

Gastropoda : Creseis virgula Rang.
Creseis acicula Rang.

Station 39. Sand, some mud, little Caulerpa. 17 fath. 12. X.

Gastropoda : Nassarius mutabilis (L.)
Nassarius (Hima) reticulatus (L.)
Scaphopoda : Dentalium vulgare da Costa (with Pagurids acc. to the collector's notes).

Bivalvia : Glycymeris pilosus (L.)
Cardium (Cerastoderma) edule L.

Station 40. Stony Amphioxus-sand, about 8 fath. 12. X.

Gastropoda : Astraea (Bolma) rugosa (L.)

Scaphopoda : Dentalium dentale L.

Bivalvia : Arca (Barbatia) barbata L.
Venus verrucosa L.

Station 41. Crags at the eastern coast of Abukir Peninsula with Cystosira, Padina, very little Caulerpa. 14. X.

Gastropoda : Patella coerulea (L.) (? according to the collector's notes).

Station 42. Gray, muddy sand with stones. Seaweed-meadows. 14. X.

Gastropoda : Cerithium (Vulgocerithium) vulgatum Brug. (accor. to the collector's notes).

Bivalvia : Brachidontes (Mytilaster) minimus (Poli) scarce. (According to the collector's notes).
Pinctada vulgaris (Schumacher). (According to the collector's notes).

Station 43. Western side of Abukir, Peninsula crags with sandy bottom, some more Çaulerpa. 14. X.

Bivalvia : Brachidontes (Mytilaster) minimus (Poli). (According to the collector's notes).
Pinctada Vulgaris (Schumacher). (According to the collector's notes).

Station 44. Fine, rich marsh, 10 fath. 15. X.

Gastropoda : Nassarius (Hima) incrassatus (Ström)

Bivalvia : Abra ovata (Phil.)

Station 45. Somewhat sandy mud 9 fath. 15. X

Gastropoda : One Opistobranchian, of some mm. length (Aglajide) (according to the collector's notes).

Bivalvia : Mactra corrallina L.

Station 47. Sand with little mud, 6 fath 15. X.

Sacphopoda : Dentalium dentale L.

Bivalvia : Glycymeris pilosus (L.)
Mactra corallina L.
Macoma cumana (Costa)

Tellina distorta Poli.

Station 48. Shallow, sandy beach near the Edku-Channel. 17 X.

Gastropoda : Diodora nubeculla (L.)
Pila ovata (Olivi)
Thiara (Melanoides) tuberculata (Müller)
Pirenella conica (Blainville)
Cerithium (Vulgocerithium) vulgatum Brug.
Janthina bicolor Menke (washed ashore according to the collector's notes).
Natica millepunctata Lamarck (washed ashore)
Polinices (Neverita) josephinia (Risso)
Tonna galea (L.) (washed ashore)
Murex (Bolinus) brandaris L. (washed ashore)
Nassarius (Arcularia) gibbosulus (L.)

Scaphopoda . Dentalium dentale L.

Bivalvia : Glycymeris pilosus (L.) (washed ashore according to the collector's notes).
Musculus sulcatus (Risso)
Brachidontes (Mytilaster) minimus (Poli) ("Station 58" of the list of stations is evidently a mistake).
Cardium (Cerastoderma) edule L. (washed ashore)
Mactra corallina L.
Macoma cumana (Costa)
Solen marginatus (L.) (washed ashore according to the collector's notes).

Eastern Harbour near the Laboratory, on stones, 16.X.

Gastropoda : Diodora nubecula (L.)

Station 49. Near the Edku Canal on shallow seawed-bottom 17 X. (Cl = 1.13°/₀₀, S = 2.07°/₀₀).

Gastropoda : Pirenella conica (Blainville)

Bivalvia : Cardium (Cerastoderma) edule L.

Station 50. Stony, sandy Amphioxus-bottom. 9 fath. 18. X.

Gastropoda : Calliostoma zizyphinum (L.)
Cantharidus (Jujubinus) igneus (Monterosato).
Clanculus corallinus (Gmelin).
Clanculus cruciatus (L.)
Columbella rustica (L.)

Bivalvia : Donax (Serrula) variegatus (Gmelin)

Station 51. Amphioxus-sand 13 fath. 18 X.

Gastropoda : Cypraea spurca L.
Euthria cornea (L.)
Mitra (Fuscomitra) cornicula (L.)
Bulla striata Brug.

Scaphopoda : Dentalium dentale L.
Dentalium vulgare da Costa.

Bivalvia : Nucula nucleus (L.)
Arca (Barbatia) barbata L.
Glycymeris pilosus (L.)
Glycymeris violacescens (Lamarck)
Chlamys varia (L.)
Chlamys sp. indet.
Donax (Serrula) truncatus (L.)
Tellina distorta Poli.

Station 52. Mud. 22 fath 18. X.

Gastropoda : Emarginula cancellata Phillippi
Aporrhais serresianus (Michaud)
Polinices (Neverita) josephinia (Risso)
Murex (Bolinus) brandaris L.
Nassarius (Hima) pygmaeus (Lamarck.)

Scaphopoda: Dentalium dentale L.

Bivalvia : Arca diluvii Lamarck.
Modiolus adriaticus (Lamarck)
Chlamys glabra (L.)
Diplodonta rotundata (Montagu)
Cardium (Rudicardium) paucicostatum Sowerby
Solecurtus chamasolen (da Costa)
Abra ovata (Phil).
Angulus (Peronida) nitidus (Poli)
Aloidis gibba (Ol.) var. rosea (Brown)

Pharo, outer side washed ashore. 25. X.

Gastropoda: Janthina bicolor Menke.

Station 53. yellowish mud, 33 fath. 26. X.

Gastropoda: Turritella communis Risso
Nassarius (Hima) incrassatus (Ström)
Cylichna cylindracea (Pennant)

Scaphopoda : Dentalium dentale L.

Bivalvia : Chlamys glabra (L.)
Abra ovata (Phil.)
Aloidis gibba (Ol.) var. rosea (Brown)

Station 54. Yellowish mud. 55 fath. 26. X. (= Plankton-Station XIV).

Gastropoda : Turritella communis Risso.
Cythara (Mangelia) scabrida (Monterosata).
Creseis virgula Rang (in the plankton).
Creseis acicula Rang (in the plankton).
Scaphopodo : Dentalium dentale L.
Bivalvia : Nucula nucleus (L.)
Nuculana sulcata (Risso).
Chlamys (Aequipecten) opercularis (L.)
Diplodonta rotundata (Montagu).
Cardium (Rudicardium) paucicostatum Sowerby.
Abra ovata (Phil.)
Tellina serrata Renier.
Aloidis gibba (Ol.) var. rosea (Brown)

Station 55. Mud. 40 fath. 26. X.

Gastropoda : Tricolia pullus (L.)
Turritella communis Risso.
Scaphopoda : Dentalium dentale L. (alive acc. to the collector's notes).
Bivalvia : Chlamys glabra (L.)
Beguina (Glans) trapezia (L.)
Cardium (Rudicardium) paucicostatum Sowerby.
Abra prismatica (Montagu).
Abra ovata Phil.

Station 56. Coarse Amphioxus-sand, very little Caulerpa. 4 fath. 28. X.

Gastropoda : Gibbula turbinoides (Deshayes).
Bivalvia : Glycymeris pilosus (L.) juv. (perhaps the var. lineatus Phil.)
Venus (Chamelea) gallina L.
Donax (Serrula) variegatus (Gmelin).

Station 57. Finer sand with Caulerpa. 3 fath. 28. X.

Gastropoda : Tricolia pullus (L.)
Alvania cimex (L.)
Bittium latreillii (Payr.) ?
Triphora perversa (L.)
Columbella rustica (L.)

Nassarius (Hima) incrassatus (Strom).
Conus mediterraneus Brug.
Bulla striata Brug.
Scaphopoda : Dentalium dentale L.
Bivalvia : Glycymeris pilosus (L.)
Modiolus adriaticus (Lamarck).
Cardita antiquata (L.)
Venus verrucosa L.
Gastrana fragilis (L.)
Tellina pulchella Lamarck.

Station 58. Sand with Caulerpa and Cymodocea. 4 fath 28. X.

Gastropoda : Polinices (Neverita) josephinia (Risso).
Bulla striata Brug.
Scaphopoda : Dentalium dentale L.
Bivalvia : Glycymeris violacescens (Lamarck)
Loripes lacteus Poli.
Cardium (Cerastoderma) edule L.
Venus (Chamelea) gallina L.
Paphia catenifera (Lamarck).
Donax (Serrula) semistriatus Poli.
Macoma cumana (Costa).
Angulus (Peronidia) planatus (L.)
Solen marginatus Montagu, piece of a shell accord. to the collector's notes.
Pandora margaritacea Lamarck.

Station 59a. Coarse sand begrown with Caulerpa and Halimeda. 17 fath. 28. X.

Scaphopoda : Dentalium dentale L.
Bivalvia : Pinctada vulgaris (Schumacher).

Station 59b. Coarse Amphioxus-sand without algae. 15 fath. 28.X.

Gastropoda : Gibbula (Forskalena) guttadauri (Philippi).
Tricolia pullus (L.)
Nassarius (Hima) incrassatus (Ström).
Conus mediterraneus Brug.
Scaphopoda : Dentalium vulgare da Costa.
Bivalvia : Nucula nucleus (L.)
Aloidis gibba (Ol.) var. rosea (Brown).

Station 60. Mud. 33 fath. 30. X.

Gastropoda : Bittium latreillii (Payr.)
Scaphopoda : Dentalium dentale L.

Bivalvia : Abra ovata (Phil.)
Aloidis gibba (Ol.) var. rosea (Brown)

Station 61. Mud and stones 50 fath. 30. X.

Gastropoda : Emarginula huzardii Payr.
Calliostoma zizyphinum (L.)
Cantharidus (Jujubinus) igneus (Monterosato).
Leptothyra sanguinea (L.)
Astraea (Bolma) rugosa (L.)
Turritella communis Risso
Siliquaria obtusa Schumacher
Triphora perversa (L.)
Menestho humboldti (Risso) var. sulcata B.D.D.
Natica millepunctata Lamarck
Polinices (Lunatia) alderi Forbes var. elata B.D.D.
Marginella (Volvarina) mitrella Risso
Haminoea hydatis (L.)
Akera bullata Müller
Creseis acicula Rang
Clio pyramidata L.

Scaphopoda : Cadulus politus (Scarles Wood)
Dentalium dentale L.

Bivalvia : Nucula nucleus (L.)
Arca diluvii Lamarck
Arca (Trigonoderma) lactea L.
Chlamys multistriata (Poli)
Chlamys (Aequipecten) opercularis (L.)
Chlamys glabra (L.)
Chlamys flexuosa (Poli)
Chlamys pes-felis (L.)
Propeamussium (Lissopecten) hyalinum (Poli)
Propeamussium (Palliolum) incomparabile (Risso)
Beguina (Glans) trapezia (L.)
Tellina serrata Renier
Cardium (Parvicardium) papillosum Poli
Pitar rudis (Poli)
Abra ovata (Phil.)
Aloidis gibba (Ol.) var. rosea (Brown)

Station 62. Mud. 28 fath. 31.X.

Gastropoda . Bittium latreillii (Payr.)
Aporrhais serresianus (Michaud)

Natica flammulata Requien
Murex (Bolinus) brandaris L.
Nassarius (Hima) pygmaeus (Lamarck)
Fusinus (Aptyxis) rostratus (Olivi)
Creseis virgula Rang
Creseis acicula Rang
Styliola subula (Quoi et Gaimard)

Scaphopoda : Dentalium dentale L.
Dentalium rubescens Deshayes

Bivalvia : Arca (Navicula) noae L.
Chlamys glabra (L.)
Propeamussium (Lissopecten) hyalinum (Poli
Abra ovata (Phil).
Tellina serrata Renier

Station 63. Stony coarse sand and mud. 74 – 85 fath. 10.XI

Gastropoda : Astraea (Bolma) rugosa (L.) ; operculum only.
Turritella communis Risso
Heliacus moniliferus (Brown)
Aporrhais pes-pelecani (L.)
Aporrhais serresianus (Michaud)
Natica millepunctata Lamarck
Nassarius sp.
Marginella (Volvarina) mitrella Risso

Scaphopoda : Dentalium dentale L.

Bivalvia : Nuculana sulcata (Risso)
Nuculana commutata (Philippi)
Arca diluvii Lamarck
Chlamys multistriata (Poli)
Propeamussium (Lissopecten) hyalinum (Poli)
Astarte fusca Poli
Cardita antiquata (L.)
Beguina (Glans) trapezia (L.)
Cardium (Rudicardium) paucicostatum Sowerby
Cardium (Parvicardium) papillosum Poli
Pitar rudis (Poli)
Venus (Timoclea) ovata Pennant
Solecurtus chamasolen (da Costa)
Abra ovata (Phil)
Aloidis gibba (Ol.) var. rosea (Brown)
Cuspidaria ristrata (Spengler)

Station 64. Mud, coarse sand, 110 fath. 1. XI. (-Plankton-station XVI).

Gastropoda : Atlanta lesueuri Soul.
Natica millepunctata Lamarck.
Nassarius (Amyclina) corniculum (Olivi).
Actoen tornatilis (L.)
Creseis acicula Rang (also in the plankton).
Styliola subula (Quoi et Gaimard).
Clio pyramidata L.
Cavolinia tridentata tridentata (Forsk.)

Scaphopoda : Cadulus jefreysi Monterosato.
Dentalium dentale L.

Bivalvia : Nuculana sulcata (Risso).
Nuculana commutata (Philippi)
Arca diluvii Lamarck
Astarte fusca Poli
Beguina (Glans) trapezia (L.)
Chama gryphoides Lamarck

Station 65. Sand, mud, little Caulerpa. 20 fath. 10. XI.

Scaphopoda : Dentalium dentale L.

Crags near Fort Ada. 2. XI.

Gastropoda : Spawn, indeterminable.(1)

Pharo, outer side. 2. XI. shells washed ashore.

Gastropoda : Janthina bicolor Menke
Conus mediterraneus Brug. (very large)

Station 66. Sandy, muddy Caulerpa-bottom. 20 fathoms. 2. XI.

Gastropoda : Calliostoma zizyphinum (L.)
Rissoa variabilis (Megerle)
Murex (Bolinus) brandaris L.
Murex (Truncularia) trunculus L.
Nassarius (Hima) pygmaeus (Lamarck)
Fusinus (Aptyxis) syracusanus (L.)

Scaphopoda : Dentalium dentale L.
Dentalium rubescens Deshayes

Bivalvia : Nuculana (Lembulus) pella (L.)
Glycymeris pilosus (L.)

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1) ". . . . . und kein verantwortungsbewulter Fachforscher darf es wagen, Laich (von Schnecken) zu bestimmen." (R. Richter 1937 p. 237).

Chlamys glabra (L.)
Chlamys flexuosa (Poli)
Propeamussium (Lissopecten) hyalinum (Poli)
Tellina pulchella Lamarck

Station 67. Mud, sand. 22. fath. 2. XI.

Gastropoda : Bittium latreillii (Payr)
Strombiformis glaber da Costa
Polinices (Neverita) josephinia (Risso)
Conus mediterraneus Brug. var oblonga B.D.D

Scaphopoda : Dentalium dentale L.
Dentalium vulgare da Costa
Dentalium rubescens Deshayes

Bivalvia : Nucula nucleus (L.)
Nuculana (Lembulus) polla (L.)
Glycmeris pilosus (L.)
Chlamys glabra (L.)
Chlamys flexuosa (Poli)
Abra ovata (Phil.)
Tellina pulchella Lamarck
Tellina distorta Poli
Tellina serrata Renier

Station 68. Muddy Caulerpa-bottom. 37 fath. 2.XI.

Gastropoda : Turritella communis Risso
Polinices (Lunatia) alderi Forbes var. elata B D.D.
Nassarius (Hima) incrassatus (Ström)

Scaphopoda : Dentalium dentale L.

Bivalvia : Chlamys glabra (L.)
Chlamys flexuosa (Poli)
Cardium (Rudicardium) paucicostatum Sowerby
Abra ovata (Phil.)

Station 69. Muddy Caulerpa-bottom. 48 fath. 2.XI.

Gastropoda : Turritella communis Risso
Natica flammulata Requien
Nassarius (Hima) incrassatus (Strom)

Scaphopoda : Dentalium dentale L.

Bivalvia : Chlamys varia (L.)
Chlamys glabra (L.)

Chlamys flexuosa (Poli)
Propeamussium (Lissopecten) hyalinum (Poli)
Tellina serrata Renier.

Station 71. Stony Caulerpa-and Halimeda bottom. 23 fath.4.XI.

Bivalvia : Lima (Mantellum) hians Gmelin.

Station 72. Muddy, sandy Caulerpa bottom. 30 fath. 4 XI.

Gastropoda : Leptothyra sanguinea (L.)
Turritella communis Risso
Siliquaria obtusa Schumacher
Typhis (Typhinellus) sowerbii Broderip
Nassarius (Hima) incrassatus Strom
Conus mediterraneus Brug.

Scaphopoda ; Dentalium dentale L.

Bivalvia : Glycymeris pilosus (L.)
Abra ovata (Phil.)
Tellina serrata Renier

Station 73. Muddy Caulerpa-and Halimeda bottom. 38 fath.4.XI.

Gastropoda : Siliquaria obtusa Schumacher
Triphora perversa (L.)
Cypraea spurca L.
Conus mediterraneus Brug.

Scaphopoda : Dentalium Dentale L.

Bivalvia : Chlamys pes-felis (L.)
Tellina serrata Renier

Station 74. Mud with little Caulerpa. 23. fath. 4.XI

Gastropoda : Strombiformis glaber da Costa
Aporrhais pes-pelecani (L.)
Natica millepunctata Lamarck
Nassarius (Hima) incrassatus (Strom)

Scaphopoda : Dentalium dentale L.

Bivalvia : Abra ovata (Phil.)

Station 75. Mud, sand. 25. fath. 4. XI.

Gastropoda : Murex (Bolinus) brandaris L.
Nassarius (Hima) pygmaeus (Lamarck).

Scaphopoda : Dentalium dentale L.
Dentalium rubescens Deshayes.

Bivalvia : Nuculana (Lembulus) pella (L.)
Chlamys glaber (L.)

Station 76. Stony, sandy Caulerpa-and Halimedabottom. 7 fath. 5. XI.

Gastropoda : Bittium latreillii (Payr.)
Murex (Bolinus) brandaris L.
Murex (Truncularia) trunculus L.
Tritonalia blainvillii (Payr.)
Columbella rustica (L.)
Nassarius (Hima) incrassatus (Ström).

Bivalvia : Lithophaga lithophaga (L.) (according to the collector's notes).
Pinctada vulgaris (Schumacher.)
Lima sp (according to the collector's notes.)

Station 77. Caulerpa and Halimeda bottom. 7 fath. 5. XI

Gastropoda : Cantharidus (Jujubinus) igneus (Mont.)
Tricolia pullus (L.)
Columbella rustica (L.)
Nassarius (Hima) incrassatus (Ström).
Elysia viridis (Montagu) ?.

Bivalvia : Lithophaga lithophaga (L.)
Cardita antiquata (L.)
Beguina (Glans) trapezia (L.)

Station 78. Stony Caulerpa-,Halimeda-Posidonia bottom. 5-6 fath. 5. XI.

Gastropoda : Haliotis lamellosa Lamarck
Vermetus (Bivonia) triqueter Bivona
Nudibranch, indeterminable.

Bivalvia : Modiolus adriaticus (Lamarck)
Lithophaga lithophaga (L.)
Lima (Mantellum) inflata Lamarck (alive)
Chama gryphoides Lamarck

Station 79. Stony, coarse sand with Caulerpa and Halimeda. 14. fath. 5.XI.

Scaphopoda ; Dentalium rubescens Deshayes (alive)

Station 81. Rocky Amphioxus-sand begrown with Posidonia, Caulerpa and Halimeda. 6 fath. 5 XI.

Gastropoda : Pyrene (Mitrella) scripta (L.)

Bivalvia : Donax (Serrula) variegatus (Gmelin)

Station 82. Outer side of Fort El Ayana, rocky. 5.XI.

Bivalvia : Brachidontes (Mytilaster) minimus (Poli) according to the collector's notes.

Station 83. Crags with Padina pav. on shallow Posidonia bottom. 5.XI.

Gastropoda : Cerithium (Vulgocerithium) vulgatum Brug. var. tuberculata Phil. with the Pagurid Clibanarius misanthropus (Risso). (Balss 1936 p. 19).
Bulla striata Brug.

Bivalvia : Venus verrucosa L.

Station 86. Coarse Amphioxus-sand begrown with Caulerpa and Posidonia. 5 fath. 5.XI.

Bivalvia : Donax (Serrula) variegatus (Gmelin)

Station 87. Gray sand on Caulerpa bottom. 4 fath. 5.XI.

Bivalvia : Venus verrucosa L.

Eastern Harbour near the Laboratory on stones. 6.XI.

Bivalvia : Brachidontes (Mytilaster) minimus (Poli)
Irus irus (L.)
Petricola lithophaga Retz.

Station 90. Muddy Caulerpa bottom. 18 fath. 6.XI.

Gastropoda : Murex (Truncularia) trunculus L.

Scaphopoda : Dentalium dentale L.
Dentalium rubescens Deshayes.

Bivalvia : Glycymeris pilosus (L) (according to the collector's notes).
Chlamys varia (L.)
Chlamys glabra (L.)
Chlamys flexuosa (Poli)
Diplodonta rotundata (Montagu)
Angulus (Peronidia) nitidus (Poli)

Station 91 Muddy Caulerpa-and Cymodocea bottom. 20. fath. 6.XI.

Gastropoda : Polinices (Neverita) josephinia Risso

Scaphopoda : Dentalium dentale L.

Bivalvia : Glycymeris pilosus (L.)
Chlamys glabra (L.)
Chlamys proteus (Sowerby)
Proteomusseum (Lissopecten) hyalinum (Poli)

Station 92. Muddy Caulerpa bottom. 24.5 fath. 6.XI.

Scaphopoda : Dentalium dentale L.
Dentalium rubescens Deshayes

Bivalvia : Chlamys flexuosa (Poli)
Diplodonta rotundata (Montagu)
Cardium (Rudicardium) paucicostatum Sowerby

Station 93. Coarse Amphioxus-sand begrown with Caulerpa, Halimeda and Posidonia 9 fath. 6.XI.

Bivalvia : Pinctada vulgaris (Schumacher)

Station 94. Stony Caulerpa-, Halimeda-, Sargassum- and Posidonia bottom. 4½ fath. 6.XI.

Loricata : Callochiton laevis (Montagu)
Gastropoda : Pleurobranchus sp.
Peltodoris atromaculata Bergh

Station 98. Fine sand with stones begrown Caulerpa and Posidonia. 4 fath. 7.XI.

Bivalvia : Ostrea edulis L. (accord. to the collector's notes) beset with Balanus perforatus (Brug.) (vid. Broch 1935)

Station 99. Stony (sandy ?) begrown with Caulerpa, Halimeda and Posidonia. 5½ fath. 7.XI.

Gastropoda : Natica dillwynii Payr.
Murex (Truncularia) trunculus L.
Scaphopoda : Dentalium vulgare da Costa
Bivalvia : Chama gryphoides Lamarck.

Station 100. Mussel-sand with Caulerpa and Halimeda. 5½-6 fath 7.XI

Gastropoda : Gibbula umbilicalis (L.)
Gibbula turbinoides (Deshayes)
Cantharidus (Jujubinus) matoni (Payr.)
Tricolia pullus (L.)
Bittium latreillii (Payr.)
Columbella rustica (L.)
Pusia (Pusiolina) tricolor (Gmelin)
Bivalvia : Donax (Serrula) variegatus (Gmelin)

Station 101. Sandy Caulerpa-, Halimeda- and Posidonia bottom. 5½ fath. 7.XI.

Gastropoda : Cerithium (Vulgocerithium) vulgatum Brug. var. hirta B.D.D.
Columbella rustica (L.)
Bivalvia : Beguina (Glans) trapezia (L.)

Station 102. Stony Cystosira-, Halimeda-, Caulerpa bottom. 5-6 fath. 7,XI.

Gastropoda : Bittium latreillii (Payr.)
Columbella rustica (L.)
Euthria cornea (L.)
Conus mediterranea Brug.
Bivalvia : Arca (Barbatia) barbata L.

Station 103. Sandy, muddy Caulerpa bottom. 16 fath. 7.XI

Gastropoda : Polinices (Neverita) josephinia (Risso)
Tritonalia blainvillii (Payr.)
Nassarius (Hima) pygmaeus (Lamarck)
Cythara (Mangelia) laevigata (Philippi)

Scaphopoda : Dentalium rubescens Deshayes
Bivalvia : Arca diluvii Lamarck
Glycymeris violacescens (Lamarck)
Pinctada vulgaris (Schumacher)
Chlamys glabra (L.)
Diplodonta rotundata (Montagu)

Station 105 a and b. Sandy Posidonia- and Cystosira bottom. 4-6 fath. 8.XI.

Gastropoda . Tricolia pullus (L.)
Cerithium (Vulgocerithium) vulgatum Brug.
Bivalvia : Beguina (Glans) trapezia (L.)
Donax (Serrula) semistriatus Poli
Tellina distorta Poli.

Station 110. Crags with shallow sand bottom. 9.XI.

Gastropoda ; Patella lusitanica Gmelin
Bivalvia : Arca (Navicula) noae L.

Station 111. Stony Caulerpa-, Halimeda-, Posidonia bottom. 10 fath. 9.XI.

Gastropoda : Cerithium (Vulgocerithium) vulgatum Brug. var. hirta B.D.D.
Murex (Truncularia) trunculus L.
Columbella rustica (L.)
Bivalvia : Lithophaga lithophaga (L.)
Cardita antiquata (L.)

Station 112. Fine Amphioxus-sand with some mud, little algae. 15 fath. 9.XI.

Bivalvia ; Chama gryphoides Lamarck

Pitar (Macrocallista) chione (L.)
Tellina pulchella Lamarck.

Station 113. Muddy, sandy Caulerpa bottom 20 fath. 9.XI.

Scaphoda : Dentalium dentale L. (alive according to the collector's notes).

Station 114. Stony, sandy, muddy Caulerpa- and Halimeda-bottom. 25 fath. 11.XI.

Gastropoda : Cassidaria echinophora (L.)
Nassarius (Hima) pygmaeus (Lamarck) ?

Scaphopoda . Dentalium dentale L.
Dentalium rubescens Deshayes

Bivalvia : Glycymeris pilosus (L.)
Chlamys glabra (L.)
Chlamys flexuosa (Poli)

Station 115. Stony Caulerpa-and Halimeda bottom. 30 fath. 11. XI.

Gastropoda : Cerithium (Vulgocerithium) vulgatum Brug. var. hirta B.D.D.

Bivalvia : Modiolus adriaticus (Lamarck).
Chlamys glabra (L.)

Station 116. Sandy, muddy Caulerpa- and Halimeda bottom 35 fath. 11.XI.

Gastropoda : Calliostoma conulus (L)
Nassarius (Hima) pygmaeus (Lamarck).

Scaphopoda : Dentalium dentale L.

Bivalvia : Astarte fusca Poli.

Station 117. (=Plankton-station XVII) 11.XI.

Gastropoda : Creseis acicula Rang (in the plankton)

Station 119. Stony, muddy yellow Amphioxus sand with Caulerpa-and Posidonia 5½ fath. 12. XI.

Gastropoda : Tricolia pullus (L.)
Euthria cornea (L.)
Nassarius (Hima) incrassatus (Ström)

Bivalvia : Glycymeris pilosus (L.)
Beguina (Glans) trapezia (L.)
Venus verrucosa L.
Paphia catenifera (Lamarck)
Donax (Serrula) variegatus (Gmelin)

Station 121 Coarse Amphioxussand begrown with Caulerpa and Halimeda. 5½ fath. 12. XI.

Bivaliva : Lithophaga lithophaga (L.)
Lima (Mantellum) hians (Gmelin).
Venus verrucosa L.

Station 125. Yellow Amphioxus-sand begrown with Caulerpa and Halimeda. 6 fath. 13. XI.

Bivalvia : Chlamys varia (L.)
Ostrea edulis L.
Donox (Serrula) variegatus (Gmelin).

Station 135. Stony-sandy Caulerpa-Halimeda-Posidonia bottom. 4 fath. 14. XI.

Gastropoda : Tricolia pullus. (L.)

Station 136. Amphioxus-sand with Caulerpa and Posidonia. 5-6 fath. 14. IX.

Gastropoda : Tricolia speciosa (Megerle).
Vermetus (Petaloconchus) subcancellatus (Bivona).
Bivalvia : Pinna pectinata L.

Station 137. Dark sand begrown with Caulerpa and Cymodocea 4-5 fath. 14. XI.

Bivalvia : Pinna sp. ? (fragments only)
Angulus (Peronidia) planatus (L.)

Station 140.Stony, coarse Amphioxus-sand begrown with Caulerpa and Posidonia. 4-8 fath. 14. XI.

Gastropoda : Haliotis lamellosa Lamarck.
Murex(Truncularia) trunculus L.(according to the collector's notes)
Nudibranch, red, indeterminable.
Bivalvia : Arca (Barbatia) barbata L.
Arca (Navicula) noae L. (shell only, according to the collector's notes).
Ostrea edulis L.
Chama gryphoides Lamarck.
Venus verrucosa L.
Donax (Serrula) variegatus (Gmelin).
Gari depressa (Pennant).

Station 141. Western Harbour, Black mud and sand. 8 fath. 15 XI.

Gastropoda : Cerithium (Vulgocerithium) vulgatum Brug.
Bivalvai : Tellina pulchella Lamarck.

Station 142. Mud. 10 fath. 15. XI.

Gastropoda : Ringicula auriculata (Menard), the only mollusc.

Station 144. Coarse sand and mud, begrown with Caulerpa and Halimeda. 18 fath. 15. XI.

Scaphopoda : Dentalium vulgare da Costa.
Dentalium rubescens Deshayes.

Bivalvia : Arca (Navicula) noae L. (shell only, according to the collector's notes).
Chlamys glabra (L.)
Cardium (Parvicardium) papillosum Poli.

Station 145. Light gray mud with little Caulerpa. 21 fath. 15.XI.

Scaphopoda : Dentalium dentale L.
Dentalium rubescens (L.)

Bevalvia : Cardium (Rudicardium) paucicostatum Sowerby

Station 146. Stony Caulerpa, Halimeda- and Posidonia bottom. 10-11 fath. 15.XI.

Gastropoda : Columbella rustica (L.)

Bivalvia : Lithophaga lithophaga (L.)
Pinctada vulgaris (Schumacher)
Chlamys varia (L.)

Pharo, outer side, on stones, 16 XI.

Gastropoda : Haminoea hydatis (L.)

Station 147. Mud at the mouth of the Nile. 1-7 fath. 18.XI.

Gastropoda : Nassarius (Hima) incrassatus (Ström)
Nassarius (Hima) reticulatus (L.)
Ringicula auriculata (Menard)
Bulla striata Brug.

Bivalvia : Corbicula consobrina Cailliaud
Cardium (Cerastoderma) edule L.
Mactra corallina L.

Station 148. Sandy bottom off Rosetta, 2 fath. 18. XI.

Bivalvia : Propeamussium (Lissopecten) hyalinum (Poli) (Locality doubtful).

Eastern coast of the Bay of Abukir, about at the height of Rosetta, cast ashore on the sand, 18. XI.

Bivalvia : Glycymeris violacescens (Lamarck).
Ostrea edulis L.
Cardium (Rudicardium) rusticum L.
Cardium (Ceratoderma) edule L.
Donax (Serrula) trunculus L.
Barnea candida (L.)

PART III.

GENERAL RESULTS

By the preceding list of species the number of molluccs known from the surroundings of Alexandria has been increased by about 35 species. With a few exceptions they all belong to the "mediterranean-atlantic fauna" (Ekman 1935 p. 113). Scarcely 10% of the species found seem to occur only in the Atlantic from Gibraltar to the Canal and therefore are (provisionally) to be called "mediterranean-lusitanean" and only a few more may (provisionally) be called mediterranean. Only two snails and two mussels are also recorded from the western coast of the Atlantic, and the pelagic Pteropods, finally, also occur in other oceans. The immigrants from the Red Sea are scarce. *Pinctada vulgaris* (Schumacher) is known longest since and at the present date most widely spread in the southern and eastern Meditrranean. *Hydrobia musaensis* Frauenfeld occurs in the Red Sea and in Malta (according to Carus 1893 p. 315). A new immigrant is probably *Turris indica* Roding. The only specimen found in the Eastern Harbour off the Laboratory was, as Tomlin (p. 37) particularly emphasizes, not alive and the finding of the mediteranean-atlantic *Donax trunculus* (L.) by Issel (1869) on the beach of Attaka in the Red Sea, which has found an unexpected explanation by Jousseaume (1891) calls up precaution. Anyhow it is striking that I have found new Decapod immigrants, too, in or off the Eastern Harbour as well as in the Western Harbour (see Balss 1936 p. 10, 41) and also the new Polychaet- immigrant *Pseudonereis anomala* (Fauvel) was found (besides in Sidi Bishr) in the Eastern Harbour (Fauvel 1937). Finally of Echinoderms the Indian Echiurid (*Ophiactis Savignyi*) Müller & Troschel was fished for the first time besides in the Bay of Abukir only in the Eastern Harbour and in its next surroundings (Mortensen-Steuer 1937),

Up to now relatively seldom and usually only in the two harbours of Alexandria molluscs had been fished for. One had usually merely collected empty shells cast ashore, especially at the beach of Ramleh, which formerly offered a good occasion for collecting, while nowadays bathing establishments have been built there. It is striking how poor the eastern side of the Bay of Abukir is as to the remains of animals cast ashore ; I only found shells of six species of mussels there.

One haul only could be made with the bottom-sampler, viz. in the Eastern Harbour. With 551 gms. organic substance pro m.^{3} it is at present the richest haul in the Mediterranean (**Vatova** 1936 tav. I), consisting principally of

Bivalves and belonging to **Vatova's** "Tapes-association"(1) (Tp.) (see **Vatova** 1935). Whether the Western Harbour is in a like manner rich in individuals is yet tobe ascertained ; for it is interesting that as to the number of species, maxima are to be recorded there. 25 species of Bivalves were found on the sandy bottom mixed with little mud of station 13 off the "coal mole", among them *Paphia catenifera* (Lamarck) (syn. *Tapes aureus* Gm. var. *catenifera* Lam.), the characteristic species of the "Tapes-association". Besides, there were rich findings of molluscs with greater numbers of species only on the stony beds near the coast in little depths (St. 7, 35) and in the stony, sandy, deeper, muddy areas far from the coast between 50 and 100 fathoms. Accordingly the mollusc fauna of Alexandria shows greatest richness of species on the one hand in the land near coast-water and on the other hand in the deeper beds of the open sea. According to **Vatova** (1936 p. 9) the number of individuals increases with favourable circumstances off the surroundings while the **number of species decreases** and *vice versa*.

BIOCOENOTIC ORDER

As has been said before (1935 p. 8) we have to distinguish off the coast of Alexandria at first the following three zones of the bold shore :

I. **The subterrestrian zone** (= supralittoral-splashing zone) with *Littorina punctata* (Gmelin) which occurs principally at places much exposed to the surging sea in heaped numbers. Rock pools are few or missing.

II. **The zone of the tides** (=emerging littoral region, region of emersion) begrown with Ulva and Enteromorphs, is inhabited among others by *Middendorffia caprearum* (Scacchi) and *Patella coerulea L.*, preferring perhaps more protected places, while *Patella lusitanica* Gmelin was found in the utmost east at places most exposed to the high sea. *Brachidontes (Mytilaster) minimus* (Poli), too, met with more frequently and in heaped amounts in places exposed to the surging sea, is however not confined to this zone but is also to be found in the following one ; both these zones can better be separated floristically than faunistically.

III. **The sublittoral zone** (= submerged zone, submerse zone) is distinguished by tight amount of *Corallina officinalis* L. At the upper border of this coralline zone there occurred e.g. near Sidi Bishr, *Monodonta (Osilinus) turbiformis* (Salis), and in the Eastern Harbour near the Laboratory I found a *Diodora nubecula* (L.) tightly begrown with the above-named Corallina among the ulvae of the tidal zone ; the snail had therefore mounted from the sublittoral zone. As further representatives of this third zone may be

(1) According to A. **Lindroth** (1935 p. 362) better "Gesellschaft'.

named : *Monodonta (Osilinus) turbinata* (Born) and the lamellibranchs *Ostrea edulis* L., *Irus irus* (L.) and *Petricola lithophaga* (Retzius).

Further characteristic biotops are :

The **sandy flat shore.** In the fine beach-sand there live the purely mediterranean snail *Nassarius (Arcularia) gibbosulus* (L.) and the mussels *Donax (Serrula) semistriatus* Poli and *Macoma cumana* (Costa) ; the latter seems to be especially adapted to warm coast-water on account of its occurrence in the Atlantic (southward from Portugal at the African coast) and as immigrant from the Suez Canal —like the "west african species" *Littorina punctata* (Gmelin). Pinnae are often cited for more or less clean beach-sand or mixed with mud, e.g. by **Seurat** (1929 p. 17) for the Gulf of Gabès. I found rests of shells of *Pinna pectinata* L. only in the Western Harbour and at the coast of Dekheli situated in front of it.

The harbour fauna : The mollusc-fauna of the two harbours of Alexandria requires special notice as we have here to deal with partly "artificial" biotops, which can be easily changed to a certain extent by human influence. In the Western Harbour vast marshy bottoms are situated off the rocky, sandy coast and pass over into rocky-sandy ground partly mixed with mud.

Nassarius mutabilis (L.) var. *minor* Monterosato and the mussel *Dosinia (Orbiculus) exoleta* (L.) as well as *Solen marginatus* Montagu live in almost clean, fine sand. The remains of Pinna-shells were found on the sand-bottoms between inner and outer harbour only and off the west harbour between Minat el Fransawi and Marsa-el-Kanat.

The Eastern Harbour (Port-Neuf) has for the greater part sandy bottom ; in its eastern part at all four stations only *Philine aperta* (L.) was found. Of mussels *Paphia catenifera* (Lamarck) is very frequent wherefore one might speak of a "Tapes (Tp.)-Biocenose" in the sense of Vatova (1936 p.9). The southern and eastern border of the harbour is rocky and even mixed with a little mud in the central, deepest part (St.32). Here the greatest number of species (13 Gastropoda, 8 Bivalva) could be noted. In all, the Gastropoda prevail as to the number of species in the Eastern Harbour (28 species to 16 species), the Bivalva in the Western Harbour (33 species to 19 sp). Scaphopods were not found in the Eastern Harbour, while *Dentalium dentale* L. occurred very frequently in the Western Harbour.

Of the molluscs collected **Wilhelmi** (1912) denotes 18 Gastropods, 1 Scaphopod and 18 Bivalves being saprob. Out of these 11 Gastropods, 1 Scaphopod and 14 Bivalves were found in the harbours. Among the mussels found on the sandy ground of the harbours, *Paphia catenifera* (Lamarck)— feebly saprob according to **Wilhelmi** (1912)—is according to **Vatova**, as has been mentioned before, "Leitform" of his Tapes (Tp.) — association which iu

similar combination is to be found in the dirty lagoons of Venice. The mud in the inner harbour was black and at some places smelling badly. At the mouth of the Mahmudiyeh-Canal (Cl : 12.01% S : 21.71%) no molluscs at all were found, at the next station 11 (according to my notes) anyhow the Dentalia collected were alive. In the outer harbour the blackening of the mud began at Station 16, where no animals were found and at station 141, where only the "oligosaprob" *Cerithium (Vulgocerithium) vulgatum* Brug. and the evidently likewise saprob *Tellina pulchella* Lamarck were met with. In the black mud at the entrance of the harbour (St. 18) no molluscs were found near the end of the breakwater; at the opposite side (St. 9) at the slaughter-house there were, according to my notes, at best the small mussels *Aloides gibba* (Ol.) var *rosea* (Brown) out of the 4 Gastropod-, 2 Scaphopod- and 6 Bivalve-species taken alive.

Between the two harbours there is situated, bordered by crags, the flat basin of Anfouchi Bay. On sandy bottom there are banks of seaweeds and rich growth of aglae with the Gastropod-fauna characteristic for such "phytal-" biotops **(Remane** 1933**)**; thus *Rissoa variabilis* (Megerle) collected here is according to Issel (1912 p. 394) "predominante nelle praterie superficiale di Posidonia," and *Columbella rustica* (L.) lives also in the Adriatic on Phaeophyceae (according to Coen and Vatova 1932 p. 22). *Charonia (Colubraria) reticulata* (Blainville) and *Tricolia tenuis* (Michaud) were only to be found in the Anfouchi Bay, *Cantharus (Pollia) d'orbignyi* (Payr.) besides in the Eastern Harbour only as, on the whole, most of the Gastropods collected here were found moreover only in the harbours or in their closer or further environment.

Off the entrance to the Western Harbour is situated the wide Bay of Dekheli. After a narrow, flat fine-sand beach out of which crags are emerging, there follows a long stripe of coarse Amphioxus-sand; situated before this is, in greater depth of 4-15 fathoms, a similar stripe of Amphioxus-sand which may be traced to the Bay of Abukir. The characteristic species of mussels for this Amphioxus-sand is *Donax (Serrula) variegatus* (Gmelin), not found in any other biotop.(1)

Between the two parts of Amphioxus-sand the sea-bottom in the Bay of Dekheli is rocky, stony, fine-sanded and evidently poor in molluscs. Thus I found off the entrance near the breakwater on sandy bottom (St. 124) only Polychetes, northward from there (St. 98) only oysters near El Mejul. I noted (St. 95) *Modiolus barbatus* L., at st. 94 there occured *Callochiton laevis* (Montagu), *Pleurobranchus* sp. and *Peltodoris atromaculata* Bergh. At the eastern side of the Agami Islands (St. 85) algae were principally dredged

(1) **Vatova** (1935) cites as prevailing mussels for this biotop in the Adriatic *Divariella divaricata*. L. *Codakia* (*Jagonia*) *reticulata* (Poli); *Angulus* (*Moerella*) *donacina* (L.), also cited by him, were not found by me in the Amphioxus-sands off Alexandria.

and (St. 84) many Holothuroids (*Holothuria polii* (Delle Chiaje). Then there follows in the direction towards the coast a region of gray sand with the saprob mussel *Venus verrucosa* L. (St. 87), which sand changes finally by and by into black mud. At the deepest place (10 fath.) off the entrance to the western harbour (St. 142) only one snail was taken, *Ringicula auriculata* (Ménard), in the foul smelling mud of station 123; however molluscs were altogether missing.

The areas named above, with fine sand partly mixed with stones are stretching out from the two harbours of Alexandria along the coast at both sides of the Amphioxus beds to Abukir peninsula and occupy almost all the southern part of the Bay of Abukir. In these fine sands the two Gastropods, *Nassarius gibbosulus* (L.) (Fig. 16) and *mutabilis* (L.) var. *miner* Monterosato were found and the mussel *Donax* (*Serrula*) *semistriatus* (Poli). (fig. 36). Only in the Bay of Abukir and in the Eastern Harbour were found *Macoma cumana* (Costa) (Fig. 37) and *Musculus sulcatus* (Risso) (Fig. 26), only in the Bay of Abukir and in the Western Harbour *Solen marginatus* Montagu (Fig. 39) and *Cardium rusticum* L. (Fig. 33).

In the Bay of Abukir, in the Eastern Harbour and in the Bay of Dekheila *Angulus* (*Peronidia*) *planatus* (L.) (Fig. 38) was found, and *Pandora margaritacea* Lamarck (Fig. 39) and *Venus* (*Chamelea*) *gallina* L. (Fig. 34) could be recorded for the Bay of Abukir only. Towards the open sea and with increasing depth the sand seems to be mixed more and more with mud and it contains a mixed fauna which is not very characteristic ; in the western part e.g. *Nuculana* (*Lembulus*) *pella* L. (Fig. 23) appears. The more the sand disappears, the more the representatives of the mud fauna prevail. Thus in the utmost NW of the district investigated 63, that is in the area of the 100 fathom-line, *Nucula sulcata* (Risso) and *commutata* (Philippi) (Fig. 23), *Chlamys multistriata* (Poli) (Fig. 29), *Astarte fusca* Poli (Fig. 31) and *Cuspidaria rostrata* (Spengler) (Fig. 39) were found, which only occurred on marshy and muddy bottoms. Only here were found : *Heliacus moniliferus* (Brown) (St. 63, Fig. 7), *Acteon tornatilis* (L) (St. 64, Fig. 18) and *Venus* (*Timoclea*) *ovata* Pennant (Fig. 35).

On the other hand, there is a number of species which, being relatively eurytop "sand inhabitants" are not bound to a certain kind of sand and whose area for living is more expanded, such as *Glycymeris violacescens* (Lamarck) and *Tellina distorta* Poli (Fig. 38) while *Tellina serrata* Renier which (Fig. 38) is rather to be called a mud-form, has been taken however on muddy bottom mixed with sand (St. 2, 67, 72)(1).

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(1) On the sandy bottoms of the Bay of Naples mussels also prevail and Bellini (1929 p. 8) lists up the genera *Cardium*, *Donax*, *Solen*, *Tellina*, *Mactra*, *Venus* and *Tapes*.

The purely muddy bottoms approach the coast of Muntaza (St. 74) to four sea miles (frequently or exclusively had here been found the snails *Emarginula huzardii* (Payr.) (at st. 61, (Fig. 2) and *cancellata* Philippi (at St. 52, fig. 2), *Turritella communis* Risso (at many stations, Fig.7), *Natica flammulata* Requien (Fig. 10 at st. 62, 69). *Polinices* (*Lunatia*) *alderi* (Forbes) (at St. 61, 62, 68, Fig. 10), *Fusinus* (*Aptyxis*) *rostratus* (Olivi) (only at St· 62, Fig. 17) and *Cylichna cylindracea* (pennant) (only at St. 53, Fig. 19), further the mussels *Chlamys pes-felis* (L.) (at St. 61, 73, (Fig. 30) and finally *Abra prismatica* (*Montagu*) (at St. 55, Fig. 37).

A different state of affairs shows in the deeper mud-bottoms beyond the 50-fathoms-line, for which I indicated formerly (Steuer 1935 Chart II) *Stylocidaris affinis* (Philippi) as characteristic species. The mud is often noted on the charts as being yellowish or clayish. On these mud-bottoms at least 50 fathoms deep were dredged the snails *Marginella* (*Volvarina*) *mitrella* Risso (Fig. 17), *Drillia* (*Crassopleura*) *maravignae* (Bivona) (Fig. 18) and *Cythara* (*Mangelia*) *scabrida* (Monterosato) (Fig 18) as well as the mussels *Arca* (*Trigonodesma*) *lactea* L. (Fig. 24), *Chlamys multistriata* (Poli) (Fig. 29) and *Chlamys* (*Aequipecten*) *opercularis* (L.) (Fig. 29) as well as *Propeamussium* (*Palliolum*) *incomparabile* (Risso) (Fig. 30). On account of their occurrence in greater depths the two snails last mentioned may be stated to be relatively rare (Kobelt 1901 p. 59, 1905 p. 226)

Besides the Echinoid cited above, the deeper mud-grounds are characterised by the Brachiopod *Mühlfeldtia truncata* (L.) (**Steuer** 1936 Fig. 2). Also near Naples there can be distinguished (according to **Bellini** 1929 p. 8) in the "5. Zone der Korallen und Brachiopoden" an "oberer Abschnitt" reaching from 80-150 m. depth in which there occurs, like in AlexanPria, among others, besides the Brachiopods cited above, *Chlamys incomparabilis*. From the "unteren Abschnitt" from about 150-500 m. "Pteropodenreste" are cited as characteristic for Naples. Near Alexandria, too, the shell of a *Calvolinia tridentata* (Forsk.) was dredged by me out of a depth of more than 100 fathoms and formerly already by the Austrian Pola-Expedition (according to Oberwimmer 1898 p. 579) out of greater depths.

It is remarkable that some molluscs, otherwise frequent, occurred only in the western part of the district investigated such as *Arca* (*Navicula*) *noae* L., and of these according to my notes only small, empty shells. A large living specimen however, was brought by fishermen from near Mersa Matruh, situated further westward. As to the snails *Calliostoma conulus* (L.) (Fig. 3) *Cassidaria echinophora* (L.) (Fig. 11) and *Cythara* (*Mangelia*) *laevigata* (Philippi) (Fig. 18) were recorded only from the utmost west of the disrict investigated. Perhaps we have here to deal with more or less stenohaline species. Highly euryhaline is however *Cardium* (*Cerastoderma*)

edule L. (Fig. 33), which was frequently met with in Lake Maryut and Lake Edku and, also at the mouth of the Nile near the Bughaz. Besides, there were found the Gastropods *Nassarius (Hima) incrassatus* (Strom) (Fig. 16) also near Bughaz, *Nassarins (Hima) reticulatus* (L). var. *nitidus* Jeffreys in Lake Edku, *Ringicula auriculata* (Menard) (Fig. 19) and *Bulla striata* Brug. (Fig. 19) at the mouth of the Nile. It was perhaps by chance that *Polinices (Neverita) josephinia* (Risso) (Fig 10) was taken at the mouth of Lake Edku and not in the Lake itself. Of mussels *Nactra corallina* L. (Fig. 36) was found there ; in Lake Edku were collected : *Dosina lupinus* (Poli) (Fig. 34) and *Scrobicularia cottardi* (Payraudeau) (Fig 37), in Lake Maryut *Paphia catenifera* (Lamarck) (Fig. 35) and *Abra ovata* (Philippi) (Fig 37). The localities of the probably highly euryhaline snail *Pirenella conica* (Blainville) (Fig. 8) are in Lake Maryut, Lake Edku and off its chennel into the Bay of Abukir ; only one other finding is in the Bay of Dekheila (St. 22). From Lake Edku there is recorded a *Planorbis* sp. (Fig. 21), in Lake Maryut and Lake Edku *Hydrobia musaensis* Frauenfeld (Fig. 6) was captured and *Thiara (Melanoides) tuberculata* (Müller) (Fig. 8) was also taken near the Edku bridge ; finally the mussel *Corbicula consobrina* Cailliaud (Fig. 32) could be identified for Lake Maryut and Lake Edku as well as for the mouth of the Nile near Bughaz. A dredging in the Nile near Rosetta (St. 148) brought not a single mollusc into the net.

We only considered so far the kind of bottom when settling the distribution. But also the kind of plants that grow there and the depth are often of importance for the distribution. So **Bellini** (1929 p. 8) e. g. distinguishes as "third zone" a "zone of Laminariae" from 5-40 m. depth for which Trochids, Rissoids, Muricids and Dolium are characteristic and as a "fourth" a zone of calcareous algae" "-zone delle alghe coralline" from 40-80 m. with "*Pectunculus glycimeris*" and *Cardium echinatum*.

Off Alexandria e.g. like in the northern Adriatie *Gibbula adansonii* (Payr.) and *Tritonalia edwardsii* (Payr.) occur between coast algae in little depths (to 7 fathoms) and *Columbella rustica* (L.) reaches only a little deeper down (12 fath.). Near Alexandria, too, there lives on calcareous algae (Peyssonnelia), very well adapted in its cotour to the background *Callochiton laevis* (Montagu) In meadows of seaweeds there occur besides the *Rissoa variabilis* (Megerle) already cited, *Rissoa (Zipbora) auriscalpium* (L.), which lives (according to Issel 1912 p. 395) on the leaves of Posidonia. The Caulerpa-bottoms of 3-33 fathoms are inhabited by *Bittium latreilla* (Payraudeau), which lives also in the Tyrrhenian Sea in the above cited "zone of Laminaria".(1)

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(1) Laminariae occur (according to Funk (1927 p. 359) only near Messina, the Baleares and at a few other places of the Mediterranean (e.g. in the southern Adriatic). Evidently banks of seaweeds are meant. According to Zernov (1909 p. 177) Marion referred "bereits im Jahre

Conus mediterraneus Bruguière is to be found down to 40 fathoms as in the Adriatic, along the coast in the zone begrown with algae. Moreover, it is striking that the localities of two snails *Leptothyra sanguinea* (L.) (Fig. 5,) and *Siliquaria obtusa* Schumacher (Fig. 7) are situated northward from the Eastern Harbour where the alga *Halimeda tuna* (Ellis et Sol) Lamour descends to greater depths (Steuer 1935 Chart II.) Both snails were found there in a depth of about 30-50 fathoms.(1)

It is surprising how well the statements of depth for north-Adriatic Dentalia agree with our results.

Maximal depths for	northern Adriatic	Alexandria
Dentalium (Antalis) vulgaris da Costa	40. m.	45.3 m.(2)
„ (*Laevidentalium*) *rubescens* Deshayes	53.3 m.	50.8 m.
„ (*Antalis*) *dentale L.*	163 8 m.	200.8 m.

In its horizontal distribution, too, the area of *Dentalium dentale* L. shows its largest extent on sandy and muddy bottom. This species is also not sensitive of sweetening and pollution of the water, as it occurs in the "inner port" of the Western Harbour near the mouth of the Mahmudieh-Canal in living specimens in the black, bad smelling mud. Thus it is highly eurybath, eurytop, euryhaline and also saprob, while *Dentalium vulgare* da Costa seems to avoid brackish, dirty water and to prefer, as in the Adriatic, sandy bottoms (see **Vatova** 1928 p. 291 ; only **Graeffe** 1902 p. 14 writes : "häufig .... auf Schlammgründen"). *Dentalium rubescens* Deshayes was found almost only in the coast-near, shallow part of the western sandy bottoms more or less mixed with mud from which one may conclude its stenohalinity.

Similar differences may be observed for the two Murex-species near Alexandria. *Murex trunculus* L. (Fig. 13) was found in the two harbours only and in their environment in shallower water of 1½-20 fathoms, *Murex* (*Bolinus*) *brandaris* L. (Fig. 12) however less frequently only in the deeper places, 11—28 fathoms, further from the coast. Thus *Murex trunculus* would be more euryhaline and saprob, *Murex brandaris* L. more stenohaline and katharob. According to **Wilhelmi** (1912) however both are said to be saprob and according to Lo Bianco (1909) both occur near Naples down to 100 m.

According to **Forbes'** rule, only lately rescued from oblivion by P. **Volz** (1937). the species with great vertical extension have also a wide horizontal distribution and *vice versa*. Of the Gastropods collected there are e. g. only

1882/3 p.72 darauf hin, da B. die Laminarien des Mittelmeeres keineswegs eine spezielle Fazies bilden, und dasz es durchaus unmöglich sei, die Zosterabestände als Laminarienzone aufzufassen".

(1) At this "Halimeda-barrier" only the Echinoid *Genocidaris maculata* A. Aggassiz has been found (acc. to Mortensen and Steuer 1937 p. 18)

(2) As altogether utmost limit for distribution van Benthem Jutting (1926 p.69 gives 1100 m.).

two of the 15 species found there belonging to the fam. Trochidae, viz. *Calliostoma zizyphinum* (L.) and *Gibbula magus* (L.) that go further northward to the boreal region and both have been fished in the Mediterranean under the 100 m.—line. So deep down had only been found the purely mediterranean species *Cantharidus* (*Jujbinus*) *igneus* (Monterosato) at one station (alive ?). About just as far northward and into such depths reach further the boreal-mediterranean elements *Turritella communis* Risso, *Triphora perversa* (L.), *Strombiformis glaber* da Costa, *Aporrhais pespelecani* (L.) and *serresianus* (Michaud), *Polinices alderi* (Forbes), *Nassarius reticulatus*(L.) and *pygmaeus* (Lamarck) as well as *incrassatus* (Ström) and finally *Philbertia leufroyi* (Michaud).

Unfortunately the vertical and horizontal distribution of the Prosobranchia is still badly known. And still more uncertain (according to **Hoffmann** 1926 p. 31) is our knowledge of the distribution of the Opisthobranchia. As to the Scaphopods there was one of the three *Dentalium*-species that were collected, viz. the purely mediterranean *Dentalium rubescens* which was taken at most in 30 fathoms only, the two others reach, as has been said before, deeper down. Of the mussels taken the boreal-mediterranean-"bipolar" Taxodont *Nucula nucleus* (L.) and the boreal-mediterranean-tropic *Nuculana sulcata* (Risso) reach deeper than the 100m.-line; of the Arcidae the only boreal-mediterranean-tropic *Arca lactea* L. Of the two Glycymerids found the horizontal and vertical distribution of the boreal-mediterranean species *Glycymeris pilosus* (L.)seems to be much more extended than that of the "lusitanean-mediterranean" *Glycymeris violacescens* (Lamarck). Similar is the distribution of the two Lima-species. *Lima hians* (Gmelin), reaching up to the Arctis and to a depth of 120 m , and *Lima inflata* Lamarck with a narrower area of extension. Of Pectenids the boreal-mediterranean species *Chlamys varia* (L.), *multistraiat* (Poli), *opercularis* (L.) have a wider distribution, as well as *Propeamussium incomparbilis* (Risso) which reaches to the Arctis. Of the Veneridae there are to be cited *Gafrarium* (*Circe*) *minimum* (Mont.) which, according to **Sturany** (1896 p.16, 30) occurs in the eastern Mediterranean down to about 100 m. as well as *Venus* (*Timoclea*) *ovata* Pennant, of Garidae *Solecurtus chamasolen* (da Costa), of the Semelidae perhaps *Abra prismatica* (Montagu), of the Aloididae *Aloidis gibba* (Ol.) and of the Cuspidariidae in any case *Cuspidaria rostrata* (Spengler), which reaches the Arctis and is counted by Bellini (1929 p. 12) among the abyssal mussels of the Gulf of Naples.

On the other hand it is striking that of the 25 purely mediterranean Prosobranchians of our collection eight only surpass the 10-fathom line and-three of those only reach the 50-fath.- line. With the mussels, no similar observation can be made with the few mediterranean species. Of Gastropods there lives in the subterrestrial zone *Littorina punctata*

(Gmelin), "a West-African species", which is cited as exceedingly common at the Egyptian coast, occurring scarcely however in the rest of the Mediterranean; in the southern Mediterranean there is evidently the northern limit of its area of distribution. Also the widely spread *Pinctada vulgaris* (Schumacher) is according to **Tomlin** (1927 p. 301) "since the opening of the Suez-Canal" known in the Mediterranean besides from Malta only. According to **Gruvel** (1931 p. 123, 451) "très commun. ... dans la région de Beyrouth". Finally **Carus** (1893) also cites Malta as the only locality for *Hydrobia Musaensis* Frauenfeld from the Red Sea. These and similar occurrences require a critical examination, as **Ekman** (1935 p.133) puts the question, "Ob nicht das südöstliche Mittelmeer als subtropisches Gebiet auch faunistisch den nördlicheren Abteilungen gegenüeberzustellen ist".

Turris indica Roeding from the Eastern Harbour has been qualified as new immigrant from the Red Sea. Indeed no living animal has been found but only an empty shell ; the immediate vicinity of the Laboratory as well as the formerly indicated episode with *Donax* (*Serrula*) *trunculus* (L.) makes one think that here, too, no active immigration took place. On the other hand an Indo-Pacific Polychaete, *Pseudonereis anomala* Fauvel has been taken by me for the first time in the Eastern Harbour (and at Sidi Bishr) (**Fauvel** 1937 p. 24). I also found the Indo Pacific crab *Alpheus crassimanus* Heller in the two harbours of Alexandria only (**Balss** 1936 p. 10).

In brief, one can say that among the Gastropods found there, nearly half of the almost 60 inhabitants of shallow waters (vertical distribution down to 50 m) were purely mediterranean, while only two Opisthobranchians whose vertical distribution is perhaps not exactly known are to be called boreal-mediterranean elements. About six inhabitants of the shallow water go southward to the tropics.

Among the 30 sublittoral Gastropods (vertical distribution to 250 m.) 5 at most may be regarded as purely mediterranean and almost half of them boreal-mediterranean ; one species only as tropical.

Among the four species met within greater depths than 250 m., none is purely mediterranean, two are boreal-mediterranean.

Runnstroem could show in several papers (1927, 1929, 1936) principally on Echinoderms and Ascidians that most mediterranean-boreal species are in the boreal district summer-spawners, in the Mediterranean winter-, spring- and autumn-spawners. *Phoronis müelleri* de Selys Longchamps, too, is, near Helgoland, summer-spawner, in the southern Mediterranean winter-spawner. (**Steuer** 1936). It would be very instructive to investigate the mollusc-fauna of Alexandria with regard to this question. Unfortunatley we have but insufficient knowledge of the spawning-times of mollusca. **Haas** says (1926 p.71), that it seems to be certain for the mediterranean mussels that "die Wintermonate, von November bis April, die Zeit der Fortpflanzung sind". The laying of the eggs by the Opithobranchians occurs according to **Hoffmann** (1926 p.45) in

North Sea "in das zweite Viertel des Jahres," that is from April to June, and of the Prosobranchians most species spawn according to **Ankel** (1936 p. 179) "in der Nordsee in den ersten Monaten des Jahres". The dates existing on the spawning-times of the mediterranean mollusc-fauna, very rich in forms, are naturally still more insufficient; and from Alexandria there seems to exist only one observation made by **Fox** (1923); and **Oberwimmer** (1898) describes a Gastropod-larva dredged by the Austrian Pola-Expedition on August 17th 1891 northward of Alexandria (29° 8' E. L., 32° 30' N. L.) as *Sinusigera mediterranea* Oberwimmer. I could record Gastropod larvae in the plankton near Alexandria on July 17th and August 3rd, 15th and 28th. Larvae of mussels were found in the samples from July 28th, Sept. 3rd, Oct. 26th and March 19th. Perhaps these notes comprise relativley frequent occurrences. In the northern Adriatic (Triest, Rovigno) the Gastropod larvae are "das ganze Jahr zu finden besonders massenhaft von April bis Juni" **(Steuer** 1910 p. 580). In the rest of the year *Echinospira*-larvae are "bisweilen recht häufig". Off Alexandria I found one *Echinospira* only in a bottom-sample.

The larvae of mussels, too, can be found in the northern Adriatic the whole year through, frequently in summer, about June and July **(Steuer** ibid. p. 579, **Issel** 1922 last tab. but one).

Thus in the Mediterranean the maximal swarming period of Gastropod-larvae would occur before those of the Bivalvae and both would reach their principal swarming-period in the northern Adriatic sooner than in Alexandria. They happen for Gastropod-larvae in the northern Adriatic in the time from April to June, off Alexandria in July and August, for Bivalv-larvae in the northern Adriatic in June and July, off Alexandria in September and October.

In trying to compare the swarming times of the boreal-mediterranean species in the northern seas with those in the Mediterranean we must restrict ourselves to a few superficial examples.

Prosobranchians :

Gibbula magus (L.) spawns off Roscoff in the Channel according to **Robert** (1902 p. 284) in summer (June, July),

in the Gulf of Naples according to **Lo Bianco** (1909 p. 636) almost at the same time (May, June).

Turritella communis Lamarck spawns in Plymouth according to **Lebour** (1933 p. 499) in summer (May to July),

In the Gulf of Triest **Graeffe** (1902 p. 37) found "zu jeder Jahreszeit reife Eier und Sperma."

Aporrhais pes-pelecani (L.) spawns in Plymouth according to **Lebour** (1933 p. 503. 505) in spring,

In the Gulf of Triest according to **Graeffe.** (1902 p. 38) in summer (July, August).

Nassarius (*Hima*) *reticulatus* (L.) spawns in Plymouth according to **Lebour** (1913 p. 803) in spring and summer (March to August), more rarely in autumn and winter,

In the Gulf of Triest according to **Graeffe** (1902 p.41) in spring (April, May).

Opisthobranchians :

Elysia viridis (Montagu) spawns according to **Larsen** (cit. **Runnstroem** 1927 p. 20) in Oslofjord in summer (August),

In the Gulf of Naples according to **Lo Bianco** (1909 p. 628) and **Cerruti** (1921 p. 238) in spring (end of February to July).

Scaphopods :

Dentalium (*Antalis*) *vulgare* da Costa spawns at St. Malo in the Channel according to **Lacaze-Duthiers** (1856 p. 225, 1857 p. 28) in summer (August, September).

In the Gulf of Triest according to **Graeffe** (1902 p.14) in spring (April, May).

Bivalves :

Lima hians (Gmelin). **Lebour** (1937 p. 707) found the Veliger larvae in the plankton of Plymouth in autumn, winter and spring (August to April) with a maximum in October so that they were missing in early summer only.

In the Gulf of Naples **Lo Bianco** (1899 p. 513 1909 p. 620) observed the laying of the eggs in spring (May).

Cardium (*Cerastoderma*) *edule* L. spawns, and has mature eggs in Plymouth according to **Orton** (1919-22 p. 350) from spring to autumn (March, October)

In the Gulf of Triest **Graeffe** (1902 p. 7) found mature gonads in early spring (February, March).

Ostrea edulis L. can spawn in England according to **Orton** (1925) in warm summers from May to October. Normal spawning-time is in summer (June to November). **Haas**(1926 p. 71) notes as spawning-time for the northern seas June and first half of July.

In the Gulf of Triest the larvae swarm according to **Graeffe** (1902 p. 1) in spring and summer (May to August) and also in the Lago di Fusaro near Naples, where oysters are cultivated one finds according to **Lo Bianco** (1899 p 513) "Larven und kleine pelagische Austern" in great quantities at exactly the same time (May to August).

Mytilus sp. With. Mytilus, finally, the boreal "species" (see **Runnstroem** 1928 p. 24 and **Berner** 1935 p. 6) *Mytilus edulis* L., developping (according to **Runnstroem** ibid p. 23) normally at 4-16°, must be distinguished from the mediterranean-south-boreal "species" *Mytilus galloprovincialis* Lamarck, developping normally at 8-23°.

Mytlius edulis L. is in Bergen according to **Runnstroem** (1928. p. 24) "typischer Frühlaicher" (March to May, perhaps June according to **Runnstroem** (1927 p. 14, 15). and the spawning time seems still "etwas später einzutreffen" in

colder regions. Statements "dasz die Laichzeit das ganze Jahr hindurch andauern kann" are put into doubt by **Runnstroem**.

Mytilus galloprovincialis Lamarck gets sexually mature according to **Graeffe** (1902 p. 4) in the Gulf of Triest in spring (May, June) and the larvae then occur in the summer-plankton. In Naples maturity seems to begin a little earlier according to **Lo Bianco** (1909 p. 620) and in Alexandria **Fox** (1923) has got ripe sexual products of *Mytilus* from January till mid-June(1) according to **Runnstroem** (1928 p.8). In the middle of June 1933 the temperature of the water near Alexandria (at st. 1 off Dikheila) was 22°. 3 (according to measurements made on the station-launch El Hoot); thus the maximum temperature at which the spawn may normally develop was almost reached.

Of the Mediterranean-boreal species mentioned, not one is exactly a winter-spawner. The Opisthobranchian and the Scaphopod mentioned above are summer-spawners in the northern seas and spring-spawners in the Mediterranean. With *Gibbula magus* (L.) the spawning-time seems to be removed in the Mediterranean a little towards spring and *Turritella communis* Lamarck seems to belong to that small mediterranean-boreal group which in the north spawns in summer while in the Mediterranean it gets mature all the year through (**Runnstroem** 1927 p. 23); *Nassarius* (*Hima*) *reticulatus* (L) however can spawn in the northern seas during the whole year; in the Gulf of Triest however it is said to be spring-spawner, and *Aporrhais pes-pelecani* (L) is in the north, spring-spawner while in the northern Adriatic it is said to be summer-spawner. The Bivalves mentioned are without exception spring-spawners in the Mediterranean, the oyster however is said to spread its spawning-time over the summer-months.

In vain **Fox** (1923 p. 540, 541) has tried to find a lunar periodicity of the spawning of Oysters and Mytilidae in the Mediterranean while it is said to occur elsewhere. Some Polychaetes are said to behave in a like manner and **R. Herpin** (1929) is inclined to think of an influence of ebb and tide which is relatively insignificant in the Adriatic. In the mean time **Roch** had been able to state in larvae of *Teredo* a distinct rhythm of swarming, occuring in 28 days in the northern Adriatic. With the different Teredo-species it is however impossible to decide nowadays whether the yareen demic in the Mediterranean or whether they have been transported there by ships.

These few references to some problems of distribution and biology of molluscs may remind us that descriptions of new species and varieties and careful lists of species are valuable preparatory work but shall be just as little the final purpose of scientific Malacology as the putting up of a collection of empty mollusc-shells.

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(1) The investigation made by **Fox** (1923 Fig. 6,7) extend however only over the time from 30. V.-22. VI. 1921 and 3. I.-22, II, 1922. I am greatly indebted to colleague **Fox** for having sent me his paper.

LITERATURE

Ankel. W. E. Prosobranchia. In : Tierwelt d. Nord-und Ostsee. Lfg. 5, 1936.,

Balss, H. The fishery grounds near Alexandria VII.-Decapoda. In : Notes and Memoirs Nr. 15, Cairo 1936.

Bellini, R. I molluschi del Golfo di Napoli. In : Ann. Mus. Zool. R. Univ. Napoli N. S. 6, 1929.

Benthem Jutting, T. van Scaphopoda. In : Tierwelt d. Nord-u. Ostsee Lfg. 3, 1926.

Berner, L. La reproduction des moules comestibles (Mytilus edulisL. et Mytilus gallo-provincialis Lmk.) et Leur répartition géographique. In : Bull. Inst. Océanogr, Monaco 680. 1935.

Bisacchi, J. Molluschi marini. In : Arch. Zool. Ital. 12. 1928.

Carus, V. Prodromus faunae mediterraneae, Vol. II. Stuttgart, E. Schweizerbart, 1893.

Cerruti, A. Ulteriori notizie biologiche riguardanti il periodo di maturita sessuale degli animali del Golfo di Napoli. In : Pubbl. Staz. Zool. Napoli 3, 1921.

Coen, G Saggio di una sylloge molluscorum adriaticorum. In : R. Com. Talass. Ital. Memoria 192, 1933.

Coen G. e Vatova A. Malacofauna arupinens is. In : Thalassia I, 1, 1932.

Cuénot L. La seiche commune de la néditerranée. . . . In : Arch. Zool. Exp. et Gén. 75, 1933.

Dautzenberg Ph. Mollusques dans l'Océan Atlantique et dans le Golfe de Gascogne. In : Rés. Camp. Sc. Monaco 72, 1927.

Dautzenberg Ph. et Fischer H. Mollusques provenant etc. à l'ouest de l'Afrique. . . . In : Ibid, 32, 1906.

Dautzenberg Ph. et Fischer H. Mollusques etc. dans les Mers du Nord. In : Ibid. 37, 1912.

Ekman Sven. Tiergeographie des Meeres. Leipzig, Akad. Verlagsgesellschaft 1935.

Fauvel P. Les fonds de pêche près d'Alexandrie, XI. Annélides Polychètes. In : Notes et Mém. Nr, 19, Cairo 1937.

Fox. H. M. Lunar Periodicity in Reproduction. In : Proc. R. Soc. Biolog. 95, 1923.

Fox. H. M. General Part. Zool. Res. Cambridge Exped. In : Trans. Zool. 50 c. London 22, 1926.

Funk, G. Die Algenvegetation des Golfes von Neapel. In : Pubbl. St. Napoli 7, Suppl. 1927.

Gaillard, C. Contr. à l'étude de la faune préhist. de l'Egypte. In : Arch. Mus. Hist. Nat. Lyon. 14. 1934.

Graeffe, E. Uebers. Fauna d. Golfes v. Triest. VI. Mollusca. In : Arb. Zool. Inst. Wien 14, 1902.

Gruvel, A. Les États de Syrie. In : Bibl. Faune Colon. Françaises. Paris 1931.

Haas, F. Lamellibranchia. In : Tierwelt d. Nord und Ostsee. Lfg. 5, 1926.

Herpin, R. Etude sur les essaimages des annélides polychètes. In : Bull. biol. France et Belg. 63, 1929 (Ref. Ber. Wiss. Biol. 11, 1929, p. 335).

Hoffmann H. F. Opisthobranchia II Pteropoda. In : Tierwelt d. Nord-und Ostsee. Lfg. 3, 1926.

Issel, A. Malacologia del Mar Rosso. Pisa 1869.

Issel, R. Il bentos animale delle foglie di Posidonia. In : Zool. Jahrb. Syst. 33, 1912.

Issel, R. Atlantidae e Carinaria. In : R. Com. Tal. Ital. Mem. 52, 1915.

Issel, R. Biologia Marina. Milano. U. Hoepli 1918.

Issel, R. Nuove indagini sul plancton . . . Rovigno. In : R. Com. Tal. Ital. Mem. 102, 1922.

Joubin, L. et **Lamy.** Liste des mollusques. In : Ed. Le Danois Rech...fonds chalutables . . . . de Tunisie. Stat. oceanogr. Salammbô, Annales 1,1925.

Joubin L. Dtto. in : Rech . . . . . fonds chalutables . . . . des Côtes d'Algérie, Mém.3 (without date.)

Jousseaume F. Réflexions sur la faune malacologique de la Mer Rouge. In : Ann. Sc. Nat. Zool. Sér.7, Bd.XII., 1891.

Kalkschmid J. Beitr. z. Heteropodenfauna d. Adria. In : Jahresber. Franzisk. Gymn. Bozen 1916.

Kobelt W. Iconographie der . . . . . Meeresconchylien. Bd.1—4, Kreidels Verlg. Wiesbaden 1887—1908.

Lacaze-Duthiers H. Histoire. . . . du Dentale. In : Ann. Sc. Nat. S. 4, Zool. 6, 1856. 8, 1857.

Lamy, E. in : Faune et flore de la Méditerranée. Com. Int. Expl. Sc. Méditerr. 1928-1931.

Larsen M. Nudibranchfaunaen i Drbaksundet. II. In : Skrifter Norske Vid. Akad. Oslo. Mat. Nat. Klasse. 2, 1925.

Lebour, M. V. The Larval Stages of Nassarius reticulatus and N. incrassatus. In : J. Mar. Biol. Assoc. 17, Nr. 3, 1931.

Lebour, M. V. The eggs and larvae of Turritella communis Lamarck and Aporrhais pes-pelecani (L.) Ibid. 18, 1933.

Lebour. M. V. Larval and Post-Larval Lima from Plymouth. Ibid. 21, 1937.

Leloup E. and Volz P. Die Chitonen (Polyplacophoren) der Adria. Thalassia II. 10 1938.

Lindroth, A. Die Assoziation der marinen Weichböden. In : Zool. Bidrag. Uppsala 15, 1935.

Lo Bianco S. Notizie biolog. . . . degli anim. d. Golfo die Napoli. In : Mitt. Zool. St. Neapel. 13, 1899, 19, 1909.

Marion M. A. F. Esquisse d'une topographie zoologique du Golfe de Marseille. In : Ann. du Mus. d'hist. Nat. de Marseille. I. 1882-1883.

Martens E. v. and Thiele, J. Die beschalten Gastropoden. In : Wiss. Erg. d. Tiefsee-Exped. Valdivia. 7, 1903

Middendorff A. Th. v. B. z. Malacozoologia Rossiea. St. Petersburg 1847.

Moazzo G. Contr. . . . faune malacol. marine des côtes libano-syr. In : **Gruvel A.** (see above).

Mortensen Th. and Steuer A. The Fishery Grounds near Alexandria XIII. Echinoderma. In : Notes and Memoirs Nr. 21. Cairo 1937.

Nierstrasz, H. J. and Hoffmann H. Aculifera. In : Tierwelt d. Nord-und Ostsee. 15, 1929.

Nobre A. Moluscos Marinhos de Portugal. 1, 1931, 2, 1936. Prôto Imprensa Portuguesa.

Oberwimmer A, Mollusken II. . . . "Pola". In :Denkschr. K. Akad. Wiss. Wien 65, 1898.

Orton, J. H. Sea-Temperature, Breeding and Distribution in Marine Animals. In : J. Marine Biol. Assoc. 12 (N S.) 1919-22.

Orton, J. H. Lunar Periodicity in spawining of oysters. In : ibid, 14 (N.S) 1926-27.

Orton, J. H. The porduction of Oysters (O. edulis) in Engl. beds. . . In : Nature, London 116, 1925 (Ref. Zool. Ber. 1926, 9 p. 178).

Pallary P. Liste des mollusques test. de Tanger. In : Journ. de Conchyologie 50, 1902.

Pallary P. Catalogue des Mollusques du Littoral Médit. de L'Egypte. In : Mém. Inst. Egyptien 7, 1912.

Remane A. Verteilung und Organisation der benthonischen Mikrofauna der Kieler Bucht. In : Wiss. Meeresunters. N. F, Kiel. 21. 1933.

Richter R. Schneck-Laich als mögliche Versteinerung. In : Natur u. Volk. 67, H. 5, 1937.

Robert A. Rech. sur le développ. des Troques. In : Arch. Zool. Exp. 3. Sér. 12, 1902.

Roch F.

Runnestroem Sven. Ueber die Thermopathie d.Fortpflzg u.Entw. mar. Tiere... In : Bergens Mus.Arbok. 1927.

Runnestroem Sven. Weitere Studien Über Temperaturanpassung. . . . In : Ibid. 1929.

Runnestroem Sven. Die Anpassung u. Entwicklg. mar. Tiere a.d. Temperaturveh. In : Ibid. 1936.

Savigny-Audouin Description de l'Egypte. 1827.

Seurat L.G. Observations nouv. . . . . de la petite Syrte (Golfe de Gabès). In : Bull. Stat. Océanogr. Salammbô 12,1929.

Spaerck R. Some quant. investigations on the bottom fauna . . . . . In : Rep.

Danish Oceanogr. Exp. 1908-1910. Nr. 10, Vol. 3, 1931.

Spaerck R. Ueber d. zoogeogr. Bedeutung d. Petersenschen Tiergemeinschaften. In : Zoogeographica 3, 1936.

Steuer A. Planktonkunde. Leipzig-Berlin. Teubner, 1910.

Steuer A. Pteropoden. In : Sitzber. Akad. Wien, Math.-Natw.Kl. 120 Abt. ,1911

Steuer A. The Fishery Grounds near Alexandria I.-Preliminary Report. In : Notes and Memoirs Nr.8, Cairo 1925.

Steuer A. Sipunculoidea, Phoronidea, ... von Alexandria in Aegypten. In : Not. Inst. Biolog Rovigno 23, 1936.

Stork H.A. Scaphopoda der Adria. In : Thalsssia 1. 1934.

Sturany R. Bestimmungsliste der-.... im Marmarameer gedredgten Mollusken. In : Denkschr. Akad.Wiss.Wien. 62,1895.

Sturany R. Mollusken I. In : Ibid, 63.1896.

Tesch, J. J. Die Heteropoden d. Siboga-Exped. In : Siboga-Exp. 51, 1906.

Tesch, J. J. Pteropoda. In : Tierreich 36, 1913.

Thiele J. Gastropoden II, In : Wiss. Erg. D. Tiefsee-Exped. Valivia, 17, 1925.

Thiele J. Muscheln, In : Ibid. 21, 1931.

Thiele J. Handbuch d. syst. Weichtierkunde. 2 Bde. Jena, G. Fischer 1931, 1935.

Tomlin J. R. Rep. on the Mollusca. . . . In : Trans. Zool. Soc. London. 22, 1927.

Vatova A. Compendio della Flora e Fauna del Mare Adriatico presso Rovigno. In : R. Com. Talass. Ital. Mem. 143, 1928.

Vatova A. Ric. prel. sulle biocenose del Golfo di Rovigno. In: Thalassia II, 1935.

Vatova A. The Fishery Grounds near Alexandria II. A Bottom Sample taken at Alexandria. In : Notes and Memoirs Nr. 9, Cairo 1935.

Vatova A. Ric. quant. sulla fauna benton. dell'Alto Adriatico . . . . In : Not. Inst. Biolog. Rovigno 19, 1936,

Vaissiere A. (see Lamy.) 1929-1932.

Volz P. Der jährliche Temperaturgang im Meere und sein Einflusz auf die geographische Verbreitung u. d. Tiefenverteilung mariner Bodentiere. In : Forschungen u. Fortschritte 13. 1937 p. 300.

Wilhelmi J. Die makrosk. Fauna des Golfes von Neapel. In : Wasser u. Abwasser 6, 1912, and : Mit. Kgl. Prüfungsanst. f. Wasserversorg. . 16, 1912.

Weinkauff H. C. Die Conchylien d. Mittelmeeres. Cassel 1867-1868. Th. Fischer 2 Bde.

Yonge C. M. The Biology of Aporrhais pes-pelecani (L.) and A. serresiana (Mich.) In : Journ. Mar. Biol. Assoc. N. S. 21. 2. 1937.

Zernov, S. A Grundzüge der Verbreitung der Tierwelt des Schwarzen Meeres bei. Sebastopol. Abteil. 1 : Benthos. In : Intern. Revue d. ges. Hydrobiol. II. 1909.