3. On a Collection of Marine Shells from Aden, with some Remarks upon the Relationship of the Molluscan Fauna of the Red Sea and the Mediterranean. By Edgar A. Smith, F.Z.S.

[Received June 10, 1891.]

(Plate XXXIII.)

The specimens hereafter catalogued were collected at Aden between tide-marks or at low water by Major J. W. Yerbury, R.A., and the Rev. A. W. Baynham. To the former the British Museum is indebted for a very valuable series of 555 specimens, and from the latter it received 160 specimens. Nearly all are in excellent condition, and much praise is due to these gentlemen for devoting so much time and trouble to their cleaning and preservation. No complete list of the Mollusca of this particular spot has yet appeared, and it is as a contribution to such a Catalogue that I venture to publish the following. Many species have already been quoted from Aden, but to have searched through the vast mass of Conchological literature which exists, in order to get together a complete list of the fauna, would have occupied more time than could at present be spared.

Dr. F. Jousseaume, in the ‘Mémoires de la Société Zoologique de France’ for 1888, has enumerated the species collected in the Red Sea and Gulf of Aden by Dr. Faurot in 1885, and among the species quoted are a number (about 26) from Aden itself. Another list of 106 species from this locality was given by G. Caramagna in the ‘Bollettino della Società Malacologica Italiana,’ vol. xiii. 1888.

Some of the species mentioned in these Catalogues were not met with by Major Yerbury or Mr. Baynham, and these I have given in a supplemental list at the end of this paper. The species quoted from the present collection which also appear in the works of Jousseaume and Caramagna are indicated by the locality Aden being inserted in the distribution, with the names of one or both of these writers appended.

The fauna of the Red Sea is essentially tropical, and forms the north-west limit of the Indo-Pacific fauna. The great mass of the species found at Aden have been met with at various places further up the Red Sea, and many of them occur even at the northern end, in the Gulfs of Suez and Akaba; the majority also have a wide distribution over the Indian and Pacific Region.

I have not thought it necessary to give references to all the species, most of which are well known; but it is to be understood that they are recognized as determined in the Monographic works of Reeve, Sowerby, and Küster, viz. the ‘Conchologia Iconica,’ the ‘Thesaurus Conchylorum,’ and the ‘Conchylien-Cabinet,’ ed. 2.

Notes respecting the identification of certain species have been inserted when any doubt has existed, and it is trusted some of these observations may be useful, as, in many cases, they are based upon comparison of the types. The present paper may also be of some
use to those who possess shells from this locality and are desirous of identifying them.

Before concluding these prefatory remarks I have some observations to make respecting the list of species which, according to Mr. Cooke, are "common to the Mediterranean and the Red Sea". Examples of the seventeen species he enumerates were collected in the Gulf of Suez by the late Robert MacAndrew in the early part of the year 1869, some months before the opening of the Canal. It is important to note this as showing that their establishment in the Red Sea was not of recent date. Before expressing any opinion with regard to the accuracy of some of Mr. Cooke's identifications, it was necessary for me to study the specimens themselves, and consequently I applied to Dr. Sharp of the Cambridge Museum, where the MacAndrew collection is preserved, and I have to acknowledge his kindness in forwarding all the specimens I required, and I have also to thank Mr. Cooke for kindly looking them out for transmission.

The following is the result of my examination:—

1. Cerithium (Pirenelia) mammillatum, Risso.

(= caillaudi, Pot. & Mich.)

Nearly all the Suez specimens, which may be referred to a strongly marked variety of this species, have a peculiar facies. They have two distinct rows of granules on the upper whorls, whereas in Mediterranean specimens there are mostly three or more, and in these the granules are smaller than in the Red-Sea specimens. In the Museum we have three specimens from Bombay which are more like the Mediterranean form than that from Suez.

In discussing the marine fauna of any particular sea, it is hardly correct to include the genera Cerithidea and Leuconia, the former an estuarine form and the latter an amphibious Pulmonate. Now the distribution of some of these estuarine species is most remarkable, and so unaccountable, that I think the occurrence of two forms in some parts of the Mediterranean and the Red Sea hardly bears upon the subject of distribution in question. An instance of this unaccountable distribution has lately come to my notice which may fittingly be recorded here: I refer to Neritina crepidularia. This unmistakable species is known from the mouth of the Ganges, from Pondicherry, Tranquebar, Ceylon, Mergui, Singapore, the Dutch Indian Islands, Philippines, Japan, Persian Gulf, and lastly from the Gold Coast, West Africa, where living specimens were collected by Mr. R. Austen Freeman and presented to the British Museum.

2. Emarginula elongata, Costa.

The specimen kindly sent me for inspection I certainly consider distinct from the above species. It bears a close resemblance to it in general appearance, and without close examination one would not

2 Cerithidea bombayana, Sowerby, Con. Icon. sp. 24. Badly described and figured.
The remaining eight species are evidently correctly assigned:

1. Chiton siculus.
2. " discrepans.
3. Philine aperta.
4. Lima inflata.
5. Areca lactea.
6. Venerupis irus.
7. Petricola lithophaga.
8. Gastrochæna dubia.

The subject of the relationship of the Faunas of the Mediterranean and Red Seas is most attractive, and has been more or less fully discussed by R. A. Philippi, Paul Fischer, R. MacAndrew, A. Issel, and A. H. Cooke.

Certain species have been regarded by some of these authors as common to the two seas, and it has been conjectured by them that an intermingling of the faunas of these seas has occurred in past ages when a junction of their waters apparently existed. Species which are commonly regarded as Mediterranean, and which occur in the Gulf of Suez, are supposed to have gradually migrated southward, and, when the two seas became separated, to have established themselves as permanent inhabitants of the warmer waters.

Now, after a careful study of the geographical distribution of these species, finding that all exist also far east in the Indian Ocean, having a much greater range in this direction than through the Mediterranean and some distance into the Atlantic, and considering the Indo-Pacific character of the Red-Sea fauna, it seems to me equally or more reasonable to suppose that the Mediterranean specimens were derived from a Red-Sea source than *vice versa*. It may be urged in opposition to this theory, how is it that such and such species have been found at Suez only, and at no other part of the Red Sea? The answer to this is simply, that the shores of the Red Sea have only been cursorily examined in a few places, and I fully anticipate that, whenever other more southern parts have been as well investigated as the Gulf of Suez, most of these species will be met with. Already two out of the eight have been recorded as far south as Assab.

Geographical distribution of species is such an enigma in many cases that one feels reluctance in launching forth any theory whatever. Some species, as far as our present knowledge of them extends, appear to have an almost unlimited range; whilst, on the contrary, other allied forms seem to be equally restricted. As examples, I may instance *Areca lactea* and *A. olivacea*. The former little species ranges through the Mediterranean into the Atlantic as far north as this country, southward along the West Coast of Africa past the Atlantic Islands to Ascension Island, on to the Cape of

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1 The estuarine forms *Cerithium mammillatum* and *Leuconia denticulata* are not taken into account, as the subject under consideration is the relationship of the marine faunas of the two seas. *Vide* remarks upon the former previously given.
Good Hope and Natal, and finally it is known from the Red Sea and Philippine Islands. The other species, *A. olivacea*, the distribution of which, as far as we know, is as limited as that of *A. lactea* is extensive, has at present only been recorded from the Philippines. I could multiply cases of this kind, but the one mentioned is sufficient to demonstrate the unaccountable difference in the distribution of allied forms. There seems to be an unfathomable something in their nature which permits the one to live under very varied conditions, in temperatures greatly differing, and in waters of which the chemical composition is dissimilar, and on the other hand which does not allow the other to exist excepting under special and limited conditions. It is so in the vegetable kingdom. Do we not find some plants which will grow almost anywhere, in all kinds of soil, whereas to others existence appears to be possible only amid very special surroundings? Being cognisant of such facts as these, it is with much diffidence that I have suggested the migration, so to speak, of the species in question, or some of them at least, from the Red Sea into the Mediterranean. However, taking all points into consideration, I think this supposition is likely to be as correct as the view usually entertained.

Some support to this theory is derived from a study of the emigration of species from the Red Sea to the Mediterranean and *vice versa* since the opening of the Suez Canal. From the reports upon this subject by Fuchs 1, Keller 2, Krukenberg 3, and others, it is evident that there is a greater pilgrimage taking place northward than towards the south, and this, to some extent, is possibly attributable to the movement of the current from the Red Sea to the Bitter Lakes being faster than that from the Mediterranean southward, for there is a flow in both directions, owing to the great evaporation in the Bitter Lakes. At present two Red Sea forms, *Mytilus variabilis* and *Mactra olorina*, have been taken living at or near Port Said; on the contrary, no Mediterranean species has as yet got through to Suez, but *Cardium edule* (if correctly identified) is said to have almost reached there. Although certain species may extend northward and to the south, it yet remains to be seen if they become modified to any extent, supposing the altered temperature and chemical composition of the water into which they may have migrated permit their race to be perpetuated.

I can well imagine that eventually it will be found that all the rest of the species have as wide and very nearly the same distribution as *Arca lactea*, and therefore the possibility is suggested that their presence in the Mediterranean may have originated from the Atlantic end and not from the eastern or Red Sea extremity. Suggestive of this is the fact that specimens of the same species from the Atlantic Islands (Madeira, Canaries &c.) and the Mediterranean are absolutely identical, whereas, in some instances at all events, in the Red Sea equivalents some slight modifications are noticeable.

1 Die geologische Beschaffenheit der Landenge von Suez. Wien, 1877.
3 Vergl.-physiolog. Studien, 1888, 2nd ser., 5th part, 1st half.

PROC. ZOOL. SOC.—1891, No. XXVII. 27
The following table also lends some support to this proposition. It will be noticed that, starting from Australia and the Philippine Islands, all are found in the Red Sea, four at the Cape, one has been recorded from St Helena, one from Ascension, six from the Atlantic Islands, and all in the Mediterranean.

<table>
<thead>
<tr>
<th>Name of species</th>
<th>Australian region</th>
<th>Philippine</th>
<th>Red Sea</th>
<th>S. Africa</th>
<th>St. Helena</th>
<th>Ascension</th>
<th>Atlantic Is.</th>
<th>Mediterranean</th>
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<td>Chiton siculus</td>
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<td>Arca lactea</td>
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<td>Venerupis irus</td>
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<td>Gastrochana dubia</td>
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It is quite possible that most of these species may have been carried across the Indian Ocean to the Cape in various states of development, for we know that a very large quantity of pumice thrown into the sea during the eruption of Krakatoa in 1883 was drifted in that direction, indicating the course likely to be taken by larval and pelagic forms or even by adult organisms (like the last five of the above species) if attached by a byssus to, or burrowing into, floating substances like pumice. Passing the Cape they may have extended up the West-African side of the Atlantic past the Atlantic Islands, and so on into the Mediterranean, at the entrance of which at Gibraltar, the main strong surface current is from the Atlantic eastward, which would of course be favourable to the influx of species from that sea.

As I have before stated, this is all mere conjecture, and we have to assume a starting-point somewhere in the East, for which we have no grounds. The proposition that species common to the Red Sea and the Mediterranean may have originated in the East, holds good also in regard to three of the four species which I consider sufficiently different from the Mediterranean species to be regarded as distinct. Even if we consider them practically identical, as Mr. Cooke does,

1. *Euthria cornea* was recorded from New Caledonia by Brazier in 1889, and the 'Challenger' dredged off Sydney about 10 species of Mollusca which are inseparable from N. Atlantic forms.

2. *We conjecture* that the ocean-currents took the same direction in bygone days: what grounds have we for this?

we find that they have as near representatives in the Indo-Pacific. In the case of the fourth species, *Tellina isseli*, I am not aware that it has been found anywhere except in the Gulf of Suez, a fact which to some extent confirms its distinctness from the Mediterranean *T. balaustina*, considering that all the other species common to the two seas have an enormous distribution.

In the foregoing observations no reference has been made to the light which Palæontology may throw upon the subject of distribution of the species in question. It is true that most of them are found fossil in the Miocene, Pliocene, and other Tertiary rocks of Italy, Sicily, &c., a fact which would seem to indicate a long establishment in the northern hemisphere. On the other hand, a number of recent Mediterranean and Atlantic forms have already been recorded from the Tertiary deposits of Australia; and we may therefore conjecture that when the Palæontology of Australia and other eastern countries has been more fully worked out, many more so-called European species will be discovered. Such being the case, I fail to perceive that the evidence afforded by Palæontology lends more support to any one of the theories of distribution set forth than to another. Probably all are wrong.

*List of the Yerbury and Baynham Collections of Shells from Aden.*

I. GASTROPODA.

1. **Conus sumatrensis**, Hwass.
   
   *Hab.* Red Sea (Reeve & others). Gulf of Akaba (Brit. Mus.); Aden (Caramagna).

2. **Conus capitaneus**, Linn.
   
   *Hab.* Ceylon, Philippines, Australia, New Caledonia, Polynesia, Mauritius. Andaman Is. (Brit. Mus.).

3. **Conus rattus**, Hwass.
   
   *Hab.* Red Sea, Ceylon, New Caledonia, Tahiti, &c. Islands of Rodriguez and Annaa (Brit. Mus.).

4. **Conus tessellatus**, Born.
   
   *Hab.* Red Sea, Persian Gulf, Ceylon, Mozambique, Mauritius, Philippines, New Caledonia, Polynesia. Island of Rodriguez, Torres Straits, Fiji Islands (Brit. Mus.); Aden (Caramagna).

5. **Conus quercinus**, Hwass.
   
   *Hab.* Red Sea, E. Africa, Mauritius, Ceylon, Philippines, Viti Islands, Sandwich Islands, New Caledonia, Friendly Islands.

Some adult specimens 80 millimetres long, obtained by Major Yerbury, are entirely without the spiral thread-like lines which occur in young shells. They are covered with a very thick fibrous or spongy epidermis.

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1 R. Etheridge, jun., Cat. Australian Fossils, 1878.
6. **Conus betulinus**, Linn.

*Hab.* E. Africa, Isle of Bourbon, Ceylon, Java, China, Philippines. 
Aden (*Caramagna*).

I do not agree with Tryon\(^1\) in considering *C. suratensis* a variety of this species.

7. **Conus striatus**, Linn.


8. **Conus generalis**, var.

*Hab.* Red Sea, Ceylon, E. Africa, Philippines, New Caledonia, &c. 
*C. maldivus*, Hwass, *C. monile*, Hwass, and *C. bayani*, Jousseaume, should, I think, be considered varieties of this species, and *C. spiro-gloxxus*, Deshayes, appears to be the young of it. One of the specimens from Aden is like Reeve’s figure of *C. monile* (*Con. Icon.* f. 61), but the transverse lines are not interrupted and very much finer and thread-like. A second young example has equally fine lines, but they are interrupted and consequently form series of dots.

9. **Conus acuminatus**, Hwass.

*Hab.* Red Sea.

*C. insignis* and *C. multicatenatus*, Sowerby, belong to this species. The latter is placed by Tryon among the synonyms of *C. aplustre*, Reeve. Having Sowerby’s type in the Museum, I am able to state that it bears no relationship to that species.


11. **Conus flavidus**, Lamarck.


12. **Conus inscriptus**, Reeve.

*Hab.* Red Sea.

*C. keatii*, Sowerby, from the Seychelles Islands, which apparently is only a variety of this species, has the spire slightly tabulated and the tops of the whorls have more numerous spiral striae. One of the six specimens from Aden possesses these characteristics.

13. **Conus lineatus**, Chemnitz.


\(^1\) Man. Conch. vol. vi. p. 16.
The shell described by Crosse under the name of C. mirmillo is not allied to this species, with which it is united by Tryon (Man. Con. vi. 44), but should be regarded as a form of C. vulpinus.

14. Conus catus, var.
   Conus coffea, Gmelin, is probably the same as this species. C. discrepans, Sowerby, also appears to be a variety; and C. adansonii, Reeve, and C. nigropunctatus, Sowerby, may be regarded in the same light.

   The specimens from Aden belong to the var. adansonii.
   
   Hab. Red Sea, Mauritius, Java, China, New Caledonia, Polynesia. Gulf of Akaba (Brit. Mus.).

15. Conus erythræensis, Beck.
   
   Hab. Red Sea.

   With this species may be united C. piperatus, Reeve (non Dillwyn), C. hamilli, Crosse, C. dillwynii, Reeve, C. incisatus, Reeve, C. adustus, Sowerby, and C. quadratamaculatus, Sowerby.


   The locality of this species has hitherto remained unknown. The two specimens from Aden answer in every respect my original description. The spire, as conjectured, consists of ten whorls, which are slightly turreted. Mr. Sowerby's figure gives but a poor idea of the beauty of this shell, the form being not sufficiently tapering anteriorly, the aperture too narrow, the transverse articulated lines are not indicated, and the blotched bands are not correctly placed.

   The figure in the 'Quarterly Journal of Conchology' represents the bands more accurately as regards position, but apparently they are generally more blotchy and broken up. The whorls of the spire also are slightly elevated one above the other, producing a turreted appearance.

   A specimen from Amboina has recently been presented to the Museum by Mrs. Parkinson.

17. Conus adenensis. (Plate XXXIII. fig. 1.)
   Testa elongato-turbinate, alba, seriebus macularum subquadratarum transversis, et zonis duabus aurantio-fuscis (altera supra altera medium infra) cincta, transversim sulpata; interstitia plus minus tuberculata; spira breviter conica, leviter concava, aurantio-fusca maculata; anfractus 12–13, levissime turriti, infra suturam marginati, declives, lirulis tenuibus spiralisb ornati; apertura angusta, intus alba.

   Longit 48 millim., diam. maj. 21½.

   The colour and disposition of the markings are similar to those of C. plantilarus, Sowerby, from the China Sea, but the form is different, especially as regards the spire. It is a little more elevated
and not nearly so concave. The upper normal whorls in the Chinese species are turreted and prettily coronated or tuberculated at the angle, and the revolving sculpture of the spire is rather stronger than in the present species, which does not exhibit any coronation above. The tuberculation upon the transverse ridges of the lower two-thirds of the body-whorl is also a good distinguishing feature.

Kiener’s figure of C. recurvus (Coq. Viv. pl. 97. f. 4), if the outlines of the spire were the slightest less concave, would exactly represent the form of this species.

18. **Conus armatus**, Hwass.

*Hab.* Red Sea, East Africa, Ceylon, Philippines, New Caledonia, Viti Islands, Samoa Islands. Amirantes (Brit. Mus.); Aden (Caramagna).

19. **Conus tæniatus**, Hwass.

*Hab.* Red Sea, Ceylon, China, Singapore.

20. **Conus minimus** (auct.).

*Hab.* Natal, Andaman Islands, China, Philippines, Port Essington, New Caledonia (Brit. Mus.); Aden (Caramagna).


*Hab.* Red Sea, Ceylon, Mauritius, Andaman Islands, Island of Rodriguez.

These are localities for the typical form of this species.

22. **Conus cuvieri**, Crosse.

*Hab.* Red Sea (Brit. Mus.).

Tryon¹ could never have seen this species or he would not have placed it as a variety of *C. cerreus*, with which it has no relationship. Weinkauff², in comparing it with *C. tulipa* and *C. geographus*, has indicated its true affinity.

The locality “Swan River,” which has been quoted for this species, requires confirmation.

23. **Conus textile**, Linn.


With this species I am inclined to unite the following as varieties:—


Great as is the difference in many respects between the extreme forms, still I find it impossible to discover any permanent distinctions,

¹ Man. Conch. vi. p. 87.
when a very large series of specimens is examined, which will separate any of these so-called species from the rest.

Sowerby (Proc. Zool. Soc. 1882, p. 120), on the other hand, observes "having had exceptional opportunities, from time to time, of examining large numbers of specimens of all the varieties, I continue to regard these last (C. abbas, C. panniculus, C. legatus, &c.) as species."

24. CONUS NUSSATELLA, Linn.

_Hab._ Red Sea, East Africa, Ceylon, Java, Philippines, N. Australia, New Caledonia, Polynesia.

25. TEREBRA TESSELLATA, Gray.

_Hab._ Pidang, Sumatra.

This species is quite distinct from _T. ligata_, Hinds, with which it is united by Tryon¹. It is, however, identical with _T. decorata_, Deshayes. Having the *types* of the three so-called species in the Museum, I can speak with certainty upon the subject.

The specimens from Aden show that this species attains to much larger dimensions than those already quoted, the largest example having a length of 55 millimetres.

26. TEREBRA LAMARCKII, Kiener.

_Hab._ Zanzibar; Aden? (Jousseaume as _duplicata_).

This species is considered by Tryon and Reeve a variety of _T. duplicata_, Linné. The style of coloration, however, is very peculiar, and the longitudinal striæ are farther apart. I prefer therefore, not having as yet met with intermediate forms, to regard them as distinct species.

27. TEREBRA (IMAGES) CÆRULESCENS, Lamarck.

_Hab._ Red Sea, Mauritius, Philippines, Australia, Polynesia.

28. PLEUROTOMA VIOLACEA, Hinds, var.

_Hab._ Red Sea, Persian Gulf, Japan, Philippines, New Guinea, New Zealand, Australia.

The specimens from Aden are unusually large, measuring as much as 27 millimetres in length and 9 in diameter. They do not belong to the typical lilac form, but are of a very light brownish tint with white spiral ridges, one of which is more conspicuous than the rest.

29. PLEUROTOMA (SURCULA) CATENA, Reeve.

This species, the habitat of which was hitherto unknown, is well distinguished by the oblique white tubercles on the middle of the whorls with brownish spots between them. They become obsolete on the body-whorl, which is ornamented with oblique streaks and

NEW SPECIES OF SHELLS FROM ADEN.
261. **Malleus (Malvufundus) regula**, Forskål.

*Hab.* Red Sea; Aden (*Caramagna*); Philippine Islands and South Australia.

262. **Crenatula picta** (Gmelin).

*Hab.* Red Sea.

Two small specimens from Aden, as regards colour, seem to connect this species and *C. mytiloides*, Lamk. It is not at all improbable that *C. viridis*, Lamk., is merely another colour-variety.

263. **Meleagrina margaritifera** (Linn.).

*Hab.* Red Sea, Persian Gulf, Indian Ocean, Philippines, N.W. Australia. Aden (*Caramagna*).


*Hab.* Ceylon, Japan; Gulf of Suez (*Cooke*).

265. **Vulsella vulsella** (Linn.).

*Hab.* Red Sea; Aden (*Caramagna*).


266. **Pecten senatorius**, Gmelin.

*Hab.* Moluccas, Philippines, Red Sea, &c.


*Hab.* Red Sea, Mauritius; Aden (*Caramagna*).

268. **Pecten luculentus**, Reeve, var.

*Hab.* North Australia.

Two specimens from Aden agree exactly with the type as regards form, but differ in colour. Besides the golden yellow tint and the dark spotting between the ribs mentioned by Reeve, the valves in the shell figured are ornamented with a sort of irregular subreticulation of white lines. The specimens from Aden are white or washed with pale rose and conspicuously spotted with black in the furrows between the principal nine or ten ribs, the dots forming an equal number of uninterrupted colour-rays. These examples also exhibit the irregular opaque white lines. The ribs are finely prickled and the surface is ornamented throughout with a microscopic sculpture.

269. **Pecten plica**, Linn.

*Hab.* China, Ceylon, Red Sea; Aden (*Caramagna*).

Two valves of a species of *Spondylus* (270), an *Anomia* (271), a *Plicatula* (272), and an *Oyster* (273) were also collected by Major Yerbury, but these I refrain from attempting to name, as they belong to genera requiring special study.
APPENDIX.

1. Species quoted by Signor Caramagna which were not obtained by Major Yerbury or Mr. Baynham.

1. Rostellaria curta, Sow.
2. Murex tribulus, Linn.
3. Ranella spinosa, Lam.
4. — crumenæ, Lam.
5. Fasciolaria filamentosa, Lam.
6. Cancellaria verreauxi, Kiener.
7. Pirula nodosa, Lam.
8. Eburna ceylanica, Lam.
9. — spirita, Lam.
11. Ancillaria castanea, Sow.
12. — albifasciata, Swains.
13. Conus achatinus, Chemn.
14. — millepunctatus, Lam.
15. — magus, Lam.
16. — sulphuratus, Kien.
17. Marginella monilis, Lam.
18. — faba, Linn.
19. — lactea, Kien.
20. Turritella imbricata, Lam.
22. Atys naucum, Linn.
24. Ostrea cornupina, Lam.
25. — limacella, Lam.
26. — crista-galli, Linn.
27. Pecten sanguineolentus, Sow.
28. — sanguineus, Linn.
29. Meleagrina varia, Drkr.
30. Avicula macroptera, Ree.
31. — cumingii, Ree.
32. Vulsella spongicarium, Lam.
33. Vulsella assabensis, De Greg.
34. — pulchella, De Greg.
35. Perna femoralis, Lam.
36. Pinna rudis, Linn.
37. — attenuata, Ree.
38. — nigrina, Linn.
40. — auriculata, Chemn.
41. — tortuosa, Linn.
42. Cardium flavum, Linn.
43. — pseudolina, Lam.
44. — marmoreum, Linn.
45. Lucina tigrina, Ree.
46. Cardita variegata, Linn.
47. — angulisulata, Ree.
48. Dosinia bilunulata, Gray.
49. Cytheraea (Callista) guineensis, Linn.
50. — (—) mactroides, Lam.
51. — (—) triradiata, Ditto.
52. — (—) inflata, Desh.
53. Tapes aranoeus, Phil.
54. Tellina radiata, Linn.
55. — fausta, Pulteney.
56. Psammobia elongata, Desh.
57. — maxima, Desh.
58. Mesodesma striata, Lam.
59. Donax faba, Chemn.
60. Solen ceylanicus, Leach.
61. Cultellus cultellus, Linn.
62. Machura radiata, Linn.
63. Corbula crassa, Hinds.

2. Species mentioned by Dr. Jousseaume, and not in the Yerbury and Baynham Collections.

1. Ianthina fragilis, Linn.
2. Vertagus vertagus, Gmel.
3. Conus fulvocinctus, Crosse.
4. — tigrinus, Sow.
5. Tritonidea rugina, Jouss.
6. Odostomia fauroti, Jouss.
7. Cassis fauroti, Jouss.
8. — torquata, Ree.
10. Oliva bulbosa, Bolt.
11. Natica vestalis, Phil.
12. Clavigella adenensis, Jouss.
13. Siliqua polita, Hanley.
15. Tivela damaoides, Gray.
17. Scapharca naturalis, Krass.
18. Trissis fauroti, Jouss.
19. Pinna penna, Ree.
20. Pecten splendidulus, Sow.

EXPLANATION OF PLATE XXXIII.

Fig. 1. Conus adenensis, p. 401.
2. Pleurotoma (Drilli) baynhami, p. 404.

1 Some of these may be the same as those in the collection before me, but under different names.