THE

VOYAGE OF H.M.S. CHALLENGER.

ZOOLOGY.

REPORT on the OSTRACODA dredged by H.M.S. Challenger during the years 1873–1876. By G. STEWARDSON BRADY, M.D., F.L.S.

INTRODUCTORY.

THE extreme depths of the sea, though supporting an abundance of animal life of many kinds, nevertheless present conditions very unfavourable, it would seem, to the existence of the particular group which forms the subject of this report. So that in those large abyssal areas where, as commonly happens, the ocean-bed consists of pure globigerina ooze or of "red clay," one searches usually in vain for traces of OSTRACODA; and when these do occur their numbers are extremely small, the specimens usually consisting of detached valves, frequently much worn or broken. It would not, however, be fair to assume from these appearances that the specimens had been transported, by currents or otherwise, from shallower waters,—still less that they had subsided, as is probable in the case of many Foraminifera, from the water above; seeing that the species found in these abysses are usually quite incapable of swimming. We must, therefore, conclude that Ostracoda do live, though in very limited numbers, in the most profound depths of the sea.

The list given below includes the names of all species found in dredgings beyond a depth of 500 fathoms, the total number being fifty-two species from twenty-nine dredgings, the number of individuals being likewise very small. And if we exclude from consideration all but the very greatest depths, from 1500 fathoms downwards, the paucity of species becomes still more apparent. To exhibit this clearly, I print a list of the species found in thirteen dredgings, from depths of more than 1500 fathoms; the number of species here is nineteen,[1] a result sufficiently striking when compared with such single shallow-water dredgings as that from near Booby Island (see list, p. 21), which shows twenty-eight species; from Torres' Straits (p. 21), nineteen; Balfour Bay, Kerguelen Island (p. 16), nineteen; or Port Jackson (p. 19), twenty-three species.

[1] Two out of the nineteen are species of *Halocypris*, which in all probability got into the dredge during the process of hauling in, so that the number might not unfairly be put down as seventeen.

List of Abyssal Species found in Depths exceeding 500 Fathoms.

Bythocypris reniformis, n. gen. and sp.
elongata, n. gen. and sp.
Argillœcia eburnea, n. sp.
Bairdia acanthigera, G. S. Brady.
abyssicola, n. sp.
exaltata, n. sp.
formosa, G. S. Brady.
foveolata, G. S. Brady.
hirsuta, n. sp.
milne-edwardsi, G. S. Brady.
minima, n. sp.
victrix, G. S. Brady.
Macrocypris canariensis, n. sp.
similis, n. sp.
Cythere acanthoderma, n. sp.
aduncа, G. S. Brady.
circumdentata, n. sp.
dasyderma, n. sp.
dictyon, n. sp.
dorsoserrata, n. sp.
ericea, n. sp.
irpex, n. sp.
normani, G. S. Brady.
pyriformis, n. sp.
radula, n. sp.
serratula, n. sp.
Cythere speyeri, G. S. Brady.
squalidentata, n. sp.
scutigera, G. S. Brady.
stolonifera, n. sp.
suhmi, n. sp.
sulcato-perforata, n. sp.
viminea, n. sp.
Krithe bartonensis, Jones.
producta, n. sp.
tumida, n. sp.
Loxoconcha africana, n. sp.
Xestoleberis curta, G. S. Brady.
expansa, n. sp.
variegata, n. sp.
Cytheropteron abyssorum, n. sp.
fenestratum, n. sp.
mucronulatum, n. sp.
Pseudocythere caudata, G. O. Sars.
Cytherideis nana, n. sp.
Xiphichilus arcuatus, n. sp.
Cypridina gracilis, n. sp.
Crossophorus imperator, n. gen. and sp.
Cytherella lata, n. sp.
punctata, G. S. Brady.
Halocypris imbricata, n. sp.
atlantica, Lubbock.

List of Species obtained from Dredgings exceeding 1500 Fathoms in Depth.

Bairdia abyssicola, n. sp.
minima, n. sp.
hirsuta, n. sp.
Argillœcia eburnea, n. sp.
Cythere acanthoderma, n. sp.
circumdentata, n. sp.
dasyderma, n. sp.
dictyon, n. sp.
squalidentata, n. sp.
normani, G. S. Brady.
Cythere suhmi, n. sp.
Krithe producta, n. sp.
tumida, n. sp.
Xestoleberis expansa, n. sp.
Pseudocythere caudata, G. O. Sars.
Cytheropteron abyssorum, n. sp.
mucronulatum, n. sp.
Halocypris imbricata, n. sp.
atlantica, Lubbock.

The total number of dredgings examined for the purposes of this memoir is about 150, besides a considerable number of surface-gatherings from the tow-net. A large number of the samples, more especially those from great depths, consist largely of globigerina ooze or red clay, and in these Ostracoda are usually quite wanting. No account has been kept of such barren dredgings, but lists are given in all cases where even one species in recognisable condition was found. The number of such lists here printed (pp. 12–30) is seventy-one, exclusive of the surface-net gatherings, so that it may be accepted as pretty nearly the fact, that one-half of the dredgings contain no

traces of the existence of living Ostracoda. In by far the greater number of cases the specimens consist of detached valves, or of perfect, though empty, shells. When any vestige of the soft parts remained it was carefully examined, and three new genera, *Phlyctenophora*, *Bythocypris*, and *Crossophorus* are here described as a result of such investigation; some little new knowledge has also been gained of the characters of other genera. Still, as a whole, the results of the Challenger's work in this department are disappointing. I had thought it possible that in this, as in other departments of zoology, forms might have been found connecting our own age more distinctly than has hitherto been done, with bygone geological epochs, or, even more probably, showing new and remarkable variations of structural type. But these anticipations have in no way been realised. Amongst the marine Ostracoda of the British Islands alone we have at least thirty different genera represented. The whole of those brought home by the Challenger are distributed amongst twenty-eight genera, the British genera absent from the Challenger lists being *Potamocypris*, *Sarsiella*, *Darwinella*, *Eucythere*, *Bradycinetus*, and *Conchæcia*. But the comparison is scarcely, in this form, a fair one. The work of the Challenger gave us no collections whatever from between tide marks, nor from the laminarian zone, and these two zones usually swarm with microzoic life of all kinds. The genus *Paradoxostoma*, in British seas, is almost exclusively a littoral one, and it is in this zone that many members of other genera attain their best development. I do not doubt that shore-collecting in the tropical and sub-tropical seas would yield rich results to a student of the Ostracoda; and it has this great advantage over the dredge, that specimens are readily obtained living and unmutilated.

Geographical distribution may most readily be studied by dividing the area explored into several districts, arranging under each the species met with within its limits. With this view I propose to divide amongst seven areas the whole of the Challenger explorations:—

1. North Atlantic Ocean (Stations 1 to 110 and 348 to 354).
2. South Atlantic Ocean (Stations 111 to 142 and 313 to 347).
3. South Indian Ocean (Stations 143 to 160).
4. Australasia, including the coasts of Australia, New Zealand, and the Eastern Archipelago south of the Equator (Stations 161 to 196 and 217 to 220).
5. South Pacific Ocean (Stations 271 to 312).
6. North Pacific Ocean (Stations 238 to 270).
7. Eastern Asia, including China, Japan, and the Eastern Archipelago north of the Equator (Stations 197 to 216 and 231 to 238).

A glance at the table of distribution will show that only two Ostracoda are found pliant enough to live in all of these seven areas; these are two natatory pelagic species, *Halocypris atlantica*, Lubbock, and *Halocypris breviostris*, Dana. The reason of this wide distribution is sufficiently clear; to animals living mostly near the surface of the sea, and dependent, probably, upon no restricted or specially localised supplies of food,

the only impediment to universal distribution must probably be connected with temperature. So far as yet appears the limits of endurance in these creatures are reached at about 50 degrees south, and 35 degrees north of the Equator. Dr Claus, however, describes a Mediterranean[1] species, which is either identical with, or very closely allied to *Halocypris atlantica*, Lubbock. But this habitat, in any case, only very slightly increases its northward range. Next to these *Halocyprides*, the species which most nearly approach a cosmopolitan character are three *Cytheres—Cythere acanthoderma, mihi, Cythere dictyon, mihi*, and *Cythere dasyderma, mihi*, each of which occurred in five or six of the seven provinces. This statement, however, by no means expresses their ubiquitous distribution in the deep sea,—a fact which only becomes fully apparent when we find that amongst the forty-five lists of dredgings from depths of over 100 fathoms, *Cythere dictyon* is noted twenty-three times, *Cythere dasyderma*, nineteen times, and *Cythere acanthoderma*, seven times. *Krithe producta* appears in six out of the seven provinces, and is certainly one of the most common of deep-water Ostracoda, but the greater number of the examples grouped under this name consist only of separated valves, varying largely in form and size, and, it may be, belonging to more than one species. The difficulty of dealing with imperfect specimens of shells which possess no distinctive character of sculpture or surface-ornament is insuperable. In glancing over the columns of the tables of distribution, one notes instantly that the Australasian province possesses far more than an even share of species; the genera *Macrocypris, Bairdia*, and *Cytherella* are especially strongly represented there. Out of eight species of *Macrocypris* this province shows five, of twenty-two *Bairdiæ* it has sixteen, and of thirteen *Cytherellæ* ten. One reason for this abundance of species, I believe to be that we have a large proportion of shallow-water dredgings from this province. As to the relations between the Ostracoda of distant parts of the globe and those of the European seas,—or rather of the British and Scandinavian seas, those being the only districts which, as yet, have been tolerably well explored,—some scanty, though interesting observations, may be made. I have, elsewhere, had occasion to note the occurrence at Kerguelen Island of a very common European copepod, *Harpacticus fulvus*, which in that distant spot inhabits precisely the same sort of places as in Europe. And, now, in the lists of the Kerguelen Island Ostracoda, we may notice an affinity with the European fauna much closer than that of any other locality coming into the scope of this memoir. The British residents found in this distant home are *Pseudocythere caudata*, G. O. Sars; *Sclerochilus contortus* (Norman); *Paradoxostoma abbreviatum*, G. O. Sars; *Krithe bartonensis* (Jones); *Xestoleberis depressa*, G. O. Sars; and *Polycope orbicularis*, G. O. Sars. Some well-known northern forms: *Cythere stimpsoni*, G. S. Brady; *Cythere tenera*, G. S. Brady; *Loxoconcha guttata* (Norman); *Cytheropteron intermedium*, G. S. Brady; and *Paradoxostoma ensiforme*, G.

[1] Ueber die Geschlechtsdifferenzen von *Halocypris*, Prof. Dr C. Claus, Zeitschr. f. wissensch. Zool. Bd. xv. 4 Heft, 1865.

S. Brady, appear in our list only on the strength of their having been seen in anchor-mud from a European Station, Vigo Bay. The fact, however, is instructive, and leads to the inference that these particular species do not much overstep the European boundary; the Vigo specimens, indeed, are in the case of some species depauperated, and have not the well-marked characters which usually belong to British examples. Amongst familiar northern species which reappear in distant parts of the world, besides those which have already been noted as occurring at Kerguelen's Land, are *Paracypris polita*, G. O. Sars; *Pontocypris trigonella*, G. O. Sars; *Bairdia acanthigera*, G. S. Brady; *Bairdia crosskeiana*, G. S. Brady; *Cythere crispata*, G. S. Brady; *Cythere prava*, Baird; and *Cythere speyeri*, G. S. Brady. And this list might be further extended were I to add the names of some which were first described from sponge-sand specimens, supposed to have come from the Levant, but which, I now think, were very probably from the East Indies. Except *Krithe bartonensis*, Jones; *Cythere canaliculata*, Reuss; *Cythere polytrema*, G. S. Brady; and perhaps *Bairdia ovata*, Bosquet, no Ostracoda have been met with which can be referred with certainty to species described by palæontologists;[1] but the somewhat strained and diagrammatic drawings given by many authors render identification extremely difficult, and it is not unlikely that, were the actual specimens at hand for comparison, some further identifications might be made. As to the specimens which I have thought it allowable to refer to *Pontocypris faba*, Reuss (see p. 37), some doubt may be entertained, but they bear a very close likeness indeed to shells so named by me in a memoir on the Ostracoda of the Antwerp Crag, from which formation *Cythere polytrema* also was obtained.

The labour attending the mere preparation of a quantity of dredged material for microscopic investigation—the sifting, picking out, and sorting of specimens—is necessarily very great, and to treat in this way the whole of the samples brought home by the Challenger would have been impossible. The dredgings reported upon in this memoir were, however, carefully selected so as to include representatives of all kinds of bottoms, taken from all parts of the area worked over by the expedition. And, I must add, that, with the limited leisure at my command, I should have been quite unable to get through the work in any reasonable time, had I not been favoured with the kind help of my brother, Mr H. B. Brady, F.R.S., whose materials—carefully prepared for the examination of the Foraminifera, and, therefore, equally available for the Ostracoda—have been entirely placed at my disposal. To him my best thanks are due, and, likewise, to Mr Walter Purkiss, for the care and labour which he has bestowed upon the drawing and lithographing of the plates; all of which, I can attest, give faithful and characteristic representations of the species portrayed.

In the arrangement of the main groups of the Ostracoda I follow G. O. Sars, whose subdivision into sections and families is exhibited in the following synopsis, with the addition only of the DARWINELLIDÆ,—a family described by Mr D. Robertson and myself since the publication of Professor Sars' memoir.

[1] In this statement I leave out of view Post-Tertiary species, of which several might have been named as occurring amongst the Challenger dredgings.

Class *Crustacea*, sub-class *Entomostraca*, order *Gnathostomata*, legion *Lophyropoda*, tribe *Ostracoda*.

POSTERIOR ANTENNÆ. TWO-BRANCHED.

- Simple, subpediform, geniculate, clawed at the apex, not very unlike the anterior antennæ; both pairs either bearing long setæ and adapted for swimming, or shortly setose and not used for swimming. Mandibles distinct, mostly strongly toothed at the lower extremity; palp of moderate size, and bearing a more or less developed branchial appendage. First pair of maxillæ bearing a large branchial plate. Feet.
  - Two pairs, the last pair bent up within the valves. Postabdomen usually forming two elongated narrow rami, which are usually clawed at the apex. — CYPRIDÆ.
  - Two pairs, both ambulatory and nearly alike in structure. Postabdomen rudimentary, forming two small conical processes. — DARWINELLIDÆ.
  - Three pairs, all ambulatory, much alike in structure, and directed forwards. Postabdomen rudimentary, forming two very small lobes. Antennæ very little adapted for swimming. — CYTHERIDÆ.

  → PODOCOPA.
- One branch rudimentary, immobile; the other elongated, cylindrical, flexible, many-jointed, armed with long natatory setæ arranged in a single series; basal portion very large and stout, filled with muscular bands. Anterior antennæ scarcely natatory. Mandible-palp very large, geniculate, subpediform, destitute of a branchial appendage. First pair of jaws without a branchial plate. Postabdomen divided into two broad plates, which are unguiferous behind. Feet.
  - One pair only, of singular shape, forming an elongated, curved, flexible, annulated, vermiform appendage, which is spiniferous towards the apex. Anterior antennæ large, distinctly jointed, geniculate at the base. Mandibles proper obsolete. Second pair of jaws bearing a large branchial plate. Eyes compound, pedunculated, widely separated; between the two in front a large simple eye and a short, frontal tentacle. — CYPRIDINIDÆ.
  - Two pairs, the posterior very small and rudimentary; the anterior provided, like the second pair of jaws, with a small, lobed branchial plate. Anterior antennæ of the female small and weak, immobile, and indistinctly jointed. Mandibles distinct. No eyes. Frontal tentacle very large, and mostly dilated at the apex. — CONCHÆCIADÆ.

  → MYODOCOPA.
- Both branches well developed, movable, and natatory. Anterior antennæ also natatory, not geniculated, ending in a lash of long setæ. Mandibles distinct; palp short and scarcely pediform, provided with a small branchial appendage. Two pairs only of thoracic appendages; the anterior large, bifid, natatory; the posterior membranaceous and branchial. Eyes wanting. Postabdomen divided into two short laminæ, spinous behind. — POLYCOPIDÆ. → CLADOCOPA.
- Flattened, similar to the feet of the *Copepoda*, basal portion bi-articulate and geniculated; branches flattened, composed of few joints, and bearing numerous setæ on both margins. Anterior antennæ very large and strong, many-jointed, geniculated at the base, shortly spiniferous. Mandibles small and weak, palps large. Three pairs only of thoracic appendages, all maxilliform. Palp of mandible and first maxilla bearing on the inner side a comb of large setæ. First and second pairs of maxillæ provided with a large branchial plate; third pair rudimentary in the female, in the male well developed and prehensile. Postabdominal rami small and narrow, distinctly separated, and spiniferous at the apex. — CYTHERELLIDÆ. → PLATYCOPA.

Geographical Distribution of the Ostracoda obtained by H.M.S. Challenger.

Cypridæ.	1 North Atlantic.	2 South Atlantic.	3 South Indian Ocean.	4 Australasia.	5 South Pacific.	6 North Pacific.	7 Eastern Asia.
Paracypris polita, G. O. Sars,	+			+	(?)		
Phlyctenophora zealandica, n. gen. and sp.,				+			
Aglaia clavata, n. sp.,				+			
meridionalis, n. sp.,		+					
obtusata, n. sp.,			+				
pusilla, n. sp.,				+			
Pontocypris attenuata, G. S. Brady,				+			+
faba (?) (Reuss),				+		+	
simplex, n. sp.,		+					
subreniformis, n. sp.,		+		+			
trigonella, G. O. Sars,	+						
Argillœcia badia, n. sp.,				+			
eburnea, n. sp.,		+	+				
Macrocypris canariensis n. sp.,	+						
decora, G. S. Brady,	+		+	+			
maculata, G. S. Brady,		+	+	+			
orientalis, G. S. Brady,				+			
setigera, n. sp.,				+			
similis, n. sp.,		+			+		
tenuicauda, n. sp.,	+						
tumida, n. sp.,			+	+			
Bythocypris compressa, n. gen. and sp.,				+			
elongata, n. sp.,		+					
reniformis, n. sp.,	+	+	+	+			+
Bairdia abyssicola, n. sp.,						+	
acanthigera, G. S. Brady,	+						
amygdaloides, G. S. Brady,				+	+	+	
angulata, G. S. Brady,	+			+	+		
attenuata, n. sp.,				+		+	
crosskeiana, G. S. Brady,				+		+	
exaltata, n. sp.,				+			
expansa, n. sp.,						+	
formosa, G. S. Brady,	+	+		+			
fortificata, n. sp.,				+			
foveolata, G. S. Brady,	(?)			+	+		+
fusca, G. S. Brady,				+			
globulus, n. sp.,				+			
hirsuta, n. sp.,					+		
milne-edwardsi, G. S. Brady,	+						
minima, n. sp.,				+		+	
ovata (?), Bosquet,		+		+			

CYPRIDÆ—*continued.*	1 North Atlantic.	2 South Atlantic.	3 South Indian Ocean.	4 Australasia.	5 South Pacific.	6 North Pacific.	7 Eastern Asia.
Bairdia simplex, n. sp.,			+				
tuberculata, G. S. Brady,				+			
victrix, G. S. Brady,	+	+	+	+			
villosa, n. sp.,		+	+	+			+
woodwardiana, n. sp.,				+			
CYTHERIDÆ.							
Cythere acanthoderma, n. sp.,	+		+	+	+	+	
acupunctata, n. sp.,							+
aduncа, G. S. Brady,				+			
arata, n. sp.,				+			
audei, G. S. Brady,		+	+				
bermudæ, G. S. Brady,	+						
bicarinata, n. sp.,							+
canaliculata (Reuss),				+			
cancellata, G. S. Brady,				+			
circumdentata, n. sp.,					+	+	
clavigera, n. sp.,				+			
convoluta, G. S. Brady,				+		+	
craticula, n. sp.,		+					
cribriformis, G. S. Brady,							+
crispata, G. S. Brady,				+			+
cristatella, G. S. Brady,				+			
cumulus, n. sp.,				+			
curvicostata, G. S. Brady,				+			
cymba, G. S. Brady,							+
cytheropteroides, n. sp.,		+					
darwini, G. S. Brady,							+
dasyderma, n. sp.,	+	+		+	+	+	
demissa, G. S. Brady,				+			
dictyon, n. sp.,	+	+	+	+	+	+	
dorsoserrata, n. sp.,		+					
ericea, n. sp.,		+					
euplectella, G. S. Brady,				+			
exilis, n. sp.,		+					
falklandi, n sp.,		+					
flabellicostata, n. sp.,		+					
flos-cardui, n. sp.,						+	
fortificata, n. sp.,					+		
foveolata, n. sp.,			+				
fulcotincta, n. sp.,		+					
fungoides, G. S. Brady,	+			+			
gonjoni, G. S. Brady,				+			+

CYTHERIDÆ—*continued.*	1 North Atlantic.	2 South Atlantic.	3 South Indian Ocean.	4 Australasia.	5 South Pacific.	6 North Pacific.	7 Eastern Asia.
Cythere hodgii, G. S. Brady,							+
implula, n. sp.,		+					
inconspicua, n. sp.,				+			
irpex, n. sp.,	+	+					
irrorata, n. sp.,				+			
kerguelenensis, n. sp.,			+	+			+
lactea, G. S. Brady,					+		
lagunella, n. sp.,				+			
lauta, n. sp.,				+			
lepralioides, n. sp.,		+					
lubbockiana, n. sp.,				+			
melobesioides, G. S. Brady,		+		+			
moseleyi, n. sp.,		+					
murrayana, n. sp.,				+			
normani, G. S. Brady,			+		+		
ovalis, n. sp.,				+			
obtusalata, n. sp.,				+			
packardi, n. sp.,				+			
papuensis, n. sp.,				+			
parallelogramma, n. sp.,			+				
patagoniensis, n. sp.,					+		
polytrema, G. S. Brady,			+				
prava, Baird,				+			
pyriformis, n. sp.,		+					
quadriaculeata, n. sp.,						+	+
radula, n. sp.,				+			
rastromarginata, n. sp.,				+		+	
reussi, G. S. Brady,		+		+		+	
sabulosa, n. sp.,				+			
scabrocuneata, n. sp.,				+			+
scalaris, n. sp.,				+	+		
scintillulata, n. sp.,		+					
scutigera, G. S. Brady,				+	+		
securifer, n. sp.,			+				
serratula, n. sp.,	+	+					
speyeri, G. S. Brady,	+	+					
squalidentata, n. sp.,		+					
stimpsoni, G. S. Brady,	+						
stolonifera, n. sp.,					+		
subrufa, n. sp.,			+				+
suhmi, n. sp.,						+	+
sulcatoperforata, n. sp.,					+		
tenera, G. S. Brady,	+						
tetrica, n. sp.,				+			
torresi, n. sp.,				+			

CYTHERIDÆ—*continued.*	1 North Atlantic.	2 South Atlantic.	3 South Indian Ocean.	4 Austral-asia.	5 South Pacific.	6 North Pacific.	7 Eastern Asia.
Cythere trieristata, n. sp.,				+			
reticula, n. sp.,				+			
vellicata, n. sp.,				+			
viminea, n. sp.,			+				
wyville-thomsoni, n. sp.,			+	+			
Cytheridea spinulosa, G. S. Brady,				+	+		
Krithe bartoniensis (Jones),			+	+			
hyalina, n. sp.,							+
producta, n. sp.,	+	+	+	+	+		
tumida, n. sp.,		+					
Loxoconcha africana, n. sp.,	+						
alata, G. S. Brady,						+	
anomala, n. sp.,						+	
australis, n. sp.,				+			
avellana, G. S. Brady,				+			
guttata (Norman),	+						
honoluliensis, n. sp.,						+	
pumicosa, n. sp.,				+			
sculpta, G. S. Brady,				+			
sinensis, G. S. Brady,							+
subrhomboidea, n. sp.,		+					
variolata, G. S. Brady,				+			
Xestoleberis africana, n. sp.,		+					
curta, G. S. Brady,	+		+	+	+	+	
depressa, G. O. Sars,			+				
expansa, n. sp.,		+					
foveolata, n. sp.,				+			
granulosa, n. sp.,				+			
intermedia (?), G. S. Brady,				+			
margaritea, G. S. Brady,				+			
nana, n. sp.,				+			
polita, G. S. Brady,		+					
setigera, n. sp.,			+				
tumefacta, n. sp.,				+			
variegata, n. sp.,	+			+			
Cytherura clausi, n. sp.,		+					
clavata, n. sp.,		+					
costellata, n. sp.,			+				
cribrosa, n. sp.,					+		
cryptifera, n. sp.,				+			
curvistriata, n. sp.,				+			
lilljeborgi, n. sp.,			+				
mucronata, n. sp.,		+					
obliqua, n. sp.,			+				
rudis (?), G. S. Brady,		+					

CYTHERIDÆ—*continued.*	1 North Atlantic.	2 South Atlantic.	3 South Indian Ocean.	4 Australasia.	5 South Pacific.	6 North Pacific.	7 Eastern Asia.
Cytheropteron abyssorum, n. sp.,			+				
angustatum, n. sp.,			+	+			
assimile, n. sp.,			+				
fenestratum, n. sp.,		+	+				
intermedium, G. S. Brady,	+						
mucronalatum, n. sp.,	+				+	+	
patagoniense, n sp.,					+		
scaphoides, n. sp.,			+				
wellingtoniense, n. sp.,				+			
Bythocythere arenosa, n. sp.,				+			
exigua, n. sp.,		+					
orientalis, G. S. Brady,				+			+
pumilio, n. sp.,			+				
relifera, n. sp.,				+			
Pseudocythere caudata, G. O. Sars,			+				
fuegiensis, n. sp.,					+		
Cytheridea laevata, n. sp.,			+				
nana, n. sp.,				+			
Sclerochilus contortus (Norman),			+	+			
Xiphichilus arcuatus, n. sp.,				+			
complanatus, n. sp.,			+				
Paradoxostoma abbreviatum, G. O. Sars,			+				
ensiforme, G. S. Brady,	+						
CYPRIDINIDÆ.							
Cypridina dana, n. sp.,			+	-			
formosa (?), Dana,							+
gracilis, n. sp.,	+						
Asterope, sp.,	+						+
Philomedes gibbosa (Dana),							
wyville-thomsoni, n. sp.,				+			
Crossophorus imperator, n. gen. and sp.,				+			
CONCHŒCIADÆ.							
Halocypris atlantica, Lubbock,	+	+	+	+	+	+	+
brevirostris, Dana,	+	+	+	+	+	+	+
imbricata, n. sp.,		+				+	+

	1 North Atlantic.	2 South Atlantic.	3 South Indian Ocean.	4 Austral-asia.	5 South Pacific.	6 North Pacific.	7 Eastern Asia.
POLYCOPIDÆ.							
Polycope cingulata, n. sp.,							
facus, n. sp.,				+			
orbicularis, G. O. Sars,	+	+	+	+			
CYTHERELLIDÆ.							
Cytherella cavernosa, G S. Brady,				+			
cingulata, G. S. Brady,				+			+
cribrosa, n. sp.,				+			
dromedaria, n. sp.,		+					
irregularis, n. sp.,	+						
lata, n. sp.,	+	+		+			
latimarginata, n. sp.,				+			
polita, G. S. Brady,		+		+			
pulchra, G. S. Brady,	+	+		+			
punctata, G. S. Brady,		+		+	+		
semitalis, G. S. Brady,				+			
truncata, G. S. Brady,				+			
venusta, n. sp.,						+	

LIST OF DREDGINGS AND TOW-NET GATHERINGS EXAMINED, WITH THE SPECIES OF OSTRACODA FOUND IN EACH.

Vigo Bay. 11 fathoms. Mud from anchor. May 21, 1876.

Paracypris polita, G. O. Sars.
Cythere stimpsoni, G. S. Brady.
tenera, G. S. Brady.
Loxoconcha guttata (Norman).
Cytheropteron intermedium, G. S. Brady.
Paradoxostoma ensiforme, G. S. Brady.
Polycope orbicularis, G. O. Sars.

Off Gomera, Canaries. 620 fathoms. Sandy mud and shells. February 12, 1873.

Macrocypris canariensis, n. sp.
Bairdia, sp.

STATION 5.—South-west of Canaries. 2740 fathoms. February 21, 1873.

Cythere dasyderma, n. sp.

STATION 24.—Off Culebra Island, West Indies. 390 fathoms. Mud. March 25, 1873.

Bythocypris reniformis, n. gen. and sp.
Macrocypris tenuicauda, n. sp.
decora, G. S. Brady.
Bairdia victrix, G. S. Brady.
Cythere serratula, n. sp.
dictyon, n. sp.
Cytherella lata, n. sp.

STATION 33.—Off Bermudas. 435 fathoms. Mud. April 4, 1873.

Pontocypris trigonella, G. O. Sars.
Bairdia foveolata (?), G. S. Brady.
Cythere fungoides, G. S. Brady.
bermudæ, G. S. Brady.
Xestoleberis curta, G. S. Brady.
Cytherella irregularis, n. sp.
pulchra, G. S. Brady.
Asterope, sp.

STATION 64.—Lat. 35° 35′ N., long. 50° 27′ W. 2750 fathoms. Grey ooze. June 20, 1873.

Cythere dictyon, n. sp.
acanthoderma, n. sp.
Krithe tumida, n. sp.
Xestoleberis expansa, n. sp.

STATION 70.—Lat. 38° 25′ N., long. 35° 50′ W. 1675 fathoms. Globigerina ooze. June 20, 1873.

Cythere dictyon, n. sp.
dasyderma,n. sp.
Krithe producta, n. sp.
Cytheropteron mucronalatum, n. sp.

STATION 73.—Lat. 38° 30′ N., long. 31° 14′ W. 1000 fathoms. Globigerina ooze. June 30, 1873.

Cythere dictyon, n. sp.
acanthoderma, n. sp.
irpex, n. sp.

STATION 75.—Off Azores. Lat. 38° 37′ N., long. 28° 30′ W. 450 fathoms. Sand. July 2, 1873.

Bairdia angulata, G. S. Brady.
victrix (?), G. S. Brady.
Cythere dictyon, n. sp.
Cytherella lata, n. sp.

STATION 76.—Lat. 38° 11′ N., long. 27° 9′ W. 900 fathoms. Bottom temperature, 4°·2 C. Globigerina ooze. July 3, 1873.

Bairdia formosa, G. S. Brady.
victrix, G. S. Brady.
Cythere dictyon, n. sp.
Krithe producta, n. sp.

STATION 78.—Lat. 37° 24′ N., long. 25° 13′ W. 1000 fathoms. Globigerina ooze. July 10, 1873.

Cythere dictyon, n. sp.
irpex, n. sp.
Cypridina gracilis, n. sp.

STATION 85.—Off Canaries. Lat. 28° 42′ N., long. 18° 6′ W. 1125 fathoms. Volcanic sand. July 19, 1873.

Cythere (?) *serratula*, n. sp.
dasyderma (?), n. sp.
Krithe producta (?), n. sp.

STATION 93 or 94.—Off St Vincent, Cape Verde. 1070–1150 fathoms. Mud. July and August 1873.

Bairdia milne-edwardsi, G. S. Brady.
acanthigera, G. S. Brady.
Cythere speyeri, G. S. Brady.
Loxoconcha africana, n. sp.
Xestoleberis variegata, n. sp.

STATION 120.—Off Pernambuco. Lat. 8° 37′ S., long. 34° 28′ W. 675 fathoms. Mud. September 9, 1873.

Macrocypris similis, n. sp.
Bythocypris reniformis, n. gen. and sp.
Bairdia formosa, G. S. Brady (variety).
victrix, G. S. Brady.
Cythere pyriformis, n. sp.
ericea, n. sp.
dictyon, n. sp.
Krithe producta, n. sp.
Cytherella lata, n. sp.

STATION 122.—Off North Brazil. 350 fathoms. Mud. September 10, 1873.

Bythocypris reniformis, n. gen. and sp.
Macrocypris tenuicauda, n. sp.
decora, G. S. Brady.
Bairdia formosa, G. S. Brady.
victrix, G. S. Brady.
Cythere dasyderma, n. sp.
dictyon, n. sp.
Krithe producta, n. sp.

STATION 135.—Off Nightingale Island, Tristan d'Acunha. 100 to 150 fathoms. Rock, shells. October 18, 1873.

Bairdia villosa, n. sp.
Cythere impluta, n. sp.
Cytherella punctata, G. S. Brady.

STATION 140.—Simon's Bay, South Africa, 15 to 20 fathoms. October 1873.

Pontocypris subreniformis, n. sp.
Macrocypris maculata, G. S. Brady.
Bairdia ovata, Bosquet.
Cythere exilis, n. sp.
flabellicostata, n. sp.
lepralioides, n. sp.
craticula, n. sp.
Loxoconcha subrhomboidea, n. sp.
Xestoleberis africana, n. sp.
Cytherura mucronata, n. sp.
clausi, n. sp.
Cytherella dromedaria, n. sp.

STATION 142.—Off Cape of Good Hope. 150 fathoms. Sand. December 18, 1873.

Cythere melobesioides, G. S. Brady.
Cythere lepralioides, n. sp.
cytheropteroides, n. sp.
Polycope orbicularis, G. O. Sars.

Off Prince Edward's Island. 50 to 150 fathoms. December 26, 1874.

Bythocypris reniformis, n. gen. and sp.
Macrocypris maculata, G. S. Brady.
Bairdia villosa, n. sp.
Cythere kerguelenensis, n. sp.
securifer, n. sp.
subrufa, n. sp.
suhmi, n. sp.
parallelogramma, n. sp.
Cythere polytrema, G. S. Brady.
Xestoleberis setigera, n. sp.
Krithe producta, n. sp.
Pseudocythere caudata, G. O. Sars.

STATION 146.—Lat. 46° 46′ S., long. 45° 31′ E. 1375 fathoms. Globigerina ooze. Bottom temperature, 1°·5 C. December 29, 1873.

Cythere dasyderma, n. sp.
acanthoderma, n. sp.
Krithe producta, n. sp.
Cythere dictyon, n. sp.
viminea, n. sp.

STATION 149.—Balfour Bay, Kerguelen Island. 20 to 50 fathoms. January 1874.

Macrocypris maculata, G. S. Brady.
tumida, n. sp.
Argillæcia eburnea, n. sp.
Aglaia obtusata, n. sp.
Bairdia villosa, n. sp.
Cythere kerguelenensis, n. sp.
subrufa, n. sp.
wyville-thomsoni, n. sp.
audei, G. S. Brady.

Xestoleberis depressa, G. O. Sars.
Cytherura obliqua, n. sp.
costellata, n. sp.
lilljeborgi, n. sp.
Cytheropteron scaphoides, n. sp.
angustatum, n. sp.
Bythocythere pumilio, n. sp.
Pseudocythere caudata, G. O. Sars.
Sclerochilus contortus (Norman).
Paradoxostoma abbreviatum, G. O. Sars.

STATION 149.—Off Christmas Harbour, Kerguelen Island. 120 fathoms. January 29, 1874.

Argillæcia eburnea, n. sp.
Macrocypris decora, G. S. Brady.
Bairdia villosa, n. sp.
victrix, G. S. Brady.
Cythere wyville-thomsoni, n. sp.
foveolata, n. sp.
Xestoleberis setigera, n. sp.
Krithe bartonensis (Jones).
Cytheropteron assimile, n. sp.
Cytheropteron fenestratum, n. sp.
Pseudocythere caudata, G. O. Sars.
Xiphichilus complanatus, n. sp.
Polycope orbicularis, G. O. Sars.
Cypridina danæ, n. sp.

STATION 149.—Royal Sound, Kerguelen Island. 28 fathoms. January 20, 1874.

Macrocypris tumida, n. sp.
maculata, G. S. Brady.
Cythere kerguelenensis, n. sp.
Xestoleberis curta, G. S. Brady.

STATION 150.—Lat. 52° 4′ S., long. 71° 22′ E. 150 fathoms. Rock. February 2, 1874.

Cythere wyville-thomsoni, n. sp.
dictyon, n. sp.
normani, G. S. Brady.
Xestoleberis depressa, G. O. Sars.

STATION 151.—Off Heard Island. 75 fathoms. Mud. February 7, 1874.

Bairdia simplex, n. sp.
Cythere kerguelenensis, n. sp.
wyville-thomsoni, n. sp.
foveolata, n. sp.
Xestoleberis setigera, n. sp.
Cytheropteron assimile, n. sp.
Cytherideis lævata, n. sp.
Sclerochilus contortus (Norman).

STATION 158.—Lat. 50° 1′ S., long. 123° 4′ E. Tow-net. March 7, 1874.

Halocypris atlantica, Lubbock.

STATION 159.—Lat. 47° 25′ S., long. 130° 12′ E. Tow-net. March 12, 1874.

Halocypris atlantica, Lubbock.
brevirostris, Dana.

STATION 160.—Lat. 42° 42′ S., long. 134° 10′ E. 2600 fathoms. Bottom temperature, 0°·2 C. Red clay. March 13, 1874.

Cytheropteron abyssorum, n. sp.

STATION 161.—Off entrance to Port Philip, South Australia. 38 fathoms. Sand. April 1, 1874.

Philomedes wyville-thomsoni, n. sp.

STATION 162.—Off East Moncœur Island, Bass Strait. 38 to 40 fathoms. Sand. April 2, 1874.

Pontocypris faba (?) (Reuss).
Macrocypris maculata, G. S. Brady.
Aglaia (?), *pusilla*, n. sp.
Bythocypris reniformis, n. gen. and sp.
Bairdia villosa, n. sp.
amygdaloides, G. S. Brady.
foveolata, G. S. Brady.
victrix, G. S. Brady.

Cythere canaliculata (Reuss).
kerguelenensis, n. sp.
scabrocuneata, n. sp.
obtusalata, n. sp.
rostromarginata n. sp.
Xestoleberis granulosa, n. sp.
Cytherura cryptifera, n. sp.
Cytherella cavernosa, G. S. Brady.

Port Jackson, Australia. 2 to 10 fathoms. April 20, 1874.

Pontocypris subreniformis, n. sp.
Macrocypris setigera, n. sp.
Phlyctenophora zealandica, n. gen. and sp.
Argillæcia badia, n. sp.
Bairdia minima, n. sp.
fusca, G. S. Brady.
Cythere cumulus, n. sp.
crispata, G. S. Brady.
kerguelenensis, n. sp.
goujoni, G. S. Brady.
tricristata, n. sp.
vellicata, n. sp.
demissa, G. S. Brady.
canaliculata (Reuss).
clavigera, n. sp.
Xestoleberis curta, G. S. Brady.
granulosa, n. sp.
Loxoconcha avellana, G. S. Brady.
australis, n. sp.
Cytherura curvistriata, n. sp.
Cytherella punctata (?), G. S. Brady.
cingulata, G. S. Brady.
pulchra, G. S. Brady.

Station 164*a*.—Off Sydney. 410 fathoms. Grey ooze. June 13, 1874.

Bairdia victrix, G. S. Brady.
Cythere dictyon, n. sp.
dasyderma, n. sp.
Krithe producta, n. sp.

STATION 167.—Lat. 39° 32′ S., long. 171° 48′ E. 150 fathoms. Grey ooze. June 24, 1874.

Bairdia ovata, Bosquet.
Cythere arata, n. sp.
rastromarginata, n. sp.
scutigera, G. S. Brady.
dasyderma, n. sp.
Krithe producta, n. sp.
Cytherella punctata, G. S. Brady.
pulchra (?), G. S. Brady.

Wellington Harbour, New-Zealand. Tow-net at trawl. Depth not stated.

Aglaia clavata, n. sp.
Paracypris polita (?), G. O. Sars.
Phlyctenophora zealandica, n. gen. and sp.
Macrocypris tumida, n. sp.
Cythere murrayana, n. sp.
scabrocuneata, n. sp.
Cytheropteron wellingtoniense, n. sp.
Sclerochilus contortus (Norman).
Cytherella polita, G. S. Brady.

STATION 168.—Lat. 40° 28′ S., long. 177° 43′ E. 1100 fathoms. Bottom temperature, 2°·0 C. grey ooze. July 8, 1874.

Crossophorus imperator, n. gen. and sp.

STATION 172.—Off Nukualofa, Tongatabu. 18 fathoms. Coral. July 22, 1874.

Bythocypris compressa, n. gen. and sp.
Bairdia crosskeiana, G. S. Brady.
woodwardiana, n. sp.
Cythere cancellata, G. S. Brady.
convoluta, G. S. Brady.
Xestoleberis nana, n. sp.
variegata, n. sp.
Loxoconcha avellana, G. S. Brady.
Cytherella cribrosa, n. sp.

STATION 174.—Lat. 19° 10′ S., long. 178° 10′ E. 610 fathoms. Bottom temperature, 3°·7 C. Globigerina ooze. August 3, 1874.

Krithe producta, n. sp.
Xiphichilus arcuatus, n sp.

STATION 181.—Obi to Cape York, Pacific. Tow-net. August 26, 1874.

Halocypris atlantica, Lubbock.
brevirostris, Dana.

STATION 185.—Torres' Straits. Lat. 11° 35′ S., long. 144° 3′ E. 155 fathoms. Sand. August 31, 1874.

Bairdia attenuata, n. sp.
amygdaloides, G. S. Brady.
angulata, G. S. Brady.
Cythere torresi, n. sp.
inconspicua, n. sp.
laganella, n. sp.
wyville-thomsoni (?), n. sp.
dasyderma, n. sp.
scalaris (?), n. sp.
Xestoleberis intermedia (?), G. S. Brady.
Cytheropteron angustatum, n. sp.
Bythocythere arenosa, n. sp.
orientalis (var.), G. S. Brady.
velifera, n. sp.
Polycope orbicularis, G. O. Sars.
favus, n. sp.
Cytherella truncata, G. S. Brady.
latimarginata, n. sp.
lata, n. sp.

STATION 187.—Off Booby Island. Lat. 10° 36′ S., long. 141° 55′ E. 6 to 8 fathoms.

Macrocypris orientalis, G. S. Brady.
Bairdia amygdaloides, G. S. Brady.
fortificata, n. sp.
foveolata, G. S. Brady.

Cythere reussi, G. S. Brady.
lubbockiana, n. sp.
tetrica, n. sp.
packardi, n. sp.
curvicostata, n. sp.
ovalis, n. sp.
crispata, G. S. Brady.
sabulosa, n. sp.
lauta, n. sp.
goujoni, G. S. Brady.
fungoides, G. S. Brady.
melobesioides, G. S. Brady.
cristatella, G. S. Brady.
cancellata, G. S. Brady.
Xestoleberis foveolata, n. sp.
margaritea, G. S. Brady.
curta, G. S. Brady.
Loxoconcha pumicosa, n. sp.
variolata, G. S. Brady.
sculpta, G. S. Brady.
australis, n. sp.
Cytherella semitalis, G. S. Brady.
cavernosa, G. S. Brady.
cingulata, G. S. Brady.

STATION 189.—Lat. 9° 59′ S., long. 137° 50′ E. 28 fathoms. Mud. September 11, 1874.

Bairdia foveolata, G. S. Brady.
Cythere fungoides, G. S. Brady.
euplectella, G. S. Brady.
adunca, G. S. Brady.
velivola, n. sp.
Cytherella semitalis, G. S. Brady.
cingulata, G. S. Brady.

STATION 191*a*.—Off Ki Islands. Lat. 5° 26′ S., long. 133° 19′ E. 580 fathoms. Bottom temperature, 4°·9 C. Mud. September 24, 1874.

Macrocypris, sp.
Bairdia formosa, G. S. Brady.
Cythere dasyderma, n. sp.
acanthoderma, n. sp.
adunca, G. S. Brady.
dictyon, n. sp.
radula, n. sp.
Krithe bartonensis (Jones).
Cytherideis nana, n. sp.
Cytherella punctata, G. S. Brady.
lata, n. sp.

Amboyna. 15 to 20 fathoms. October 6, 1874.

Macrocypris maculata, G. S. Brady.
Bairdia amygdaloides, G. S. Brady.
Cythere scutigera, G. S. Brady.
Cytheridea spinulosa, G. S. Brady.
Cytherella pulchra, G. S. Brady.

Zamboangan. In surface-net at anchor. October 25, 1874.

Cypridina formosa (?), Dana.

Zebu Harbour, Philippine Islands. In surface-net. January 1875.

Philomedes gibbosa, Dana.

Hong-kong Harbour. 7 fathoms. Anchor mud.

Pontocypris attenuata, G. S. Brady.
Bairdia foveolata, G. S. Brady.
Cythere crispata, G. S. Brady.
cymba, G. S. Brady.
goujoni, G. S. Brady.
cribriformis, G S. Brady.
darwini, G. S. Brady.
Loxoconcha sinensis, G. S. Brady.
Bythocythere orientalis, G. S. Brady.
Cytherella cingulata, G. S. Brady.

Humboldt Bay, Papua. 37 fathoms. March 24, 1875.

Pontocypris attenuata, G. S. Brady.
Phlyctenophora zealandica, n. gen. and sp.
Macrocypris orientalis (?), G. S. Brady.
Bairdia amygdaloides, G. S. Brady.
Cythere papuensis, n. sp.
dictyon, n. sp.
scutigera, G. S. Brady.
Cytherella semitalis, G. S. Brady.

Nares' Harbour, Admiralty Islands. 16 fathoms. March 2, 1875.

Macrocypris decora, G. S. Brady.
Bairdia crosskeiana, G. S. Brady.
foveolata, G. S. Brady.
globulus, n. sp.
Cythere prava, Baird.
Xestoleberis tumefacta, n. sp.
Loxoconcha pumicosa, n. sp.
Cytherella semitalis, G. S. Brady.

Admiralty Islands. 16 to 25 fathoms. March 7, 1875.

Macrocypris decora, G. S. Brady.
Bairdia tuberculata, G. S. Brady.
foveolata, G. S. Brady.
globulus, n. sp.
Cythere tricristata, n. sp.
prava, Baird.
obtusalata, n. sp.
irrorata, n. sp.

STATION 218.—Lat. 2° 33′ S., long. 144° 4′ E. 1070 fathoms. Bottom temperature, 2°·1 C. Globigerina ooze. March 1, 1875.

Bairdia exaltata, n. sp.
Cythere dictyon, n. sp.
dasyderma, n. sp.

STATION 224.—Lat. 7° 45′ N., long. 144° 20′ E. 1850 fathoms. Bottom temperature, 1°·3 C. Globigerina ooze. March 21, 1875.

Cythere dictyon, n. sp.
Cytheropteron mucronalatum, n. sp.

STATION 231.—Tow-net. May 11, 1875.

Halocypris atlantica, Lubbock.
brevirostris, Dana.
imbricata, n. sp.

STATION 233*b*.—Inland Sea, Japan. Lat. 34° 20′ N., long. 133° 35′ E. 15 fathoms. Mud. May 26, 1875.

Cythere acupunctata, n. sp.
bicarinata, n. sp.
cymba, G. S. Brady.
quadriaculeata, n. sp.
hodgii, G. S. Brady.
darwini, G. S. Brady.
scabrocuneata, n. sp.
Krithe hyalina, n. sp.
Loxoconcha sinensis, G. S. Brady.

STATION 241.—Lat. 35° 41′ N., long. 157° 42′ E. 2300 fathoms. Bottom temperature, 1°·1 C. Red clay. June 23, 1875.

Cythere suhmi, n. sp.

STATION 241.—Lat. 35° 41′ N., long. 157° 42′ E. Tow-net. June 23, 1875.

Halocypris atlantica, Lubbock.
brevirostris, Dana.
imbricata, n. sp.

STATION 246.—Lat. 36° 10′ N., long. 178° 0′ E. 2050 fathoms. Bottom temperature, 1°·3 C. Grey ooze. July 2, 1875.

Bairdia minima, n. sp.
abyssicola, n. sp.
Cythere dasyderma, n. sp.
acanthoderma, n. sp.
circumdentata, n. sp.
dictyon, n. sp.
Cytheropteron mucronalatum, n. sp.

Off Reefs, Honolulu. 40 fathoms. July 1875.

Pontocypris faba (?) (Reuss).
Bairdia attenuata, n. sp.
amygdaloides, G. S. Brady.
crosskeiana, G. S. Brady.
expansa, n. sp.
Cythere reussi, G. S. Brady.
quadriaculeata, n. sp.
convoluta, G. S. Brady.
flos-cardui, n. sp.
rastromarginata, n. sp.
Xestoleberis curta, G. S. Brady.
Loxoconcha alata, G. S. Brady.
honoluliensis, n. sp.
anomala, n. sp.
Cytherella venusta, n. sp.

STATION 276.—Lat. 13° 28′ S., long. 149° 30′ W. 2350 fathoms. Bottom temperature, 1°·0 C. Red clay. September 16, 1875.

Cythere circumdentata, n. sp.

STATION 280.—Lat. 18° 40′ S., long. 149° 52′ W. 1940 fathoms. Bottom temperature, 1°·6 C. Globigerina ooze. October 4, 1875.

Cythere dictyon, n. sp.

STATION 287.—Lat. 36° 32′ S., long. 132° 52′ W. Tow-net. October 19, 1875.

Halocypris atlantica, Lubbock.
brevirostris, Dana.

STATION 296.—Lat. 38° 6′ S., long. 88° 2′ W. 1825 fathoms. Bottom temperature, 1°·2 C. Red clay. November 9, 1875.

Bairdia hirsuta, n. sp.
Cythere normani (?), G. S. Brady.
dasyderma, n. sp.
acanthoderma, n. sp.
dictyon, n. sp.
Krithe producta, n. sp.
Cytheropteron mucronalatum, n. sp.

420 fathoms. Sounding. October 20, 1875.

Paracypris polita (?), G. O. Sars.
Pontocypris (?), sp.
Bairdia foveolata, G. S. Brady.
Cythere lactea, G. S. Brady.
fortificata, n. sp.
Cytheridea spinulosa, G. S. Brady.

STATION 300.—Lat. 33° 42′ S., long. 78° 18′ W. 1375 fathoms. Bottom temperature, 1°·6 C. Globigerina ooze. December 17, 1875.

Bairdia hirsuta, n. sp.
Cythere dictyon, n. sp.
stolonifera, n. sp.
sulcato-perforata, n. sp.
dasyderma, n. sp.
scutigera, G. S. Brady.
Xestoleberis curta, G. S. Brady.
Krithe producta, n. sp.
Cytheropteron mucronalatum, n. sp.

STATION 302.—Lat. 42° 43′ S., long. 82° 11′ W. Tow-net. December 28, 1875.

Halocypris atlantica, Lubbock.
brevirostris, Dana.

STATION 302.—Lat. 42° 43′ S., long. 82° 11′ W. 1450 fathoms. Bottom temperature, 1°·5 C. Globigerina ooze. December 28, 1875.

Cythere dictyon, n. sp.
acanthoderma, n. sp.
dasyderma, n. sp.
Krithe producta, n. sp.
Cytheropteron mucronalatum, n. sp.

STATION 303.—Lat. 45° 31′ S., long. 78° 9′ W. Tow-net. December 30, 1875.

Halocypris atlantica, Lubbock.
brevirostris, Dana.

STATION 304.—Lat. 46° 53′ S., long. 75° 11′ W. Tow-net. December 31, 1875.

Halocypris atlantica, Lubbock.

STATION 305.—160 fathoms. Sounding. January 13, 1876.

Macrocypris similis, n. sp.
Bairdia angulata, G. S. Brady.
amygdaloides, G. S. Brady.
Cythere dasyderma, n. sp.
dictyon, n. sp.
scalaris, n. sp.
Krithe producta, n. sp.
Cytheropteron patagoniense, n. sp.
Cytherura cribrosa, n. sp.
Cytherella punctata, G. S. Brady.

STATION 308.—Lat. 50° 10′ S., long. 74° 42′ W. 175 fathoms. Mud. January 5, 1876.

Bairdia, sp.
Cythere dictyon, n. sp.
patagoniensis, n. sp.
Krithe producta, n. sp.
Cytherella, sp.

STATION 311.—Lat. 52° 50′ S., long. 73° 53′ W. 245 fathoms. Bottom temperature, 7°·7 C. Mud. January 11, 1876.

Cythere dasyderma, n. sp.
Krithe producta, n. sp.
Pseudocythere fuegiensis, n. sp.

STATION 313.—Straits of Magellan, lat. 52° 20′ S., long. 68° 0′ W. 55 fathoms. Bottom temperature, 8°·8 C. Sand. January 20, 1876.

Cythere reussi, G. S. Brady.
scintillulata, n. sp.
Cytherura rudis (?), G. S. Brady.
Bythocythere exigua, n. sp.

STATION 316. — Stanley Harbour, Falkland Islands. 6 fathoms. Anchor mud. February 1, 1876.

Aglaia meridionalis, n. sp.
Cythere falklandi, n. sp.
fulvotincta, n. sp.
Xestoleberis polita, G. S. Brady.
Cytherura clavata, n. sp.
Cythere impluta, n. sp.
moseleyi, n. sp.

STATION 317.—Lat. 48° 37′ S., long. 55° 17′ W. 1035 fathoms. Bottom temperature, 1°·7 C. Hard ground. Tow-net at trawl. February 8, 1876.

Cythere dasyderma, n. sp.

STATION 318.—Lat. 42° 32′ S., long. 56° 27′ W. Tow-net. February 11, 1876.

Halocypris atlantica, Lubbock.

STATION 321.—Mouth of Rio de la Plata. 13 fathoms. Mud. February 25, 1876.

Cytherella polita, G. S. Brady.

STATION 323.—Lat. 35° 39′ S., long. 50° 47′ W. 1900 fathoms. Bottom temperature, 0°·0 C. Grey mud.

Argillæcia eburnea, n. sp.
Cythere squalidentata, n. sp.
Krithe tumida, n. sp.
Xestoleberis expansa, n. sp.
Pseudocythere caudata, G. O. Sars.

STATION 325.—Lat. 36° 44′ S., long. 46° 16′ W. 2650 fathoms. Tow-net at trawl. Bottom temperature, 0°·4 C. March 2, 1876.

Halocypris atlantica, Lubbock.
imbricata, n. sp.

STATION 330.—Lat. 37° 45′ S., long. 33° 0′ W. March 8, 1876.

Halocypris brevirostris, Dana.

STATION 332.—Lat. 37° 29′ S., long. 27° 31′ W. 2200 fathoms. Bottom temperature, 0°·4 C. Globigerina ooze. Tow-net at trawl. March 10, 1876.

Cythere dictyon, n. sp.
dasyderma, n. sp.

STATION 335.—North of Tristan d'Acunha, lat. 32° 24′ S., long. 13° 5′ W. 1425 fathoms. Bottom temperature, 2°·3 C. Globigerina ooze. March 16, 1876.

Bairdia victrix, G. S. Brady.
Bythocypris elongata, n. gen. and sp.
Cythere serratula, n. sp.
Cythere dictyon, n. sp.
dasyderma, n. sp.
dorsoserrata, n. sp.
irpex, n. sp.
Krithe producta, n. sp.
Cytheropteron fenestratum, n. sp.

STATION 341.—Lat. 12° 16′ S., long. 13° 44′ W. March 25, 1876.

Halocypris atlantica, Lubbock.
brevirostris, Dana.

STATION 344.—Off Ascension Island. 420 fathoms. Hard ground. April 3, 1876.

Macrocypris similis, n. sp.
Cythere speyeri, G. S. Brady.
Cytherella pulchra (?), G. S. Brady.

Off Ascension Island. 7 fathoms.

Pontocypris simplex, n. sp.
Cythere audei, G. S. Brady.

STATION 346.—Lat. 2° 42′ S., long. 14° 41′ W. 2350 fathoms. Bottom temperature, 0°·4 C. Globigerina ooze. April 6, 1876.

Cythere dasyderma, n. sp.

STATION 348.—Lat. 3° 10′ N., long. 14° 51′ W. April 9, 1876.

Halocypris atlantica, Lubbock.

St Vincent, Cape Verde Islands. April 26, 1876.

Halocypris brevirostris, Dana.

Section PODOCOPA.

Family I. Cypridæ.

Valves mostly thin and smooth, more or less sinuated below. Anterior antennæ mostly seven-jointed, and beset with numerous setæ, which form a dense brush of greater or less length; posterior antennæ geniculated, and bent backwards, four or five-jointed, armed at the distal extremity with from three to five long, slightly curved claws, and bearing commonly on the posterior aspect of the antepenultimate joint, a bundle of setæ. Mandibles powerful, and divided at the extremity into several teeth, bearing a large four-jointed palp, the first joint of which is provided with a branchial appendage. Two pairs of jaws: the first large, and divided into four digitiform segments, the anterior segment being larger than the rest, two-jointed, and giving attachment to a large branchial plate; second pair small, simple, in the female bearing a simple subconical palp, in the male often pediform. Two pairs of feet: the first stout, and five-jointed, terminated by a long curved claw; the second more slender, and usually bent upwards within the valves. Postabdomen forming two long movable rami, which are sometimes rudimentary and setiform, but oftener well developed, and terminating in two strong curved claws. Eye single, or altogether wanting; rarely double. Intestinal canal forming two pouches; ovaries and testis lying immediately beneath the shell. Copulative organs of the male situated immediately in front of the postabdominal rami, and provided with testes or mucous glands of complex structure.

Paracypris, G. O. Sars.

Shell smooth, compact, elongated. Anterior antennæ seven-jointed, beset with rather short setæ; posterior stout, terminating in four strong curved claws; antepenultimate joint bearing at its base a pedicellated hyaline vesicle. Mandibles terminating in five or six long teeth, and bearing a four-jointed palp, from the basal joint of which springs a narrow branchial appendage. External lobe or palp of the first pair of maxillæ linear, not much broader than the rest. Second pair of maxillæ provided with a branchial appendage, the palp elongated, conical, and inarticulate. Last pair of feet similar to the first in form and size; both pairs five-jointed, and terminating in a long curved claw, the last pair armed also with a short seta, which is directed upwards. Postabdominal rami large, armed at the extremity with two strong curved claws, and a short slender seta; the posterior margin also bears two long setæ; one eye.

Paracypris polita, G. O. Sars.

Paracypris polita, G. O. Sars, Oversigt af Norges marine Ostracoder, p. 12; Brady, Monograph of Recent British Ostracoda, Trans. Lin. Soc., vol. xxvi. p. 378, pl. xxvii. figs. 1–4, and pl. xxxviii. fig. 2.

A few specimens of *Paracypris polita* were found amongst mud, brought up by the anchor in Vigo Bay; others, very doubtfully referable to the same species, occurred in the proceeds of the tow-net at trawl, from Wellington Harbour, New Zealand, and in a sounding from a depth of 420 fathoms, October 20, 1875.

All these examples, however, are so imperfect and ill-developed that to describe or figure them would be quite useless. The species is known hitherto only as inhabiting the seas of Northern Europe.

Phlyctenophora,[1] n. gen.

Carapace (Pl. III. fig. 1, *a*) elongated, not higher in front than behind; shell smooth, and usually more or less ornamented with dark-coloured blotches or striæ. Anterior antennæ (fig. 1, *e*) seven-jointed, beset with moderately long and slender setæ; posterior (fig. 1, *f*) four-jointed, stout, ending in four strong curved claws; second joint bearing a stalked hyaline vesicle, and a brush of short setæ. Mandible, strongly toothed at the apex (fig. 1, *g*) bearing a four-jointed palp, which is destitute of a branchial appendage (?). First pair of maxillæ divided into four linear setiferous segments (fig. 1, *h*), and having at the base a branchial plate bearing six setæ; second pair (fig. 1, *i*) also bearing a branchial appendage, and a small conical palp. First pair of feet five-jointed, terminating in a long slender curved claw (fig. 1, *j*); second pair (fig. 1, *k*) four-jointed (?), flexuous, provided with a movable hinge between the second and third joints; terminal claw long, reflexed against the limb. Postabdominal rami (fig. 1, *l*) well developed, bearing two strong terminal claws. Spermatic gland of the male (fig. 1, *m*) cylindrical, beset with a spiral of delicate setose filaments.

This seems to be sufficiently distinguished from the preceding genus by the absence of a branchial appendage to the mandible palp, and by the flexuous second foot, while from *Macrocypris* it differs, not only in the characters of the mandibles and maxillæ, but in having well-developed postabdominal rami; also in the structure of the spermatic glands.

The genera *Paracypris* and *Phlyctenophora*, both in external appearance, and in the structure of the various parts of the animal, are more nearly allied to the fresh water Cypridæ than are any other marine genera. Many forms probably yet remain to be discovered, which will more completely bridge over the gap between these and the Cytheridæ, and the classification of some of the species described in this monograph, and known only by their shells, must be looked upon as merely provisional. In this category

[1] Φλύκταινα, a blotch; φέρω, I carry.

we must include most of those here referred to the genera *Macrocypris*, *Argillæcia*, and *Pontocypris*.

Phlyctenophora zealandica, n. sp. (Pl. III. fig. 1, *a–m*).

Carapace elongated, compressed; seen from the side, subsiliquose; greatest height situated in the middle, and equal to less than half the length; anterior extremity well rounded, posterior narrowed, and ending in a subacute angle near the ventral surface; dorsal margin well arched, and continued in an unbroken curve to the infero-posteal angle, ventral margin slightly sinuated in the middle; seen from above, the outline is ovate, widest in the middle, and tapering only slightly to the broadly-rounded extremities; width and height about equal; end view subcircular, rather narrowed and angular below. Shell-surface smooth, whitish, marked with a few irregular strigæ of a blackish hue, and on the ventral surface with a broad longitudinal and transversely striated squamous band. Length, 1-26th of an inch (·98 mm.).

Several specimens of this species were taken in the tow-net at trawl in Wellington Harbour, New Zealand; at Port Jackson, Australia, in a depth of 2 to 10 fathoms; and at Humboldt Bay, Papua, in 37 fathoms.

[Pl. III. fig. 1, *a–m*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front, *e* anterior antenna, *f* posterior antenna, *g* mandible, *h* first maxilla, *i* second maxilla, *j* first foot, *k* second foot, *l* postabdominal ramus, *m* spermatic gland of male. The figures of the shell magnified 50 diameters.]

Aglaia, G. S. Brady.

Aglaia, Brady, Les Fonds de la Mer, tom. i., 1867.
Aglaia, Brady, Crosskey, and Robertson, Post-Tertiary Entomostraca, 1874.

Shell smooth and polished, of about equal height before and behind, compressed, subcylindrical. Anterior antennæ seven-jointed, beset with short stout setæ; posterior robust, and bearing at the apex of each joint several strong curved setæ; furnished also with a very small hyaline vesicle, and on the penultimate joint with a lash of very short setæ. Mandibles slender, divided at the extremity into about five blunt teeth, and furnished with a large, narrow, branchial palp. First pair of jaws divided into four elongated segments, and bearing a distinct branchial appendage; second pair also provided with a branchial lamina, and with a simple conical setiferous palp. First pair of feet long, five-jointed, with a long terminal claw; second pair flexuous, four-jointed, last joint armed with three setæ, one of which is very long, and finely pectinate on its inner margin. Postabdominal rami moderately robust, bearing two curved terminal claws, one seta on the anterior, and two on the posterior margin. Testis disposed round the body of the animal; mucous gland of the male elongated, and composed of seven series of whorled filaments.

This genus comes very near to the preceding one, *Phlyctenophora*, but the animal is altogether stouter in build, the limbs shorter, the setose armature of the antennæ much shorter and more robust, and the mandible provided with a branchial lamina; as regards the shell the chief distinction is in the want of angulation of the posterior extremity. The anatomy of the genus was worked out from one or two dried specimens sent to me by M. le Marquis de Folin, and, as regards the main points at any rate, the description given above may be relied upon as being accurate; but as all the Challenger specimens referable to the genus are mere empty shells, I am not able from this source to verifiy, or add anything to the first description, nor even to do more than guess at the genus to which these shells ought to be assigned.

1. *Aglaia* (?) *pusilla*, n. sp. (Pl. XXX. fig. 6, *a–d*).

Carapace compressed, oblong; seen from the side subreniform, rather higher in front than behind, height rather less than half the length; extremities obliquely rounded; dorsal margin very gently arched, ventral sinuated in the middle; seen from above ovate, tapering, and acuminate in front, narrowly rounded behind, width somewhat less than the height; end view subcircular. Surface of the shell perfectly smooth. Length, 1-50th of an inch (·5 mm.).

Dredged off East Moncœur Island, Bass Straits, in 38 to 40 fathoms. Sandy bottom. Station 162.

[Pl. XXX. fig. 6, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

2. *Aglaia clavata*, n. sp. (Pl. VI. fig. 4, *a–d*).

Shell elongated, reniform; seen from the side rather lower in front than behind, height greatest in the middle, and equal to less than half the length, extremities well rounded, dorsal margin gently arched, ventral slightly sinuated in the middle; seen from above, the outline is subclavate, widest behind the middle, tapering very gradually towards the front, and scarcely at all behind, anterior extremity very obtusely pointed, posterior broadly rounded; width and height nearly equal; end view circular; shell-surface perfectly smooth. Length, 1-45th of an inch (·54 mm.).

A few specimens from tow-net at trawl, Wellington Harbour, New Zealand.

[Pl. VI. fig. 4, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

3. *Aglaia* (?) *meridionalis*, n. sp. (Pl. XXX. fig. 7, *a–d*).

Shell compressed, oblong; seen from the side sub-ovate, height equal to more than one-third of the length, extremities rounded and nearly equal in height, the posterior rather oblique; dorsal margin gently arched, highest in the middle, ventral straight;

seen from above, compressed, subulate, widest in the middle, and tapering evenly to the extremities, which are acuminate, width equal to about one-third of the length; end view subcircular, the right valve greatly overlapping the left. Surface of the shell perfectly smooth; length 1-37th of an inch (·68 mm.).

Found in a haul of anchor-mud, from a depth of 6 fathoms, in Stanley Harbour, Falkland Islands. Station 316.

The very great inequality of the two valves of this and the following species may possibly indicate a distinct generic rank, but without the means of examining anatomical details, the point must for the present be left undecided. The larger valve, in this case, is the right; in *Bairdia*, where a like inequality exists, the left valve is the large one.

[Pl. XXX. fig. 7, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

4. *Aglaia* (?) *obtusata*, n. sp. (Pl. XXX. fig. 8, *a–d*).

Shell tumid, subovate, right valve much larger than the left; seen from the side, subreniform, slightly depressed in front; extremities well rounded, the posterior much wider than the anterior; dorsal margin moderately arched, highest in the middle, ventral nearly straight, height equal to half the length; outline as seen from above, ovate, acuminate in front, broadly rounded behind, greatest width equal to the height, and situated in the middle, whence the margins converge quickly towards the front, but scarcely at all backwards; end view subcircular, sides unequal. Surface quite smooth. Length, 1-45th of an inch (·54 mm.).

Dredged in Balfour Bay, Kerguelen Island, in a depth of 20 to 50 fathoms. Station 149.

[Pl. XXX. fig. 8, *a–d*. *a* Shell seen from the left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

Pontocypris, G. O. Sars.

Pontocypris, G. O. Sars, Oversigt af Norges marine Ostrac., 1865.

Shell thin and fragile, higher in front than behind. From the first joint of the seven-jointed anterior antennæ spring two short setæ, one seta from each of the four following joints, four from the sixth, and four from the seventh, those of the last joint being much the longest; last joint of the posterior antenna bearing four long terminal claws; to the side of the second joint is attached a pedicellated vesicle, and to its apex a brush of about five setæ, the longest of which do not much overreach the apices of the terminal claws. Mandibles slender, divided into several curved teeth, and bearing near the apex a long ciliated seta; palp robust, the basal joint large, and bearing a branchial appendage, last joint short and spinous. External segment of the first pair of maxillæ very large, the rest very short

and setiferous, and provided with a branchial plate. Second pair of maxillæ without a branchial plate; palp large and subpediform, three-jointed, last joint in the female, armed with two long slightly curved claws. First pair of feet five-jointed, terminal claw very long; second pair flexuous, four-jointed, last joint short, armed at the extremity with several stout setæ, the margin of one of which is pectinated. Postabdominal rami well developed, with three long marginal setæ; at the apex two curved claws and one slender seta; also one long seta at the base, near the orifice of the intestinal canal. According to G. O. Sars, the ovaries are contained between the valves forming a loop posteriorly, while the testes extend round the whole circumference of the valves.

The palp of the second maxilla is here much more fully developed than in the two genera already described; and the armature of the second pair of feet affords another good distinctive character. The animals, though quite able to swim, are far from active in their habits,—in captivity at any rate being content chiefly to crawl on the bottom,—and, judging from structure, one would suppose that the habits of the genera *Phlyctenophora* and *Aglaia* must be pretty much the same. *Paracypris*, on the other hand, is restricted entirely to a crawling life, by the absence of swimming setæ on its lower antennæ. The specimens of *Pontocypris*, brought home by the Challenger, are remarkably few, and those few present no very distinctive shell characters; possibly they may be immature examples. The reason of this paucity of specimens I believe to be that the genus is essentially one belonging to shallow water, and no doubt littoral dredgings in the warm seas of the tropical and sub-tropical zones would bring to light numerous new species. Some few species from the Mediterranean and the Island of Mauritius I have already had the opportunity of describing.[1] In the open sea, and especially in shallow sheltered inlets, round the British Islands, in depths of from 5 to 20, or 30 fathoms, the two typical species, *Pontocypris mytiloides*, Norman, and *Pontocypris trigonella*, Sars, are often very abundant.

1. *Pontocypris trigonella*, G. O. Sars (Pl. XV. fig. 4, *a–d*).

Pontocypris trigonella, Sars, Oversigt af Norges marine Ostracoder, p. 16, 1865.
Pontocypris trigonella, Brady, Monograph of Recent Brit. Ostrac., p. 387, pl. xxv. figs. 31–34, and pl. xxviii. fig. 3.
Pontocypris trigonella, Brady, Crosskey, and Robertson, Monog. Post-Tertiary Entom., p. 137, pl. xvi. figs. 26–28.

Carapace compressed, oblong; seen from the side subtriangular, greatest height situated in the middle, and equal to half the length, anterior extremity moderately broad and well-rounded, posterior rounded, but much narrower; dorsal margin boldly arched, highest in the middle, ventral very gently sinuated in the middle; seen from

[1] Ann. and Mag. Nat. Hist., 1868 and 1869.

above regularly ovate, widest near, or a little in front of, the middle, and tapering equally toward both ends; extremities acuminate, width equal to one-third of the length; end view ovate. Surface of the shell smooth and polished, white or cream-coloured, and bearing often a few minute impressed puncta. Length, 1-50th of an inch (·5 mm.).

Found in a dredging from off Bermudas (Station 33), 435 fathoms; mud. These specimens, though considerably smaller than those met with in Europe, present no other important difference. I suppose, therefore, that the conditions of a tropical sea are not so favourable to the species as those of temperate regions. Possibly the same observation may hold good if applied to the whole genus. *Pontocypris trigonella* is a common species in Northern Europe, and has been noticed also in dredgings from the Mediterranean and Cape Verde. It occurs not unfrequently in the Post-Tertiary deposits of Scotland.

[Pl. XV. fig. 4, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

2. *Pontocypris simplex*, n. sp. (Pl. I. fig. 5, *a-d*).

Carapace compressed, elongated; seen from the side, subreniform, higher in front than behind; greatest height situated in the middle, and equal to half the length; anterior extremity broadly and obliquely rounded, posterior rounded but considerably narrowed; dorsal margin boldly arched, highest near the middle; ventral sinuated in front of the middle; seen from above the outline is ovate, widest a little in front of the middle; extremities subacuminate, width equal to somewhat more than one-third of the length; end view ovate, rather compressed towards the dorsal margin; surface of the valves quite smooth. Length, 1-38th of an inch (·66 mm.).

Dredged in a depth of 7 fathoms off Ascension Island.

[Pl. I. fig. 5, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

3. *Pontocypris faba* (?), Reuss (Pl. I. fig. 4, *a–d*).

Bairdia faba, Reuss, Ein Beitrag zur genaueren Kenntniss der Kreidegebilde Meklenburgs, Zeitsch. d. deutsch. Geol. Ges., 1855, p. 278, pl. x. fig. 2.

Pontocypris faba, Brady, Ostracoda of the Antwerp Crag, Trans. Zool. Soc., 1878, p. 382, pl. lxiii. fig. 6, *a–e*.

Carapace of the female rather tumid; seen from the side subtriangular, highest in front of the middle, the height being equal to more than half the length; anterior extremity very broadly rounded, posterior much attenuated and almost acuminate; dorsal margin very boldly arched, highest in front of the middle, sloping with a steep curve backwards, and more gently towards the front; ventral rather deeply sinuated in the middle; seen

from above, the shape is ovate, rather more than twice as long as broad, widest in front of the middle, and acuminate at the extremities; end view broadly ovate. Surface of the shell perfectly smooth. Length, 1-30th of an inch (·85 mm.).

The foregoing description applies to the female carapace, which I suppose to be represented by the figures *a–c*, the form figured at *d* being probably the male of the same species. Forms found in the Antwerp Crag differing from each other in almost precisely the same way, and agreeing very closely with those here described, I have, through the kindness of M. Ernest Vanden Broeck, already had the opportunity of describing; the Challenger specimens are, however, somewhat larger. The following dredgings yielded specimens which I refer to this species: males, off East Moncœur Island, Bass Strait (Station 162), 38 to 40 fathoms, sand; females, off Reefs, Honolulu, 40 fathoms.

[Pl. I. fig. 4, *a–d*. *a* Shell of female seen from left side, *b* from below, *c* from front, *d* male seen from left side. All magnified 40 diameters.]

4. *Pontocypris attenuata*, G. S. Brady (Pl. XV. fig. 2, *a–d*).

Pontocypris attenuata, Brady, Ann. and Mag. Nat. Hist., ser. 4, vol. ii. 1868, p. 179, pl. iv. figs. 11–14.

Carapace compressed, elongated, siliquose; seen from the side subtriangular, much higher in front than behind, height scarcely equal to half the length; anterior extremity broadly rounded, posterior attenuated, and tapering to a narrowly-rounded point; dorsal margin elevated, and subangular in front of the middle, thence sloping gently towards the front, steeply and almost in a straight line backwards; ventral margin deeply sinuated in front of the middle; seen from above, the outline is compressed, lanceolate, widest in front of the middle, extremities acuminate, greatest width equal to about one-third of the length; end view ovate; surface of the shell quite smooth. Length, 1-43d of an inch (·57 mm.).

Found in anchor-mud, from a depth of 7 fathoms, in Hong-kong Harbour and in Humboldt Bay, Papua, 37 fathoms. The type-specimens were from Mauritius.

[Pl. XV. fig. 2, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

5. *Pontocypris* (?) *subreniformis*, n. sp. (Pl. XV. fig. 6, *a–d*).

Carapace, as seen from the side, subreniform, highest in the middle, height equal to somewhat more than half the length; anterior extremity rounded, somewhat depressed, posterior broad, rather flattened, rounded off above and below; dorsal margin very boldly arched, almost gibbous in the middle where it is highest; ventral margin, very slightly sinuated; seen from above the outline is evenly ovate, widest in the middle, extremities rounded off, the anterior much the narrower of the two, greatest width equal to more

than one-third of the length; end view broadly ovate, widest toward the ventral margin; surface of the shell smooth. Length, 1-43d of an inch (·57 mm.).

Dredged in Simon's Bay, South Africa, 15 to 20 fathoms (Station 140); Port Jackson, Australia, 2 to 10 fathoms. The anterior depression of this species suggests doubt as to the propriety of its genuine location as a *Pontocypris*, but I do not know of any genus, except perhaps *Bythocypris*, to which it could with propriety be referred, its anatomical characters being quite unknown.

[Pl. XV. fig. 6, *a-d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

Argillæcia, G. O. Sars.

Argillæcia, Sars, Oversigt af Norges marine Ostracoder, 1865.
Argillæcia, Brady, Crosskey, and Robertson, Post-Tertiary Entomostraca, 1874.

Valves equal, smooth, elongated, moderately robust, scarcely higher in front than behind, more or less angulated at the junction of the posterior and ventral margins. Anterior antennæ (Pl. IV. fig. 5) robust, five-jointed, first joint large and stout, the rest beset on the lower margins with strong spines, and on the upper margins, especially in the male, with numerous long setæ; posterior antennæ (Pl. IV. fig. 6) short and thick, otherwise as in *Pontocypris*; the setæ of the antepenultimate joint in the female short, in the male very long, and reaching much beyond the terminal claws. Mandibles (fig. 7) almost as in *Pontocypris*, the palp, however, having only three or four setæ ("one," Sars) in place of a branchial plate. Palp of the second pair of jaws indistinctly three-jointed (fig. 9) bearing several terminal setæ ("ending in a single claw," Sars). First pair of feet (fig. 10) strong, ending in two nearly equal claws; second pair unlike the first, and almost like those of *Pontocypris*; last joint very short, and bearing three setæ, of which one is very long and curved. Postabdominal rami short, attenuated towards the apices, terminal claws very small. Eye wanting.

The anatomical details of *Argillæcia eburnea*, as shown in Pl. IV., do not in all respects coincide with Sars' generic description; the antennal setæ of *Argillæcia eburnea* are much longer and more slender than ought to be the case, the branchial setæ of the mandible-palp are more numerous, and the second pair of maxillæ seem to be somewhat different in structure; yet, notwithstanding these divergences, I prefer, for the present at least, to place this species in the already established genus, rather than to create a new one on what might perhaps prove to be insufficient grounds. The genus, though widely distributed, does not seem to contain a large number of species, and these, like most of the *Cypridæ*, present so few peculiarities of external form that their identification is a difficult matter in the case of fossil species and of recent empty shells. The subacute infero-posteal angle, and the overlap of the right valve in the centre of the ventral surface, are the only tangible distinctive marks, so far as the shell is concerned.

1. *Argillæcia eburnea*, n. sp. (Pl. IV. figs. 1–15).

Shell oblong, compressed, subreniform, height less than half the length; seen from the side the anterior extremity is obliquely rounded; posterior produced, and subacute at the ventral angle; dorsal margin boldly arched, highest in the middle, sloping, with a gentle curve forwards, and steeply backwards, as far as the ventral angle; ventral margin rather deeply sinuated in the middle; seen from above, compressed ovate, widest near the middle, acuminate in front, rounded behind, width equal to the height; end view nearly circular. Surface of the shell perfectly smooth. Length, 1-32d of an inch (·77 mm.).

Argillæcia eburnea, occurred plentifully in two dredgings from Kerguelen Island,—Balfour Bay, 20 to 50 fathoms, and off Christmas Harbour, 120 fathoms; also in lat. 35° 39′ S., long. 50° 47′ W., 1900 fathoms (Station 323).

[Pl. IV. figs. 1–15. Fig. 1, shell of male seen from left side; fig. 2, from above; fig. 3, from below; fig. 4, from front; fig. 5, anterior antenna; fig. 6, posterior antenna; fig. 7, mandible and palp; fig. 8, first maxilla; fig. 9, second maxilla (male); fig. 10, first foot; fig. 11, second foot (male); fig. 12, second foot (female); fig. 13, abdomen and postabdominal ramus; fig. 14, copulative organs of male; fig. 15, muscle spots. The figures of the shell magnified 50 diameters.]

2. *Argillæcia badia*, n. sp. (Pl. VI. fig. 3, *a*-*d*).

Shell minute, compressed, ovate; seen from the side, oblong, subovate, higher in front than behind, greatest height situated in the middle, and equal to half the length; anterior extremity broadly rounded, posterior depressed, obliquely rounded; dorsal margin moderately arched, ventral almost straight; seen from above, ovate, acuminate in front, rounded behind, greatest width in the middle, and equal to rather more than one-third of the length; end view subcircular. Surface of the shell perfectly smooth. Length, 1-62d of an inch (·4 mm.).

Dredged at Port Jackson, Australia, in 2 to 10 fathoms.

[Pl. VI. fig. 3, *a*–*d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front, magnified 60 diameters.]

Macrocypris, G. S. Brady.

Macrocypris, Brady, Monog. Recent Brit. Ostrac., 1868.
Bairdia (in part), G. O. Sars, Oversigt af Norges marin. Ostr., 1865.

Carapace elongated, attenuated at the extremities; valves unequal, the right larger than the left, and overlapping dorsally; hinge-line flexuous. Surface of the shell smooth, polished, and destitute of hairs. Antennæ short and robust; the anterior seven-jointed, tapering to the apex, bearing numerous short setæ; posterior five-jointed,

last two joints very short; terminal claws elongated; second joint bearing a bundle of short biarticulate setæ. Mandibles large, dilated, and armed with six or seven strong teeth; palp elongated, four-jointed, and provided with a branchial appendage. The first pair of jaws have an unusually small, subovate branchial plate, and the external segment is narrow, and not larger than the rest; second pair destitute of a branchial appendage; palp in the female, large and subpediform, four-jointed, the last joint armed with three claws; in the male, very robust and subcheliform. First pair of feet much elongated, five-jointed, last joint armed with one or two long curved claws; second pair very different, covered entirely by the shell, five-jointed, terminal claw very long and recurved. Postabdominal rami rudimentary, forming two small simple appendages attached to the posterior part of the abdomen. No eye. Male smaller than the female; copulative organs large; spermatic glands long and narrow, the lateral filaments apparently not arranged in a verticellate manner.

The type of this genus, *Macrocypris minna*, was included by G. O. Sars under *Bairdia*, he having had no opportunity of investigating the anatomy of the animal. The shell, however, differs distinctly from that of *Bairdia* in having the *right* valve instead of the left the larger; while as to the structure of the contained animal, the presence in *Macrocypris* of two pairs of jaws, the flexuous second foot, and the rudimentary postabdominal rami, besides other differences, are amply sufficient to separate the one genus from the other.

1. *Macrocypris tenuicauda*, n. sp. (Pl. II. fig. 1, *a–f*, and Pl. III. fig. 2, *a*, *b*).

Carapace elongated, siliquose; seen from the side subtriangular, highest in the middle, narrowly rounded in front, much attenuated, and subacuminate behind; dorsal margin strongly arched, and sloping steeply from the middle to each extremity, ventral slightly sinuated in front; height equal to rather more than one-third of the length; seen from above the outline is broadly ovate, widest near the middle, and tapering evenly to the extremities, which are acuminate; width and height nearly equal; the end view is subcircular, but somewhat angulated above, and keeled below; the left valve (Pl. II. fig. 1, *e*) is much narrower than the right (fig. 1, *f*), and has its dorsal arch truncated. Shell perfectly smooth, dense in structure, whitish. Length, 1-16th of an inch (1·55 mm.).

This species seems to be not very widely distributed; the only dredgings in which I have met with it being those from off Culebra Island, West Indies, 390 fathoms, mud (Station 24); and off North Brazil, 350 fathoms, mud (Station 122). In both of these it occurred abundantly, though the specimens were for the most part separated valves. From some of the more perfect specimens I have been able to satisfy myself as to the structure of the contained animal, and this, together with the characters of the shell, is sufficient to identify the genus to which it belongs.

[Pl. II. fig. 1, *a–f*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from

front, *e* left valve *f* right valve; all magnified 40 diameters. Plate III. fig. 2, *a–b*. *a* Second maxilla of male, *b* second foot.]

2. *Macrocypris canariensis*, n. sp. (Pl. II. fig. 3, *a–d*).

Carapace, as seen from the side, elongated, arcuate, highest in the middle, the dorsal margin forming one continuous arch as far as the extremities, both of which are subacute; ventral margin nearly straight; height equal to one-third of the length; seen from above, the outline is elongate-ovate, more than thrice as long as broad, widest in the middle, and tapering gradually to the extremities, both of which are acuminate. Surface of the shell quite smooth. Length, 1-12th of an inch (2·1 mm.).

Only one example of this species has been noticed. It occurred in a dredging from a depth of 620 fathoms, off the Canary Islands, on a bottom of sandy mud and shells (Station 8).

[Pl. II. fig. 3, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 30 diameters.]

3. *Macrocypris similis*, n. sp. (Pl. II. fig. 2, *a–d*).

Carapace, as seen from the side, elongated, siliquose, highest in the middle, height not equal to one-half of the length; anterior extremity broadly rounded, posterior acuminate at the ventral angle; dorsal margin strongly arched, sloping gently towards the front, and with a steep curve to the ventral angle; ventral margin sinuous, incurved in the middle; seen from above, ovate, widest in the middle, nearly thrice as long as broad; extremities acute; end view subcircular, width less than the height. Shell-surface smooth and polished. Length, 1-12th of an inch (2·1 mm.).

Habitat.—Off Pernambuco, lat. 8° 37′ S., long. 34° 28′ W., 675 fathoms, mud (Station 120). From a sounding in a depth of 160 fathoms off the coast of Patagonia, and off Ascension Island, 420 fathoms.

This is perplexingly like in its general characters to the next described species, *Macrocypris orientalis*; but it is at least twice as large, and somewhat more compressed.

[Pl. II. fig. 2, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 30 diameters.]

4. *Macrocypris orientalis*, G. S. Brady (Pl. II. fig. 4, *a–d*).

Macrocypris orientalis, Brady, Les Fonds de la Mer, tom. i., p. 61, pl. vii. figs. 1–3.
(?) *Cytherina acuminata*, Alth., Reuss in Haidinger's Abhandl., 1850, vol. iv. p. 49, tab. vi. fig. 7, *a–c*, and fig. 8.

Except in its much smaller size, and in being more robust, there are no characters in this species to separate it from *Macrocypris similis*. Its length is 1-27th of an inch (·9 mm.).

The figures of *Cytherina acuminata*, given by Reuss (*loc. cit.*), though somewhat more slender, are very near to the present species in general character. Indeed, had Reuss's drawings referred to a recent species, there need have been no hesitation in saying that our shells belonged to the same, but as *Cytherina acuminata* is a chalk-marl species, and is stated to be only ·7 mm. in length, it seems best to regard its identity as, at any rate, not proven for the present. The Challenger specimens are from near Booby Island, lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms (Station 187), and (?) from Humboldt Bay, Papua, 37 fathoms. The type specimens, described in Les Fonds de la Mer, are from Batavia and other stations in the Malay Archipelago.

[Pl. II. fig. 4, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

5. *Macrocypris setigera*, n. sp. (Pl. I. fig. 1, *a–d*).

Carapace, as seen from the side, elongated, subtriangular, highest in the middle, height less than half the length; extremities rounded, the anterior the broader of the two; dorsal margin boldly arched, high in the middle, ventral nearly straight; seen from above, ovate, nearly thrice as long as broad, widest in the middle, and only slightly tapering towards the very broadly rounded extremities; end view nearly circular. Shell smooth, bearing a few small scattered setæ towards the extremities. Length, 1-20th of an inch.

Found only in a dredging made at Port Jackson, in a depth of 2 to 10 fathoms. The specimens being only empty shells, I have no means of verifying the generic reference, so that the position here assigned to the species must be understood as purely provisional.

[Pl. I. fig. 1, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 40 diameters.]

6. *Macrocypris tumida*, n. sp. (Pl. VI. fig. 2, *a–d*).

Shell oblong, tumid, subovate; seen laterally the anterior extremity is broadly rounded, the posterior obliquely rounded, produced and obscurely angular below; dorsal margin boldly and evenly arched, highest in the middle; ventral straight; height equal to half the length; seen from above the outline is broadly ovate, widest in the middle, and tapering very slightly towards the extremities, which are broadly rounded; the anterior slightly mucronate, width equal to the height; end view nearly circular. Shell-surface smooth. Length, 1-16th of an inch (1·55 mm.).

A very fine and well-marked species, found in a dredging from a depth of 28 fathoms, in Royal Sound, Kerguelen Island (Station 149), and from Wellington Harbour, New Zealand, in tow-net at trawl.

[Pl. VI. fig. 2, *a-d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 30 diameters.]

7. *Macrocypris decora*, G. S. Brady (Pl. I. fig. 3, *a–d*, and Pl. VI. fig. 8, *a*, *b*).

Cytherideis decora, Brady, Trans. Zool. Soc., 1865, vol. v. p. 366, pl. lvii. fig. 13, *a–c*.
Paracypris hieroglyphica, Brady, Les Fonds de la Mer, tom. i., 1868, p. 62, pl. vii. figs. 7, 8.

Carapace, as seen from the side, elongated, flexuous, siliquose, highest in the middle; anterior extremity rather obliquely rounded, posterior attenuated, and very slightly rounded off, almost acuminate; dorsal margin boldly arched, somewhat flattened in the middle, sloping with a slight sinuosity towards the front, more steeply, and almost in a right line, backwards; ventral margin deeply sinuated in the middle; seen from above the outline is ovate, widest in the middle, and tapering to the extremities which are equally pointed, width and height almost equal; end view subcircular. Surface of the shell smooth, polished, and marked, in fresh living specimens, with two or more waved transverse bands of black (Pl. VI. fig. 8). Length, 1-22d of an inch (1·1 mm.).

A widely-distributed species in the Southern Hemisphere. Among the Challenger dredgings it occurred as follows:—Off Culebra Island, West Indies, 390 fathoms, mud (Station 24); off North Brazil, 350 fathoms, mud (Station 122); off Christmas Harbour, Kerguelen Island, 120 fathoms (Station 149); Nares' Harbour, Admiralty Islands, 16 fathoms. The type specimens were from Australia, and those more lately described under the name of *Paracypris hieroglyphica*, from Batavia.

Between this and the following species, *Macrocypris maculata*, the distinction is not very clear, the more regularly arcuate dorsal curve of the latter, together with its more evenly rounded extremities, when viewed from the side, seem to be the best diagnostic marks; but it is quite possible that further examination may show the two forms to belong to the males and females of one and the same species. The figures in Pl. VI. are given merely to show the coloured markings which occur in characteristic specimens.

[Pl. I. fig. 3, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Pl. VI. fig. 8, *a*, *b*. *a* Carapace seen from right side, *b* from above. Magnified 40 diameters.]

8. *Macrocypris maculata*, G. S. Brady (Pl. I. fig. 2, *a–d*).

Cytherideis maculata, Brady, Trans. Zool. Soc., 1865, vol. v. p. 367, pl. lvii. fig. 12, *a–b*.

Carapace, seen from the side, elongated, subreniform, highest in the middle, extremities rounded, and nearly equal in width, dorsal margin boldly arched, sloping about equally to either end; ventral margin sinuated in front of the middle, height scarcely equal to half the length; seen from above ovate, nearly thrice as long as broad, widest in the middle, and tapering evenly to each extremity; end view broadly ovate, keeled below. Shell smooth and polished. Length, 1-16th of an inch (1·55 mm.).

Macrocypris maculata was found in dredgings from the following localities:—Simon's

Bay, 15 to 20 fathoms (Station 140); Balfour Bay, Kerguelen Island, 20 to 50 fathoms (Station 149); Royal Sound, Kerguelen Island, 28 fathoms; off Prince Edward's Island, 50 to 150 fathoms; off East Moncœur Island, Bass' Strait, 38 to 40 fathoms (Station 162); and off Amboyna, 15 to 20 fathoms. The type specimens were from "Australia, the West Indies, and Turk's Island."

[Pl. I. fig. 2, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 30 diameters.]

Bythocypris, n. gen.

Shell thin and fragile, smooth, reniform or subreniform; left valve much larger than the right, which it overlaps both on the dorsal and ventral margins. Antennæ short and stout; anterior pair (Pl. V. fig. 1, *f*) six-jointed, the first two joints very large, the remainder small and bearing numerous long setæ; posterior pair (fig. 1, *g*) five-jointed, having no "hyaline vesicle," the second and fifth joints about twice as long as the rest, scarcely at all tapered toward the apex, and terminating in about six stout curved setæ, one of which is much stouter than the others; mandibles (fig. 1, *h*) armed with numerous strong serrated apical teeth, and bearing a well-developed, four-jointed, and setiferous palp, the first joint of which bears a rudimentary branchial appendage consisting of a single stout seta. One pair of jaws only (?), consisting of four setiferous digits (fig. 1, *i*) and a large branchial appendage, which is divided into two portions, the upper portion ovate and bearing ten setæ, the lower narrow, biarticulate, and provided with five slender setæ. Two pairs (?) of feet, the first (fig. 1, *j*) bearing a single curved terminal claw and about three short marginal setæ, the second (fig. 1, *k*) rudimentary, consisting of a single small joint with two stout setæ. Post-abdominal rami (fig. 1, *l*) of moderate size, curved, and armed at the apex with one long and one short curved seta.

Of this genus I have seen no perfect specimens, the description above given having been drawn up from the examination of a number of mutilated individuals. Most of the dredged specimens consisted of single detached valves; and the few which were perfect so far as the shell is concerned contained in no case more than very imperfect remains of the animal. Drawings of the various parts are given in Plate I., and from these it will be seen that the species cannot be assigned to any hitherto described genus, those with which it has most affinity, however, being *Cypris* and *Bairdia*. From *Cypris* it is distinctly separated by the unequal valves, the absence of a tuft of swimming setæ on the second pair of antennæ, and by the quite rudimentary character of the branchial appendage of the mandible-palp; from *Bairdia*, to which, however, it approaches very closely, by the rudimentary branchial appendage of the mandible (which in *Bairdia* (Pl. I. fig. 2, *c*) consists of a distinct trisetose joint); and by differences in the characters of the maxillary branchial apparatus and of the post-abdominal rami. From all other genera of

Cypridæ—except, perhaps, *Potamocypris*, the animal of which is as yet imperfectly known—the characters of the shell afford amply sufficient distinction. The anatomical points which want still further elucidation are, chiefly, the presence or absence of a second maxilla,—(though, considering its close affinity with *Bairdia*, the absence of this organ may perhaps be safely assumed),—the number and characters of the feet, and the real nature of the rudimentary organ here called the second foot.

1. *Bythocypris reniformis*, n. sp. (Pl. V. fig. 1, *a–l*).

Carapace reniform; seen laterally, the greatest height situated in the middle, and equal to more than half the length; extremities rounded, the anterior broader than the posterior, ventral margin sinuated in the middle, dorsal boldly and evenly arched; seen from above, the outline is narrowly ovate, about thrice as long as broad and widest in the middle, tapering evenly to the extremities, of which the anterior is pointed, the posterior narrowly rounded; end view ovate, the width equal to about two-thirds of the height. The left valve is more rounded in contour, and is also much more strongly arched dorsally than the right valve, the hinge margins overlapping along almost its entire length; its lower margin also forms a curved flange, which overlaps the right valve in the middle of the ventral aspect. The shell is smooth, thin, and homogeneous in structure, but marked with irregularly scattered translucent spots; muscle spots arranged irregularly near the centre of the valves. Length, 1-20th of an inch (1·3 mm.).

A considerable number of detached valves, together with a few entire specimens, of the shell of this species were found in dredgings from 390 fathoms, off Culebra Island, West Indies, mud (Station 24); off North Brazil, in 675 fathoms and 350 fathoms, mud (Stations 120 and 122); off Prince Edward's Island, in 50 to 150 fathoms; and off East Moncœur Island, Bass' Straits, in 38 to 40 fathoms, sand.

[Pl. V. fig. 1, *a–l*. *a* Carapace, magnified 40 diameters, seen from left side, *b* from right side, *c* from above, *d* from below, *e* from front, *f* anterior antenna, *g* posterior antenna, *h* mandible with palp, *i* maxilla with palp, *j* first foot, *k* second foot (?), *l* abdominal ramus.]

2. *Bythocypris* (?) *compressa*, n. sp. (Pl. XXXV. fig. 5, *a–d*).

Carapace compressed, elongated, subreniform, greatest height situated in the middle, and equal to half the length. Seen laterally the anterior extremity is broad, obliquely rounded, and somewhat produced at its lower end, the posterior much narrower and evenly rounded; dorsal margin well arched, ventral gently sinuated; seen from above, the outline is compressed, ovate, widest in the middle, and tapering evenly to the extremities, which are not very acute; width equal to about one-third of the length. The end view is subovate, rounded above, and rather suddenly narrowed below the middle. Shell smooth and structureless. Length, 1-33d of an inch (·77 mm.).

One specimen only of this species was found in material dredged in 18 fathoms off Tongatabu, South Pacific (Station 172). From *Bythocypris reniformis* it is separated by the broad, very oblique, and downwardly produced anterior margin, as well as by a generally more elongated contour.

[Pl. XXXV. fig. 5, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 50 diameters.]

3. *Bythocypris elongata*, n. sp. (Pl. VI. fig. 1, *a–c*).

Carapace compressed, elongated; seen from the side, subreniform, highest in the middle, height equal to about half the length; anterior extremity rounded off, posterior somewhat produced, narrowed, scarcely rounded; dorsal margin forming a flattened arch, which slopes much more abruptly behind than in front; ventral very slightly sinuated in the middle; seen from above the outline is elongate-ovate, widest in the middle, and having subacuminate extremities. The valves are unequal, the right being somewhat lower and more angular in outline than the left. Surface of the shell quite smooth. Length, 1-22d of an inch (1·1 mm.).

Only a few separated valves of this species have been noticed. It is impossible to refer them even provisionally to any known species, and their true generic position is also doubtful. In general appearance they seem to come nearer to *Bythocypris* than to any other genus. The specimens described were found in a dredging from a depth of 1425 fathoms, north of Tristan d'Acunha, lat. 32° 24′ S., long. 13° 5′ W. (Station 335).

Bairdia, M'Coy.

Bairdia, M'Coy, Carb. Limest. Foss. Ireland, 1844.

Valves unequal in size, the left much the larger of the two, and overlapping the right on the dorsal, and in the middle of the ventral surface; the right valve (Pl. VIII. fig. 1, *e*) is narrow, elongated, and angular; its anterior margin often rather produced at the lower extremity; dorsal margin flattened in the middle, and sloping steeply toward each end; the posterior extremity produced into a more or less prominent beak; and the ventral margin more or less sinuated; the left valve (fig. 1, *f*) is much less angular in outline, dorsal margin much elevated, and very strongly arched; ventral convex; anterior extremity broadly rounded, posterior narrower, but not beaked. The shape of the shell is variable, — reniform, subtriangular or subrhomboidal; hinge simple, and without teeth; shell-surface smooth, hirsute or slightly punctate. Muscle-spots not far from the centre of the valves, and arranged usually in a rosette. Eyes absent. Antennæ usually robust; the anterior pair six to eight-jointed (Pl. V. fig. 2, *a*), first two joints large, the rest short, and finally joined together, "but forming with a second joint, a movable hinge" (Sars), and bearing numerous long, apical

setæ; posterior antennæ five or six-jointed, the first joint bearing at its base a bisetose tubercle, fourth and fifth joints elongated and slender, last joint very short, and terminating in two or three curved claws (fig. 2, *b*); mandibes (fig. 2, *c*) large, bearing six or seven strong curved teeth at the dilated extremity; palp robust, four-jointed, and provided with a trisetose branchial appendage, which is attached to the basal joint. One pair of jaws only (fig. 2, *d*), divided into three or four narrow subequal and setiferous branches, and having a large branchial plate, which is divided into two parts by a distinct constriction, the basal portion bearing six, the upper dilated and ovate portion about twenty-four, long ciliated filaments. Three pairs of feet, all of similar structure, directed forwards and protuding from the shell, four-jointed, and terminating in a long claw, the first pair having attached to its basal joint a large ovate, branchial lamina, which, like that of the maxilla, is divided into two portions, and fringed with numerous plumose filaments (fig. 2, *e*). Postabdominal rami (Pl. III. fig. 3, *c*, and Pl. V. fig. 2, *g*) well developed, and of moderate length, bearing several lateral setæ, and two long, curved apical claws, the larger of which is (at any rate, sometimes) pectinated towards the apex. Copulative organs of the male (Pl. III. fig. 3, *a*) complex in structure, and not unlike those of many *Cytheridæ*; no spermatic glands have been noticed. The animal crawls slowly about amongst the mud.

This is a widely dispersed genus, attaining, apparently, its greatest development in the tropical and southern seas, in dredgings from which regions the number of specimens of *Bairdiæ* not unfrequently exceeds that of all the other *Ostracoda* together; the individuals, however, though numerous, are usually found to belong in each gathering to one, or at most two, predominant species.

The anatomy of the genus has been pretty well made out by G. O. Sars,[1] from an examination of the European species, *Bairdia complanata*, Brady. The structure of this animal agrees in all essential respects with that of *Bairdia villosa*, a new species of which several perfect examples occurred in the Challenger dredgings from Kerguelen Island, and which I have been able to dissect and figure with tolerable completeness. The most important generic characters,—apart from the form of the shell, the peculiarities of which have long been recognised,—reside in the absence of the second maxilla, the very small trisetose branchial appendage of the mandible, and the presence of a branchial appendage to the first foot, of which, unlike the typical *Cypridæ*, there are three pairs. G. O. Sars has, with his usual accuracy and acuteness, pointed out that this genus constitutes a very interesting link between the two families *Cypridæ* and *Cytheridæ*, agreeing with the first-named family in its perfectly developed postabdominal rami, and with the last in having three pairs of legs, the first of which, however, answers to the second maxilla of the typical *Cypridæ*, and has attached to its base a well-developed

[1] Undersögelser over Hardangerfjordens Fauna, I. Crustacea, af G. O. Sars (Videnskabs.—Selskabets Forhandlinger, p. 246, 1871).

branchial plate. The genera *Pontocypris* and *Macrocypris* also show intermediate characters in the structure of the second pair of maxillæ.

Of the twenty-three species of *Bairdia* noticed in this monograph, one only, *Bairdia villosa*, was taken alive. All the rest are represented merely by dead shells. In this condition it will be seen that the task of specific identification becomes very difficult, the only available characters being those of the shell, which in this genus does not show any very marked specific differences of surface-ornament; the shape and proportions of the shell thus become the only available diagnostic marks, and it is very probable that the further investigation of larger numbers of specimens, and above all, of living animals, may very much modify our view as to the validity of some of the characters here adopted as specific marks, but which may prove to be dependent upon sex or stages of growth. It need scarcely be said that many of the fossil forms described by authors under the generic name *Bairdia*, must of necessity be transferred to other genera, and the same observation holds good as regards *Cythere*, *Cytheridea*, *Cypridina*, and other names in use by palæontologists before our anatomical knowledge of the group had been much elaborated. But as important anatomical differences are constantly coincident with well-marked shell characters,[1] it is possible in most cases to refer even fossil species to their proper generic position, the difficulty being, indeed, no greater than constantly occurs with recent dredged specimens, in which the animal contents of the shell have entirely disappeared.

1. *Bairdia fusca*, G. S. Brady (Pl. VII. fig. 2, *a–d*).

Bairdia fusca, Brady, Trans. Zool. Soc. London, 1865, vol. v. p. 364, pl. lvii. fig. 9, *a–d*.

Carapace as seen from the side subtriangular, greatest height situated in the middle, and equal to about two-thirds of the length; extremities rounded, but more broadly in front than behind; ventral margin nearly straight; dorsal very boldly arched; seen from above, the outline is compressed, ovate, subacuminate behind, and rather more obtusely pointed in front; greatest width in the middle, scarcely equal to half the length; end view ovate, height much exceeding the width. Shell-surface smooth (slightly hairy when recent), and covered with closely set minute punctations. Length, 1-25th of an inch (1 mm.).

A few specimens of *Bairdia fusca* occurred in a dredging made in very shallow water (2 to 10 fathoms) at Port Jackson, Australia. The species was described by myself in 1865, from Australian specimens, which agree entirely with those brought home by the Challenger, except that these last, being only dead shells, are pale in colour and have lost all their hairs.

[1] So far as British Post-Tertiary species are concerned, these characters have been tabulated in Messrs Brady, Crosskey, and Robertson's Monograph of the Post-Tertiary Entomostraca, issued by the Palæontographical Society.

[Pl. VII. fig. 2, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. All magnified 30 diameters.]

2. *Bairdia villosa*, n. sp. (Pl. III. fig. 3, *a*, *b*, Pl. V. fig. 2, *a–g*, and Pl. VIII. fig. 4, *a–f*).

Carapace, as seen laterally, subtriangular, highest in the middle, height equal to two-thirds of the length; extremities well rounded and not at all beaked; dorsal margin excessively arched, very high and subangular in the middle; ventral almost straight; seen from above, regularly ovate with subacute and nearly equal extremities, twice as long as broad; end view broadly ovate. The shell is finely punctate, and densely clothed with coarse brown hairs, many of which, especially towards the hinder extremity, are very long; colour, deep brown. Length, 1-18th of an inch (1·4 mm.).

The antennæ are more slender than is usual in this genus (Pl. V. fig. 2, *a*, *b*); the anterior pair seven-jointed, the posterior six-jointed (?). The terminal claws of the post-abdominal rami (fig. 2, *g*) are two, one of them very long, and bearing towards the apex a long seta and a number of short cilia, arranged in a pectinate manner along its concave side; the other claw, about half as long, and destitute of marginal setæ; the inner margin of the ramus bears near its distal end, five long setæ. In other respects the animal exhibits the ordinary characters of the genus.

The following is the list of dredgings in which *Bairdia villosa* has been found:—off Nightingale Island (Tristan d'Acunha), 100 to 150 fathoms (Station 135); Balfour Bay, Kerguelen Island, 20 to 50 fathoms (Station 149); off Christmas Harbour, Kerguelen Island, 120 fathoms; off Prince Edward's Island, 50 to 150 fathoms; off East Moncœur Island, Bass' Strait, 38 to 40 fathoms (Station 162).

The characters of the species are sufficiently well marked; it is less compressed, larger and much more hirsute than *Bairdia fusca*, and much less tumid than the following species, *Bairdia hirsuta*. In the Balfour Bay dredging there were a considerable number of specimens, but not so many in those from other localities.

[Pl. III. fig. 3, *a*, *b*. *a* Copulative organs and postabdominal rami of the male, *b* labrum. Pl. V. fig. 2, *a–g*. *a* Anterior antenna, *b* posterior antenna, *c* mandible, *d* maxilla, *e* first foot with branchial plate attached, *f* second foot, *g* postabdominal ramus. Pl. VIII. fig. 4, *a–f*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front, *e* right valve, *f* left valve; the figures of the shell magnified 30 diameters.]

3. *Bairdia hirsuta*, n. sp. (Pl. VIII. fig. 3, *a–d*).

In general appearance very much like the preceding species, but more tumid, more compressed at the extremities, and slightly beaked behind; seen from the side, the dorsal margin is not so strongly arched as in *Bairdia villosa*, the ventral margin is convex, and

both extremities are slightly produced; height equal to two-thirds of the length; seen from above, the outline is broadly ovate, with suddenly tapering and produced mucronate extremities, twice as long as broad; end view very broadly ovate, the greatest width being below the middle, and almost equalling the height. Shell brown and densely hairy. Length, 1-16th of an inch (1·55 mm.).

Dredged in lat. 38° 6′ S., long. 88° 2′ W., bottom of red clay, 1825 fathoms (Station 296); and in lat. 33° 42′ S., long. 78° 18′ W., 1375 fathoms, among globigerina ooze (Station 300).

[Pl. VIII. figs. 3, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 30 diameters.]

4. *Bairdia simplex*, n. sp. (Pl. VII. fig. 1, *a–d*).

Carapace, as seen from the side, oblong, subovate, nearly twice as long as high, extremities rather narrow, evenly rounded; dorsal margin arched, ventral straight or slightly convex; the outline, as seen from above, is compressed, ovate, about twice as long as broad, widest in the middle, extremities subacuminate; end view broadly ovate, widest in the middle, width equal to two-thirds of the height. Shell-surface smooth, with a few scattered hairs. Length, 1-20th of an inch (1·3 mm.).

One or two specimens of this species were found in a dredging (Station 151) made off Heard Island, in 75 fathoms, on a muddy bottom. Were it not for its much more elongated contour and larger size, it might have been referred to *Bairdia villosa*, to which in other respects it bears a very close resemblance.

[Pl. VII. fig. 1, *a–d*. *a* Carapace seen from the left side, *b* from above, *c* from below, *d* from front. Magnified 30 diameters.]

5. *Bairdia exaltata*, n. sp. (Pl. IX. fig. 2, *a–d*).

Carapace, as seen from the side, subovate, highest in the middle; height equal to more than two-thirds of the length; extremities evenly, and very broadly rounded, dorsal margin excessively arched, ventral slightly convex; seen from above the outline is ovate, with compressed, though rather obtuse extremities, more than twice as long as broad, the greatest width being in the middle; end view ovate, much attenuated towards the dorsal edge, widest in the middle, the greatest width equal to two-thirds of the height. Shell-surface perfectly smooth, and polished. Length, 1-18th of an inch (·1·4 mm.).

One or two specimens only of this fine and very distinct species were collected in a dredging from lat. 2° 33′ S., long. 144° 4′ E., 1070 fathoms. Bottom of globigerina ooze (Station 218).

[Pl. IX. fig. 2, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 40 diameters.]

6. *Bairdia formosa*, G. S. Brady (Pl. X. fig. 1, *a–e*).

Bairdia formosa, Brady, Ann. and Mag. Nat. Hist., 1868, ser. 4, vol. ii. p. 221, pl. xiv. figs. 5–7.

Carapace as seen from the side subtriangular, all the angles broadly rounded off, height greatest in the middle, and equal to three-fourths of the length; the dorsal margin is excessively arched, and somewhat gibbous in the middle, the ventral straight or rather convex; anterior extremity broadly rounded, posterior narrower, slightly produced below the middle; seen from above, the outline is very broadly ovate, the greatest width being situated in the middle, and equal to more than half the length; extremities obtuse, submucronate; the end view is broadly ovate, the height considerably greater than the width. In well-developed adult specimens the surface is slightly punctate, and is beset with numerous slight tubercular or papilliform eminences, the left valve bearing also at its infero-posteal angle a series of five or six spines; the right valve is fringed along its anterior margin with a considerable number—twelve or more—of small blunt teeth; young specimens have the shell quite smooth and destitute of marginal teeth. Length, 1-16th of an inch (1·55 mm.).

Numerous specimens, chiefly detached valves, of this handsome species occurred in dredgings from lat. 38° 11′ N., long. 27° 9′ W., 900 fathoms, on a bottom of globigerina ooze (Station 76); from lat. 8° 37′ S., long. 34° 28′ W., 675 fathoms, muddy bottom (Station 120); from a depth of 350 fathoms off North Brazil, lat. 9° 5′ S., long. 34° 49′ W. (Station 122); and (one or two doubtful examples) from lat. 5° 26′ S., long. 133° 19′ E., 580 fathoms (Station 191*a*).

The Mediterranean specimens from which *Bairdia formosa* was originally described, differ not inconsiderably from those now under notice, being rather more elongated, more distinctly beaked behind, sharper and more constant in their spinous armature, and in the pitting of the shell surface. But notwithstanding this, the general aspect is so similar that I think it quite reasonable to look upon the specimens from these various localities as specifically identical. At any rate it would not be easy to point out good characters for specific distinction.

[Pl. X. fig. 1, *a–e*. *a* Carapace seen from left side, *b* from right side, *c* from above, *d* from below, *e* from front. Magnified 40 diameters.]

7. *Bairdia abyssicola*, n. sp. (Pl. VII. fig. 4, *a–c*).

Left valve, seen laterally, subreniform, highest in the middle; height equal to about two-thirds of the length; anterior extremity broadly rounded, posterior somewhat produced and narrowed, dorsal margin boldly arched, ventral nearly straight. The right valve is narrower, more produced behind, and has the dorsal margin sinuated near the front. Seen from above, the outline is regularly ovate. Surface of the shell quite smooth. Length, 1-16th of an inch (1·55 mm.).

The two valves figured in Pl. VII. are the only examples of this species. In the same dredging, from a depth of 2050 fathoms (Station 246) were also found some specimens of the next described species *Bairdia minima*, and it is not unlikely that one species may prove to be only a fully-developed stage of the other. This, however, cannot be decided without comparison with a larger series of specimens in various stages of growth.

[Pl. VII. fig. 4, *a–c*. *a* Left valve seen laterally, *b* right valve seen laterally, *c* the same seen from above. Magnified 30 diameters.]

8. *Bairdia minima*, n. sp. (Pl. VII. fig. 6, *a–g*).

Shell, seen laterally, oblong, subovate or subtriangular, somewhat gibbous, greatest height situated near the middle, and equal to nearly two-thirds of the length; extremities rounded, anterior broad, posterior somewhat angular and narrower; dorsal margin strongly arched and slightly angular or gibbous at its highest point, ventral nearly straight; seen from above, the outline is broadly and regularly ovate, widest in the middle, and tapering evenly to the extremities which are pointed; the width and height of the shell are equal; end view very broadly ovate or subcircular. [The specimen shown in figures *e–g* differs only in being somewhat more compressed laterally, and may, perhaps, belong to a male, figures *a–d* representing probably the female.] Shell perfectly smooth. Length, 1-35th of an inch (·75 mm.).

Habitat.—Port Jackson, Australia, 6 fathoms, and from a depth of 2050 fathoms, lat. 36° 10′ N., long. 178° 0′ E. Station 246.

The characters of this species are not very well marked, and it may fairly be doubted whether it be not only a young stage of some larger animal, perhaps of *Bairdia abyssicola*.

[Pl. VII. fig. 6, *a–g*. *a–d* specimens from Station 246. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. *e–g* specimens from Port Jackson; *e* seen from left side, *f* from below, *g* from front. All magnified 50 diameters.]

9. *Bairdia ovata* (?), Bosquet (Pl. VII. fig. 3, *a–d*).

Bairdia ovata, Bosquet, Crustacés fossiles du Limbourg, 1853, p. 63, pl. v. fig. 6, *a–d*.
Bairdia ovata, Brady, Trans. Zool. Soc. Lond., 1865, vol. v. p. 364, pl. lvii. fig 7, *a–c*.

Valves ovate, broadly and evenly rounded in front, more or less produced at the infero-posteal angle. The left valve is almost perfectly egg-shaped, very broad in front, the margins sweeping in one continuous curve, with a very bold dorsal, and a slight ventral arch to the posterior angle, which is subacute. The right valve is, as usual, narrower, distinctly beaked behind, and has the dorsal and ventral margins slightly sinuous; outline as seen from above, regularly ovate. Shell-surface quite smooth. Length, 1-22d of an inch (1·1 mm.).

Habitat.—Simon's Bay, South Africa, 15 to 20 fathoms (Station 140). Lat. 39° 32′ S., long. 171° 48′ E., 150 fathoms. Grey ooze (Station 167).

Though approaching very closely to the species described by M. Bosquet, under the name *ovata*, this somewhat differs from the figures given by that author, in being somewhat higher in proportion to its length, and more acute at the posterior angle. Still the resemblance is sufficiently close to justify, at any rate, a provisional reference to that species. I have not yet seen a specimen retaining both valves in apposition.

[Pl. VII. fig. 3, *a–d*. *a* Left valve seen from side, *b* from above, *c* right valve seen from side, *d* from above. Mangnified 40 diameters.]

10. *Bairdia globulus*, n. sp. (Pl. IX. fig. 1, *a–d*).

Carapace excessively tumid; as seen from the side, subcircular, the circumference forming one continuous curve, except behind, where the upper and lower borders unite, and form an acute angle; the anterior extremity is very broadly rounded, and bears a fringing row of several short closely-set teeth; the dorsal margin is very boldly and evenly arched, the ventral margin also considerably arched; height equal to three-fourths of the length; seen from above, the outline is broadly ovate, widest in the middle, and tapering equally to the extremities which are subacuminate, width equal to two-thirds of the length; end view ovate, tumid, height not much greater than the width. Surface of the shell smooth, marked by a few distant small impressed puncta. Length, 1-20th of an inch (1·3 mm.).

Two or three specimens only of this interesting and well-marked species were found amongst the proceeds of dredgings made near the Admiralty Islands, in a depth of 16 to 25 fathoms.

[Pl. IX. fig. 1, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 40 diameters.]

11. *Bairdia amygdaloides*, G. S. Brady (Pl. IX. fig. 5, *a–f*, Pl. X. fig. 2, *a–c*).

Bairdia amygdaloides, Brady, Trans. Zool. Soc. Lond., 1865, vol. v. p. 364, pl. lvii. fig. 6, *a–c*.
Bairdia de wattrei, Brady, Les Fonds de la Mer, p. 199, pl. xxvii. figs. 17, 18.

Carapace, as seen from the side, subtriangular, greatest width situated in the middle, and equal to two-thirds of the length; anterior extremity broad and obliquely rounded, posterior narrowed to a subacute angle; dorsal margin boldly arched and somewhat gibbous in the middle, sloping almost in a right line toward the front, and with a steep curve backwards; ventral more or less convex; seen from above ovate, with slightly rounded extremities, width in the middle equal to half the length; end view broadly ovate, height one-third greater than the width. Surface of the shell smooth, often finely punctate. Length, 1-20th of an inch (1·3 mm.).

Habitat.—Off East Moncœur Island, Bass' Strait, 38 to 40 fathoms (Station 162);

Port Jackson, Australia, 2 to 10 fathoms; Torres' Straits, lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms (Station 185); off Booby Island, lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms (Station 187); Humboldt Bay, Papua, 37 fathoms; off reefs, Honolulu, 40 fathoms; sounding in lat. 47° 48′ S., long. 74° 48′ W., 160 fathoms (near Station 305).

The somewhat more tumid form of the species figured in Pl. X., I once thought to be specifically distinct, and on that account figured it separately. There seems, however, to be no sufficient ground for this separation.

[Pl. IX. fig. 5, *a–f*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front, *e* right valve, *f* left valve. Pl. X. fig. 2, *a–c*. *a* Carapace seen from left side, *b* from above, *c* from front. Magnified 40 diameters.]

12. *Bairdia foveolata*, G. S. Brady (Plate VIII. fig. 1, *a–f*, and fig. 2, *a–f*).

Bairdia foveolata, Brady, Les Fonds de la Mer, tom. i. p. 56, pl. vii. figs. 4–6.

Shell tumid; seen from the side subtriangular, highest in the middle; height equal to about two-thirds of the length; anterior extremity broad, obliquely rounded, and obscurely angulated in the middle; posterior narrowed and produced into a short obtuse beak; dorsal margin very strongly, ventral slightly arched; seen from above, the outline is lozenge-shaped, widest in the middle, and with obtusely rounded extremities, width equal to at least half the length; end view subcircular, height not much greater than the width. Surface of the shell smooth, usually more or less beset with small impressed puncta. Length, 1-22d of an inch (1·1 mm.).

Habitat.—Off Bermudas, 435 fathoms, mud (Station 33); off St Vincent, Cape Verde, 1070 to 1150 fathoms, mud (Stations 93 and 94); off East Moncœur Island, Bass' Strait, 38 to 40 fathoms, sand (Station 162); off Booby Island, 6 to 8 fathoms (Station 187); lat. 9° 59′ S., long. 137° 50′ E., 28 fathoms, mud (Station 189); Hong-kong Harbour, 7 fathoms; Admiralty Islands, 16 to 25 fathoms; sounding, 420 fathoms, October 20, 1875.

This is one of the more abundant forms of *Bairdia*, especially in the Southern Seas, and it seems to be subject to a great deal of variation, both in form and surface-ornament. Two varieties are figured in Pl. VIII., and the specimens from which the species was first described (Les Fonds de la Mer, tom. i.) differed from both of these in being more or less spinous on the anterior and posterior margins. This approaches, perhaps, as nearly as any recent form, to the typical *Bairdia subdeltoidea*, Münster, but the differences are too great to allow of its identification with that species. It is, indeed, very probable that several species are comprised under the specific name *subdeltoidea*, as applied by various palæontologists, the figures of that species given in the works of Messrs Bosquet, Jones, Speyer, Reuss, and Egger, presenting important points of difference among themselves.

[Pl. VIII. figs. 1 and 2, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front, *e* right valve, *f* left valve. Fig. 1 magnified 40, fig 2, 30 diameters.]

13. *Bairdia milne-edwardsi*, G. S. Brady (Pl. X. fig. 4, *a–g*).

Bairdia milne-edwardsi, Brady, Les Fonds de la Mer, tom. i. p. 139, pl. xvii. figs. 3, 4.

Carapace, as seen from the side, subtriangular, height equal to two-thirds of the length; anterior extremity slightly rounded, ending suddenly in an obtuse angle above; posterior produced into a median conical beak; dorsal margin strongly arched, gibbous, sloping with a steep curve to either end, sinuated in front, ventral margin slightly convex; seen from above the outline is lozenge-shaped, twice as long as broad, with a distinct lateral sinuation before and behind the middle, extremities obtuse, mucronate; end view broadly ovate, height one-third more than the width. Surface of the shell densely punctate with small circular impressions. Length, 1-25th of an inch (1 mm.).

The only dredging in which I have seen specimens at all certainly referable to this species is one from a depth of 1070 to 1150 fathoms, on a muddy bottom, off St Vincent, Cape Verde.

The types described in Les Fonds de la Mer, were also got at St Vincent. Some of the shells, which I have referred, with not a little hesitation, to *Bairdia foveolata*, make a very close approach to the present species: that figured in fig. 4 *a–c*, where, though the lateral outline is very different, the sinuous dorsal aspect is exactly the same, is an instance of a debateable form; judging from the regularly arcuate dorsal margin, the dentated anterior, and the very slightly produced posterior extremity, one would have placed it without hesitation apart from *Bairdia milne-edwardsi*, but the other aspects of the shell leave one in doubt about the matter. I have seen only one specimen, I think, of this questionable form: figures *d–g* must be looked upon as representing the typical form of the species.

[Pl. X. fig. 4, *a–g*. *a* Carapace (variety ?) seen from left side, *b* from below, *c* from front, *d* (typical form) seen from left side, *e* from above, *f* from below, *g* from front. Magnified 40 diameters.]

14. *Bairdia victrix*, G. S. Brady (Pl. X. fig. 5, *a–d*).

Bairdia victrix, Brady, Les Fonds de la Mer, tom. i. p. 152, pl. xviii. figs. 17, 18.

Carapace tumid, gibbous; seen from the side subtriangular, height equal to rather more than two-thirds of the length; anterior extremity rounded, posterior obliquely truncate and produced into a prominent obtuse beak; dorsal margin very boldly arched, ventral more or less convex, and often irregularly sinuous towards the posterior extremity; the margins of the right valve are often beset at the two extremities with numerous short, obtuse teeth; seen from above the outline is broadly ovate, more than twice as

long as broad, widest in the middle; anterior extremity subacuminate, posterior broadly mucronate; end view ovate, widest below, height almost one-third greater than the width. Surface of the shell smooth, sometimes sparingly punctate, and (especially towards the hinder end) bearing a few scattered, rigid hairs. Length, 1-15th of an inch (1·6 mm.).

Habitat.—Off Culebra Island, West Indies, 390 fathoms, mud (Station 24); lat. 38° 11′ N., long. 27° 9′ W., 900 fathoms, globigerina ooze (Station 76); off Azores, lat. 38° 37′ N., long. 28° 30′ W., 450 fathoms, sand (Station 75); off North Brazil, 350 to 675 fathoms, mud (Stations 120 and 122); off Christmas Harbour, Kerguelen Islands, 120 fathoms (Station 149); off Sydney, Australia, 410 fathoms, grey ooze, Station 164*a*(?); north of Tristan d'Acunha, lat. 32° 24′ S., long. 13° 5′ W., 1425 fathoms, Station 335 (?).

This fine species seems to be commonly distributed in the South-Western Atlantic, and perhaps over even a larger area of the Southern Hemisphere, inhabiting chiefly water of a considerable depth. The two stations, 164*a* and 335, must be considered as doubtful, the specimens from the former place being not very well characterised, and only provisionally referred to this species, while from Tristan d'Acunha there is only one valve, which probably, but by no means certainly, belongs to *Bairdia victrix*. The species was first described from examples brought from Colon-Aspinwall, and I have also seen specimens taken at Cuba.

[Pl. X. fig. 5, *a*–*d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 40 diameters.]

15. *Bairdia woodwardiana*, n. sp. (Pl. XI. fig. 1, *a*–*e*).

Carapace elongated, tumid, height equal to half the length; seen from the side, subrhomboidal; anterior extremity oblique, slightly rounded, ending above in an obtuse angle; posterior attenuated and produced into a tapering acute or subacute beak; dorsal margin forming a rather flattened arch, and sinuated towards each extremity, ventral nearly straight; seen from above, the outline is regularly ovate, about twice as long as broad, hinder end more tapering and acute than the front; end view subtriangular, widest below; height and width equal. Shell-surface smooth, more or less ornamented with minute circular punctures. Length, 1-25th of an inch (1 mm.).

Found only in one dredging—off Nukualofa, Tongatabu, 18 fathoms, coral (Station 178). About half a dozen specimens were picked out of this dredging.

Seen laterally the resemblance is very close between this species and *Bairdia crosskeiana*, but in all other aspects the two are entirely different, so that, though both species occurred in the Tongatabu dredging, it is scarcely likely that the differences are those merely of sex or growth.

The species is dedicated to my friend Dr H. Woodward, F.R.S. of the British

Museum, a naturalist to whose long continued and conscientious labours all students of the Crustacea are deeply indebted.

[Pl. XI. fig. 1, *a–e*. *a* Carapace seen from left side, *b* from right side, *c* from above, *d* from below, *e* from front. Magnified 50 diameters.]

16. *Bairdia crosskeiana*, G. S. Brady (Pl. IX. fig. 3, *a–c*).

Bairdia crosskeiana, Brady, Trans. Zool. Soc. Lond., 1865, vol. v. p. 366, pl. lvii. fig. 10, *a–d*.

Carapace elongated, compressed, greatest height equal to about half the length, and situated rather in front of the middle; seen laterally the outline is subpyriform, wider in front than behind; anterior extremity obliquely rounded and angulated at its junction with the dorsal margin; posterior gradually tapering, subacute, and more or less squamously dentated below; dorsal margin moderately arched, slightly sinuated in front; ventral margin nearly straight seen from above, the outline is spear-shaped, more than twice as long as broad, widest near the front, tapering abruptly and with a slight sinuosity forwards, very gradually and with a gentle curve backwards; the anterior extremity is somewhat obtusely rounded, the posterior subacute; end view ovate, narrowed above, broad below, height considerably exceeding the width. Surface of the shell smooth, marked with closely-set minute punctations. Length, 1-25th of an inch (1 mm.).

Found in the Tongatabu dredging, along with the preceding species; at Nares' Harbour, Admiralty Islands, in a depth of 16 fathoms; and off reefs at Honolulu, in 40 fathoms.

The southern form as shown by the Challenger dredgings differs from the types taken in the Mediterranean only in being somewhat more slender. My first specimens were found in sponge-sand from the Levant, but since then I have had dredged specimens from other parts of the Mediterranean.

[Pl. IX. fig. 3, *a–c*. *a* Carapace seen from left side, *b* from below, *c* from front. Magnified 40 diameters.]

17. *Bairdia expansa*, n. sp. (Pl. XI. fig. 2, *a–c*).

Carapace oblong, tumid; seen from the side, subrhomboidal; anterior extremity obliquely subtruncate, scarcely at all rounded; posterior much narrower, oblique, somewhat squamous, and divided into a few flattened tooth-like processes; dorsal margin evenly arched, ventral straight; height equal to more than half the length; the dorsal view is broadly ovate, not twice as long as broad, widest in the middle, tapering evenly to the extremities, which are mucronate; end view subtriangular, width slightly exceeding the height; shell-surface perfectly smooth. Length, 1-33d of an inch (·77 mm.).

One specimen only, from a depth of 40 fathoms, off Honolulu, in company with *Bairdia crosskeiana*, *attenuata* and *amygdaloides*. Apparently quite distinct from

any other, but requiring further investigation with the help of a larger series of specimens.

[Pl. XI. fig. 2, *a–e*. *a* Carapace seen from left side, *b* from right side, *c* from above, *d* from below, *e* from front. Magnified 50 diameters.]

18. *Bairdia attenuata*, n. sp. (Pl. XI. fig. 3, *a–e*).

Carapace compressed, seen from the side, subtriangular; height equal to more than half the length; anterior extremity oblique, rounded off below, but obtusely angular above; posterior extremity narrowed and produced into a tapering beak; dorsal margin boldly arched in the middle, sinuated towards each extremity, ventral slightly convex; dorsal outline compressed, lozenge-shaped, twice and a half as long as broad, widest in the middle, extremities acuminate; end view ovate, tapering towards the dorsum; width equal to two-thirds of the height; surface of the shell marked with small and closely-set, circular, impressed punctures. Length, 1-30th of an inch (·85 mm.).

Found only in a dredging from Torres Straits, lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms, sand (Station 185); and off the reefs at Honolulu, in a depth of 40 fathoms.

The compressed form, taken together with the other characters, abundantly distinguishes this from all other known species.

[Pl. XI. fig. 3, *a–e*. *a* Carapace seen from left side, *b* from right side, *c* from above, *d* from below, *e* from front. Magnified 50 diameters.]

19. *Bairdia fortificata*, n. sp. (Pl. XI. fig. 4, *a*, *b*).

Valves as seen from the side, oblong, subquadrate; height equal to somewhat more than half the length; extremities broad, rather oblique, moderately rounded, and fringed each with nine or ten short, blunt teeth; dorsal margin gently arched; ventral nearly straight; outline, as seen from above, ovate, widest in the middle; surface of the shell sculptured with numerous closely-set subrotund excavations of moderate size. Length, 1-23d of an inch (1·1 mm.).

Only one specimen of this species, the valves of which, unfortunately, separated before it could be drawn, was found in a dredging made, in a depth of 6 to 8 fathoms, off Booby Island, lat. 10° 36′ S., long. 141° 55′ E. (Station 187).

[Pl. XI. fig. 4, *a*, *b*. *a* Left valve seen laterally, *b* the same from above. Magnified 50 diameters.]

20. *Bairdia angulata*, G. S. Brady (Pl. XI. fig. 5, *a–d*).

Bairdia angulata, Brady, Les Fonds de la Mer, tom. i. p. 199, pl. xxvii. figs. 11, 12.

Carapace oblong, compressed; seen from the side, subreniform, scarcely twice as long as high; extremities well and evenly rounded; the anterior bearing about the middle a

few (four or five) short broad teeth; the posterior armed *below* the middle with six or eight nearly similar teeth; dorsal margin very slightly arched; ventral straight, except that near the front at its junction with the anterior border it is produced downwards into a conspicuous angular prominence; seen from above, the outline is about thrice as long as broad, compressed, with parallel sides and tapering acuminate extremities; end view ovate, compressed, width scarcely equal to half the length (in the plate, fig. 5, *d*, the ventral margin is, by an error of the artist, placed uppermost); surface of the shell smooth, or finely punctate. Length, 1-28th of an inch (·9 mm.).

Dredged off the Azores; lat. 38° 37′ N., long. 28° 30′ W., 450 fathoms, sand (Station 75); Torres Straits, lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms, sand (Station 185); and in a sounding from 160 fathoms (Station 305).

A very distinct and well marked species, described first from specimens taken at Halt Bay in the Straits of Magellan. Only one or two specimens were found in each of the dredgings mentioned above. The specific name *angulosa* has been already used for a so-called member of this genus by Egger (Ostrac. der Miocän.-Schicht. bei Ortenburg), but as the form to which Egger applied the name is in all probability a *Cytheridea*—at any rate not a true *Bairdia*—there can be no impropriety in allowing the name *angulata* to stand.

[Pl. XI. fig. 5, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

21. *Bairdia tuberculata*, G. S. Brady (Pl. X. fig. 3, *a–d*).

Bairdia rhomboidea, Brady, Les Fonds de la Mer, tom. i. p. 162, pl. xix. figs. 14, 15.

Carapace oblong, tumid; seen from the side, subrhomboidal; height equal to half the length, and nearly the same throughout; extremities obliquely rounded and fringed irregularly with small blunt teeth; dorsal margin very slightly arched; ventral straight or a little sinuated; seen from above, the outline is ovate, scarcely twice as long as broad; with rather irregular margins and rounded extremities; end view depressed, height less than the width; shell-surface rather rough, with small closely-set tubercular prominences. Length, 1-33d of an inch (·77 mm.).

This species was found only in a dredging from 16 to 25 fathoms, off the Admiralty Islands.

The specific name *rhomboidea* being preoccupied (Kirkby, Ann. and Mag. Nat. Hist., 1858), I have substituted that of *tuberculata*. The types from which the species was first described, and which agree exactly with those found in the Challenger dredging, were got at Mauritius.

[Pl. X. fig 3, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 40 diameters.]

22. *Bairdia acanthigera*, G. S. Brady (Pl. IX. fig. 4, *a*–*c*).

Bairdia acanthigera, Brady, Trans. Lin. Soc., 1868, vol. xxvi. p. 390, pl. xxvii. figs. 18-21.

Carapace oblong, tumid; seen from the side, subreniform, twice as long as broad; anterior extremity rounded (usually dentate), posterior narrowed, and fringed with a few small teeth; dorsal margin gently arched, ventral slightly sinuated in the middle; seen from above, ovate, twice as long as broad, with nearly parallel sides, and abruptly tapered, rather obtuse extremities; end view broad, subovate, widest below the middle, height and width nearly equal. Shell-surface nearly smooth, marked with numerous small circular punctures, and towards the hinder extremity slightly hirsute. Length, 1-30th of an inch (·85 mm.).

This species occurred in a dredging from a depth of 1070 to 1150 fathoms off St Vincent, Cape Verde, muddy bottom (Stations 93 and 94). Except from a few stations in the English Channel, whence the type specimens were derived, I do not know of the occurrence of *Bairdia acanthigera* elsewhere. The specimen from which the artist has drawn his figures appears to have been without the usual row of teeth on the anterior margin; these teeth, however, constantly exist on adult specimens as far as my observation goes.

[Pl. IX. fig. 4, *a*–*c*. *a* Carapace seen from left side, *b* from below, *c* from front. Magnified 40 diameters.]

Family II. Cytheridæ.

Shell mostly hard and compact, calcareous; surface generally more or less rough and uneven, occasionally quite smooth. Hinge margins mostly toothed; antennæ not adapted for swimming, the anterior composed of from five to seven joints, and armed with various setæ or spines; posterior four-or five-jointed, last joint the smallest, and armed with one to three curved claws, second joint destitute of the brush of setæ, which mostly exists in the Cypridæ; first joint giving origin, at its apex, to a long biarticulate tubular seta, which extends downwards in front of the antenna, about as far as the last joint, and is connected above by an efferent tube, with a gland situated in the body of the animal. Mandible very similar to that of the Cypridæ. One pair of jaws, composed of four segments, with a branchial plate. Three pairs of feet directed forwards, very much alike in shape, but increasing in length from before backwards; all of them adapted for creeping, and terminating in a single strong curved claw. The first foot corresponds with the palp of the second maxilla in the Cypridæ, the cutting segments being represented by two small setiferous appendages, arising from a common base. Postabdomen rudimentary, and almost obsolete, forming two small lobes or setæ. Eyes mostly separate, sometimes confluent, more rarely altogether wanting. Ovaries and testes not

extending between the valves. Male copulative organs very large and complex in structure. Mucus gland wanting.

This family, which includes by far the greater number of the marine Ostracoda, differs chiefly from the Cypridæ in the structure of the posterior antennæ and mandible-palp, and in having three instead of two pairs of feet, the appendage forming the second pair of jaws in the Cypridæ assuming the shape of an ambulatory foot in the Cytheridæ. They do not swim, but the posterior antenna is armed with a curved tubular seta, connected with what appears to be a poison gland, situated near the base of the limb. The limbs, both in this family, and in the Cypridæ, are often strengthened on their anterior and posterior surfaces, with dense chitinous plates, which give firm points of attachment to the powerful muscles of the interior of the limb.

Cythere, Müller.

Cythere, Müller, Entomostraca, 1785.

Valves unequal, mostly oblong-ovate, subreniform, or quadrate; surface variously ornamented, smooth, punctate, foveolate, strongly rugose, spinous or tuberculated, usually having a distinct polished tubercle over the anterior hinge-joint. Hinge formed on the right valve by two terminal teeth, on the left by one anterior tooth, and a posterior fossa, between which there is frequently a ridge which is received into a corresponding furrow of the opposite valve; the teeth are in some few cases crenulated, and on the left valve are sometimes altogether absent. Antennæ robust; anterior five- or six-jointed, armed on the anterior margin with three long curved spines, mostly one on the third and two on the fourth joint; posterior four-jointed, the last joint short and stout; mandibular palp three- or four-jointed, bearing in place of a branchial appendage a turf of two to five setæ. Eyes one or two. Structure of the shell usually very dense.

The genus *Cythere*, as above defined, includes probably nearly as many species, recent and fossil, as all the remaining genera put together, the number assigned to it in this monograph being 83 out of a total of 221. But though in its present form excessively unwieldy, it seems impossible, without a more perfect knowledge than we yet possess of the variations of anatomical structure in the several species, either to form useful sub-genera, or to separate from the main group any true generic types. I have no doubt, however, that further investigation will before long enable us to do this. Meantime it is sufficient to note that the external shell characters are quite insufficient for the purpose, and that such divisions as have already been proposed, on this basis, are at the best very vague, and can only be looked upon as a mere temporary expedient for the sake of convenience.

1. *Cythere scintillulata*, n. sp. (Pl. XIV. fig. 3, *a*–*d*).

Shell oblong, compressed, subreniform, rather lower in front than behind; seen from

the side, the extremities are well rounded, the posterior rather the wider of the two; dorsal margin moderately arched, highest in the middle, sloping steeply in front, ventral sinuated in the middle; height equal to nearly half the length; seen from above the outline is regularly ovate, greatest width situated in the middle, and equal to rather less than the height; extremities subacuminate, and nearly equal; end view subcircular. Surface of the shell covered with minute, closely-set impressed puncta, and on the ventral aspect marked with delicate longitudinal grooves. Length, 1-43d of an inch (·57 mm.).

A few specimens of this elegant species were dredged in the Straits of Magellan, lat. 52° 21′ S., long. 68° 0′ W., depth 55 fathoms (Station 313).

I refer it, not without hesitation, to the genus *Cythere*, the general configuration of the shell having much in common with the Cypridæ, but as in many other cases noted in this memoir, the want of opportunity of examining the animal structure leaves the real affinity of the species open to doubt.

[Pl. XIV. fig. 3, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

2. *Cythere* (?) *laganella*, n. sp. (Pl. XVI. fig. 7, *a–d*).

Shell oblong, subreniform, compressed; the extremities as seen from the side are boldly rounded, and nearly equal; dorsal margin moderately arched, ventral slightly sinuated; the height, which is greatest in the middle, equal to more than half the length; seen from above, the outline is much compressed and widest in the middle, regularly ovate, sharply-pointed in front, rather more obtuse behind; width equal to about one-third of the length; end view ovate, much higher than broad. Shell-surface perfectly smooth. Length, 1-58th of an inch (·44 mm.).

Dredged in Torres Straits, lat. 11° 35′ S., long. 144° 3′ E., 165 fathoms (Station 185).

[Pl. XVI. fig. 7, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

3. *Cythere tenera*, G. S. Brady (Pl. XII. fig. 3, *a–f*).

> *Cythere tenera*, Brady, Monog. Recent Brit. Ostr., 1868, p. 399, pl. xxviii. figs. 29–32.
> *Cythere tenera*, Brady, Crosskey, and Robertson, Monog. Post-Tertiary Entom., 1874, p. 145, pl. xiii. figs. 6, 7.

Carapace of the female oblong, compressed; seen from the side, subquadrangular, rather higher in front than behind, height equal to half the length; anterior extremity rounded, posterior subtruncate, only slightly rounded, and smaller than the anterior; dorsal margin sloping almost in a right line from before backwards; ventral nearly straight, seen from above, compressed, subovate, widest near the middle, sides nearly parallel in the middle, and converging rather suddenly towards the extremities, which are obtusely pointed, width equal to rather more than one-third of the length; end view

ovate, widest below the middle; the shell of the male (fig. 3, *e*, *f*) is narrower, and, seen laterally, is more tapered towards the hinder end. Shell-surface quite smooth. Length, 1-55th of an inch (·46 mm.).

The only specimens of this species brought home by the Challenger were found in anchor-mud from Vigo Bay; they are ill-grown, and do not exhibit the delicate, punctured, and papillose ornament which is usually found in British specimens; the headquarters of the species appears to be the North Sea, though I have examples also from the Mediterranean and the Bay of Biscay. It occurs, too, though very sparingly, as a Post-Tertiary fossil in Wales, Scotland, and Norway.

[Pl. XII. fig. 3, *a–f*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from below. All magnified 60 diameters.]

4. *Cythere vellicata*, n. sp. (Pl. XII. fig. 2, *a–d*).

Carapace elongated, compressed, seen from the side, subreniform, height scarcely equal to half the length, and nearly the same before and behind; anterior extremity well rounded, posterior obliquely truncated, and looking upwards; dorsal margin very slightly arched, highest in the middle, and sloping almost imperceptibly to each extremity, ventral deeply sinuated in the middle, and inclined rather abruptly upwards behind; seen from above, the outline is nearly cuneiform, very narrow, widest at the posterior extremity, the width being equal to one-third of the length; sides nearly parallel for the greater part of their course, but converging in front of the middle, and ending in an obtuse anterior extremity; at the hinder end the lateral margins terminate abruptly in a right angle, the extremity being truncated, and having a large central mucronate process; end view subovate, widest in the middle. Surface of the shell smooth, and somewhat undulated. Length, 1-58th of an inch (·44 mm.).

A small but very distinctly characterised species not unlike *Cythere castanea* in lateral outline, but abundantly separated from it by the wedge-shaped dorsal outline, and the want of punctured surface ornament.

Dredged at Port Jackson, Australia, in a depth of 2 to 10 fathoms.

[Pl. XII. fig. 2, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 80 diameters.]

5. *Cythere moseleyi*, n. sp. (Pl. XII. fig. 5, *a–f*).

Carapace of the female, as seen from the side, oblong, subquadrangular, somewhat higher in front than behind, height equal to half the length; anterior extremity well rounded, posterior narrower, and obliquely truncated, with very slightly rounded angles; dorsal margin slightly arched, and sloping gently from before backwards, ventral slightly sinuated in front, and trending upwards behind the middle; seen dorsally, the outline is

subovate, with nearly parallel sides, converging rather abruptly towards the extremities, which are nearly equal and obtusely pointed; width less than the height; end view subquadrate, with a well-marked ventral keel. The surface of the shell is marked irregularly with small rounded depressions, and also round the margins with sinuous grooves, which on the ventral aspect are disposed in regular longitudinal lines; the hinge-line along the dorsal valvular commissure is slightly depressed, and there is likewise a similar, though short depression on the ventral surface near the middle of the two contact margins. The shell of the male (fig. 5, *e–f*) is altogether more slender, and more tapered towards the hinder extremity. Length, 1-43d of an inch (·57 mm.).

Found only in anchor-mud, from a depth of 6 fathoms, in Stanley Harbour, Falkland Islands. (Station 316.)

This species I have much pleasure in naming after Mr H. N. Moseley, F.R.S., whose admirable researches on the structure of Corals, and in other departments of Natural History, especially in connection with the voyage of the Challenger, are too well known to need recital here. *Cythere moseleyi*, in lateral view, and in style of sculpture, resembles rather closely *Cythere pellucida*, Baird, to which species I was at first disposed to refer it, but the posterior ventral angle in the latter species is rounded away entirely, and the other aspects of the shell are also very much less angular than in *Cythere moseleyi*. The male exhibits at the posterior angle some approach to the *pellucida* character, and is altogether much more slender than the female, a condition which is found to exist in most, if not all, members of the genus *Cythere*, and which is shown in four of the species figured in Pl. XII.—*Cythere tenera*, *moseleyi*, *falklandi*, and *demissa*.

[Pl. XII. fig. 5, *a–f*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from below. All magnified 60 diameters.]

6. *Cythere falklandi*, n. sp. (Pl. XII. fig. 6, *a–f*).

Carapace of the *female* rather tumid; seen from the side, subquadrangular, higher in front than behind, height equal to half the length; anterior extremity well rounded; posterior truncated, rounded off below, and excavated above the middle; dorsal margin slightly arched, highest in the middle; ventral nearly straight; seen from above, the outline is ovate, twice as long as broad, widest behind the middle, acuminate in front, narrowed and truncated behind, lateral margins curved and somewhat sinuous; end view broadly ovate, width and height nearly equal, ventral border keeled. Surface of the shell marked out into polygonal areolæ, which are either slightly depressed or excavated into distinct pits. Length, 1-45th of an inch (·53 mm.).

Found only in anchor-mud, from Stanley Harbour, Falkland Islands, depth 6 fathoms (Station 316). It is perhaps doubtful whether figures *e* and *f* really belong to the same species as *a–d*.

[Pl. XII. fig. 6, *a–f*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from below. All magnified 60 diameters.]

7. *Cythere demissa*, G. S. Brady (Pl. XII. fig. 1, *a–j*).

Cythere demissa, Brady, Ann. and Mag. Nat. Hist., 1868, ser. 4, vol. ii. p. 180, pl. xii. figs. 1, 2.

Shell seen laterally, oblong, subovate or subreniform, not much higher in front than behind, height equal to about half the length; anterior extremity somewhat obliquely rounded, posterior only poorly rounded, subtruncate; dorsal margin highest in front of the middle, where it is slightly gibbous, thence sloping steeply to the front, and with a slight curve backwards; ventral margin sinuated in the middle; seen from above, the outline is ovate, with wide, obtuse, or subtruncate extremities, and nearly parallel sides, width considerably less than half the length, the whole posterior extremity and the hinder parts of the lateral margins present a succession of deep notches or crenations, and the anterior extremity is either abruptly truncated or rounded, and broken into tooth-like crentations; end view subcircular, with a tendency to hexagonal form. Shell-surface thickly beset with subrotund or angular excavations, which, on the ventral surface, coalesce so as to form well-marked grooves and ridges. Length, 1-58th of an inch (·43 mm.).

Several specimens, varying a good deal in minor details, but agreeing in general character, and, I think, all belonging really to one species, which may fairly be identified with *Cythere demissa*, were found in a dredging made at Port Jackson, in a depth of 2 to 10 fathoms (Station 163). The most distinct of these forms are represented in Pl. XII., fig. 1, *e* and *f*, being probably the male. The tapering and strongly sculptured form shown in figures *g–j*, may perhaps be looked upon as the fully-developed adult female, of which figures *a–d* show an earlier stage.

[Pl. XII. fig. 1, *a–j*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from above, *g* adult female seen from left side, *h* from above, *i* from below, *j* from front. All magnified 80 diameters.]

8. *Cythere ovalis*, n. sp. (Pl. XIV. fig. 4, *a–d*).

Shell oblong, rather tumid; seen from the side, elongated, subreniform, height equal to about half the length, and nearly the same throughout; extremities well rounded; the anterior fringed with a regular series of small teeth, about twelve in number, posterior having a smaller number of similar teeth at the longer angle; dorsal margin very slightly arched, sloping gently from before backwards, ventral nearly straight; seen from above, the outline is regularly ovate, widest behind the middle; extremities subacuminate, sides gently curved, converging gradually towards the front, and more suddenly towards the hinder end, width equal to the height; end view subcircular,

produced in the median line both above and below; surface of the valves marked throughout with large, closely-set, angular fossæ. Length, 1-40th of an inch (·66 mm.).

Dredged off Booby Island, lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms. The nearest known ally of this species is probably the familiar *Cythere tuberculata*, Sars, an abundant North Sea species. The southern form is, however, much more regularly ovate in contour, has fewer surface rugosities, while, in lateral view, it has its extremities more evenly rounded, and is destitute of any marked angular elevation in the situation of the anterior hinge-joint.

[Pl. XIV. fig. 4, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

9. *Cythere fulvotincta*, n. sp. (Pl. XIV. fig. 5, *a–d*).

Shell compressed, oblong; seen from the side, subreniform, scarcely higher in front than behind, height equal to somewhat more than half the length; anterior extremity boldly rounded, posterior subtruncate, scarcely rounded; dorsal margin gently arched, obscurely angulated behind, ventral slightly sinuated in the middle; seen from above, club-shaped, widest near the hinder end, the width equal to considerably less than half the length; anterior extremity broad, produced in the middle, posterior obtusely rounded; lateral margins protuberant near the hinder extremity, from which point they converge suddenly backwards, and with a gradual sinuous curve towards the front; end view broadly ovate, sides convex below, and sinuated above the middle, base broad, apex narrowed and truncate. Shell-surface marked with irregularly angular, excavated areolæ; anterior hinge-tubercle distinct. Length, 1-45th of an inch (·53 mm.).

Found in anchor-mud from a depth of 6 fathoms, Stanley Harbour, Falkland Islands.

[Pl. XIV. fig. 5, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

10. *Cythere torresi*, n. sp. (Pl. XIX. fig. 8, *a–c*).

Valves, seen from the side, subelliptical, rather higher behind than in front, height equal to more than half the length; anterior extremity rounded, and produced into four squamous, tooth-like processes; posterior wider, squamous, and bearing at the lower angle four distinct spines; the dorsal margin forms a flattened arch; the ventral is straight or only slightly sinuated; seen from above, the valves are tumid, and strongly convex in the middle, sloping to either extremity with a hollow curve; extremities produced and obtuse; the end view shows a projecting median keel, both above and below, and has two distinct lateral dorsal prominences. The central portion of the valves is much elevated, and is limited by a squamous encircling ridge, and the surface is closely set with rounded excavations. Length, 1-70th of an inch (·38 mm.).

One valve only found in a dredging from Torres Straits, 155 fathoms (Station 185).

[Pl. XIX. fig. 8, *a–c*. *a* Left valve seen from side, *b* from above, *c* from front. Magnified 100 diameters.]

11. *Cythere acupunctata*, n. sp. (Pl. XIV. fig. 1, *a–h*).

Shell elongated, compressed; seen from the side, subreniform, higher in front than behind, height equal to about half the length; anterior extremity broad and fully rounded, posterior narrow, subtruncate, scarcely rounded, produced and somewhat angular below the middle; dorsal margin sloping gently, and almost in a straight line from before backwards, curved in front, but forming a distinct angle behind; ventral gently sinuated in the middle; seen from above, compressed, regularly ovate, nearly thrice as long as broad, widest towards the posterior extremity, sides converging very gradually, and with a gentle curve towards the anterior extremity, which is subacuminate, posterior extremity broadly rounded; end view very broadly oval. Surface of the shell thickly covered with small, impressed, circular puncta, and at the anterior extremity produced into a not very prominent bordering flange. Length, 1-42d of an inch (·6 mm.).

This species was dredged in the Inland Sea, Japan, on a muddy bottom, 15 fathoms deep. It is very nearly allied to *Cythere fuscata*, Brady, a European species, and might perhaps, without much impropriety, have been identified with it; the Japanese shells are, however, more elongated, more nearly reniform, and seen from above are not so acutely tapered in front.

[Pl. XIV. fig. 1, *a–h*. *a* Carapace of adult seen from left side, *b* from above, *c* from below, *d* from front; figures *a–h* represent the same views of the young shell. All magnified 60 diameters.]

12. *Cythere lubbockiana*, n. sp. (Pl. XIV. fig. 6, *a–d*).

Shell, seen from the side, elongated, curved, scarcely higher in front than behind, height equal to nearly half the length; anterior extremity obliquely rounded, posterior subtruncate, only very slightly rounded, divided below the middle into four or five broad, blunt teeth; dorsal margin gently curved, sloping from before backwards, and ending in an obtuse angle, ventral slightly sinuated; seen from above, compressed, subhexagonal, more than twice as long as broad, with parallel sides, which converge very abruptly and at an obtuse angle behind, but much more gradually in front; anterior extremity obtusely rounded, posterior acuminate, end view subcircular. Surface of the shell marked with rather vaguely-defined, roundish irregular excavations. Length, 1-40th of an inch (·65 mm.).

Several specimens found in the Booby Island dredging, depth 6 to 8 fathoms, lat. 10° 36′ S., long. 141° 55′ E.

This seems to occupy an intermediate position between *Cythere oblonga*, Brady, and

Cythere finmarchica, Sars, and might perhaps, without much impropriety, be considered as a variety of the former species; the dorsal outline, however, is in *Cythere lubbockiana* much more angular, the sides being almost rectilinear, and I have not observed any trace of the tubercle which is so marked a characteristic of *Cythere oblonga*, as well as of *Cythere finmarchica*. *Cythere oblonga* is also a considerably larger species, having a length of 1-29th of an inch.

[Pl. XIV. fig. 6, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

13. *Cythere exilis*, n. sp. (Pl. XVI. fig. 5, *a–h*).

Shell of the female, seen from the side, oblong, subquadrangular, greatest height situated near the anterior extremity, and equal to half the length; anterior margin boldly rounded, sometimes fringed below the middle with a series of minute teeth, posterior much produced, narrowly rounded; dorsal margin almost straight, ending in an obtuse angle behind, ventral deeply and very abruptly sinuated in the middle, slightly notched behind the middle, then gently curving upwards at the hinder end; seen from above, compressed, subovate, width considerably less than half the length, extremities nearly equal, obtusely rounded, sides subparallel, and slightly sinuated in the middle, converging very gradually towards the extremities; end view irregular, slightly higher than broad, ventral margin broad, convex and emarginate in the middle, dorsal strongly arched. The surface of the valves is undulated, marked with irregular longitudinal ribs, and with numerous large angular excavations, the margins of the valves forming, especially at the two extremities, a stout encircling fillet. The shell of the male (figures *e–h*) is exactly similar, except in being narrower and more elongated. Length, 1-34th of an inch (·75 mm.).

The only dredging in which *Cythere exilis* was detected is from Simon's Bay, South Africa. Depth, 15 to 20 fathoms. (Station 140.)

[Pl. XVI. fig. 5, *a–h*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front; figures *e–h* refer to similar views of the male shell. All magnified 50 diameters.]

14. *Cythere murrayana*, n. sp. (Pl. XVI. fig. 4, *a–h*).

Carapace of the female, as seen from the side, oblong, subquadrangular, scarcely higher in front than behind, height equal to half the length, anterior extremity rounded, posterior narrower, subtruncated and rather angular, the lower angle rounded off; dorsal margin nearly straight, but, towards the hinder end, suddenly depressed and excavated, ventral margin sinuated in the middle, and turned upwards behind; seen from above, the outline is subovate, width nearly equal to the height, sides slightly curved and nearly parallel, extremities obtusely rounded; end view subhexagonal, with obtusely-rounded

angles. Surface marked with numerous closely-set, small angular excavations. Length, 1-62d of an inch (·41 mm.).

In a gathering taken in the "tow-net at trawl" in Wellington Harbour, New Zealand, a good series of specimens belonging to this species were obtained. Though small, its characters are well marked; the shell represented in fig. 4, *e–h*, probably belongs to the male. The species is named after Mr John Murray, one of the several able naturalists attached to the Challenger Expedition.

[Pl. XVI. fig. 4, *a–h*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from above, *g* from below, *h* from front. All magnified 60 diameters.]

15. *Cythere bicarinata*, n. sp. (Pl. XVI. fig. 6, *a–d*).

Shell compressed, oblong; seen from the side, subtrapezodial, greatest height near the middle, and equal to at least half the length; extremities rounded, the anterior the broader of the two, dorsal margin straight in the middle, sloping steeply and abruptly towards each end, ventral straight in the middle, and gently curved upwards at the ends; seen from above, the outline is compressed, ovate, nearly thrice as long as broad, sides nearly parallel, converging only slightly towards the extremities, which are equal, broad, subtruncated, and prominent in the middle; end view subtriangular, height considerably greater than the width, with convex sides, obtuse apex, and narrow flattened base; sides of the valves marked with distant, small impressed puncta, ventral surface having a sinuous longitudinal keel on each side of the median line, these being continued round almost the whole circumference of the shell in the form of an encircling flange. Length, 1-55th of an inch (·46 mm.).

Found only in a dredging from the Inland Sea of Japan. Depth, 15 fathoms. (Station 233*b*.)

[Pl. XVI. fig. 6, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

16. *Cythere inconspicua*, n. sp. (Pl. XIII. fig. 1, *a–d*).

Carapace oblong, short and stout; seen from the side subquadrangular, higher in front than behind, greatest height equal to at least half the length; anterior extremity broad and well rounded, sometimes slightly toothed below the middle, posterior narrower, truncated, and scarcely at all rounded off; dorsal margin sloping almost in a right line from the front, but behind the middle descending with a rather steeper curve, ventral sinuated near the middle; seen from above, the outline is irregular, the extremities being broadly truncated; greatest width situated behind the middle, whence the lateral margins converge slightly towards the front and abruptly towards the hinder end, this part of the outline being broken by a large almost rectangular

projection of the hinder portion of the valves; the dorsal surface is elevated along the hinge-line into a prominent ridge; the ventral surface keeled in a similar manner, and having the valve-margins expanded so as to form a flattened flange anteriorly; end view triangular, the angles rounded off, the lateral margins arched, and the ventral margin bisinuate; surface of the shell sculptured throughout with subrotund excavations of moderate size and rather closely set; the valves gradually elevated behind the middle so as to form a rather prominent alæform protuberance. Length, 1-62d of an inch (·41 mm.).

A well marked but small species, distinguished by the broadly truncated extremities and the alæform lateral elevations of the valves. It was noticed only in a dredging from Torres Straits, depth 155 fathoms, sand. (Station 185.)

[Pl. XIII. fig. 1, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

17. *Cythere cumulus*, n. sp. (Pl. XIII. fig. 2, *a–d*).

Shell oblong, tumid; seen from the side, subquadrangular, not much higher in front than behind, height equal to a little more than half the length; anterior extremity well rounded; posterior rounded and narrow; dorsal margin straight; ventral straight throughout the greater part of its course, but turned abruptly upwards at an obtuse angle at the posterior extremity; seen from above the outline is boat-shaped, tapering abruptly in front, scarcely at all behind, sides nearly straight and parallel; anterior extremity obtusely pointed, posterior broad and rounded off, but having a small mucronate projection in the middle, width equal to the height; the end view is in the form of a high arch with a slightly convex base, the sides being nearly straight below the middle. Surface of the shell thickly covered with deep angular excavations. Length, 1-50th of an inch (·5 mm.).

The only dredging in which *Cythere cumulus* occurred is that from Port Jackson, 2 to 10 fathoms.

[Pl. XIII. fig. 2, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

18. *Cythere flos-cardui*, n. sp. (Pl. XIII. fig. 3, *a–h*).

Carapace of the female, as seen from the side, subquadrangular, higher in front than behind, the greatest height situated near the anterior extremity and equal to nearly two-thirds of the length; anterior extremity broad and obliquely rounded, posterior narrower, oblique, scarcely rounded, looking slightly upwards; dorsal margin slightly arched, sloping gently backwards, and terminating in a distinct angle, ventral nearly straight, bent upwards at the posterior extremity; seen from above, ovate, with subparallel sides, twice as long as broad; anterior extremity narrow, rounded off, and mucronate in the

middle; posterior more abruptly rounded, almost truncated, and having also a mucronate process in the middle; end view broadly ovate, wide at the base, and only slightly tapered toward the dorsal margin. Surface of the shell beset with small angular fossæ, which have a concentric arrangement, and on the ventral surface form groves with separating ridges. Specimens which I take to be the male of this species (figures *e–h*) are rather different in shape, the infero-posteal angle being more decidedly rounded off, and the posterior extremity, when viewed from above, being expanded so as to give a distinct sinuation to the lateral margins, the whole outline thus getting a pretty close resemblance to that of a thistle-blossom; the sculpturing of the surface is also much coarser than in the female. Length, 1-55th of an inch (·46 mm.).

Several specimens of this *Cythere* occurred in a dredging from a depth of 40 fathoms, off the reefs at Honolulu. (Station 246.)

[Pl. XIII. fig. 3, *a–h*. *a* Shell of female (?) seen from left side, *b* from above, *c* from below, *d* from front, *e* shell of male (?) seen from left side, *f* from above, *g* from below, *h* from front. All magnified 60 diameters.]

19. *Cythere crispata*, G. S. Brady (Pl. XIV. fig. 8, *a–d*).

Cythere cicatricosa, G. O. Sars (1865), Oversigt af Norges marine Ostracoder, p. 33.
Cythere badia (in part), Brady (1868), Monog. Recent Brit. Ostrac., p. 399 (not figures). (Not *C. badia*, Norman.)
Cythere badia, Brady (1868), Les Fonds de la Mer, tom. i. p. 89.
Cythere crispata, Brady (1868), Ann. and Mag. Nat. Hist., ser. 4, vol. ii. p. 221, pl. xiv. figs. 14, 15.
Cythere cicatricosa, Brady and Robertson (1869), Ann. and Mag. Nat. Hist., ser. 4, vol. iii. p. 369, pl. xix. figs. 13, 14.
Cythere crispata, Brady, Crosskey, and Robertson (1874), Post-Tertiary Entomostraca, p. 146, pl. xii. figs. 52, 53, and pl. xiii. figs. 12, 13.

Shell, seen from the side, subquadrangular, rather higher in front than behind; height equal to at least half the length; anterior extremity obliquely rounded, posterior narrower, truncated, and only very slightly rounded; dorsal margin sloping from before backwards and gently curved, ventral slightly sinuated in the middle; seen from above, the outline is compressed and irregularly subhexagonal, the greatest width less than half the length; extremities truncated, the anterior being much narrower than the posterior, sides nearly parallel, but gently converging from a point in front of the middle to the anterior extremity, and, near the hinder end, slightly emarginate; end view hexagonal and nearly equilateral. Shell-surface sculptured all over with closely-set angular excavations of irregular form and size. Length, 1-50th of an inch (·5 mm.).

Cythere crispata was observed in dredgings from Port Jackson, 2 to 10 fathoms; from Booby Island, 6 to 8 fathoms, (Station 187); and in anchor-mud brought up from a depth

of 7 fathoms in Hong Kong Harbour. It is a widely-distributed species; shells not specifically separable from it having been met with in the British seas, in those of Norway, and in the Mediterranean (?). As a Post-Tertiary fossil it has been found in Scotland, Ireland, and Norway. The specimens from these various localities differ, doubtless, in minor details both of form and surface sculpture, but not so much as to preclude grouping them under one specific name. The two following species, *Cythere cancellata* and *Cythere canaliculata*, approach it very closely, but the former may be distinguished by its ovate dorsal and more rounded or reniform lateral outline, the latter by the more flexuous lateral outline, broad dorsal surface, and regular disposition of the very large central excavations of the shell.

[Pl. XIV. fig. 8, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

20. *Cythere cancellata*, G. S. Brady (Pl. XIV. fig 9, *a–e*).

Cythere cancellata, Brady, Les Fonds de la Mer, tom. i. (1868), p. 62, pl. vii. figs. 9–11.

Shell oblong, rather tumid; seen from the side, subreniform, scarcely higher in front than behind, height equal to about half the length; anterior extremity obliquely rounded, and divided below the middle into several short blunt teeth; posterior also well rounded, and sometimes delicately toothed below the middle; dorsal margin very gently arched and slightly sinuous, ventral nearly straight; seen from above, ovate, with obtusely pointed and nearly equal extremities; sides somewhat sinuous, width equal to half the length; end view irregular, boldly arched above, sides converging downwards towards a narrowed ventral line. Surface of the shell marked (as in *Cythere crispata*) with closely-set angular excavations, and, in old specimens (figures *d*, *e*), with sinuous, obliquely transverse ribs. Length, 1-35th of an inch (·75 mm.).

Dredged off Mukuolofa, Tongatabu, 18 fathoms, coral (Station 172); and off Booby Island, 6 to 8 fathoms (Station 187). The type specimens were from Java.

[Pl. XIV. figs. 9, *a–e*. *a* Shell seen from left side, *b* from above, *c* from front, *d* right valve of adult seen laterally, *e* the same from above. Magnified 50 diameters.]

21. *Cythere canaliculata* (Reuss), (Pl. XIV. fig. 7 *a–d*).

Cypridina canaliculata, Reuss, Haidinger's Abhand. (1850), Bd. iii. p. 76, tab. ix. fig. 12.
Cythere canaliculata, Egger (1858), Ostrak. der Miocän.-Schicht., Bd. v. p. 33, t. v. figs. 10, 11.
Cythere canaliculata, Brady, Trans. Zool. Soc. (1865), vol. v. p. 373, pl. lix. fig. 4, *a–f*.

Carapace oblong, rather tumid; seen from the side, subsigmoid, highest in the middle, the height being equal to at least half the length; anterior extremity well rounded, posterior oblique, rounded off with a full curve below, and forming a distinct angle with

the dorsal margin above; dorsal margin boldly arched, forming in front a continuous curve with the anterior margin, slightly sinuated behind, and joining the posterior extremity at an acute angle; ventral margin deeply sinuated in the middle, and curving upwards with a bold sweep behind; seen from above, the outline is boat-shaped, obtusely pointed in front, broad and truncated behind; the sides sinuous, curved, and falling slightly inwards at an obtuse angle near the posterior extremity; width and height nearly equal; end view broadly ovate, widest above, the sides converging towards the ventral margin, which is narrow and keel-shaped. The central portion of each valve is excavated so as to form a large subrotund pit, above which, towards the dorsal margin, is a series of four or five similar, but not quite so large, excavations; these are separated from each other by rounded ridges, and round about this group of large fossæ are disposed several much smaller hollows; the dorsal surface is very broad, has a deep longitudinal furrow along the greater part of the hinge-line, and shows conspicuously the transverse ribbing which separates the lateral fossæ. Length, 1-58th of an inch (·43 mm.).

The specimens described by me in the Zoological Transactions were from Hobson's Bay, Australia; but those figured by Reuss and Egger were fossils from the European Tertiary formations. The Challenger specimens are from off East Moncœur Island, Bass Strait, 38 to 40 fathoms (Station 162); and from Port Jackson, Australia, 2 to 10 fathoms.

[Pl. XIV. fig. 7, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

22. *Cythere reussi*, G. S. Brady (Pl. XIV. fig. 2, *a–d*).

Cythere reussi, Brady, Les Fonds de la Mer, tom. i. p. 153, pl. xviii. figs. 9, 10.

Shell, seen from the side, oblong, subquadrate; greatest height situated near the anterior extremity, and equal to half the length; anterior extremity broad, obliquely rounded, posterior narrower, rounded off above, somewhat angular below, and having below the middle one or two short stout teeth; dorsal margin nearly straight, sloping gently from before backwards, ventral slightly sinuated in the middle; seen from above, the outline is compressed, ovate, more than twice as long as broad, and having the greatest width near the middle; lateral margins gently curved; extremities bimucronate; the anterior wide and truncated; the posterior narrower, and deeply notched between the two terminal teeth; end view broadly ovate, almost circular, keeled on the ventral margin. The valves are throughout sculptured with numerous closely-set, irregularly-shaped fossæ of small size; the tubercles over the anterior hinge-joint are conspicuous, and the junction of the valves on the dorsal surface is marked by a deep longitudinal groove. Length, 1-50th of an inch (·5 mm.).

The localities in which *Cythere reussi* was dredged are the following:—Off Booby Island, lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms (Station 187); off the reefs, Honolulu, 40 fathoms; and Straits of Magellan, 55 fathoms (Station 313). The type-specimens were from Colon-Aspinwall, and differ somewhat from those here described, in being of more robust build and more strongly spinous.

[Pl. XIV. fig. 2, *a-d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

23. *Cythere fortificata*, n. sp. (Pl. XXI. fig. 1, *a–d*).

Carapace compressed, oblong; seen from the side, quadrangular, not much higher in front than behind, height equal to one-half the length; anterior extremity rounded and fringed with a row of short, blunt teeth, posterior obliquely truncated, rounded off and fringed with a few short, almost obsolete teeth, below the middle; dorsal margin sloping greatly from the anterior extremity where it forms a gibbous elevation, slightly curved behind the middle, and ending in a somewhat rounded angle; ventral almost straight; seen from above, the outline is compressed, oblong, more than twice as long as broad, widest in the middle, the sides gently convex and tapering evenly to the extremities which are produced, obtuse and subtruncated; end view broadly ovate; the valves are smooth, and encircled, except on the ventral margin, by a flattened flange of no great width. Length, 1-47th of an inch (·53 mm.).

The only material which yielded this species was a sounding from a depth of 420 fathoms, in the Mid Pacific, about 38° S. latitude.

[Pl. XXI. fig. 1, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

24. *Cythere foveolata*, n. sp. (Pl. XIII. fig. 5, *a–h*).

Carapace of the female tumid; seen from the side subrhomboidal, greatest height situated in the middle and equal to more than half the length; extremities obliquely rounded; dorsal margin flattened in the middle, and sloping steeply to either extremity, ventral sinuated in front and turned upwards at the back; the shape as seen from above is broadly ovate, scarcely twice as long as broad, with acutely pointed extremities and very convex sides; greatest width in the middle, whence the sides converge evenly towards each extremity; the posterior curve, however, broken by two small angular projections; end view cordate, the apex corresponding with the dorsal, base with the ventral, margin. Shell-surface marked all over with deep, closely-set, angular cavities; hinge-tubercles prominent. The outline of the male (figures *e–h*) is more compressed and very much more angular. Length, 1-45th of an inch (·53 mm.).

Several specimens occurred in dredgings from off Christmas Harbour, Kerguelen Island, 120 fathoms (Station 149); and off Heard Island, 75 fathoms (Station 151). The

general form of this species is very familiar; many might be named which approach it rather closely, but no described species seems to be absolutely identical with it. The nearest, perhaps, are *Cythere borealis*, Brady,—an Arctic form,—and *Cythere ædichilus*, Brady, a fossil of the Antwerp Crag.

[Pl. XIII. fig. 5, *a–h*. *a* Carapace of female seen from side, *b* from above, *c* from below, *d* from front; figures *e–h* represent similar views of the male shell. All magnified 60 diameters.]

25. *Cythere securifer*, n. sp. (Pl. XIII. fig. 4, *a–h*).

Shell of the female, seen from the side, nearly rhomboidal, highest in the middle, scarcely higher in front than behind, height equal to two-thirds of the length; anterior extremity obliquely rounded, posterior subtruncated, produced and obscurely angular in the middle; dorsal margin gently arched, ending behind in an obtuse angle, ventral slightly sinuated both in front and behind, and prominent in the middle; seen from above, boat-shaped, twice as long as broad, broadest a little behind the middle, sides gently curved, extremities truncated, with strong mucronate projections in the middle line, the anterior narrower than the posterior; end view quadrilateral, all the sides slightly convex. Surface of the shell coarsely sculptured with deep angular excavations. The shell of the male, besides being more slender than that of the female, has the ventral margin of each valve produced downwards, near the middle, so as to form a conspicuous triangular or hatchet-shaped protuberance, that of the left valve being commonly larger than on the right; the ventral margins in the female are also produced, but not in so marked a manner. Length, 1-50th of an inch (·5 mm.).

A good series of this remarkable *Cythere* was obtained off Prince Edward's Island, in a depth of 50 to 150 fathoms. (Near Station 145.)

[Pl. XIII. fig. 4, *a–h*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front; figures *e–h* represent similar views of the male shell. All magnified 60 diameters.]

26. *Cythere impluta*, n. sp. (Pl. XVI. fig. 3, *a–d*, and Pl. XXVI. fig. 6, *a–d*).

Shell, seen from the side, subovate or subquadrangular, higher in front than behind; anterior extremity wide and obliquely rounded, posterior narrow, subtruncated or rounded, sometimes produced below the middle, and dentated; dorsal margin gibbous over the anterior hinge, thence sloping steeply backwards, and ending either in an obtuse angle or a rounded curve, ventral margin convex; greatest height situated at the anterior hinge, and equal to more than half the length; seen from above, regularly ovate, widest near the middle, more than twice as long as broad, sides gently convex, or slightly sinuated in the middle, and converging evenly to the extremities which are equal and subacuminate; end view subtriangular, higher than broad, sides convex, angles

rounded off. The sides of the valves are marked with irregularly scattered subrotund excavations of variable size; just within the ventral margin there is an elevated ridge, and occasionally one or more indistinct longitudinal ribs on the middle of the valves which are also slightly undulated transversely; the hinge-line on the dorsal aspect of the shell is distinctly depressed in the middle. Length, 1-37th of an inch (·74 mm.).

Dredged off Nightingale Island, Tristan d'Acunha, in 100 to 150 fathoms (Station 135); also in anchor-mud, from a depth of 6 fathoms, Stanley Harbour, Falkland Islands (Station 316).

The somewhat different forms figured in Plates XVI. and XXVI. I at first supposed to belong to distinct species, but my impression now is that they cannot properly be separated. The forms shown in Pl. XVI. occurred in the Falkland Islands only; that in Pl. XXVI. in both localities.

[Pl. XXVI. fig. 6, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters. Pl. XVI. fig. 3, *a–d*, represent similar views of one of the Falkland Island forms. Magnified 60 diameters.]

27. *Cythere* (?) *serratula*, n. sp. (Pl. XLIII. fig. 7, *a–d*).

Valves compressed, oblong; seen from the side subreniform, rather higher in front than behind, height equal to half the length; extremities boldly rounded, anterior smooth, posterior bordered with a series of very small distant spines; dorsal margin nearly straight, ventral deeply sinuated in the middle; seen from above the valves are compressed, ovate, and slightly sinuated in the middle of the lateral margin. Shell smooth, or very partially and indistinctly marked with small circular impressed puncta. Length, 1-23d of an inch (1·1 mm.).

Cythere serratula occurred in three dredgings, but in each case only a very few separated valves were found; it might, perhaps, more properly have been placed amongst the *Cypridæ*, but its real affinity must, with the scanty material at present available, be merely conjectural:—Off Culebra Island, West Indies, 390 fathoms (Station 24); off Canaries, 1125 fathoms (Station 85); and north of Tristan d'Acunha, 1425 fathoms (Station 335).

[Pl. XLIII. fig. *a–d*. *a*, *c*, Right valves (? young and old) seen from side; *b*, *d*, the same seen from below. Magnified 40 diameters.]

28. *Cythere pyriformis*, n. sp. (Pl. XV. fig. 3, *a–d*).

Valves seen from the side, much higher in front than behind, all the margins perfectly smooth; anterior extremity broadly rounded, posterior also rounded, but much narrower; dorsal margin boldly arched, highest in front of the middle, and sloping steeply backwards, ventral margin nearly straight, greatest height equal to considerably more than

half the length; seen from above, the outline forms a regular curve with a slight sinuation towards either end, extremities equal and subacute. Surface of the shell smooth, slightly undulated, and marked round the extremities and on the ventral margin with numerous radiating hair-like lines. Length, 1-28th of an inch (·9 mm.).

A few valves only belonging to this species were found in a dredging from off Pernambuco (Station 120), lat. 8° 37′ S., long. 34° 28′ W., depth, 675 fathoms. From these scanty materials it is impossible to describe the species fully, but there can be little doubt of its distinctness from any recorded form. The valve shown at fig. 3, *d*, may perhaps be taken to belong to the young of the same.

[Pl. XV. fig. 3, *a–d*. *a* Left valve seen from side, *b* from above, *c* from front, *d* right valve of a younger specimen. All magnified 50 diameters.]

29. *Cythere cytheropteroides*, n. sp. (Pl. XV. fig. 5, *a–d*).

Valves seen from the side, subovate, much higher in front than behind; the greatest height equal to more than half the length; anterior extremity broad, rounded, its lower half armed with a series of broad, short, and blunt teeth, about twelve in number; posterior extremity produced, narrowed, and in some cases bearing two or three teeth, of similar character to those of the anterior border; dorsal margin gibbous in front, thence sloping with a gentle curve to the hinder extremity, ventral slightly convex, sinuated in front of the middle, seen from above, the outline appears to be subovate, widest behind the middle, and with very thick, heavy extremities. The surface of the shell is smooth, but bears a prominent rounded crest near the ventral margin. Length, 1-32d of an inch (·77 mm.).

As with the preceding species, I am able only imperfectly to describe this shell. Detached valves only were found, and very few of them; these occurred in a dredging from off the Cape of Good Hope, 150 fathoms (Station 142).

[Pl. XV. fig. 5, *a–d*. *a* Left valve seen from side, *b* from above, *c* from front, *d* right valve seen from side. All magnified 50 diameters.]

30. *Cythere kerguelenensis*, n. sp. (Pl. IV. figs. 16–18, and Pl. XX. fig. 1, *a–f*).

Carapace of the female, seen from the side, subreniform, higher in front than behind, greatest height situated in the middle, and equal to nearly two-thirds of the length; left valve much larger than the right; anterior extremity well rounded; posterior produced below the middle, and forming an angular squamous beak, which is often bordered with a few small, blunt teeth; dorsal margin evenly and boldly arched, highest in the middle, ventral sinuated in the middle; seen from above, oblong, ovate, widest in the middle, and tapering evenly to the extremities which are equal and sharply acuminate; width scarcely equal to half the length; end view broadly ovate, broad below, and tapering to the apex which is acute, sides very convex, base strongly keeled in the

middle. Surface of the valves profusely marked with rounded, impressed puncta; hinge-tubercles conspicuous; margins produced, especially at the two ends of the shell, so as to form a squamous encircling fillet, which in front and behind is marked by small marginal teeth and numerous transverse hair-like lines; along the contact margins of the valves, both on the dorsal and ventral surface, is a distinct angular depression. Length, 1-25th of an inch (·1 mm.).

Dredged plentifully in Balfour Bay, 20 to 50 fathoms, and Royal Sound, Kerguelen Island, 28 fathoms; off Prince Edward's Island, 50 to 150 fathoms; off East Monceur Island, Bass' Strait, 38 to 40 fathoms; and Port Jackson, Australia, 2 to 10 fathoms. Seen on the dorsal surface, this species bears a close resemblance to the common British *Cythere albomaculata*, Baird, but the shell is much more coarsely sculptured, while the spinous margins, and very broadly reniform lateral outline are constant distinctive characters.

[Pl. XX. fig. 1, *a–f*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from above. All magnified 40 diameters.]

31. *Cythere speyeri*, G. S. Brady (Pl. XX. fig. 2, *a–f*).

Cythere speyeri, Brady, Ann. and Mag. Nat. Hist., 1868, ser. 4, vol. ii. p. 222, pl. xv. figs. 8–11.
Cythere speyeri, Les Fonds de la Mer, tom. i. p. 99, pl. xii. figs. 8–10.

Shell of the female excessively tumid; seen from the side, broadly ovate, with a prominent posterior beak, greatest height in the middle, and equal to two-thirds of the length, anterior extremity fully rounded, and forming a continuous curve with the dorsal margin, which is boldly arched; posterior extremity produced below the middle into a prominent angular beak; ventral margin moderately convex; seen from above, broadly ovate, not twice as long as broad, widest behind the middle, lateral margins extremely convex, converging gently towards the front, and more abruptly backwards, anterior extremity subacuminate, posterior obtuse; end view broad, ovate, widest below the middle, pointed at the apex, sides very convex; left valve larger than the right. Surface of the shell marked throughout with large circular impressed puncta, hinge-tubercles conspicuous; no very marked encircling fillet. Length, 1-28th of an inch (·9 mm.).

Dredged off St Vincent, Cape Verde, in a depth of 1070 to 1150 fathoms (Station 93), and off Ascension Island, 420 fathoms (Station 344). The type specimens which differ in nothing from those here described, except in the frequent presence of a spine at the infero-posteal angle, were found in a dredging from Tenedos; and I have other specimens from Colon and New Providence, and St Vincent, Cape Verde. The species altogether is very like an excessively tumid *Cythere convexa*, Baird. The distinct inequality of size of the right and left valves, in this and the preceding species, is an interesting peculiarity,

and may, perhaps, coincide with other more important structural characters, which, however, I have not been fortunate enough to discover.

[Pl. XX. fig. 2, *a–f*. *a* Shell of female, seen from left side, *b* from above, *c* from below, *d* from front, *e* male, seen from side, *f* from above. All magnified 40 diameters.]

32. *Cythere sabulosa*, n. sp. (Pl. XIX. fig. 1, *a–h*).

Shell very tumid; its greatest height situated near the front, and equal to two-thirds of the length; the anterior extremity, seen from the side, is broad and very obliquely rounded, the posterior narrowed, slightly produced below the middle, and sloping steeply above; the dorsal margin is slightly gibbous in front, over the large and conspicuous hinge-tubercle, and thence slopes with a gentle curve backwards; ventral margin straight, or slightly convex, and somewhat jagged or crenulated near the posterior extremity; seen from above, the outline is very broadly ovate, widest near the middle, the lateral margins forming a bold curve from one extremity to the other; the anterior extremity is obtusely pointed, the posterior broader and slightly produced; end view equilaterally triangular, the sides convex, apex emarginate. The surface of the shell is thickly covered with angular depressions, the intervals between which are in many cases rough, or almost spinous; a wide longitudinal area in the middle of the dorsal and ventral surfaces is, however, smooth, and free from sculptured ornament; the hinge-line is deeply depressed. Length, 1-45th of an inch (·53 mm.).

The specimen shown in figures *e–f* is somewhat different in shape, and may perhaps belong to the male; while figures *g–h* have a less gritty surface, and show a peculiar crenulation of the ventral margin; a somewhat similar crenulation is visible on the upper posterior angle in *a* and *e*, though not on the ventral margin. I do not imagine that these variations, though interesting, are of any importance, except as showing a variable development of the subspinous ornament of the shell.

Cythere sabulosa occurred in moderate abundance in the dredging from Station 187, off Booby Island, depth 6 to 8 fathoms.

[Pl. XIX. fig. 1, *a–h*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* shell of male (?) seen from left side, *f* from above, *g* smooth variety, shell seen from left side, *h* from above. All magnified 60 diameters.]

33. *Cythere cymba*, G. S. Brady (Pl. XX. fig. 5, *a–f*).

Cythere cymba, Brady, Les Fonds de la Mer, tom. i. p. 157, pl. xvi. figs. 5–7.

Shell of the female, seen from the side, higher in front than behind, greatest height situated a little in front of the middle, and equal to two-thirds of the length; anterior extremity broad, fully rounded, and often finely denticulated from the front of the ventral to the commencement of the dorsal margin; posterior truncated,

angular, produced below the middle, the lower half bearing several short blunt spines; dorsal margin well arched, ending posteriorly in an abrupt angle; ventral margin moderately convex; end view elongated, rhomboidal, twice as long as broad, widest in the middle, whence the margins converge abruptly at an angle towards either extremity; extremities equal, bimucronate; end view triangular, with rounded angles, and slightly convex sides. The valves are ornamented with numerous large, roundish, or angular excavations; the hinge-tubercles are prominent and polished; there is a sharply-defined ridge or crest running at a little distance within, and parallel to, the ventral border, continuing round the posterior and dorsal margins, and gradually becoming lost near the anterior extremity; another as distinctly marked ridge runs close along the ventral margin; these ridges are most distinctly seen on the ventral aspect of the shell, and the intervals are ornamented with angular sculpture. Length, 1-28th of an inch (·9 mm.).

Found in anchor-mud from 7 fathoms in Hong Kong Harbour; also in a dredging from the Inland Sea, Japan, lat. 34° 20′ N., long. 133° 35′ E.; 15 fathoms. The type specimens also were from Hong Kong.

[Pl. XX. fig. 5, *a-f*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male from left side, *f* from above. All magnified 40 diameters.]

34. *Cythere subrufa*, n. sp. (Pl. XX. fig. 3, *a–f*).

Carapace, seen from the side, oblong, subquadrangular, higher in front than behind, height equal to rather more than half the length; anterior extremity well-rounded, posterior truncated, scarcely rounded, fringed below the middle with several short blunt spines of irregular size, inferior angle rounded off; dorsal margin gibbous over the hinge tubercle, thence sloping backwards with a gentle curve, and sinuated just in front of the hinder extremity which forms a somewhat produced angle; ventral margin straight; seen from above, ovate, twice as long as broad, the greatest width situated in the middle, sides evenly and continuously curved throughout; extremities acuminate, a slight constriction in front of the hinder one; end view ovate, broad below and tapering above, height greater than the width. The surface of the valves is marked with a reticulated pattern, enclosing angular, finely punctated areolæ, the hinge-tubercles are polished and prominent, and the anterior and posterior extremities produced so as to form flange-like borders which are marked with transverse hair-like lines. Length, 1-33d of an inch (·77 mm.).

A good series of this species was obtained in Balfour Bay, Kerguelen Island, from a depth of 20 to 50 fathoms (Station 149); also off Prince Edward's Island, 50 to 150 fathoms.

[Pl. XX. fig. 3, *a–f*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from front. Magnified 40 diameters.]

35. *Cythere wyville-thomsoni*, n. sp. (Pl. XX. fig. 4, *a–f*).

Shell of the female, seen from the side, oblong, quadrangular, highest over the anterior hinge-joint, the height being equal to more than half the length; anterior extremity boldly rounded, fringed from above the middle with a series of small and regular serratures; posterior truncated, produced below the middle, and bearing four or five short, very stout and blunt spines; dorsal margin elevated over the anterior hinge, thence sloping steeply, and with two or three abrupt sinuations, backwards to the posterior extremity, where it is sharply angulated; ventral margin straight; seen from above, the outline is very irregularly hastate, fully twice as long as broad, the lateral margins deeply indented in the middle, converging gently in front and abruptly behind, and forming at each extremity a wide truncated prominence, the hinder one cut up into a number of blunt spines; end view irregularly triangular; the margins of the valves, as in the preceding species, are much expanded, and marked by transverse lines; the hinge-tubercles are large and prominent, the central portion of the valves has a large round elevated tubercle, while within the ventral and, less distinctly, also near the dorsal margin runs a sharply-cut longitudinal ridge, these ridges being especially conspicuous on the dorsal and ventral aspects of the shell; the general surface of the valves, including the lateral tubercle, is thickly sculptured with angular excavations. Length, 1-28th of an inch (·9 mm.).

A fine series of this very well marked species was obtained in the dredgings from Balfour Bay and Christmas Harbour, Kerguelen Island (Station 149). It occurred also in those from lat. 52° 4′ S., long. 71° 22′ E., 150 fathoms (Station 150); off Heard Island, 75 fathoms (Station 151); Torres Straits (?), lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms (Station 185).

Pl. XX. fig. 4, *a–f*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from above. All magnified 40 diameters.]

36. *Cythere parallelogramma*, n. sp. (Pl. XV. fig. 1, *a–e*).

Carapace, seen from the side, oblong, quadrangular, nearly equal in height throughout, the height being less than one-half the length; anterior extremity obliquely rounded, and sometimes obscurely dentated below the middle; lower half of the posterior margin slightly rounded and minutely dentated, upper half obliquely truncated (in the right deeply excavated); dorsal margin almost straight, terminating behind in a produced angle, ventral straight; seen from above, the outline is oblong, ovate, with irregularly sinuated sides. The surface of the valves is marked throughout with coarse, irregularly shaped excavations; within the anterior and ventral borders runs a more or less distinct elevated ridge, and just in front of the middle of each valve is a large, rounded tubercular elevation, the markings of which are smaller than those on other parts of the shell. Length, 1-30th of an inch (·85 mm.).

Dredged off Prince Edward's Island, 50 to 150 fathoms, near Station 145.

[Pl. XV. fig. 1, *a–e*. *a* Left valve of male seen from side, *b* from above, *c* right valve of male from side, *d* the same from above, *e* right valve of female seen from side. All magnified 50 diameters.]

37. *Cythere rastromarginata*, n. sp. (Pl. XVI. fig. 1, *a–d* and fig. 2, *a–d*).

Shell compressed, oblong; seen from the side, quadrangular, a little higher in front than behind, greatest height situated over the anterior hinge, and equal to half the length; anterior extremity boldly rounded and fringed throughout with a series of short, blunt, and subequal teeth; posterior truncated, rounded, and produced at the ventral angle, where it is armed with a row of six or eight strong, spine-like teeth; dorsal margin sloping with a sinuous curve backwards, and ending in an obtuse angle both before and behind, ventral nearly straight; seen from above, the outline is much compressed, thrice as long as broad, with nearly parallel sides, and broadly truncated equal extremities, the sides converging only very slightly towards the ends; end view irregularly ovate, height much greater than the width. Surface of the shell sculptured with polygonal fossæ, arranged in a somewhat radiate manner round a subcentral circular tubercle; the ventral surface forms two flattened, but only slightly extended lateral alæ, which are marked with very large excavated fossæ. Length, 1-37th of an inch (·8 mm.).

Males (fig. 1), dredged off reefs, Honolulu, 40 fathoms; off East Moncœur Island, Bass Straits, in 38 to 40 fathoms (Station 162). Females (fig. 2), in lat. 39° 32′ S., long. 171° 48′ E., 150 fathoms (Station 167).

The form figured in Pl. XVI. fig. 2, *a–d*, which I at first thought to belong to a distinct species, I now believe to be, in all probability, only the female of that shown in fig. 1, *a–d*. The general characters of the two forms are altogether similar, the chief difference being found in the large lateral expansions of fig. 2; its rather more attenuated extremities and less pronounced style of surface-sculpture, but these are all characters which are well known to be often of only sexual importance. Had the two forms occurred in the same dredging, I should not have hesitated at all to assign them to the two sexes of the same species.

[Pl. XVI. fig. 1, *a–d*, and fig. 2, *a–d*. 1*a* Shell of male (?) seen from left side, 1*b* from above, 1*c* from below, 1*d* from front. 2*a* Shell of female (?) seen from left side, 2*b* the same seen from above, 2*c* from below, 2*d* from the front. Magnified 60 diameters.]

38. *Cythere audei*, G. S. Brady (Pl. XV. fig. 7, *a–h*).

Cythere audei, Brady, Les Fonds de la Mer, tom. i. p. 162, pl. xix. figs. 12, 13.
Cythere rectangularis, Brady, Les Fonds de la Mer, tom. i. p. 153, pl. xviii. figs. 13, 14.

Shell, seen from the side, oblong, quadrangular, highest in front, the height being

equal to more than half the length; anterior extremity obliquely rounded, posterior truncated, produced below the middle into a beak-like or irregularly squamous process; dorsal margin highest over the hinge-tubercle, thence sloping with a sinuous curve backwards, and ending in a well-marked angle, ventral margin nearly straight; seen from above, the outline is oblong and subhexagonal, with parallel sides, which converge gently towards the front, abruptly and almost at a right angle behind; anterior extremity wide, subtruncated, and having a small central mucro, posterior produced in the middle into a broad protuberance; end view vaulted, dorsal margin arched, ventral broad and only slightly convex. Surface of the valves marked with small, shallow pittings, which are rather irregularly disposed and obscurely rounded. Length, 1-50th of an inch (·5 mm.).

Found in a dredging from a depth of 7 fathoms off Ascension Island; the single valve shown in figures *e–h* is from Balfour Bay, Kerguelen Island, but it may well be doubted whether it really belongs to this species. The type specimens were from Mauritius and Colon-Aspinwall.

[Pl. XV. fig. 7, *a–h*. *a* Shell of Ascension Island specimen seen from left side, *b* from above, *c* from below, *d* from front; figures *e–h* exhibit similar views of a right valve from Balfour Bay. Magnified 60 diameters.]

39. *Cythere curvicostata*, n. sp. (Pl. XII. fig. 4, *a–d*).

Carapace compressed oblong; seen from the side, subclavate, rather higher in front than behind, greatest height not so much as half the length; anterior extremity well rounded and bordered with a regular row of small teeth, which extend a short distance along the ventral margin; posterior subtruncated, slightly produced below the middle, the produced portion divided into teeth similar to those of the anterior extremity; dorsal margin highest in front, and falling by two abrupt but shallow steps towards the posterior extremity; ventral margin straight. The lateral surfaces of the shell exhibit two or three sinuous longitudinal ribs extending nearly the whole length of the valves, and towards the margins some irregularly-disposed smaller ribs; the interspaces are occupied by small fossæ closely set and arranged in longitudinal rows; seen from above, the outline is oblong, thrice as long as broad, nearly equal in width throughout, the sides parallel, the extremities broad and subtruncate; end view subquadrangular, height greater than the width. Length, 1-45th of an inch (·53 mm.).

One or two specimens only in a dredging from near Booby Island, in a depth of 6 to 8 fathoms. In style of surface ornament as well as in general shape the species is not very unlike the British *Cythere emaciata*, but a critical examination shows numerous important differences. Yet the peculiar disposition of the rib-work and associated fossæ, the finely-dentated margins and fan-like posterior expansions of the valve-margins suggest either a community of descent, or (which is scarcely likely) exposure to con-

ditions which have at length resulted in similar peculiarities of structure. The same observation applies with equal force to several of the ribbed species which come next to be described.

[Pl. XII. fig. 4, *a–d*. *a* Shell seen from left side, *b* from below, *c* from above, *d* from front. All magnified 60 diameters.]

40. *Cythere lauta*, n. sp. (Pl. XXI. fig. 4, *a–d*).

Shell, seen from the side, oblong, subquadrate, the greatest height being situated over the anterior hinge-joint, and equalling at least half the length; anterior extremity well rounded and crenulated, posterior truncated and irregularly notched, lower angle rounded off; dorsal margin sinking rather abruptly behind the anterior hinge, thence sloping gently with an irregularly notched line to the hinder end where it is abruptly angular, ventral margin slightly sinuated; seen from above, the outline is clavate, nearly thrice as long as broad, the sides parallel, suddenly converging in front of the middle, then running again directly forwards and forming a broad truncated anterior extremity; the posterior extremity forms a short truncated and notched prominence rather broader than that of the anterior; end view irregularly quadrangular, the dorsal and ventral margins convex, sides concave. The margins of the shell are produced and form a thick, flattened, and dentated flange, this being most fully developed at the two extremities, and much expanded on the ventral surface; the remaining central portion of the valve forms a somewhat elliptical area, and is marked off more or less perfectly by elevated ridges; there is also an oblique longitudinal ridge occupying the posterior half of the middle line, the rest of the surface being marked by angular excavations. Length, 1-52d of an inch (·49 mm.).

Found only in the Booby Island dredging, from lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms. (Station 187.)

[Pl. XXI. fig. 4, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

41. *Cythere stimpsoni*, G. S. Brady (Pl. XXI. fig. 6, *a–h*).

Cythere stimpsoni, Brady, Les Fonds de la Mer, tom. i. p. 78, pl. x. figs. 7, 8, and Ann. and Mag. Nat. Hist., ser. 4, 1869, vol. iii. p. 48, pl. vii. figs. 9–12.

Carapace of the female, seen from the side, oblong, subclavate, higher in front than behind, greatest height situated over the anterior hinge, and equal to half the length; anterior extremity broadly rounded, bordered with numerous more or less strongly developed spines, posterior much narrower, somewhat angular in the middle, toothed below the middle; dorsal margin gibbous over the anterior hinge, thence sloping with a gentle curve backward; ventral margin nearly straight; seen from above, the outline forms a narrow parallelogram with two nearly equally broad, produced extremities, width

equal to less than half the length; the end view forms an irregular pentagon. Surface of the valves coarsely excavated with large, closely-set and irregular fossæ, and having three conspicuous curved ribs, the largest of which runs lengthwise nearly in the middle of the valve, another rather shorter and near the ventral margin, and a third close to the dorsal margin; these, in the full-grown shell, all end abruptly behind in angular prominences, and are lost in front on the surface of the shell; the ribbing and spinous armature are much more fully developed in the male (fig. *e*). Length, 1-33d of an inch (·77 mm.).

This is a characteristic Mediterranean species, and the only specimens brought home by the Challenger, so far as I have seen, are from anchor-mud, brought up from a depth of 11 fathoms in Vigo Bay.

[Pl. XXI. fig. 6, *a–h*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side; *f*, *g*, *h* show young forms of the shell. All magnified 45 diameters.]

42. *Cythere quadriaculeata*, n. sp. (Pl. XXII. fig. 2, *a–d*, and Pl. XXV. fig. 4, *a–d*).

Shell, seen from the side, irregularly quadrate, much higher in front than behind, the greatest height equal to two-thirds of the length; anterior extremity well rounded, oblique, posterior narrowed, truncated, and emarginate, dorsal margin sloping steeply from the front, and suddenly excavated just in front of the angulated posterior extremity; ventral margin nearly straight, but up-curved behind the middle; seen from above, the outline is oblong, subhastate, fully twice as long as broad, widest behind the middle, the sides slightly converging forwards from two spinous projections near the posterior extremity; behind these projections they converge more abruptly to the middle line; the posterior extremity is subacute, the anterior more obtuse; end view angular, five or six sided, lateral margins parallel, ending above and below in sharp projecting processes. Surface of the shell marked with closely-set subrotund excavations, and having on each lateral aspect two strongly-marked longitudinal ridges, each of which terminates much behind the middle of the valve in a sharp spine. Length, 1-50th of an inch (·5 mm.).

Dredged in the Inland Sea, Japan, 15 fathoms (Station 233*b*), and off the reefs at Honolulu in 40 fathoms.

This is in general character very like *Cythere polytrema*, but it is not so coarsely sculptured, and is devoid of the marginal spines belonging to that species. The ribs in *Cythere polytrema* are straighter, longer, and more strongly developed, but do not end posteriorly in the conspicuous spines which are characteristic of *Cythere quadriaculeata*. The dorsal and ventral aspects are very different in the two species.

[Pl. XXII. fig. 2, *a–d*. *a* Shell (Honolulu) seen from left side, *b* from above, *c* from below, *d* from front. Magnified 80 diameters. Pl. XXV. fig. 4, *a–d*. *a* Shell (Japan)

seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

43. *Cythere polytrema*, G. S. Brady (Pl. XXI. fig. 5, *a–h*).

Cythere polytrema, Brady, Trans. Zool. Soc., 1878, vol. x. p. 393, pl. lxvi. fig. 1, *a–d*.

Shell of the female, seen from the side, subquadrangular, highest in front, the height over the hinge-joint considerably exceeding half the length; anterior extremity broad, well rounded, and bearing a series of from six to ten stout, blunt spines; posterior truncated, angular, and bordered irregularly with spines like those of the anterior margin; dorsal margin sloping backwards with a somewhat sinuous curve, but in the male often much cut up and indented; ventral margin more or less sinuous and spinous at the hinder end; the dorsal aspect is not unlike that of *Cythere stimpsoni*, except that the lateral margins, instead of being straight, are convex; end view also like *Cythere stimpsoni*, but showing the projections of the ribs more strongly; the surface of the shell is roughly excavated as in *Cythere stimpsoni*, and the lateral aspect of the valves shows two very strong and almost straight longitudinal ribs, which terminate abruptly both in front and behind without reaching the extremities of the shell. Length, 1-33d of an inch (·77 mm.).

A few detached valves brought by the Challenger from off Prince Edward's Island in the Southern Ocean are in no respect distinguishable from the fossil specimens described by me in a *Monograph of the Fossil Ostracoda of the Antwerp Crag*, under the name *Cythere polytrema*. It is extremely interesting to note the occurrence, alive in this distant region, of so well marked a European fossil. The forms figured at *d* and *e* are, I think, undoubtedly the right and left valves of the male, while *f*, *g*, and *h* represent most likely immature conditions of the shell.

[Pl. XXI. fig. 5, *a–h*. *a* Left valve of female seen from the side, *b* from above, *c* from front, *d* left valve of male, *e* right valve of male; *f*, *g*, *h* immature forms of the shell. All magnified 45 diameters.]

44. *Cythere scalaris*, n. sp. (Pl. XXI. fig. 8, *a–c*).

Valves, seen from the side, much higher in front than behind, greatest height equal to considerably more than half the length; anterior extremity broad and rounded, armed with numerous long and stout spines which are directed somewhat downwards; posterior extremity narrowed, angular, and irregularly spinous; dorsal margin sloping steeply backwards in a succession of very sharply angular steps; ventral irregularly sinuous, and bending upwards at the hinder end; dorsal aspect ovate, with very irregularly indented and spinous margins. Surface of the shell bearing one or more much contorted longitudinal ribs, and covered, like the foregoing, with closely-set, large, polygonal excavations. Length, 1-30th of an inch (·85 mm.).

Only a few valves of *Cythere scalaris* were noticed in a dredging from Torres Straits, lat. 11° 26′ S., long. 140° 3′ E., 155 fathoms (Station 185), and in a sounding from 100 fathoms (Station 305).

[Pl. XXI. fig. 8, *a–c*. *a* Left valve (young), *b* right valve (adult) seen from side, *c* the same from above. All magnified 50 diameters.]

45. *Cythere packardi*, n. sp. (Pl. XIX. fig. 2, *a–d*).

Shell, seen from the side, oblong, rather higher in front than behind, anterior extremity obliquely rounded, posterior rounded off above, produced below the middle; dorsal margin sloping backwards from the front, almost in a right line, inferior sinuated about the middle; greatest height equal to more than half the length; seen from above, the outline is oblong, with nearly parallel sides and broad truncated extremities; the lateral margins are slightly sinuated in the middle, and converge somewhat suddenly towards the extremities; width equal to half the length; the end view is irregularly ovate, height considerably greater than the width. Surface of the shell honeycombed with rather large angular cavities, and having also several sinuous ridges, the most conspicuous of which runs parallel with the ventral margin, and makes an upward turn a little in front of the posterior margin. Length, 1-52d of an inch (·48 mm.).

This species, which occurred only in a dredging from Station 187, off Booby Island, I have pleasure in naming after Dr A. Packard of Cambridge, U.S., a naturalist well known for his valuable contributions to the knowledge of many branches of invertebrate zoology.

[Pl. XIX. fig. 2, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

46. *Cythere flabellicostata*, n. sp. (Pl. XIII. fig. 6, *a–h*).

Shell of the female, seen from the side, quadrangular, highest in front, height equal to more than half the length; anterior extremity broad and obliquely rounded, posterior truncated, produced below the middle and slightly emarginate above; dorsal margin gibbous in front, thence sloping with a slight convexity backwards, and ending in a sharp angle; ventral margin nearly straight; seen from above, ovate, with nearly equal, broadly truncated extremities; width equal to about half the length; the sides are gently curved, converging gradually towards the front and more suddenly behind; end view ovate, with irregular convex margins, broad at the base, and slightly tapered to the apex. The surface of the valves is marked throughout with large, irregularly-shaped, angular cavities, separated from each other by sharply-cut ridges, which on the hinder half assume a radiating or fan-like arrangement. The shell of the male (figures *e–h*) presents the usual elongated, compressed, and angular form. Length, 1-50th of an inch (·5 mm.).

Dredged in Simon's Bay, South Africa, in a depth of 15 to 20 fathoms (Station 140).

[Pl. XIII. fig. 6, *a–h*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front. Figures *e–h* show similar views of the male. All magnified 60 diameters.]

47. *Cythere craticula*, n. sp. (Pl. XXI. fig. 7, *a–d*).

Shell larger and much more tumid than that of *Cythere flabellicostata*, but, seen laterally, of almost exactly the same shape; seen from above, the shape approaches that of a very irregular elongated octagon, about twice as long as broad; the sides are nearly parallel and slightly sinuated, converging gently towards the front and much more abruptly behind, each extremity forming a wide truncated prominence, the anterior, however, much the wider of the two; the posterior is emarginate, the anterior bimucronate; end view very irregularly quadrate; height and width about equal, the lateral margins having a very large and conspicuous median protuberance. The lateral surfaces of the valves are marked by two or three flexures and very prominent longitudinal ribs, which again are connected by several similar transverse ribs, forming a very open network, the interspaces of which are excavated into numerous smaller cavities; on the ventral surface the longitudinal ribs are more numerous and closely set; the anterior margin of the shell has a few small blunt spines, the posterior two or three of rather larger size. Length, 1-38th of an inch (·66 mm.).

Dredged in Simon's Bay, South Africa, in a depth of 15 to 20 fathoms (Station 140).

[Pl. XXI. fig. 7, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

48. *Cythere stolonifera*, n. sp. (Pl. XXI. fig. 3, *a–d*).

Shell compressed, elongated; seen from the side, oblong, subovate, with a much-produced infero-posteal angle, rather higher in front than behind, height equal to about one-half of the length; anterior extremity well rounded, and forming a continuous curve with both dorsal and ventral margins, posterior obliquely truncated, much produced below the middle, where it is also minutely dentate; dorsal margin gently arched and somewhat sinuous, ventral almost straight; seen from above, the outline is compressed, ovate, widest behind the middle, and having both extremities projected as rectangularly truncate processes, the anterior much the larger of the two; width considerably less than half the length; the end view is in the form of a narrow irregular octagon, its sides more or less denticulated or spinous. The sides of the valves are ornamented with several flexuous ribs, two or three of which run lengthwise, the rest obliquely or in various directions; the margins, especially the anterior and ventral, are produced into a well-marked, flattened, or concave encircling rim. Length, 1-42d of an inch (·6 mm.).

Dredged in Simon's Bay, South Africa, 15 to 20 fathoms (Station 140).

[Pl. XXI. fig. 3, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

49. *Cythere bermudæ*, G. S. Brady (Pl. XXI. fig. 2, *a–d*).

Cythere serrulata, Brady, Les Fonds de la Mer (1868), tom. i. p. 153, pl. xviii. figs. 11, 12.

Shell, seen from the side, somewhat siliquose, much higher in front than behind, the greatest height situated over the anterior hinge, and equal to at least half the length; anterior extremity broad and obliquely rounded; posterior truncated, narrow, irregularly emarginate and angulated about the middle; dorsal margin sloping backwards with a steep curve, and terminating in a produced angle; ventral nearly straight, angulated at the hinder end; seen from above, the outline is that of a narrow parallelogram with two broad produced extremities, the sides converging gently in front and almost at a right angle behind; width equal to rather more than one-third of the length; end view sub-pentagonal. Surface of the valves marked with three prominent longitudinal ribs, the interspaces excavated into large irregular pits. Length, 1-50th of an inch (·5 mm.).

Specimens which seem fairly referable to this species, differing a little, however, in shape as well as in the absence of serratures on the extremities of the valves, were dredged in a depth of 435 fathoms off Bermudas (Station 33). The type specimens were from Colon-Aspinwall, but the specific name originally applied to them (*serrulata*) having been already used by M. Bosquet is here abandoned in favour of *bermudæ*.

[Pl. XXI. fig. 2, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

50. *Cythere cristatella*, n. sp. (Pl. XIX. fig. 6, *a–d*).

Shell, seen laterally, oblong, quadrangular, higher in front than behind, the greatest height being equal to at least half the length; anterior extremity moderately rounded and slightly jagged; posterior truncated, produced in the middle and angulated both above and below; dorsal margin elevated in front, sloping very gently backwards, and ending in an angle at the hinder extremity; ventral margin nearly straight; seen from above, the outline is compressed, much more than twice as long as broad, subhexagonal, with nearly parallel sides, which converge gradually towards the front, but very abruptly behind; the extremities form thick truncated prominences; end view octagonal, widest in the middle, the four oblique margins deeply sinuated. Surface of the shell irregularly undulated, having an elevated longitudinal crest running parallel with the ventral margin, and ending abruptly behind the middle; the margins produced into a thick encircling flange. Length, 1-43d of an inch (·575 mm.).

Dredged off Booby Island (Station 187), 6 to 8 fathoms.

[Pl. XIX. fig. 6, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

51. *Cythere obtusalata*, n. sp. (Pl. XII. fig. 1, *a–c*).

Valves, seen from the side, subquadrangular, highest over the anterior hinge; anterior extremity obliquely rounded, posterior produced below the middle into a broad, irregularly dentated, beak-like process; dorsal margin sloping gently from the rather gibbous anterior extremity, ventral straight; height equal to more than half the length; seen from above, the lateral margins form a median alæform projection which ends abruptly behind, and tapers gently away towards the front. The surface of the shell is marked throughout with closely-set and not very large subangular excavations, but has no trace of ribbed ornament. Length, 1-43d of an inch (·57 mm.).

Only detached valves of this species were found in the following dredgings:—Off East Moncœur Island, Bass Straits, 38 to 40 fathoms, and in 16 to 25 fathoms off Admiralty Islands.

[Pl. XII. fig. 1, *a–c*. *a* Right valve seen from side, *b* from above, *c* from front. Magnified 60 diameters.]

52. *Cythere lactea*, G. S. Brady (Pl. XXII. fig. 1, *a–d*).

Cythere lactea, Brady, Trans. Zool. Soc. (1865), vol. v. p. 377, pl. lx. fig. 3, *a–c*.

Carapace, seen from the side, oblong, quadrangular, higher in front than behind, greatest height equal to nearly two-thirds of the length; anterior extremity broadly rounded; posterior truncated, slightly toothed below and excavated above the middle; dorsal margin sinuated behind the anterior hinge, thence sloping gently to the posterior extremity; ventral margin straight; seen from above, the outline is irregularly hexagonal, oblong, with subparallel sides, which are deeply indented in the middle, and converge abruptly and sinuously towards the obtuse, truncated extremities; the end view is subtriangular, with irregularly notched sides, and broad, rather convex, base. The surface of the shell is covered with closely-set angular excavations; within the ventral and posterior margins runs an elevated ridge, and on the front of each valve is a rounded tubercular prominence (not shown in the plate). Length, 1-50th of an inch (·5 mm.).

From a sounding made in a depth of 420 fathoms (mid-Pacific, about lat. 40° S.).

These specimens appear to be referable to a *Cythere* which was described by me from one shell only, under the name *lactea*, in the Transactions of the Zoological Society (*loc. cit.*). The type specimen is more sharply sculptured and rather longer than those now figured and described, but considerable latitude must be allowed for difference of race and habitat. As a general rule, Ostracoda dredged from great depths are more blurred in their features than the same species from shallower water.

[Pl. XXII. fig. 1, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

53. *Cythere prava* (Baird), (Pl. XXII. fig. 4, *a–f*).

Cythereis prava, Baird, Proc. Zool. Soc. (1850), part xviii. p. 254 (Annulosa), pl. 18, figs. 13–15.
Cythereis deformis, *idem*, *ibidem*, pl. xviii. figs. 4–6.

This, though much resembling *Cythere lactea*, is a larger and more coarsely-sculptured species, the sides of the valves show two or three flexuous, more or less prominent, longitudinal ridges running along almost the entire length of the shell; the dorsal margin is more irregularly broken, and the shell is wider in proportion to its length; the width and height are equal, and, in the female, exceed half the length. The end view is irregularly quadrate, very broad dorsally. Length, 1-38th of an inch (·66 mm.).

Dredged at Nares' Harbour and other stations off the Admiralty Islands, in depths of 16 to 25 fathoms.

The types of this species, described by Dr Baird, were from the Mediterranean (Tenedos), and my own collection contains a series of specimens from the same place. The Challenger specimens here referred to are altogether coarser and clumsier in general aspect; the longitudinal ribbing is not so clean cut, nor is the pitted sculpturing of the shell so well defined, and, seen dorsally, the outline is more obese and less attenuated towards the extremities. But though the differences are thus rather considerable, it would not be easy to fix upon a line of separation, and I therefore prefer to consider these specimens as local varieties of Dr Baird's species.

[Pl. XXII. fig. 4, *a–f*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from above. All magnified 60 diameters.]

54. *Cythere convoluta*, G. S. Brady (Pl. XXII. fig. 3, *a–d*).

Cythere convoluta, Brady, Ann. and Mag. Nat. Hist. (1868), ser. 4, vol. ii. p. 182, pl xii. figs. 3, 4.

Shell, seen from the side, subquadrangular, greatest height situated in front, and equal to about two-thirds of the length; anterior extremity smooth and broadly rounded, posterior subtruncate and irregularly toothed, produced below and excavated above the middle; dorsal margin sloping from before backwards, abruptly and irregularly sinuous, ventral slightly convex; seen from above, the outline is irregularly ovate, widest in the middle, with broad truncated extremities and irregularly jagged sides (the jags not sufficiently marked in the plate); width equal to the height; end view vaulted, base nearly straight, sides boldly curved and deeply indented. The surface of the valves is marked with numerous prominent, twisted, and sharply-cut longitudinal ribs, the intervals of which are irregularly reticulated. Length, 1-42d of an inch (·6 mm.).

Dredged off Tongatabu, 18 fathoms (Station 172), and in 40 fathoms off the reefs at Honolulu; in both places amongst coral. The types were from Mauritius.

[Pl. XXII. fig. 3, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

55. *Cythere fungoides* (G. S. Brady), (Pl. XIX. fig. 7, *a–d*).

Cythereis fungoides, Brady, Trans. Zool. Soc. (1865), vol. v. p. 385, pl. lxi. fig. 7, *a–d*.

Shell very tumid; seen from the side, subtrapezoidal, nearly equal in height throughout, height equal to more than half the length, the entire circumference irregularly indented and spinous; extremities nearly equal, obliquely subtruncate, scarcely rounded; dorsal margin sloping slightly backwards, irregularly indented, almost laciniated; ventral irregular, slightly convex; seen from above, the outline is irregular and subhexagonal, greatest width behind the middle, and equal to two-thirds of the length; lateral margins converging slightly towards the front and much more abruptly behind; extremities broad and truncated; the whole outline, except the extreme front, much jagged and dentated; end view pentagonal; height scarcely as great as the width. The surface of the shell is rough, especially on the dorsal aspect, with irregular crests and tubercles. Length, 1-38th of an inch (·66 mm.).

Dredged off Booby Island (Station 187) in 6 to 8 fathoms; off Bermudas, 435 fathoms (Station 33); and in lat. 9° 59′ S., long. 137° 50′ E., 28 fathoms (Station 189).

The type specimen is Australian, and is even more laciniated in its sculpture than that here figured.

[Pl. XIX. fig. 7, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

56. *Cythere patagoniensis*, n. sp. (Pl. XXIII. fig. 3, *a–d*).

Shell oblong, compressed; seen from the side, the greatest height is situated in front of the middle, and is equal to more than half the length; anterior extremity broad, well rounded, and divided into a series of broad blunt teeth, posterior narrow, scarcely rounded, armed with five or six short blunt teeth below the middle; the dorsal margin is gibbous in front, thence sloping steeply backwards in an irregularly sinuous line; ventral margin straight; seen from above, the outline is compressed, subhastate, more than twice as long as broad, widest behind the middle, from which point the sides converge very gradually towards the front, and sink at an abrupt angle behind, thus forming a deep excavation; the extremities broad and truncated, with dentated margins; end view subtriangular, with sinuous sides and broadly rounded apex, the base-line broadly keeled. Surface of the shell very irregularly nodulated. Length, 1-40th of an inch (·65 mm.).

Several specimens were dredged off the coast of Patagonia in lat. 50° 10′ S., long. 74° 42′ W., 175 fathoms.

[Pl. XXIII. fig. 3, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

Cythere viminea, n. sp. (Pl. XVIII. fig. 3, *a–c*).

Valves, seen laterally, oblong, subovate, greatest height situated near the anterior extremity and equal to nearly two-thirds of the length; extremities well rounded and fringed below the middle with a series of six or eight small but stout spines; dorsal margin sloping gently from before backwards, and slightly sinuated, ventral nearly straight; seen from above, the lateral margin is angular, nearly straight in the middle, then sloping suddenly to either end, the extremities forming broad truncated projections. Shell sculptured with closely-set polygonal fossæ, and produced round the margins so as to form a stout encircling flange. Length, 1-38th of an inch (·66 mm.).

One valve dredged in 1375 fathoms, lat. 46° 46′ S., long. 45° 31′ E. (Station 146).

[Pl. XVIII. fig. 3, *a–c*. *a* Right valve seen from side, *b* from above, *c* from front. Magnified 50 diameters.]

58. *Cythere lepralioides*, n. sp. (Pl. XIX. fig. 5, *a–d*).

Carapace oblong, subovate, tumid, seen from the side, rather higher in front than behind, the height being about equal to half the length; anterior extremity obliquely rounded and bordered by even lines of short blunt teeth; posterior extremity narrowed, unevenly notched; dorsal margin gibbous in front over the hinge-tubercle, thence sloping gently backwards; ventral margin slightly convex; seen from above, the shell is oblong-ovate, twice as long as broad, widest behind the middle, lateral margins evenly convex, extremities obtuse and emarginate; end view very broadly ovate. Surface of the shell marked with closely-packed, large angular excavations and depressed on the dorsal and ventral surfaces along the lines of contact of the valves. Length, 1-32d of an inch (·775 mm.).

Dredged at Simon's Bay, South Africa (Station 140), in a depth of 15 to 20 fathoms, and off the Cape of Good Hope (Station 142) in 150 fathoms.

[Pl. XIX. fig. 5, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

59. *Cythere hodgii*, G. S. Brady (Pl. XXV. fig. 1, *a–d*).

Cythere hodgii, Brady, Trans. Zool. Soc. (1865), vol. v. p. 373, pl. lix. fig. 3, *a*, *b*.

Carapace of the female oblong-ovate; seen from the side, subovate or subrhomboidal, scarcely higher in front than behind, height equal to somewhat more than half the length; extremities obliquely rounded, the anterior bearing on the lower half of each valve a variable number (3 to 8) of short downward-pointing spines, the posterior one a much larger spine, which also points obliquely downwards (sometimes there are one or two supplementary small spines); seen from above, the outline is regularly ovate, widest near the middle, about twice as long as broad, somewhat more tapered in front than behind,

showing two prominent spines at each extremity, the anterior two closely approximated, the posterior two much wider apart and divergent; end view subcircular, emarginate above and below. The surface of the shell is marked with numerous subovate or angular fossæ which, toward the middle of the valves, are arranged in longitudinal rows, but towards the margins, in more or less distinctly concentric lines. Length, 1-38th of an inch (·66 mm.). The male carapace (fig. 1, *e–g*) differs, it will be seen, from the female in its more attenuated form, and in the depression of the dorsal and ventral surfaces. The species occurred plentifully in a dredging from the Inland Sea, Japan, lat. 34° 20′ N., long. 133° 35′ E., 15 fathoms (Station 233*b*).

The type specimen was found amongst sponge sand, which was said to have come from the Levant, but this may well be doubted. It differs from these Japanese examples in being much more sparingly sculptured, the excavations, in fact, being obsolete except on the hinder portion of the valve: in shape, too, the European (?) specimen is rather more slender. Possibly the two forms might fairly be separated as well-marked varieties, but they seem to me to be certainly referable to one and the same species. It remains to be noted that I have seen other specimens of *Cythere hodgii* collected in various parts of the Malayan Archipelago, and that some of the young shells exhibit a close approach to the single valve described in the Zoological Transactions.

[Pl. XXV. fig. 1, *a–g*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front; *e* male seen from left side, *f* from below, *g* from front. All magnified 50 diameters.]

60. *Cythere papuensis*, n. sp. (Pl. XXV. fig. 5, *a–d*).

Shell oblong, subovate; seen laterally, higher in front than behind, the height being equal to more than half the length; anterior extremity broad, obliquely rounded and divided into numerous short teeth, posterior narrowed and having on each valve three or four spines, the lowermost of which is the longest; these are directed straight backwards as those of the anterior margin are forward: dorsal margin sloping from the front with a gentle curve, ventral nearly straight; seen from above, the appearance is almost exactly that of *Cythere hodgii*, but that the spines of the posterior extremity are more numerous and more closely approximated; the end view is subtriangular, equilateral, with rounded angles and convex side; the sculpture also is very similar to that of *Cythere hodgii*, but the cavities have not any concentric or linear arrangement. Length, 1-38th of an inch (·66 mm.).

This species was found only in a dredging from a depth of 37 fathoms in Humboldt Bay, Papua.

[Pl. XXV. fig. 5, *a–d*).—*a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

61. *Cythere euplectella*, G. S. Brady (Pl. XXV. fig. 3, *a–d*).

Cythere euplectella, Brady, Les Fonds de la Mer, p. 157, pl. xvi. figs. 5–7.

Shell tumid, subovate; seen laterally, oblong, rather higher in front than behind, height equal to more than half the length; anterior extremity rounded, bordered with a row of small, blunt teeth, and distinctly angulated at its junction with the dorsum; posterior narrowed, irregularly jagged, produced in the middle, and bearing four or five spines of irregular lengths; seen from above, the outline is ovate, tumid, greatest width behind the middle, and equal to two-thirds of the length; extremities rounded, the posterior much the wider of the two; the spines of the anterior and posterior extremities project strongly, and give a marked character to the shell; end view broadly cordate. The surface of the shell is marked with a network of ribs, which cross each other at right angles, enclosing deep fossæ; the longitudinal ribs are more prominent than the transverse. Length, 1-45th of an inch (·53 mm.).

Found only in a dredging from Station 189, lat. 9° 59′ S., long. 137° 50′ E., 28 fathoms. The type specimens are from Hong Kong. The species is well characterised by the peculiar, and, in well-marked specimens, the very beautiful shell-sculpture. The cavities with which the shells of Ostracoda are so commonly adorned, usually appear as if simply scooped out of the substance of the valves, but in the case of *Cythere euplectella*, they give the impression of being formed by the crossing of two series of ribs. I know of no other species in which precisely the same structure occurs.

[Pl. XXV. fig. 3, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 50 diameters.]

62. *Cythere goujoni*, G. S. Brady (Pl. XXV. fig. 7, *a–g*).

Cythere goujoni, Brady, Les Fonds de la Mer, tom. i. p. 78, pl. x. figs. 9, 10.

This species very closely approaches *Cythere papuensis*, but is more angular in its contour, both as viewed from above and from the side. Seen laterally, it is highest near the front, the height of the female being equal to more than half the length; the anterior margin is rounded, and has several distant sharp spines; the posterior is truncated, angular at its upper termination, and bears a few small, blunt spines below the middle; the dorsal margin is sinuated behind its highest point, and then slopes with a gentle curve backwards; ventral margin slightly convex; seen from above, the outline is subovate, about twice as long as broad, and widest near the middle, the extremities are truncated, but the anterior is considerably broader than the posterior, and there are two conspicuous lateral spines, one on each valve, near the hinder extremity; end view very broadly ovate. Surface of the valves covered with closely-set angular cavities. Length, 1-38th of an inch (·66 mm.).

This species was noticed in three dredgings:—from Port Jackson, 2 to 10 fathoms;

off Booby Island (Station 187), 6 to 8 fathoms; and Hong Kong Harbour, 7 fathoms. It was first described from specimens taken in the China Seas.

[Pl. XXV. fig. 7, *a–g*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from below, *g* from front. All magnified 50 diameters.]

63. *Cythere adunca*, G. S. Brady (Pl. XXV. fig. 6, *a–d*).

Cythere cerebralis, Brady, Les Fonds de la Mer, tom. i. p. 63, pl. vii. figs. 12–14.

Shell, seen from the side, oblong, flexuous, irregularly subrhomboidal, rather higher in front than behind, height equal to more than half the length; anterior extremity obliquely rounded, not spinous, posterior truncated, narrow and sinuous; dorsal margin very irregularly sinuous, and prominent over the hinge-tubercle, ventral strongly convex and sharply up-turned towards the hinder extremity; seen from above, the outline is sub-ovate, twice as long as broad, the greatest width situated near the middle; the sides are irregularly jagged, and have a spinous projection near the posterior extremity, the

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off Booby Island (Station 187), 6 to 8 fathoms; and Hong Kong Harbour, 7 fathoms. It was first described from specimens taken in the China Seas.

[Pl. XXV. fig. 7, *a–g*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from below, *g* from front. All magnified 50 diameters.]

63. *Cythere adunca*, G. S. Brady (Pl. XXV. fig. 6, *a–d*).

Cythere cerebralis, Brady, Les Fonds de la Mer, tom. i. p. 63, pl. vii. figs. 12–14.

Shell, seen from the side, oblong, flexuous, irregularly subrhomboidal, rather higher in front than behind, height equal to more than half the length; anterior extremity obliquely rounded, not spinous, posterior truncated, narrow and sinuous; dorsal margin very irregularly sinuous, and prominent over the hinge-tubercle, ventral strongly convex and sharply up-turned towards the hinder extremity; seen from above, the outline is sub-

length, and equal throughout; anterior extremity slightly rounded, and bordered with a row of short, broad, and blunt teeth; posterior extremity irregularly rounded, and more or less broken into spine-like processes; dorsal margin straight or nearly straight, angulated at its junction with the posterior extremity, ventral slightly convex; seen from above, the outline is regularly ovate, with slightly jagged edges, greatest width equal to the height, and situated in the middle; extremities broadly rounded; end view very broadly ovate, almost cordate. The surface of the shell is granular in appearance, and is marked throughout by closely-packed, deep, angular fossæ; the spinous armature is very variable in its degree of development, and as a rule is dependent largely upon age and sex, stronger in males than in females. Male specimens are figured at *e*, *f*, *g*, and besides being strongly spined are larger and of more slender proportions than the females. Length (of females), 1-38th of an inch (·66 mm.).

Found in anchor-mud from a depth of 7 fathoms, Hong Kong Harbour, and in a dredging from 15 fathoms, Inland Sea, Japan (Station 233*b*). The specimens described in Les Fonds de la Mer were dredged at the north point of Java ("North Watcher").

[Pl. XXV. fig. 2, *a–g*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* shell of male seen from left side, *f* from below, *g* variety of male, right valve seen from side. All magnified 50 diameters.]

65. *Cythere cribriformis*, G. S. Brady (Pl. XIX. fig. 3, *a–d*).

Cythere cribriformis, Brady, Trans. Zool. Soc., 1865, vol. v. p. 379, pl. lxi. fig. 6, *a–d*.

Shell tumid, subovate; seen from the side, oblong, subquadrangular, scarcely higher in front than behind, height equal to more than half the length; anterior extremity moderately rounded; posterior narrower, and well-rounded; dorsal margin elevated into an angular prominence over the anterior hinge, behind which it is almost straight; ventral slightly convex; the entire circumference, especially the anterior and posterior margins, is irregularly broken and dentated; seen from above the outline is broadly ovate, strongly jagged, or dentated, widest behind the middle, greatest width equal to nearly two-thirds of the length, very broadly rounded behind, narrower in front; end view very broad, the width greater than the height, centrally emarginate both above and below. The surface-sculpture is very similar in character to that of *Cythere darwini*, but is more strongly marked, and there are no distinct marginal spines, the marginal irregularities

[Pl. XXV. fig. 2, *a–g*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* shell of male seen from left side, *f* from below, *g* variety of male, right valve seen from side. All magnified 50 diameters.]

65. *Cythere cribriformis*, G. S. Brady (Pl. XIX. fig. 3, *a–d*).

Cythere cribriformis, Brady, Trans. Zool. Soc., 1865, vol. v. p. 379, pl. lxi. fig. 6, *a–d*.

Shell tumid, subovate; seen from the side, oblong, subquadrangular, scarcely higher in front than behind, height equal to more than half the length; anterior extremity moderately rounded; posterior narrower, and well-rounded; dorsal margin elevated into an angular prominence over the anterior hinge, behind which it is almost straight; ventral slightly convex; the entire circumference, especially the anterior and posterior margins, is irregularly broken and dentated; seen from above the outline is broadly

66. *Cythere sulcatoperforata*, n. sp. (Pl. XXVI. fig. 1, *a–d*).

Valves, seen from the side, subquadrangular, nearly equal in height throughout, height equal to two-thirds of the length; anterior extremity boldly rounded; posterior nearly as broad as the anterior, produced in the middle; dorsal margin elevated into a gibbous prominence at each end, between which points it is irregularly spinous; ventral margin convex, slightly sinuated in front and dentated behind; seen from above, the outline of the shell is ovate, with dentated margins; the end view has its sides broken with two deep angular excavations, corresponding with two longitudinal furrows which run nearly the whole length of each valve. The shell-surface is sculptured with numerous scattered subangular fossæ, arranged in interrupted, more or less longitudinal, rows. Length, 1-23d of an inch (1·1 mm.).

Only one or two detached valves of this species were found in a dredging from 1375 fathoms, lat. 33° 42′ S., long. 78° 18′ W. (Station 300).

[Pl. XXVI. fig. 1, *a–d*. *a* Left valve seen from side, *b* from above, *c* from below, *d* from front. Magnified 40 diameters.]

67. *Cythere dictyon*, n. sp. (Pl. XXIV. fig. 1, *a–y*).

Shell of the female, seen from the side, oblong, subquadrangular, not much higher in front than behind; height equal to more than half the length; anterior extremity well rounded, fringed below the middle with numerous short teeth; posterior subtruncated, scarcely rounded, irregularly toothed on the lower half; the dorsal margin slopes gently from before backwards, and is always, in adult specimens, more or less irregularly jagged, while in some cases (figs. *j* and *r*) the indentations are remarkably deep; ventral margin more or less convex; seen from above, the outline is lozenge-shaped or somewhat hastate, about twice as long as broad, sides subparallel or converging gently towards the front, extremities broad and truncated; end view subtriangular, with convex margins and rounded angles. Shell-surface covered with an irregular network of ribs, the main lines of which have often an obscurely radiate arrangement, originating in an obsolete central tubercle; just within and parallel with the ventral margin is a prominent, sharply-cut ridge, which is often produced behind the middle of the valve into a strong spine, but is continued in a less prominent style round the anterior and posterior portions of the shell, thus enclosing an elevated central area. The shell of the male is shown at figures *e–g*, and has usually a more strongly developed spinous armature than is seen in the female. Length, 1-25th of an inch (1 mm.).

I have thought it desirable to figure more copiously than usual some of the more remarkable forms, as well as various stages of growth, of this widely-distributed and variable species. Many intermediate varieties might have been added to those given in the plate, but a careful examination of these figures will, I think, be sufficient to show pretty conclusively the unity of the series. The ventral ridge is conspicuous even in the

very youngest shells (*r–u*), and in these the surface-ornament, though much more delicate than in the adult, is sufficiently obvious; this character becomes increasingly distinct with the age of the animal, until in what appear to be the very oldest examples (*j*, *v*) the reticulations have become very massive and rounded by constant depositions of calcareous substance, while the intervening fossæ are proportionally deepened. It is not uncommon to find the sculptured ornament of Ostracoda filled up and partly obliterated in old age; possibly this might be the case in still older specimens of *Cythere dictyon* than those which have come under my observation, but at present I have seen no trace of the obliterating process in this species. The tapering form of the valves in the earlier stages of growth is plainly shown in the plate, as also the absence or comparative feebleness of spinous armature. The adult varieties do not call for much remark; the spinous termination of the ventral ridge is seen in figures *f*, *g*, and *i*, and a marked difference of contour is apparent in the dorsal views (*b*, *i*); this may perhaps be dependent on growth, or possibly on distinction of race. I long hesitated as to whether or not the forms shown in figures *j* and *v* should be considered to belong to *Cythere dictyon*. The chief points of divergence are the very convex ventral margin, the contracted and strongly-indented dorsum, and (in figure *v*) the marked projection of the infero-posteal angle; I believe, however, that these conditions are mere exaggerations of characters which belong to the species, and which may be found developed with variable degrees of distinctness in different examples.

Cythere dictyon occurred in a great number of the Challenger dredgings,—mostly in those from deep water,—in some of which it was the most abundant species. The following is a list of the localities :—

Off Culebra Island, West Indies, . . .	390 fathoms,	Station 24
Lat. 35° 35′ N., long. 50° 27′ W., . .	2750 „	„ 64
„ 38° 30′ N., „ 31° 14′ W., . .	1000 „	„ 73
„ 38° 25′ N., „ 35° 50′ W., . .	1675 „	„ 70
„ 38° 37′ N., „ 28° 30′ W., . .	450 „	„ 75
„ 37° 34′ N., „ 25° 13′ W., . .	1000 „	„ 76
„ 37° 24′ N., „ 25° 13′ W., . .	1000 „	„ 78
„ 8° 37′ S., „ 34° 28′ W., . .	675 „	„ 120
„ 9° 5′ S., „ 34° 49′ W., . .	350 „	„ 122
„ 46° 46′ S., „ 45° 31′ E., . .	1375 „	„ 146
„ 52° 4′ S., „ 71° 22′ E., . .	150 „	„ 150
Off Sydney, New South Wales, . . .	410 „	„ 164*a*
Lat. 5° 26′ S., long. 133° 19′ E., . . .	580 „	„ 191*a*
Humboldt Bay, Papua, ...	37 „	...
Lat. 2° 33′ S., long. 144° 4′ E., . .	1070 „	„ 218
„ 7° 45′ N., „ 144° 20′ E., . .	1850 „	„ 224
„ 36° 10′ N., „ 178° 0′ S., . .	2050 „	„ 246
„ 18° 40′ S., „ 149° 52′ W., . .	1940 „	„ 280
„ 38° 6′ S., „ 88° 2′ W., .	1825 „	„ 296
„ 33° 42′ S., „ 78° 18′ W., . .	1375 „	„ 300

Lat. 42° 43′ S., long.	82° 11′ W.,	.	.	1450 fathoms,	Station 302
„ 47° 48′ S., „	74° 48′ W.,	.	.	120 „	„ 305
„ 50° 10′ S., „	74° 42′ W.,	.	.	175 „	„ 308
„ 37° 29′ S., „	27° 31′ W.,	.	.	2220 „	„ 332
„ 32° 24′ S., „	13° 5′ W.,	.	.	1425 „	„ 335

The species is evidently ubiquitous, or nearly so, in the deep sea, the foregoing list of localities extending over the North and South Atlantic, the Indian, and Pacific Oceans; in very shallow water it is uniformly wanting, the smallest depth in its list of habitats being 120 fathoms, while the greater number of the dredgings in which it occurs range from 1000 to 2000 fathoms.

[Pl. XXIV. fig. 1, *a–y*. Figures *a–d* are drawn from a female shell, and *e–g* from a male of the common type; figures *h*, *i* show a variety of the female with well-developed posterior spines (Station 280); figures *j*, *k* are from valves of a different type (Station 296); figures *e–y* are drawn from a very strongly-sculptured specimen of extreme type (Station 191*a*); the figures from *l* to *u* exhibit various stages of growth, and are from Station 300. All magnified 40 diameters, except *e–y*, which are × 50.]

68. *Cythere arata*, n. sp. (Pl. XXIV. fig. 2, *a–c*).

Valves, seen from the side, subquadrangular, equal in height throughout; anterior extremity obliquely rounded, and bearing numerous short marginal teeth; posterior subtruncate, irregularly spinous, sloping steeply forwards above the middle to its upper termination, where it is strongly angulated and bears a prominent spine; dorsal margin more or less sinuated and dentate, ventral slightly convex, and forming a sharp ridge which ends posteriorly in a strong spine; seen from above, the margin of the valve forms a tolerably regular curve, and is widest behind the middle where there is a conspicuous spine. Shell-surface marked with minute scattered puncta, in the middle with several transverse furrows, within the ventral and anterior margins with a number of irregular deep fossæ. Length, 1-24th of an inch (1·05 mm.).

A few valves only of this species were found in a dredging from a depth of 150 fathoms, lat. 39° 32′ S., long. 171° 48′ E. (Station 167). Though more angular in outline than any examples of *Cythere dictyon* which I have yet seen, it yet closely approaches that species; but the style of surface ornament is entirely different, both from *Cythere dictyon*, and, so far as I know, from all other species.

[Pl. XXIV. fig. 2, *a–c*. *a* Left valve seen from side, *b* from above, *c* right valve seen from side. Magnified 40 diameters.]

69. *Cythere normani*, G. S. Brady (Pl. XVII. fig. 3, *a–d*, and (?) Pl. XXVI. fig. 4, *a*, *b*).

Cythere normani, Brady, Trans. Zool. Soc., 1865, vol. v. p. 379, pl. lxi. fig. 5, *a–d*.

Valves, seen laterally, trapezoidal, slightly higher in front than behind, height equal

to rather more than half the length; anterior extremity obliquely rounded and usually more or less beset with short spines; posterior obliquely truncated, only slightly curved, more or less spinous; dorsal margin gently arcuated and irregularly indented, ventral convex much longer than the dorsal margin owing to the obliquity of the extremities; seen from above the valves are widest behind the middle, thence tapering with a gentle curve toward the front, abruptly backwards, and prominently angular at the widest point. The surface of the shell is sculptured with deep, irregularly-shaped cavities of considerable size. Length, 1-30th of an inch (·8 mm.).

A few detached valves only found in a dredging from lat. 52° 4′ S., long. 71° 22′ E., 150 fathoms (Station 150), and doubtfully at Station 296. These valves differ from the type specimen in having a much rougher and more irregular style of shell-sculpture, but in general shape and character agree closely with it. The peculiarity of sculpture may very probably depend on the age of the specimens.

[Pl. XVII. fig. 3, *a–d*. *a*, *b* Right valve seen from side, *c* from above, *d* from front. Magnified 50 diameters. Pl. XXVI. fig. 4, *a*, *b*. These figures are doubtfully referred to *Cythere normani*.]

70. *Cythere radula*, n. sp. (Pl. XIX. fig. 4, *a*, *b*).

Valves, seen laterally, oblong, quadrangular, higher in front than behind, the greatest height equal to more than half the length; anterior extremity well rounded, posterior narrowed and obliquely truncated; dorsal margin almost straight, but indented at intervals, ventral convex; the whole circumference, except on the dorsum, is broken with strong, irregularly disposed spines of variable shape, but mostly short, acuminate, and wide at the base; seen from above the lateral margin is curved, widest behind the middle, extremities obtusely rounded. The surface of the shell is very rough, covered with a coarse net-work of ribbed sculpture, enclosing angular areolæ, at the intersections of which are occasional spines or tubercles. Length, 1-30th of an inch (·85 mm.).

A single valve of this species was found in a dredging from off the Ki Islands, 580 fathoms, Station 191*a*. It is not unlike Bosquet's *Cythere arachnoidea*, but wants the regularity of sculpture, and especially the longitudinal rib-work belonging to that species.

[Pl. XIX. fig. 4, *a*, *b*. *a* Left valve seen from side, *b* the same from above. Magnified 50 diameters.]

71. *Cythere dorsoserrata*, n. sp. (Pl. XXIII. fig. 1, *a–d*).

Shell compressed, oblong; seen from the side, subovate, greatest height in front, and equal to half the length; anterior extremity broad, well rounded, posterior narrowed and produced in the middle to a sharp point; dorsal margin gently sloping backwards, and finely serrated or dentated throughout the greater part of its course, ventral gently sinuated

with strong, irregularly disposed spines of variable shape, but mostly short, acuminate, and wide at the base; seen from above the lateral margin is curved, widest behind the middle, extremities obtusely rounded. The surface of the shell is very rough, covered with a coarse net-work of ribbed sculpture, enclosing angular areolæ, at the intersections of which are occasional spines or tubercles. Length, 1-30th of an inch (·85 mm.).

A single valve of this species was found in a dredging from off the Ki Islands, 580

in the middle; seen from above, the outline is narrow and subhastate, with rounded angles, greatest width situated behind the middle, and somewhat less than half the length; from the widest point the sides converge gradually towards the front, but with an abrupt curve backwards, each extremity forming a broad truncated prominence; the margins are throughout profusely and irregularly dentated; end view ovate, tumid, with very convex sides, and strongly-keeled broad base. The surface of the shell is covered thickly with nodular elevations, and the extremities are produced into flanges which are marked with transverse hair-like lines. Length, 1-33d of an inch (·77 mm.).

Dredged north of Tristan d'Acunha in lat. 32° 24′ S., long. 13° 5′ W., 1425 fathoms.

[Pl. XXIII. fig. 1, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

72. *Cythere scabrocuneata*, n. sp. (Pl. XVII. fig. 5, *a–f*, and Pl. XXIII. fig. 2, *a–c*).

Very like *Cythere dorsoserrata*, but more tumid, more nearly ovate in its dorsal aspect, and having all its margins more uneven; seen from the side, the shape of the female shell is that of a long triangle with the apex behind, all the margins, but especially the dorsal, denticulated or jagged, highest in front, the dorsal and ventral margins gently curved and converging equally to the pointed posterior extremity; seen from above, the outline is ovate, twice as long as broad, and widest near the middle, extremities broad and rounded off, lateral margins curved and converging rather more abruptly behind than in front. Shell-surface rough, with prominent nodules and scattered ill-defined ridges. Length, 1-33d of an inch (·77 mm.). The shell of the male is a good deal narrower and longer.

Dredged off East Moncœur Island, Bass' Straits, in 38 to 40 fathoms (Station 162); in the Inland Sea, Japan, lat. 34° 20′ N., long. 133° 35′ E., 15 fathoms (Station 233*b*); and in Wellington Harbour, New Zealand.

The lateral aspect of the specimens referred to *Cythere scabrocuneata* is so closely similar to that of *Cythere dorsoserrata* as to lead to the suspicion that the two forms may be specifically identical. And still more doubt may be entertained as to the proper position of the valves figured in Pl. XXIII. fig. 2, *a–c*, which I consider for the present as a variety of *Cythere scabrocuneata*. This is one of the numerous cases in which further observation on a more extensive series of specimens is required before a satisfactory decision can be arrived at.

[Pl. XVII. fig. 5, *a–f*. *a* Shell of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from above; Pl. XXIII. fig. 2, *a–c*, *a*, left valve (variety) from side, *b* left valve (variety) from side, *c* the same from above. All magnified 50 diameters.]

73. *Cythere tetrica*, n. sp. (Pl. XXIII. fig. 5, *a–d*).

Carapace, seen from the side, oblong, subovate, greatest height near the front, and equal to half the length; anterior extremity rounded and divided into numerous small crenulations; posterior subtruncated, slightly jagged, rounded off at the angles; dorsal margin sloping gently from the front and broken up by numerous irregular indentations; ventral nearly straight; seen from above, the outline is ovate, more than twice as long as broad, with gently curved subparallel sides, and broadly rounded extremities, the margins throughout very much broken; end view irregularly ovate, with a lateral tuberosity on each side above the middle. The surface of the shell is thickly covered with large nodules of irregular size and shape, and has an irregular longitudinal ridge just within the ventral margin. Length, 1-45th of an inch (·53 min.).

Dredged off Booby Island, lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms (Station 187).

[Pl. XXIII. fig. 5, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

74. *Cythere acanthoderma*, n. sp. (Pl. XVIII. fig. 5, *a–c*).

Shell oblong, subovate, tumid, covered everywhere with more or less strongly-developed, very irregular, blunt and ragged spines; seen from the side, the valves are subovate or somewhat pear-shaped, highest near the front, the height being equal to nearly two-thirds of the length; anterior extremity well rounded, posterior produced in the middle; dorsal margin sloping backwards and very much laciniated, ventral slightly convex; seen from above, the outline is subovate, not twice as long as broad, widest near the middle; sides curved, converging gradually towards the front and abruptly behind; extremities wide and truncated; the end view is subtriangular, equilateral, with convex sides and rounded angles; the margins of the shell, from whatever aspect it is viewed, are excessively rugged, and the spines with which it is everywhere thickly beset have a tendency to enlarge at their apices, often becoming bifurcate or even trifurcate; in this character it differs very remarkably from the next species (*Cythere dasyderma*), in which the spines never take on any development of this nature. *Cythere acanthoderma* occurred in moderate numbers in several of the Challenger dredgings:—

Lat. 35° 35′ N., long. 50° 27′ W.,	. .	2750 fathoms,	Station 64
„ 38° 30′ N., „ 31° 14′ W.,	. .	1000 „	„ 73
„ 46° 46′ S., „ 45° 31′ E.,	. .	1375 „	„ 146
„ 5° 26′ S., „ 133° 19′ E.,	. .	580 „	„ 191*a*
„ 36° 10′ N., „ 178° 0′ E.,	. .	2050 „	„ 246
„ 38° 6′ S., „ 88° 2′ W.,	. .	1825 „	„ 296
„ 42° 43′ S., „ 82° 11′ W.,	. .	1450 „	„ 302

Like *Cythere dictyon* and *Cythere dasyderma* this species seems to be cosmopolitan in

its range over the deep sea-bed, and like them also to be confined to great depths, the shallowest reading in the foregoing list being 580 fathoms.

[Pl. XVIII. fig. 5, *a–c*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 50 diameters. *e* Right valve, magnified 40 diameters.]

75. *Cythere dasyderma*, n. sp. (Pl. XVII. fig. 4, *a–f*, and Pl. XVIII. fig. 4, *a–f*).

Carapace tumid, ovate; seen from the side, oblong, subovate or subquadrangular; greatest height situated near the front, and equal to about two-thirds of the length; anterior extremity boldly rounded, posterior narrower, rounded or subtruncate; dorsal margin sloping gently backwards from the front, which is elevated over the hinge-joint; ventral margin slightly convex; the entire circumference broken into closely-set, but short and blunt teeth; seen from above, the outline is ovate, widest near the middle, about twice as long as broad, lateral margins gently and evenly curved, extremities broad and nearly equal, obtusely rounded or truncated; end view broadly ovate, rounded off above, broad and centrally emarginate below. Shell-surface covered with closely-packed, rather small, angular excavations, from the intervals between which arise numberless (usually short and blunt) spines, the shell in every aspect presenting a rough appearance. Length, 1-40th to 1-28th of an inch (·65 to ·9 mm.).

Like *Cythere dictyon* and *Cythere acanthoderma*, this species seems to occur in all the deep places of the sea. The following list embraces all the dredgings in which I have noticed it:—

Lat.	24° 20′ N.,	long.	24° 28′ W.,	.	.	2740	fathoms,	Station 5
„	38° 25′ N.,	„	35° 50′ W.,	.	.	1675	„	„ 70
„	28° 42′ N.,	„	18° 6′ W.,	.	.	1125	„	„ 85
„	9° 5′ S.,	„	34° 49′ W.,	.	.	350	„	„ 122
„	46° 46′ S.,	„	45° 31′ E.,	.	.	1375	„	„ 146
„	34° 13′ S.,	„	151° 38′ E.,	.	.	410	„	„ 164*a*
„	39° 32′ S.,	„	171° 48′ E.,	.	.	150	„	„ 167
„	11° 35′ S.,	„	144° 3′ E.,	.	.	155	„	„ 185
„	5° 26′ S.,	„	133° 19′ E.,	.	.	580	„	„ 191*a*
„	2° 33′ S.,	„	144° 4′ E.,	.	.	1070	„	„ 218
„	36° 10′ N.,	„	178° 0′ E.,	.	.	2050	„	„ 246
„	38° 6′ S.,	„	88° 2′ W.,	.	.	1825	„	„ 296
„	33° 42′ S.,	„	78° 18′ W.,	.	.	1375	„	„ 300
„	42° 43′ S.,	„	82° 11′ W.,	.	.	1450	„	„ 302
„		„				160	„	„ 305 (?)
„	52° 50′ S.,	„	73° 53′ W.,	.	.	245	„	„ 311
„	48° 37′ S.,	„	55° 17′ W.,	.	.	1035	„	„ 317
„	37° 29′ S.,	„	27° 31′ W.,	.	.	2200	„	„ 332
„	32° 24′ S.,	„	13° 5′ W.,	.	.	1425	„	„ 335
„	2° 42′ S.,	„	14° 41′ W.,	.	.	2350	„	„ 346

[Pl. XVII. fig. 4, *a–f*. Figures *a–d* are drawn from a specimen from Station No. 317

(magnified 50 diameters), *e*, *f* from Station No. 122 (magnified 60 diameters); Pl. XVIII. fig. 4, *a–f*, figures *a–d*, from Station No. 246, *e*, *f*, from Station 300 (magnified 50 diameters).]

76. *Cythere circumdentata*, n. sp. (Pl. XXVI. fig. 2, *a–c*).

Valves, seen laterally, oblong, subquadrangular, rather higher in front than behind, height equal to half the length; anterior extremity well rounded posterior rounded below, angular at its junction with the dorsal margin; dorsal margin straight, ventral sinuated in the middle, the whole circumference of the shell strongly but irregularly dentated. The outline, as seen from above, is exactly similar to that of *Cythere dasyderma*. Surface of the valves beset with deep polygonal fossæ, and round the marginal portions with numerous short spines. Length, 1-24th of an inch (1·05 mm.).

This comes very close to *Cythere dasyderma*, and may, perhaps, be but an extreme form of that species; it is, however, somewhat larger, more oblong in shape, has a surface sculpture composed of larger pits, and is only sparingly spiniferous, except near the margins. Detached valves were found in two dredgings only; in lat. 36° 10′ N., long. 178° 0′ E., 2050 fathoms (Station 246), and in lat. 13° 28′ S., long. 149° 30′ W., 2350 fathoms (Station 276).

[Pl. XXVI. fig. 2, *a–c*. *a* Left valve (Station 276) seen from outside, *b* the same from above, *c* left valve (Station 246) seen from above. All magnified 40 diameters.]

77. *Cythere suhmi*, n. sp. (Pl. XXVI. fig. 3, *a–h*).

Carapace of the female, seen from the side, subquadrangular, scarcely higher in front than behind, height equal to nearly two-thirds of the length; extremities rounded and beset, somewhat sparingly, with spines of irregular length; dorsal and ventral margins nearly straight, the former irregularly indented and spinous; seen from above, the shell is about twice as long as broad, widest in the middle, the lateral margins extremely convex, converging with a gentle curve towards the front, but very abruptly behind, the extremities forming very large and broad, truncated prominences, armed with divergent terminal spines; the hinder portion of the central mass bears also several stout backward-pointing spines; end view irregularly five-sided; the elevated central portion of the valves is limited in front and behind by a flattened zone which forms, when seen from the dorsal or ventral surfaces, two strong terminal projections, the margins (except the ventral) are irregularly spinous and the general surface is vaguely undulated. Length, 1-24th of an inch (1·95 mm.).

Only one perfect specimen and a few separated valves of this fine species have been seen. These occurred in a dredging from lat 35° 41′ N., long. 157° 42′ E.; 2300 fathoms (Station 241), and off Prince Edward's Island, 50 to 150 fathoms. The valves figured at 4, *a*, *b*, which at one time I took to belong to *Cythere suhmi* probably belong

to some other species, perhaps to *Cythere normani*; they were dredged at Station 296. The species is named after M. Von Willemœs Suhm, whose death during the voyage of the Challenger was an irreparable loss not only to the Expedition but to zoological science in general.

[Pl. XXVI. fig. 3, *a–h*. *a* Shell of female (Station 241) seen from left side, *b* from above, *c* from below, *d* from front,—magnified 40 diameters; *e–h* left valve of immature male probably (Prince Edward's Island),—magnified 50 diameters.]

78. *Cythere irpex*, n. sp. (Pl. XVII. fig. 2, *a–d*).

Valves, seen from the side, subquadrangular, rather higher in front than behind, greatest height equal to nearly two-thirds of the length; anterior extremity boldly and evenly rounded, posterior narrower, truncate, very slightly rounded, obscurely angular both above and below; dorsal margin sloping gently, almost in a straight line from the front, ventral slightly convex; seen from above, the sides of the valve form a continuous curve from end to end and are widest in the middle, extremities produced and obtusely rounded. The right valve is less angular in outline than the left. Surface of the shell uneven and covered closely with small stout spines, which are arranged in more or less distinctly concentric rows; on the ventral surface the spines coalesce, forming a longitudinal rib-work; the margins of the shell are uniformly dentated, the teeth being strongest on the anterior and dorsal regions. Length, 1-25th of an inch (1 mm.).

This is a deep-sea species, and occurred in three dredgings: lat. 38° 30′ N., long. 31° 14′ W., 1000 fathoms (Station 73); lat. 37° 34′ N., long. 25° 13′ W., 1000 fathoms (Station 78); lat. 32° 24′ S., long. 13° 5′ W., 1425 fathoms (Station 335).

[Pl. XVII. fig. 2, *a–d*. *a* Left valve seen from side, *b* from above, *c* from below, *d* right valve seen from side. Magnified 50 diameters.]

79. *Cythere ericea*, n. sp. (Pl. XVII. fig. 1, *a–d*).

Valves, seen from the side, quadrate, equal in height before and behind, sculptured with numerous but not very large rounded excavations, and thickly beset with long circular spines; anterior extremity rounded off, posterior truncated, well-rounded below, but only slightly at the upper angle, height equal to two-thirds of the length; seen from above the outline is ovate, evenly curved, widest behind the middle, tapering gradually towards the front but more rapidly behind. Length, 1-25th of an inch (1 mm.).

This species has been seen only in one dredging., from lat. 8° 37′ S., long 34° 28′ W., 675 fathoms. The valve shown at figure *d* is totally denuded of spines, no doubt by abrasion, and it is certain that in perfect condition the shell would be much more profusely spined than is represented even in figure *a*.

[Pl. XVII. fig. 1, *a–d*. *c* Left valve seen from side, *b* from above, *c* from front, *d* left valve (another example) denuded of spines. All magnified 50 diameters.]

80. *Cythere melobesioides*, G. S. Brady (Pl. XVIII. fig. 1, *a–g*).

Cythere melobesioides, Brady, Les Fonds de la Mer, tom. i. p. 162, pl. xix. figs. 10, 11.
Cythere nodulifera, Brady, Les Fonds de la Mer, tom. i. p. 163, pl. xix. figs. 24, 25.

Shell, seen from the side, oblong; height equal to half the length, the same before and behind; anterior extremity well rounded, posterior oblique, only slightly rounded; dorsal and ventral margins straight, the former much the shorter of the two owing to the obliquity of the extremities; seen from above the outline is compressed, oval, twice as long as broad, widest about the middle, sides nearly parallel, and converging rather suddenly to the extremities which are equal and broadly rounded; end view subcircular; shell-surface everywhere rough with small subspinous nodules, from which structure the margins of the shell in every aspect appear minutely dentated. Length, 1-35th of an inch (·75 mm.).

The foregoing description applies to the example shown in figures *a–d*, but not quite accurately to *e–g*, which latter specimen shows some rather important differences chiefly in the lateral contour. Still it seems best for the present to consider both as belonging to the same species; possibly the differences may be sexual. Figures *a–d* are drawn from one of a series dredged off Booby Island in a depth of 6 to 8 fathoms (Station 187), figures *e–g* from a single valve; the latter agrees more closely than the other with the specimens from Mauritius described in "Les Fonds de la Mer."

[Pl. XVIII. fig. 1, *a–g*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front, *e* left valve (variety) seen from side, *f* from above, *g* from front. Magnified 50 diameters.]

81. *Cythere irrorata*, n. sp. (Pl. XVIII. fig. 2, *a–d*).

Shell oblong, tumid; seen from the side, subquadrangular, nearly equal in height throughout, height equal to at least half the length; anterior extremity rounded off above and below, posterior oblique, truncated, scarcely rounded, provided with a row of five or six small blunt teeth below the middle; dorsal margin very slightly arched, ending behind in a prominent angle; ventral margin nearly straight, but finely crenulated, as is also the front of the shell; seen from above, the outline is irregularly six-sided, nearly twice as long as broad; sides straight and parallel in the middle, converging suddenly in front, and terminating in a broadly-rounded extremity,—behind the middle, converging abruptly at a right angle, and then running obliquely backwards, and terminating much as in front; end view triangular, with very convex sides and rounded angles. The surface of the shell is closely covered with small irregularly rounded nodules and flexuous grooves. Length, 1-42d of an inch (·6 mm.).

This species was found only in one dredging from near the Admiralty Islands in a depth of 16 to 25 fathoms.

[Pl. XVIII. fig. 2, *a-d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

82. *Cythere scutigera*, G. S. Brady (Pl. XXII. fig. 5, *a–f*).

Cythere scutigera, Brady, Les Fonds de la Mer, tom. i. p. 70, pl. viii. figs. 15, 16.

Shell of the female, seen from the side, oblong, subquadrangular, scarcely higher in front than behind, height equal to half the length; anterior extremity rounded, and divided below the middle into a number of short and stout blunt teeth; posterior extremity obliquely rounded, the lower angle rounded off; dorsal margin sloping slightly backwards, and broken by numerous large strong spines; ventral margin almost straight; seen from above, irregularly ovate, twice as long as broad, the margins very irregular and broken, extremities equal, broad and truncated; end view irregularly hexagonal, width and height equal. The male is much more elongated and slender, as well as more sharply spinous. The valves are armed with several large shield-like circular bosses which are more or less spinous at the summit, and the rest of the surface is closely beset with spines or spiniferous tubercles. Length, 1-48th to 1-24th of an inch (·52 to 1·1 mm.).

Specimens which I take to belong to *Cythere scutigera* were dredged in several places, all, however, in the Eastern Archipelago, Amboyna, 15 to 20 fathoms (Station 163); in lat. 39° 32′ S., long. 171° 48′ E., 150 fathoms (Station 167); in Humboldt Bay, Papua, 37 fathoms; and in lat. 33° 42′ S., long. 78° 18′ W., 1375 fathoms (Station 300).

The type specimens described in Les Fonds de la Mer, and taken off the north of Java, are much more strongly marked in their spinous armature than any of those found in the Challenger dredgings, but the general character of the shells is closely similar.

[Pl. XX. fig. 5, *a–f*. *a* Left valve of male (Amboyna) seen from side, *b* from above (both magnified 40 diameters); *c* shell of female (Station 167), seen from left side, *d* from above, *e* from below, *f* from front (magnified 50 diameters).]

83. *Cythere clavigera*, n. sp. (Pl. XXIII. fig. 7, *a–d*).

Cythere subcoronata, Brady, Trans. Zool. Soc., vol. v. p. 384, pl. lx. fig. 9, *a–c*.

Shell, seen from the side, ovate, oblong, greatest height situated in front of the middle, and equal to half the length; anterior extremity boldly rounded, completely bordered with a series of short and broad blunt spines, posterior extremity narrower, and likewise beset with spines, much longer and stronger than those of the front; dorsal margin sloping rather steeply backwards, and broken by a series of five or six spines of irregular size, one conspicuous spine just behind the anterior hinge-tubercle; the dorsal margin is nearly straight, but is also broken by continuous and irregular tooth-like projections; seen from above the outline is compressed, ovate, more than twice as long as broad, and having its greatest width in the middle; extremities broadly truncated, the whole outline much

broken and spinous; end view irregularly hexagonal, much higher than broad. The middle of each valve bears an irregularly lacinated longitudinal ridge, from which the surface slopes away in an undulating curve to the dorsal and ventral margins, the curved surface being more or less tuberculated or spinous; within the anterior and ventral margins runs a plaited or dentated ridge; and the whole circumference bears rows of spines as before described. Length, 1-33d of an inch (·77 mm.).

This species was found only in a dredging from a depth of 2 to 10 fathoms at Port Jackson, Australia. It is either identical with, or very nearly allied to, a form found in the Mediterranean, and previously assigned by me to *Cythere subcoronata*, Speyer, but which I now think to be distinct from that species. And it is just possible that an Australian species described in the same memoir (*Cythereis militaris*) may represent a very young form of *Cythere clavigera*.

[Pl. XXIII. fig. 7, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 50 diameters.]

84. *Cythere squalidentata*, n. sp. (Pl. XXIII. fig. 8, *a–d*).

Shell tumid behind, compressed in front; seen from the side much higher in front than behind, the greatest height equal to two-thirds of the length; anterior extremity broad and boldly rounded, posterior narrow and truncated; dorsal margin sloping steeply backwards, and bearing on each valve a series of four long curved slender spines, arranged one behind another, the hindermost being the longest; ventral margin nearly straight; seen from above the shell is broadly club-shaped, the greatest width equal to more than half the length, and situated behind the middle; at this point the sides are very protuberant, running forwards towards the front in a sinuous line, and backwards with a full curve, from the middle of which, on each valve, springs a strong spine pointing obliquely backwards and outwards; the anterior extremity is truncated, and has a deep central emargination; the posterior broadly rounded and dentate; end view irregular, with strongly jagged margins. Surface of the shell very irregularly undulated and finely punctate, length, 1-70th of an inch (·38 mm.).

One specimen only was found in a dredging from Station 323, lat. 35° 39′ S., long. 50° 47′ W., 1900 fathoms.

[Pl. XXIII. fig. 8, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 80 diameters.]

85. *Cythere tricristata*, n. sp. (Pl. XXIII. fig. 6, *a–d*).

Seen from the side, the shell is quadrangular, highest near the front, the height at that point being equal to more than half the length; anterior extremity broadly rounded, posterior narrow and truncated; dorsal margin sloping rather steeply backwards, ventral nearly straight, the entire circumference broken into broad, blunt tooth-

like processes of no great length, but fewer and more prominent on the dorsal margin; the posterior dorsal angle has one spine somewhat larger and more conspicuous than the rest; seen from above, the outline is very irregular, consisting of a central mass which has on each side a deep median indentation, and of two broad truncated terminal portions; seen endwise, it is likewise of irregular form, having two strongly-developed lateral protuberances projecting from a broad central portion. The central mass of the shell is bounded on all sides, except the dorsal, by a transversely corrugated encircling zone, the edges of which are irregularly dentated; and on the sides of the valves, placed one behind another, in the middle line are three short strongly-elevated crests, each of which is divided into three or four tooth-like segments. Length, 1-40th of an inch (·65 mm.).

Dredged at Port Jackson, 2 to 10 fathoms, and in 16 to 25 fathoms off the Admiralty Islands.

[Pl. XXIII. fig. 6, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 50 diameters.]

86. *Cythere velicola*, n. sp. (Pl. XXIII. fig. 4, *a–c*).

Valves, seen laterally, oblong, much higher in front than behind, height equal to two-thirds of the length; anterior extremity broadly rounded, divided into numerous broad, blunt squamous teeth of various sizes; posterior extremely narrow, rounded, and bearing four or five thick, gnarled teeth, those at the ventral angle being longer than the rest; dorsal margin cut up into several broad squamous processes, and bearing at its posterior angle a very long and stout curved spine; the ventral margin is nearly straight, and in the middle third of its course is produced laterally, forming a very strongly projecting alæform plate; seen from above, the outline is excessively compressed and almost linear, except in the middle, where the lateral ala forms a remarkable angular projection. The general surface of the valves is much depressed and sinks towards the extremities, forming a sort of trough, which is bounded externally by a somewhat elevated and irregularly lacinated belt; the central area is slightly undulated, and bears a few scattered circular papillæ. Length, 1-40th of an inch (·65 mm.).

A few detached valves of this remarkable little species were found in a dredging from Station 189, lat. 9° 59′ S., long. 137° 50′ E., 28 fathoms.

[Pl. XXIII, fig. 4, *a–c*. *a* Left valve seen from side, *b* right valve seen from side, *c* left valve seen from below. Magnified 60 diameters.]

Cytheridea, Bosquet.

Cytheridea, Bosquet, Entom. fossil. des Terres tertiair. (1850).

Valves unequal, the left mostly larger than the right, ovate or subtriangular, highest in front; surface smooth, or marked with scattered circular tubercles, impressed puncta

or concentric furrows; anterior extremity rarely spinous, posterior sometimes armed with a spine at the lower angle. Muscle spots arranged in a transverse row of three or four, with two detached (sometimes coalescent) spots in front. Hinges composed of two crenulated crests on the left (occasionally the right) valve, which articulate with corresponding depressions of the opposite valve. Anterior antennæ very robust, mostly five-jointed, and bearing strong spines, last joint narrow and elongated; posterior antennæ four-jointed, urticating setæ long and slender, bi-articulate. Mandibles large and numerously toothed; palp three-jointed, and bearing a distinct branchial appendage. The right foot of the first and second pairs in the male different from the rest, that of the first pair very strong and prehensile; of the second very feeble, the apical portion rudimentary and destitute of a terminal claw. Eyes distinct.

Certain species of this genus are amongst the most abundant of European Ostracoda, and several have been described from distant parts of the world, while in the Tertiary epoch the genus seems to have been at least equally abundant. The almost complete absence of this group from the Challenger dredgings is, therefore, very remarkable, nor do I see any reasonable way of accounting for it except on the supposition that these animals prefer shallower waters than those to which the work of the Challenger was almost exclusively confined. At any rate, the only example found amongst these dredgings is—

Cytheridea spinulosa, G. S. Brady (Pl. XXXIII. fig. 6, *a–d*).

Cytheridea spinulosa, Brady, Ann. and Mag. Nat. Hist., ser. 4, vol. ii. p. 182, pl. xiii. figs. 1–6.

Carapace, seen from the side, subquadrangular, oblong, not much higher in front than behind, height equal to rather more than half the length; anterior extremity moderately well rounded, posterior scarcely rounded, subtruncate; dorsal margin sloping gently and almost in a right line from before backwards, ventral straight; seen from above, the outline is subcuneiform, being widest at the posterior extremity, width and height nearly equal; the lateral margins converge gradually towards the front, which is wide, obtuse, and scarcely pointed in the middle, hinder extremity subtruncate, convex, and mucronate in the middle; end view nearly circular. Shell-surface beset with closely-set, large circular pittings, fringed on the anterior and front of the inferior margin with numerous short teeth, and below the middle of the posterior extremity with a smaller number (usually six or eight) of larger and unequal teeth. Length, 1-45th of an inch (·54 mm.).

Cytheridea spinulosa was found only in a dredging from a depth of 15 to 20 fathoms at Amboyna, and in a sounding made in 420 fathoms (October 20, 1875, near Station 287). The type specimens were found at Mauritius.

[Pl. XXXIII. fig. 6, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

Krithe, Brady, Crosskey, and Robertson.

Ilyobates, G. O. Sars, Oversigt af Norges marine Ostracoder, 1865.
Krithe, Brady, Crosskey, and Robertson, Post-Tertiary Entomostraca of Scotland, &c., 1874.

Valves thin and (except in old age) pellucid, subovate, truncate behind, smooth, polished, and set with very small distant circular papillæ. Hinge-joint simple, formed by a slight projection of the left valve, which is received into a corresponding depression of the right. Anterior antennæ very stout, five-jointed, the first two joints much thickened, the rest short and bearing long curved spines; posterior antennæ four-jointed. Mandibles small, with unusually long slender teeth; palp three-jointed, the second joint elongated, branchial appendage having one rudimentary and two long ciliated setæ. Maxillæ of the usual form. Feet very short, the first two pairs three-jointed, last pair four-jointed; "right foot of the last pair, in the male, prehensile and only three-jointed, terminal claw very large and strong. Abdomen of the female very convex above, the post-abdominal lobes bearing two short hairs." Eyes wanting.

The members of this genus are at once recognisable by their smooth, ovate outline and sharply truncated posterior extremity. Though widely distributed, the number of specific forms does not appear to be large, and amongst fossil species I know of none which can with certainty be referred here except *Bairdia pernoides* and *Bairdia lævissima*, Bornemann,[1] and two British Tertiary and Post-Tertiary species, *Krithe bartonensis* (Jones), and *Krithe glacialis* (B., C., and R.), the first-named of which occurs also plentifully living in the British and Scandinavian seas.

The generic name *Krithe* was proposed on account of the preoccupation of the word *Ilyobates*, applied by Sars to these animals in 1865. The anatomical details given in the foregoing description are taken almost entirely from Sars' statement. I have myself had scarcely any opportunity of examining the living animals.

1. *Krithe bartonensis*, Jones (Pl. XXVII. fig. 2, *a–d*).

Cytheridea bartonensis, Jones, Monog. Tert. Entom., p. 50, pl. v. figs. 2, *a*, *b*; 3, *a*, *b* (1856).
Ilyobates pretexta, G. O. Sars, Oversigt Norges Mar. Ostrac., p. 60 (1865).
Ilyobates bartonensis, Brady, Monog. Rec. Brit. Ostrac., p. 432, pl. xxxiv. figs. 11–14, pl. xl. fig. 5 (1868).
Krithe bartonensis, Brady, Crosskey, and Robertson, Monog. Post-Tertiary Entom., p. 184, pl. ii. figs. 22–26 (1874).

Carapace elongated, subovate, in general outline not unlike a grain of wheat; seen from the side, the shell is oblong and subquadrangular, the height being equal to about one-half of the length and nearly alike at all points; the extremities are nearly equal in height, the anterior evenly rounded, the posterior somewhat flattened, rounded off at its upper, and obscurely angular at its lower, termination; dorsal and ventral margins

[1] Die Mikroskopische Fauna des Septarienthones von Hermsdorf bei Berlin (Zeitschr. d. deutsch. Geol., Ges., 1855).

straight, or very slightly convex and sub-parallel; seen from above, the outline is ovate, tapering with a gentle curve towards the front and more suddenly behind; the anterior extremity is obtusely pointed, the posterior broader and deeply emarginate; width only a little less than the height; end view subcircular. Surface of the shell perfectly smooth and polished, marked sometimes with a few scattered circular papillæ, and in old specimens becoming of an opaque milky or yellowish-white. Length, 1-34th of an inch (·75 mm.).

I have memoranda of the occurrence of this species off Christmas Harbour, Kerguelen Island, in a depth of 120 fathoms (Station 149); and off the Ki Islands, 580 fathoms (Station 191).

2. *Krithe producta*, n. sp. (Pl. XXVII. fig. 1, *a–j*).

Carapace of the female more flexuous and more tumid than that of *Krithe bartonensis*; seen from the side, subreniform; greatest height situated in the middle, and equal to more than half the length; anterior extremity rounded off, posterior oblique, rounded off above and obscurely angulated below; dorsal margin moderately arched, ventral sinuated in the middle; seen from above, ovate, widest in the middle, width equal to half the length, pointed in front; posterior extremity wide, truncate, and centrally emarginate; shell-surface quite smooth, or beset with numerous minute closely-set punctures and a few distant circular tubercles. The shell of the male (figures *e–g*) is much narrower and more elongated, and has its ventral and dorsal margins almost straight. Length, 1-34th of an inch (·75 mm.).

This species is either a cosmopolitan one, and very variable as to shape, or the figures given under its name in Pl. XXVII. fig. 1, *h–j*, which are fairly representative of many different examples, must belong to other undescribed species. I prefer, however, to consider them as forms of *Krithe producta*, the variations observable in a large series of specimens being almost countless, and, as I think, in many cases fairly referable to differences of age, sex, or race. This, however, may be doubted in such a case as that of the valve represented at *j*, which is not only very remarkable in shape, but is also very much larger than the normal forms of *Krithe producta*.

Specimens which, for the present at least, must be held to belong to this species occurred in the following dredgings :—

Lat. 38° 25′ N., long. 35° 50′ W.,	1675 fathoms,	Station	70
„ 38° 11′ N., „ 27° 9′ W.,	900 „	„	76
„ 28° 42′ N., „ 18° 6′ W.,	1125 „	„	85
„ 8° 37′ S., „ 34° 28′ W.,	675 „	„	120
Off North Brazil,	350 „	„	122
Off Prince Edward's Island,	50–150 „		...
Lat. 46° 46′ S., long. 45° 31′ E.,	1375 „	„	146
Off Sydney,	410 „	„	164*a*

Lat. 39° 32′ S.,	long. 171° 48′ E.,	. .	150 fathoms,	Station 167
„ 19° 10′ S.,	„ 178° 10′ E.,	. .	610 „	„ 174
„ 38° 6′ S.,	„ 88° 2′ W.,	. .	1825 „	„ 296
„ 33° 42′ S.,	„ 78° 18′ W.,	. .	1375 „	„ 300
„ 42° 43′ S.,	„ 82° 11′ W.,	. .	1450 „	„ 302
„ 47° 48′ S.,	„ 74° 43′ W.,	. .	160 „	„ 305
„ 50° 10′ S.,	„ 74° 42′ W.,	. .	175 „	„ 308
„ 52° 50′ S.,	„ 73° 53′ W.,	. .	245 „	„ 311
„ 32° 24′ S.,	„ 13° 5′ W.,	. .	1425 „	„ 335

[Pl. XXVII. fig. 1, *a–j*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front; *e* male seen from left side, *f* from below, *g* from front, *h–j* valves of left side. All magnified 50 diameters.]

3. *Krithe hyalina*, n. sp. (Pl. XXVII. fig. 3, *a–d*).

Carapace, as seen from the side, subovate, higher in front than behind, greatest height situated near the middle, and equal to at least half the length; anterior extremity broadly rounded, posterior narrower and rather oblique, dorsal margin slightly arched, flattened, and sloping somewhat steeply behind the middle, ventral margin nearly straight; seen from above, oblong, ovate, widest in the middle, width equal to scarcely half the length; anterior extremity subacuminate, posterior wider and deeply emarginate; end view subcircular. Shell translucent, polished, marked with a few scattered circular papillæ. Length, 1-52d of an inch (·49 mm.).

The smaller size, more ovate form and posterior depression of the shell, are the characters on which I depend to separate this from other species of the same genus. The only dredging in which I have found it is that from the Inland Sea of Japan, where it occurred in a depth of 15 fathoms on a muddy bottom (Station 233*b*).

[Pl. XXVII. fig. 3, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

4. *Krithe tumida*, n. sp. (Pl. XXVII. fig. 4, *a–d*).

Shell oblong, tumid; seen from the side, subovate, somewhat lower in front than behind, height equal to about two-thirds of the length; anterior extremity rounded off, posterior broader, oblique, and scarcely rounded; dorsal margin very slightly arched, highest near the middle, ventral gently convex; seen from above, the outline is broadly ovate, the greatest width in the middle, and exactly equal to the height; the lateral margins are subparallel until near the two extremities, where in front they converge suddenly forming an acute angular extremity, and behind are broadly rounded off, but show a moderate central indentation; the end view is subcircular, but broadly indented at the ventral margin. Surface of the shell quite smooth. Length, 1-48th of an inch (·51 mm.).

A few specimens only of this species were met with in a dredging from lat. 35° 39′ S., long. 50° 47′ W. Depth, 1900 fathoms.

[Pl. XXVII. fig. 4, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

Loxoconcha, G. O. Sars.

Loxoconcha, Sars, Oversigt, &c., 1865.
Normania, Brady, Trans. Zool. Soc., 1865.

Valves nearly equal, subrhomboidal, mostly flexuous in outline, and evenly convex. Surface smooth, or marked with concentrically arranged impressed puncta, or with polygonal fossæ, often also with minute circular papillæ. Ventral margins usually forming a prominent compressed keel towards the hinder extremity of the shell; postero-superior angle obliquely truncate. There is usually a prominent, shining tubercle over the anterior end of the hinge in each valve. Hinge-joint formed by two small teeth at the extremities of the hinge-line of each valve. Limbs of the animal slender and colourless. Anterior antennæ very slender, six-jointed, the last joint very long, linear, and bearing long, simple setæ; posterior antennæ four-jointed, the third joint long and narrow; flagellum long and biarticulate, mandible-palp three-jointed, bearing a distinct branchial appendage. Lowest seta of the branchial plate of the first pair of jaws deflexed. Feet long and slender, alike in male and female. Abdomen terminated by a hairy conical process; postabdominal lobes bearing two moderately long subequal setæ.

The "peach-stone" or obliquely quadrangular shape, and the bevelled-off postero-superior angle of the shell, are characters usually sufficiently pronounced to distinguish at a glance the members of this genus. The genus is cosmopolitan, and contains even now a considerable number of recent species, to which we may expect further research to add very largely. In gatherings from between tide marks or from very shallow water it will doubtless be found in greatest abundance. One British species, *Loxoconcha elliptica*, occurs only in the brackish water of estuaries and salt-marshes; and another, *Loxoconcha impressa*, has occasionally been found in fresh water altogether out of reach of the sea, and in such cases may probably be looked upon as a relic of some old marine fauna. There can be no doubt that the brackish and subbrackish waters of tropical and equatorial countries will some day yield an abundant and highly-interesting harvest to students of the Entomostraca.

Many fossil species described by authors under various generic terms—*Cythere*, *Cytherina*, *Bairdia*, &c.—belong by rights to *Loxoconcha*.

The difference in shape between males and females is strongly marked, the females being usually tumid, flexuous, and having all their angles, except the postero-superior, well-rounded off; the males more compressed, with a flatter dorsal margin, elongated and angular.

1. *Loxoconcha avellana*, G. S. Brady (Pl. XXVIII. fig. 1, *a–f*).

Normania avellana, Brady, Trans. Zool. Soc., vol. v. (1865), p. 382, pl. lxi. fig. 15, *a–c*.

Carapace of the female, as seen from the side, flexuous, broadly pear-shaped, higher behind than in front, greatest height in the middle, and equal to two-thirds of the length; anterior extremity depressed, rounded, posterior broadly rounded and emarginate at the upper angle; dorsal margin excessively arched, almost gibbous, ventral deeply sinuated in front of the middle; seen from above, the outline is broadly ovate, scarcely twice as long as broad, widest in the middle and tapering evenly to the extremities, which are pointed; end view broadly ovate, obtusely subangular at base and apex, height rather greater than the width. Surface of the shell marked with distant, concentrically arranged circular pits, which on the ventral surface run together so as to form beaded longitudinal grooves. The shell of the male (figures *e*, *f*) is longer and not so strongly arched dorsally. Length of female, 1-42d of an inch (·6 mm.).

Dredged at Port Jackson, Australia, in a depth of 2 to 10 fathoms; and off Tongatabu, 18 fathoms (Station 172).

The single specimen from which the species was first described was got in the West Indies.

[Pl. XXVIII. fig. 1, *a–f*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front; *e* male seen from left side, *f* from below. Magnified 50 diameters.]

2. *Loxoconcha honoluliensis*, n. sp. (Pl. XXVIII. fig. 6, *a–f*).

Carapace of the female, seen from the side, flexuous, subrhomboidal, highest behind the middle, height equal to two-thirds of the length, anterior extremity broad and well-rounded, posterior oblique, produced above the middle into a very broad, truncated beak; dorsal margin flattened in front, convex behind; ventral sinuated in front of the middle, strongly convex and keeled behind; seen from above, the outline is lozenge-shaped, widest in the middle, thence tapering without much curve to the extremities which are subacuminate, width equal to more than half the length; end view very broadly ovate. Surface of the shell marked with distant circular punctures, or irregularly reticulated. The shell of the male (figures *a–d*) is, as usual, more compressed and less strongly arcuate dorsally. Length, 1-42d of an inch (·6 mm.).

Dredged in 40 fathoms off the reefs, Honolulu. A very well-marked species, distinctly characterised by the large beak-like projection of the posterior dorsal angle and the very pronounced keeled convexity of the ventral surface. The two forms represented in the plate, besides sexual differences of shape, are somewhat different also in style of shell-sculpture, the one being distinctly reticulated, the other marked merely with distinct circular impressions. Should these characters prove to be constant, we could

scarcely consider the two to belong to the same species; but it is not uncommon amongst Ostracoda to find shells strongly sculptured in the earlier stages of life becoming encrusted with a limy deposit, and thus losing their original surface-markings in old age. A process of this kind I suppose to have taken place in the specimens figured at *a–d*. At any rate, it would be unreasonable to refer to distinct species shells occurring together in one dredging only, and at the same time so much alike in general character.

[Pl. XXVIII. fig. 6, *a–f*. *a* Carapace of male seen from left side, *b* from above, *c* from below, *d* from front; *e* female seen from left side, *f* from above. Magnified 50 diameters.]

4. *Loxoconcha africana*, n. sp. (Pl. XXVIII. fig. 3, *a–d*).

Carapace, seen from the side, flexuous, subovate, highest about the middle, slightly depressed in front, height equal to at least two-thirds of the length; anterior extremity well and evenly rounded, posterior scarcely broader than the anterior, rounded, gently emarginate at the upper angle, not produced; dorsal margin evenly and moderately arched, ventral sinuated in front, convex behind; seen from above, ovate, acuminate in front, rounded off and mucronate behind, greatest width in the middle, and equal to more than half the length; end view broadly ovate, rounded both at base and apex, dorsal very nearly as wide as the ventral margin, height not very much greater than the width. Surface of the shell smooth, partially marked with small circular punctures, and with a few scattered circular papillæ. Length, 1-42d of an inch (·6 mm.).

Dredged off St Vincent, Cape Verde, in 1070 to 1150 fathoms, muddy bottom.

[Pl. XXVIII. fig. 3, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

5. *Loxoconcha pumicosa*, n. sp. (Pl. XXVIII. fig. 2, *a–d*).

Carapace short, tumid; seen from the side, subrhomboidal, greatest height situated in the middle, and equal to two-thirds of the length; extremities about equal in height, anterior rounded, posterior oblique, produced above the middle into a short, truncated beak, dorsal margin moderately arched, and slightly sinuated behind the middle, ventral gently convex; seen from above, the outline is lozenge-shaped, very wide in the middle, and tapering equally to the extremities which are subacute, width about equal to the height; end view broadly heart-shaped, wide, and nearly flat below, rounded, and but slightly tapered above. The surface of the shell is sculptured with rather closely- and concentrically-set subrotund excavations of moderate size, which on the ventral surface are arranged in longitudinal furrows. Length, 1-48th of an inch (·52 mm.).

Dredged off Booby Island, lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms (Station 187); and at Nares' Harbour, Admiralty Islands, 16 fathoms.

[Pl. XXVIII. fig. 2, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

6. *Loxoconcha sculpta*, G. S. Brady (Pl. XXIX. fig. 5, *a–d*).

Loxoconcha sculpta, Brady, Les Fonds de la Mer, tom. i. p. 140, pl. xviii. figs. 5, 6.

Carapace of the female (?), seen from the side, short, subrhomboidal, greatest height in the middle, and equal to about two-thirds of the length; anterior extremity obliquely rounded, posterior produced in the middle into a wide truncated beak; dorsal margin high, and somewhat arched near the middle, thence sloping backwards in a right line; ventral margin gently convex; seen from above the outline is compressed, and nearly diamond-shaped, widest in the middle, the width being equal to half the length, tapering to the extremities which are subacuminate; end view subtrapezoidal, considerably higher than broad, widest at the base, which is concave, apex wide and subtruncate, sides greatly curved. Shell-surface sculptured with large and closely-set angular pits; anterior margin sometimes slightly denticulated below the middle; at the posterior dorsal angles are two prominent subconical eminences, which are especially conspicuous when viewed from above or below, forming rectangular lateral projections. Length, 1-50th of an inch (·5 mm.).

Dredged off Booby Island, lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms.

The type specimens described in Les Fonds de la Mer were dredged at St Vincent, Cape Verde.

[Pl. XXIX. fig. 5, *a–d*. *a* Carapace of female (?) seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

7. *Loxoconcha australis*, n. sp. (Pl. XXVIII. fig. 5, *a–f*, and Pl. XXIX. fig. 3, *a–d*).

Carapace of the female tumid; seen from the side, subrhomboidal, nearly equal in height throughout; anterior extremity well rounded, posterior rounded, prominent in the middle, and emarginate at the upper angle; dorsal margin nearly straight, ventral slightly sinuated; height equal to nearly two-thirds of the length; seen from above, broadly ovate, with strongly mucronate extremities, greatest width situated in the middle, and equal to the height; end view subcordate, wide below, and obtusely pointed above. Surface of the shell marked with rather large and closely-set angular excavations, which have an obscurely concentric arrangement; ventral surface strongly grooved longitudinally, the pittings being placed in the furrows. The shell of the male (Pl. XXVIII. fig. 5, *e–f*), is longer and narrower, but in other respects shows much the same characters as that of the female. Length of the male, 1-38th of an inch (·66 mm.); of the female, 1-48th of an inch (·52 mm.).

Dredged at Port Jackson, Australia, in a depth of 2 to 10 fathoms, and off Booby Island, lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms.

The specimens shown in Plate XXIX. I at first thought to be specifically distinct from those got at Booby Island, but though there is a considerable difference in form as well as in sculpture, I believe this may be accounted for by supposing the Port Jackson specimens to be of more advanced growth; something also may be allowed for local variation.

[Pl. XXVIII. fig. 5, *a–f*. *a* Carapace of female (Booby Island) seen from left side, *b* from above, *c* from below, *d* from front; *e* male seen from left side, *f* from above. Pl. XXIX. fig. 3, *a–d*. *a* Carapace of female (?) (Port Jackson), seen from left side, *b* from above, *c* from below, *d* from front. All magnified 50 diameters.]

8. *Loxoconcha sinensis*, G. S. Brady (Pl. XXIX. fig. 2, *a–d*).

Loxoconcha sinensis, Brady, Les Fonds de la Mer, p. 158, pl. xvi. figs. 17, 18 (*Icones malæ*).

Carapace oblong, tumid; seen from the side, subrhomboidal, slightly higher in front than behind, height equal to nearly two-thirds of the length; anterior extremity rounded, posterior slightly produced in the middle, and obliquely sinuated above, dorsal and ventral margins nearly straight; seen from above the outline is somewhat hastate, with subparallel curved sides which converge rather abruptly towards the front, and end in an acuminate apex, the posterior extremity is broadly rounded, and mucronate in the middle, width equal to the height; end view subcordate, broadly rounded below, angulated at the apex. Surface sculptured much as in *Loxoconcha guttata*. Length, 1-48th of an inch (·52 mm.).

Loxoconcha sinensis was found only in dredgings from Hong Kong Harbour, and from the Inland Sea, Japan, in a depth of 15 fathoms on a muddy bottom (Station 233*b*). The type specimens were from Hong Kong.

[Pl. XXIX. fig. 2, *a–d*. *a* Carapace seen from side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

9. *Loxoconcha guttata*, Norman (Pl. XXIX. fig. 1, *a–f*).

Cythere guttata, Norman, Nat. Hist. Trans. Northumberland and Durham, vol. i. 1865, p. 19, pl. vi. figs. 9–12.
Loxoconcha guttata, Brady, Monog. Recent Brit. Ostrac., 1868, p. 436, pl. xxvii. figs. 40–44.
Loxoconcha guttata, Brady, Crosskey, and Robertson, Post-Tertiary Entomostraca, p. 186, pl. viii. figs. 5–7.

Carapace of the female oblong, tumid; seen from the side, peach-stone shaped, about equal in height before and behind, height equal to nearly two-thirds of the length; anterior extremity rounded, posterior produced in the middle and emarginate above the middle; dorsal margin nearly straight behind, curved in front; ventral convex behind, sinuated in front; seen from above, ovate, widest in the middle, twice as long as broad;

extremities broad, mucronate; end view broadly ovate, width nearly as great as the height. Surface of the shell sculptured with deep and closely-set angular excavations, which are usually fainter, and sometimes wanting altogether, in the centre of the valves. Shell of the male (figures *e–f*) narrower and more compressed, the dorsal and ventral margins nearly parallel. Length, 1-45th of an inch (·53 mm.).

An extremely well-marked species, the range of which seems to be very restricted. In the recent state it is known only as an inhabitant of the western shores of Europe (Norway, the British Islands, France, and Spain), and as a fossil it occurs not uncommonly in the Post-Tertiary deposits of Britain and Norway. The specimens here figured were found in anchor-mud from Vigo Bay.

[Pl. XXIX. fig. 1, *a–f*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from above. Magnified 50 diameters.]

10. *Loxoconcha subrhomboidea*, n. sp. (Pl. XXVIII. fig. 4, *a–d*).

Carapace short, and rather tumid; seen from the side, subrhomboidal, equal in height before and behind, height equal to two-thirds of the length; extremities broad and obliquely rounded, dorsal margin nearly straight, ventral slightly convex; seen from above, ovate, widest near the middle, scarcely twice as long as broad, extremities rounded and mucronate; end view subcordate, slightly tapered towards the apex. Surface of the shell marked with angular excavations, as in the preceding species. Length, 1-60th of an inch (·425 mm.).

Dredged in Simon's Bay, South Africa, in a depth of 15 to 20 fathoms (Station 140).

[Pl. XXVIII. fig. 4, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

11. *Loxoconcha variolata*, G. S. Brady (Pl. XXIX. fig. 6, *a–d*).

> *Loxoconcha variolata*, Brady, Ostracoda of Antwerp Crag, Trans. Zool. Soc., vol. x. pt. 8, 1878, p. 400, pl. lxviii. fig. 4, *a–d*.

Carapace, as seen from the side, oblong, rather higher in front than behind; height equal to more than half the length, anterior extremity broad, and evenly rounded, posterior narrower, rounded, not produced nor emarginate, dorsal margin straight, ventral slightly convex; seen from above, hastate, with parallel sides, which converge abruptly to a mucronate apex in front, and terminate rectangularly behind the middle, thence converging sharply backwards in a bisinuated line to the mucronate posterior termination; width equal to the height; from below, the posterior lateral angulation is seen to be carried across the ventral surface of the shell, forming a sharp ridge; viewed from the

front, the outline is rounded, not much wider at the base than at the apex. Surface beset with angular pittings which, on the ventral aspect, are arranged in longitudinal grooves. Length, 1-52d of an inch (·49 mm.).

Dredged off Booby Island (Station 187), in a depth of 6 to 8 fathoms.

The specimens here noted differ somewhat from the types described in my monograph of the Antwerp Crag Ostracoda, being less tapered in front when seen dorsally, rounder and more narrowed behind when seen from the side. Nevertheless, the Challenger specimens in general style and appearance so closely approximate to those from the Antwerp Crag, that I do not think it safe to propose for them a separate specific name. Two other fossil species, *Cythere subtriangularis*, Speyer, and *Cythere hastata*, Reuss, Egger, are also very nearly allied, but without the opportunity of examining authentic specimens, one cannot pronounce with certainty respecting them. Among recent species *Loxoconcha angustata*, Brady, *Loxoconcha alata*, Brady, and *Loxoconcha multifora* (Norman), are all near relatives, but distinct.

[Pl. XXIX. fig. 6, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

12. *Loxoconcha alata*, G. S. Brady (Pl. XXVII. fig. 6, *a–j*).

Loxoconcha alata, Brady, Ann. and Mag. Nat. Hist., ser. 4, vol. ii. (1868), p. 223, pl. xiv. figs. 8–13.

Carapace of the female oblong, tumid; seen from the side, subrhomboidal, equal in height throughout, height equal to rather more than half the length; anterior extremity evenly rounded; posterior oblique, produced above the middle into a short, blunt beak; dorsal margin straight, or very slightly hollowed, ventral almost straight; seen from above, the outline is irregularly lozenge-shaped, each valve having a conspicuous lateral prominence behind the middle; greatest width situated behind the middle, and equal to about three-fourths of the length; the extremities are broad and strongly mucronate, the end view is somewhat trapezoidal in outline, its height and width being about equal, and its angles produced or gibbous. The surface of the shell is marked with numerous small angular hollows, which, on the ventral surface, are disposed in longitudinal grooves; and towards the hinder extremity of the ventral margin on each valve is a conspicuous, bluntly angular alæform process or tubercle; there is also usually a distinct polished tubercle over the anterior hinge-joint. Length, 1-55th of an inch (·44 mm.).

A considerable number of specimens of *Loxoconcha alata* were found in a dredging made off the reefs at Honolulu, in a depth of 40 fathoms. These differ somewhat from the type-specimens which were got at Mauritius, but not so much, I think, as to warrant my calling them by a new name. The Honolulu specimens are not nearly so sharp at the

ends; when seen from above, they are also rather more tumid, and the sculpturing is considerably coarser; but the general build and appearance is exactly that of the Mauritius species. The three series of figures given in Pl. XXVII. represent various stages of growth, figures *a–c* being probably the adult female, and *h–j* perhaps the young male.

This is very nearly allied to the preceding species (*Loxoconcha variolata*), but as will be at once seen on reference to the figures in Pl. XXIX., it is more angular in its contours, and the lateral alæ are very much more prominent. *Loxoconcha hastata*, Brady (see Les Fonds de la Mer), is another closely related species.

[Pl. XXVII. fig. 6, *a–j*. *a* Carapace of adult female seen from left side, *b* from below, *c* from front, *d* younger female seen from left side, *e* from above, *f* from below, *g* from front; *h* male (?) seen from left side, *i* from below, *j* from front. Magnified 50 diameters.]

13. *Loxoconcha anomala*, n. sp. (Pl. XXVII. fig. 5, *a–d*).

Carapace as seen from the side, flexuous, subrhomboidal, greatest height situated near the middle, and equal to two-thirds of the length; anterior extremity rounded, posterior oblique, produced above the middle into a broad truncated beak; superior margin forming a flattened arch which slopes gently toward the front, but more abruptly, and with a slight sinuation behind, ventral margin rather prominently convex behind the middle; seen from above, the outline would be almost a perfect rhomboid, but for the abrupt constriction behind the lateral alæ which project a little behind the middle of the shell; the extremities are acuminate, and the greatest width across the alæ is equal to two-thirds of the length. Seen from the front the outline is subtriangular and equilateral, being almost exactly like the hull of a vessel seen "end on," the apex of the triangle corresponding with the ventral margin, and produced into a distinct keel, the sides evenly convex, and the base, which corresponds with the dorsum, angularly elevated in the middle. The surface of the shell is marked by numerous irregular shallow pittings of moderate size. Length, 1-50th of an inch (·5 mm.).

Of this remarkable species only a few examples were found in the 40 fathoms dredging from the reefs at Honolulu, It is not a little remarkable that two forms so *outré*, and so closely resembling each other in lateral outline, as this species and *Loxoconcha honoluliensis* should have occurred in this one dredging. But though so much alike when viewed sideways, the difference between the two from all other points of view is very striking, especially in the laterally projecting alæ and in the remarkably broad dorsal and narrowed ventral surface, a condition of which I know no other so marked an example amongst the Ostracoda.

[Pl. XXVII. fig 5, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

Xestoleberis, G. O. Sars (1865).

Shell smooth and polished, ornamented with small, round, distant papillæ, or rarely marked with sculptured pittings, much lower in front than behind, and in the female very tumid behind. Hinge-joint formed by a dentated projecting crest of the left, which is received into an excavation of the right valve; ventral margin of both valves incurved in front of the middle, and forming on the ventral surface a central hollow; anterior antennæ six-jointed, the last four joints successively decreasing in length, and bearing very short, simple setæ; posterior antennæ short, four-jointed, flagellum of moderate length. Mandible-palp four-jointed; branchial appendage small, and bearing only two setæ. Jaws as in *Loxoconcha*. Feet small; post-abdominal lobes bearing two setæ. Eyes distinct. Ova and immature young borne within the shell of the female,

This genus is at a glance distinguishable by the generally rounded outline, the depressed and pointed front, and the rounded, tumid posterior end of the shell. It is widely distributed, containing apparently a very large number of species, and occurring abundantly in the seas of all parts of the world. So far, however, as we know of it palæontologically, it would seem to be a genus of comparatively recent development, the only described fossil species which can be unmistakably referred to it—so far as I know —being *Cytherina impressa*, Reuss (a chalk-marl species extremely like in the published figures to the recent European species, *Xestoleberis depressa* and *aurantia*), *Cytheridea tumida*, Egger (=? *Cytherina tumida*, Reuss), and *Bairdia glutea*, Egger, the last two being Miocene species. Zoologically, the most remarkable character of *Xestoleberis* is its being viviparous; the fry are retained within the shell of the mother until very fully developed: this, perhaps, may account for the great posterior expansion of the female carapace.

1. *Xestoleberis depressa*, G. O. Sars (Pl. XXXI. fig. 1, *a–g*).

Xestoleberis depressa, Sars, Oversigt af Norges marine Ostracoder, p. 68, 1865.
Xestoleberis depressa, Brady, Monog. Recent Brit. Ostrac., Trans. Lin. Soc., 1868, p. 438, pl. xxvii. figs. 27–33.
Xestoleberis depressa, Brady, Crosskey, and Robertson, Post-Tertiary Entomostraca, p. 190, pl. vii. figs. 13–19.
(?) *Cytherina tumida*, Reuss, Foss. Entom. Oesterr. Tert., Beckens, p. 57, pl. viii. fig. 29, 1850.
(?) *Cytheridea tumida*, Egger, Ostrak. Miocän-Schicht, Ortenburg, p. 17, pl. ii. fig. 11.

Carapace of the female tumid; seen from the side, oblong, sub-semicircular, highest near the middle, height equal to more than half the length; subacutely pointed in front, broadly rounded behind, dorsal margin boldly arched and forming one continuous curve from the anterior to the posterior ends of the ventral margin, which is straight, except for a slight sinuation in front of the middle. Seen from above, the outline is cordate, pointed in front and broad behind, width equal to two-thirds of the length; end view depressed, broad below and boldly arched above, width greater than the height. Surface of the shell smooth, iridescent, marked with numerous small circular papillæ. The shell

of the male is smaller, much less tumid, and has its posterior portion compressed and narrowly rounded. Length of the female, 1-35th of an inch (·75 mm.); of the male 1-42d of an inch (·65 mm.).

The only dredgings in which I have seen this species are from Balfour Bay, Kerguelen Island, 20 to 25 fathoms; and from lat. 52° 4′ S., long. 71° 22′ E., 150 fathoms. It is to be borne in mind, however, that the distinctions between this and the next species, if valid at all, are very slight; and it is not unlikely that the two may prove to be identical. *Xestoleberis depressa* is a common species in the Northern Hemisphere, having been found in the seas of Great Britain, Ireland, Norway, Spitzbergen, and in the Gulf of St Lawrence, while as a Post-Tertiary fossil it occurs abundantly in Scotland, Ireland, Norway, and Canada.

In size the northern specimens agree with *Xestoleberis setigera*, while in shape they approach more closely to the Balfour Bay specimens here assigned to *depressa*.

[Pl. XXXI. fig. 1, *a–g*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front; *e* carapace of male seen from left side, *f* from below, *g* from front. All magnified 50 diameters.]

2. *Xestoleberis setigera*, n. sp. (Pl. XXXI. fig. 2, *a–d*, and fig. 3, *a–c*).

Very closely similar to *Xestoleberis depressa*, but, when seen from the dorsal surface, less tumid both in front and behind; the width, also, is considerably greater than the height, so that the end view is much depressed. The surface of the shell is studded with small papillæ, many of which bear single minute setæ. Length, 1-42d of an inch (·65 mm.).

I have notes of the occurrence of this species as follows:—Off Christmas Harbour, Kerguelen Island, 120 fathoms, specimen figured (fig. 3, *a–c*); off Heard Island, 75 fathoms, mud, Station 151; off Prince Edward's Island, 50 to 150 fathoms.

[Pl. XXXI. fig. 2, *a–d*. *a* Carapace of male seen from left side, *b* from above, *c* from below, *d* from front; fig. 3, *a–c*, *a* female seen from left side, *b* from below, *c* from front. All magnified 50 diameters.]

3. *Xestoleberis granulosa*, n. sp. (Pl. XXX. fig. 5, *a–d*).

Carapace compressed, oblong; seen from the side, subreniform, highest behind the middle, height equal to more than half the length, extremities rounded off, the posterior the broader of the two, dorsal margin well arched, ventral slightly sinuated in front of the middle; seen from above, compressed, ovate, twice as long as broad, widest near the middle, subacuminate in front, rounded behind; end view nearly circular, height slightly exceeding the width. Surface of the shell smooth, somewhat granular in appearance, and sparingly papillose. Length, 1-43d of an inch (·575 mm.).

Taken off East Moncœur Island, Bass' Strait, 38 to 40 fathoms, sand (Station 162); Port Jackson, Australia, 2 to 10 fathoms.

This species is more slender in outline than any other with which I am acquainted, excepting, perhaps, *Xestoleberis intermedia*, Brady (Mediterranean); and *Xestoleberis labiata*, Brady and Robertson (British), from which latter, however, it differs somewhat in shape as well as in the want of the peculiar labiate prolongation of the shell from which the British species takes it name.

[Pl. XXX. fig. 5, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

4. *Xestoleberis nana*, n. sp. (Pl. XXXI. fig. 5, *a–c*).

Carapace very tumid; as seen from the side, sub-semicircular, highest near the middle; extremities obliquely rounded, dorsal margin boldly arched, ventral nearly straight, height equal to more than half the length; seen from above the outline is very broadly ovate, subacuminate in front, broadly rounded behind, greatest width in the middle, and equal to nearly three-fourths of the length; end view depressed, the width much greater than the height. Surface of the shell perfectly smooth. Length, 1-58th of an inch (·45 mm.).

Found in a dredging, from a depth of 18 fathoms, off Tongatabu, coral bottom (Station 172).

[Pl. XXXI. fig. 5, *a–c*. *a* Carapace seen from left side, *b* from below, *c* from front. Magnified 50 diameters.]

5. *Xestoleberis africana*, n. sp. (Pl. XXX. fig. 4, *a–c*).

Carapace very tumid; seen from the side, broadly subovate, height greatest a little behind the middle, and equal to about three-fourths of the length; obliquely rounded, and somewhat narrowed in front, broad, and well rounded behind, dorsal margin boldly arched, ventral decidedly convex; seen from above broadly ovate, widest in the middle, abruptly tapered and subacuminate in front, rounded behind, width equal to two-thirds of the length; end view subcircular, base somewhat emarginate; height greater than the width. Surface of the shell smooth, slightly papillose. Length, 1-50th of an inch (·5 mm.).

Dredged in Simon's Bay, South Africa, in a depth of 15 to 20 fathoms. (Station 140.)

[Pl. XXX. fig. 4, *a–c*. *a* Carapace seen from left side, *b* from below, *c* from front. Magnified 60 diameters.]

6. *Xestoleberis curta*, G. S. Brady (Pl. XXXI. fig. 6, *a–d*).

> *Cytheridea* (?) *curta*, Brady, Trans. Zool. Soc., 1865, vol. v. p. 370, pl. lviii. fig. 7, *a–b*.
> *Xestoleberis curta*, Brady, Les Fonds de la Mer, p. 79, pl. x. figs. 16–18 (*Icon. mal.*).

Carapace, as seen from the side, oblong, subovate, greatest width situated behind the middle, and equal to more than half the length; extremities well rounded; dorsal margin

moderately arched, inferior slightly sinuated in front; seen from above the outline is ovate, tapering only slightly towards the extremities, scarcely pointed in front, rounded behind; the width, which is greatest about the middle is just equal to the height; end view nearly circular. Surface of the shell perfectly smooth. Length, 1-52d of an inch (·49 mm.).

The following are the dredgings in which *Xestoleberis curta* has been noticed:—Off Bermudas, 435 fathoms, mud (Station 33); Royal Sound, Kerguelen Island, 28 fathoms (Station 149); Port Jackson, Australia, 2 to 10 fathoms; off Booby Island, lat. 10° 36′ S., long. 141° 55′ E.; 6 to 8 fathoms (Station 187); off reefs at Honolulu, 40 fathoms; in lat. 33° 42′ S., long 78° 18′ W.; 1375 fathoms (Station 300). The type-specimen described in the Zoological Society's Transactions (*loc. cit.*) was from the West Indies, and differs in no important respect from those here described, though the measurement is somewhat larger—1-42d of an inch.

[Pl. XXXI. fig. 6, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

7. *Xestoleberis polita*, G. S. Brady (Pl. XXXI. fig. 7, *a–c*).

Xestoleberis polita, Brady, Les Fonds de la Mer, tom. i. p. 202, pl. xxvii. figs. 15, 16.

Carapace as seen from the side, pear-shaped, highest behind the middle; anterior extremity narrow, posterior broad, both well rounded, dorsal margin moderately arched, inferior straight or slightly convex, height equal to two-thirds of the length; seen from above, compressed, ovate, narrowed, and obtusely pointed in front, somewhat broader and rounded behind; width rather less than the height; end view nearly circular. Surface of the shell smooth, very sparingly papillose. Length, 1-52d of an inch (·49 mm.).

The Challenger specimens of this species were found in mud brought up on the anchor from a depth of 6 fathoms in Stanley Harbour, Falkland Islands (Station 316). The type-specimens were taken in a locality not very far distant—Halt Bay, Straits of Magellan.

[Pl. XXXI. fig. 7, *a–c*. *a* Carapace seen from left side, *b* from below, *c* from front. Magnified 50 diameters.]

8. *Xestoleberis margaritea*, G. S. Brady (Pl. XXX. fig. 2, *a–g*).

Cytheridea margaritea, Brady, Trans. Zool. Soc., 1865, vol. v. p. 370, pl. lviii. fig. 6, *a–d*.
(?) *Cytherina ovulum*, Reuss, Haidinger's Abhandl., Band iii. p. 55, pl. viii. fig. 19.

Carapace of the female, tumid; seen from the side, ovate, greatest height situated behind the middle, and equal to two-thirds of the length; extremities evenly rounded, dorsal margin moderately arched, ventral slightly sinuated in front of the middle; seen

from above, the outline is broadly ovate, pointed in front, and well rounded behind; width equal to the height; end view obscurely angulated above, broad, and somewhat emarginate below. Surface of the shell smooth, marked with a few distant small papillæ. Length, 1-50th of an inch (·5 mm.). The shell represented in figures *e–g* is perhaps referable to the male of this species, being found in company with the more tumid form (figures *a–d*). The broken line shown by the artist in fig. 5, has been inserted by mistake, probably from the accidental adhesion of some foreign body to the shell.

Xestoleberis margaritea has been met with only in one of the Challenger dredgings, off Booby Island, lat. 10° 36′ S., long. 140° 55′ E.; 6 to 8 fathoms (Station 187). The type-specimens are from the Mediterranean, where the species seems to be plentiful; and I have seen others from the Mauritius which are probably referable to the same.

[Pl. XXX. fig. 2, *a–g*. *a* Carapace of the female, seen from left side, *b* from above, *c* from below, *d* from front, *e* male (?), seen from left side, *f* from below, *g* from front. All magnified 60 diameters.]

9. *Xestoleberis intermedia* (?), G. S. Brady (Pl. XXXIII. fig. 2, *a–d*).

Xestoleberis intermedia (?), Brady, Les Fonds de la Mer, tom. i. p. 94, pl. xii. figs. 3–7.

Shell, seen from the side, subovate, depressed in front, highest in the middle, height equal to more than half the length; extremities rounded, the anterior narrower than the posterior; dorsal margin boldly arched, ventral gently convex; seen from above, the outline is regularly ovate, widest near the middle, the width equal to the height; extremities acuminate, the posterior, however, broader than the anterior; end view subcircular. Surface of the shell smooth, and ornamented with a few scattered circular papillæ, each of which bears a minute seta. Length, 1-70th of an inch (·37 mm.).

Found in Torres' Straits, lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms (Station 185).

The few specimens referred to in the foregoing description differ to some extent from the type-specimens of *Xestoleberis intermedia*, especially in being much smaller, and in the convex character of the ventral surface. I have thought it better, however, to assign them to that species, than to coin a new name, on what might probably prove to be insufficient grounds.

[Pl. XXXIII. fig. 2, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 80 diameters.]

10. *Xestoleberis tumefacta*, n. sp. (Pl. XXXI. fig. 4, *a–d*).

Carapace tumid; seen from the side, subovate, not much higher behind than in front, height equal to two-thirds of the length; extremities obliquely rounded, dorsal margin moderately arched, ventral sinuated in front of the middle; seen from above, ovate,

widest in the middle, tapering equally to the extremities, which are pointed; width equal to the height; end view subcircular, scarcely at all tapered towards the apex. Surface of the shell smooth, marked with numerous small circular papillæ and with irregular light or dark coloured blotches. Length, 1-43d of an inch (·57 mm.).

Found in a dredging from Nares' Harbour, Admiralty Islands, in a depth of 16 fathoms. This has very much the general aspect of *Loxoconcha*, but there is no angulation at the supero-posteal portion of the margin, and on that account chiefly I think it is best referred to *Xestoleberis*.

[Pl. XXXI. fig. 4, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

11. *Xestoleberis variegata*, n. sp. (Pl. XXXI. fig. 8, *a–g*).

Carapace of the female, tumid; seen from the side, broadly pear-shaped, highest near the middle, extremities well rounded, the anterior, however, much narrower than the posterior; dorsal margin boldly arched, ventral sinuated in front, and convex behind the middle; seen from above, broadly ovate, tapering, and pointed in front, rather broadly rounded behind, width scarcely equal to the height; end view subcircular. Surface of the shell smooth, variegated with blotches of dark upon a pale ground. Length, 1-43d of an inch (·57 mm.). Specimens which I believe to belong to the male of this species are represented in figures *c–g*, and, as usual, are more elongated and slender than those of the opposite sex.

Xestoleberis variegata was noticed in dredgings from off St Vincent, Cape Verde, in 1070 to 1150 fathoms (Stations 93, 94); and off Tongatabu, 18 fathoms (Station 172).

[Pl. XXXI. fig. 8, *a–g*. *a* Carapace of female, seen from left side, *b* from above, *c* from below, *d* from front, *e* male seen from left side, *f* from below, *g* from front. All magnified 50 diameters.]

12. *Xestoleberis expansa*, n. sp. (Pl. XXX. fig. 3, *a–d*).

Carapace excessively ventricose; seen from the side, oblong, subovate, highest a little behind the middle, extremities broad and rounded, dorsal margin boldly arched, somewhat gibbous, ventral nearly straight; height equal to two-thirds of the length; seen from above, very broadly ovate, greatest width situated in the middle, and equal to three-fourths of the length, abruptly tapered towards the anterior extremity, which is subacute; posterior extremity broadly rounded, and slightly emarginate in the middle; end view subtriangular, widest at the ventral margin, width much greater than the height, apex acute, lateral angles rounded. Surface of the shell smooth and polished. Length, 1-58th of an inch (·44 mm.).

One specimen only, dredged in a depth of 1900 fathoms, in lat. 35° 39′ S., long. 50° 47′ W.; grey mud (Station 323).

The remarkably ventricose character, and broadly triangular end-view separate this species unmistakably from any other with which I am acquainted.

[Pl. XXX. fig. 3, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

13. *Xestoleberis foveolata*, n. sp. (Pl. XXX. fig. 1, *a–g*).

Carapace of the female, subcordate, very tumid; seen from the side, the greatest height is situated near the middle, and is equal to more than two-thirds of the length; anterior extremity rounded, and only slightly depressed, posterior very broadly rounded, and somewhat produced in the middle; dorsal margin very boldly arched, ventral nearly straight; seen from above, broadly and obtusely wedge-shaped, tapering rather abruptly near the anterior extremity, which is obtusely pointed, posterior extremity wide, subtruncate, with rounded angles, and a central submucronate projection; greatest width situated behind the middle and equal to three-fourths of the length; end view subtriangular, with extremely convex sides, and rounded lateral angles, apex obtusely angulated, width rather greater than the height. Surface of the shell ornamented with closely-set, and rather large angular excavations, and, on the ventral surface, also with deep longitudinal furrows. Length, 1-45th of an inch (·53 mm.). The male differs from the female in having the superior margin almost angular in the middle, the dorsal view being regularly ovate, and the end view subtriangular.

This remarkable species, differing from all other known members of the genus in the strongly pitted character of its shell, was dredged plentifully in a depth of 6 to 8 fathoms, off Booby Island, lat. 10° 36′ S., long. 141° 55′ E. (Station 187).

[Pl. XXX. fig. 1, *a–g*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front; *e* male seen from left side, *f* from below, *g* from front. Magnified 60 diameters.]

Cytherura, G. O. Sars (1865).

Valves unequal and dissimilar in form, the right more or less overlapping the left on the dorsal margin; surface smooth, reticulated, punctated, deeply excavated, or bearing irregularly disposed ribs or protuberances, and mostly marked with a central darkly-coloured areola; in shape oblong or subtriangular and produced at the hinder end into a more or less prominent beak; hinge-processes mostly obsolete. Anterior antennæ shortly setose, six-jointed, gradually tapered; second joint bearing a rather long seta on the middle of its posterior margin; posterior antenna five-jointed, with short terminal claws; flagellum long, triarticulate. Mandibles robust, bluntly toothed; palp three-jointed, its branchial appendage small and bearing only two recurved setæ. Terminal lobes of the first pair of maxillæ long and narrow; branchial plate bearing on its external margin two non-ciliated setæ, which are directed downwards and arise from a separate lobe. Feet

small, with short, recurved claws; eyes distinct. Copulative organs of the male very complex, provided with several irregular processes and a very long spirally convoluted tube.

The members of this genus appear to be distributed abundantly over the whole globe, and are perhaps equally common in the Arctic Seas, as in those of the tropical and temperate regions. With very few exceptions, they are the smallest of all the Ostracoda, the usual range of length being between 1-50th and 1-70th of an inch.

1. *Cytherura curvistriata*, n. sp. (Pl. XXXII. fig. 10, *a–d*).

Carapace oblong, tumid; seen from the side, subrhomboidal, about equal in height throughout, scarcely twice as long as high; anterior extremity obliquely rounded, posterior angular, tapering abruptly and broadly truncated in the middle; dorsal and ventral margins parallel and nearly straight; seen from above, the outline is broadly ovate, greatest width behind the middle and equal to more than half the length, broadly mucronate in front, hinder extremity broadly rounded and irregularly emarginate; end view subelliptical, height less than the width. Surface of the shell marked with not very prominent, flexuous, longitudinal ribs, the intervals between which are pitted with angular cavities. Length, 1-62d of an inch (·40 mm.).

Dredged at Port Jackson, Australia, in a depth of 2 to 10 fathoms.

[Pl. XXXII. fig. 10, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

2. *Cytherura obliqua*, n. sp. (Pl. XXXII. fig. 1, *a–d*).

Carapace oblong, tumid; seen from the side, flexuous, subrhomboidal, higher in front than behind, height equal to about two-thirds of the length; anterior extremity broad and obliquely rounded off, posterior rounded but much narrower, not beaked; dorsal margin moderately arched, ventral somewhat convex and sinuated towards the front; seen from above, the outline is hexagonal, scarcely twice as long as broad; the sides parallel in the middle but converging rather abruptly towards the ends; end view heart-shaped, broad at the base and tapering to an obtusely rounded summit, height greater than the width. Shell marked with rather large angular excavations, and on the ventral surface with sinuous longitudinal grooves. Length, 1-43d of an inch (·58 mm.).

The only dredging in which I have seen *Cytherura obliqua* is from 20 to 50 fathoms at Balfour Bay, Kerguelen Island (Station 149). The species is rather anomalous in character, having a good deal of the general contour of *Loxoconcha*, and being destitute of the beak, which is the chief external mark of *Cytherura*. The same remarks apply partially to the two next described species *Cytherura rudis* and *Cytherura cribrosa*; the generic position here assigned to them must be looked upon as merely conjectural.

[Pl. XXXII. fig. 1, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

3. *Cytherura rudis* (?) G. S. Brady (Pl. XXXII. fig. 3, *a*-*d*).

Cytherura rudis, Brady, Ann. and Mag. Nat. Hist., ser. 4, vol. ii. (1868), p. 34, pl. v. figs. 15-17.

Carapace oblong, rather compressed; seen from the side rhomboidal, greatest height situated near the front and equal to more than half the length; anterior extremity broad, oblique, only slightly rounded, posterior narrower, oblique, produced near the middle into a very short and broad beak; dorsal margin sloping backwards with a very gentle curve from the front, ventral slightly sinuated in front; dorsal view elongated, subhexagonal, slightly wider in front than behind, anterior extremity abruptly tapered, obtusely pointed, posterior broad, subtruncate, with a wide central mucro; end view hexagonal, the dorsal much shorter than the ventral line; height a little greater than the width. Surface of the shell marked with polygonal excavations and faint flexuous longitudinal ribs, much as in the preceding species. Length, 1-52d of an inch (·49 mm.).

This is rather more angular in contour than the type-specimens which came from Davis' Straits, but in other respects the two entirely agree. The Challenger specimens were got in the Straits of Magellan, 55 fathoms (Station 313).

[Pl. XXXII. fig. 3, *a*–*d*. *a* Carapace seen from left side, *b* from above, *c* from below *d* from front. Magnified 60 diameters.]

4. *Cytherura cribrosa*, n. sp. (Pl. XXXII. fig. 5, *a*–*d*).

Carapace, as seen from the side, subquadrate, scarcely higher in front than behind, greatest height situated in the middle, and equal to about two-thirds of the length; anterior extremity obliquely rounded, posterior produced in the middle into a broad, subacute beak; dorsal margin moderately arched, ventral nearly straight; seen from above, ovate, widest in the middle, subacuminate in front, mucronate behind, twice as long as broad; end view subquadrate, height considerably greater than the width. Shell marked over the whole surface with rather large angular excavations. Length, 1-45th of an inch (·54 mm.).

Found only in a dredging from a depth of 160 fathoms. January 13, 1876. (Station 305).

[Pl. XXXII. fig. 5, *a*–*d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

5. *Cytherura lilljeborgi*, n. sp. (Pl. XXXII. fig. 6, *a*–*d*).

Carapace elongated, compressed, rather higher in front than behind; seen from the side, subovate, greatest height situated in front of the middle and equal to half the length; anterior extremity obliquely rounded, and jagged below the middle with three or four small teeth, posterior rather narrower and produced in the middle into a broad truncated

beak; superior margin moderately arched, inferior straight; seen from above, the outline is oblong-ovate, more than twice as long as broad, widest near the front, tapering abruptly towards the obtusely-pointed anterior, and gradually towards the broadly mucronate posterior extremity; end view hexagonal, with concave margins; valves marked in the middle of the lateral aspect with a longitudinal flexuous ridge and on the ventral surface with numerous longitudinal ridges, the other portions of the surface being irregularly and coarsely reticulated with prominent ribs. Length, 1-60th of an inch (·42 mm.).

This very well-marked species occurred in a dredging from Balfour Bay, Kerguelen Island, in 20 to 50 fathoms. Its nearest known ally is probably *Cytherura clathrata*, Sars, with which it closely agrees in style of surface-sculpture though quite different in proportions and general contour.

[Pl. XXXII. fig. 6, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 75 diameters.]

6. *Cytherura clavata*, n. sp. (Pl. XXIX. fig. 7, *a–d*).

Carapace, as seen from the side, oblong, nearly equal in height throughout, length equal to twice the height; anterior extremity well rounded, posterior produced in the middle into a short and broadly truncated beak; dorsal and ventral margins parallel and nearly straight; seen from above, the outline is subcuneate, widest behind, more or less constricted in the middle (the constriction more marked in the female), extremities centrally mucronate, the anterior broadly rounded, posterior subtruncate, width about equal to the height; end view subcircular, broad at the base and somewhat angulated at the apex. Surface of the shell marked with numerous delicate longitudinal anastomosing ridges; each valve has also a wide transverse groove or depression across the middle. Length 1-40th of an inch (·65 mm.).

A considerable number of specimens of *Cytherura clavata* were found in a dredging from Stanley Harbour, Falkland Islands,—6 fathoms. The species is not unlike *Cytherura gibba* (Müller), but is much more wedge-shaped when seen from the dorsal or ventral aspect. Some specimens have a much more distinct transverse groove than others, as shown in the two figures *b*, *c*. The difference is probably sexual.

[Pl. XXIX. fig. 7. *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

7. *Cytherura mucronata*, n. sp. (Pl. XXXII. fig. 9, *a–d*).

Carapace, as seen from the side, subrhomboidal, highest about the middle, height equal to fully half the length; anterior extremity obliquely rounded, posterior produced into a large tapering central beak; dorsal margin forming a flattened arch, ventral convex, slightly sinuated in front of the middle; seen from above the outline is compressed-ovate, widest in the middle and tapering evenly to the extremities, the anterior being sub-

acuminate, the posterior strongly mucronate; end-view subtriangular, height greater than the width, widest at the base, apex truncate. Surface of the shell marked with distant rounded punctures which are arranged in curved longitudinal rows. Length, 1-50th of an inch (·5 mm.).

Dredged in Simon's Bay, South Africa, in a depth of 15 to 20 fathoms. A very distinct species somewhat like the British *Cytherura producta*, but more robust and much higher in proportion to its length, distinctly sculptured also,—the British species being quite smooth.

[Pl. XXXII. fig. 9, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

8. *Cytherura costellata*, n. sp. (Pl. XXXII. fig. 7, *a–d*).

Carapace elongated, compressed; seen from the side oblong, narrow, highest in the middle, height equal to half the length, anterior extremity evenly rounded, posterior obliquely truncate, and produced above the middle into a prominent conical beak; dorsal margin gently and evenly arched, ventral straight; seen from above, oblong, subhexagonal; sides straight and parallel, converging rather abruptly to the extremities, both of which are strongly mucronate, width less than the height; end view pentagonal, much and irregularly emarginate. Shell-surface ornamented with numerous waved and anastomosing ribs forming an irregularly reticulated pattern. Length, 1-50th of an inch (·5 mm.).

Dredged in Balfour Bay, Kerguelen Island, in 20 to 50 fathoms (Station 149).

[Pl. XXXII. fig. 7, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

9. *Cytherura clausi*, n. sp. (Pl. XXXII. fig. 8, *a–d*).

Carapace tumid; seen from the side, oblong, height nearly the same behind and before, and equal to half the length, anterior extremity rounded, posterior produced above the middle into a large, conical, truncated beak, dorsal margin slightly arched, ventral straight; seen from above, ovate, widest in the middle, tapering gradually to the anterior extremity, which is broadly pointed, posterior extremity rounded, with a large central mucro; end view subtriangular, width and height about equal. Surface of the valves honey-combed with numerous irregularly angular cavities. Length, 1-50th of an inch (·5 mm.).

Dredged in Simon's Bay, South Africa, 15 to 20 fathoms (Station 140).

[Pl. XXXII. fig. 8, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, from front. Magnified 60 diameters.]

10. *Cytherura cryptifera*, n. sp. (Pl. XXXII. fig. 4, *a–c*).

Valves, as seen from the side, oblong, subrhomboidal, a little lower in front than

behind, height equal to half the length; anterior extremity rounded and divided below the middle into four or five small teeth; posterior obliquely truncated, irregularly notched and produced above the middle into a wide prominent beak, dorsal and ventral margins nearly straight; seen from above, the outline is broadly ovate, with pointed extremities; end-view subhexagonal, excavated between the angles. The surface of each valve is divided into several large angular hollows by sharply-cut flexuous ribs, the two principal of which run from a point near the anterior border to the posterior extremity of the valve, diverging at an acute angle, and enclosing a large portion of the area of the valve in one large cavity, the surrounding portion being cut up into irregular hollows by shorter separating ribs. Length, 1-62d of an inch (·40 mm.).

One specimen of this remarkably sculptured species was found in the dredging from off East Moncœur Island, Bass' Strait, in a depth of 38 to 40 fathoms. Though at first perfect, the two valves, unfortunately, became separated in examination, so that I have not been able to figure the complete shell.

[Pl. XXXII. fig. 4, *a*–*c*. *a* Left valve seen from side, *b* the same from above, *c* from front. Magnified 60 diameters.]

Cytheropteron, G. O. Sars (1865).

Valves mostly subrhomboidal, tumid, unequal, and different in shape, the right valve more or less overlapping the left on the dorsal margin; surface of the shell variously sculptured, punctate, papillose, reticulated, or transversely rugose, ventral surface produced laterally into a prominent rounded or spinous ala; posterior margin produced into a more or less distinct but obtuse beak; hinge formed by two small terminal teeth on the right, and by a minutely-crenated median bar on the left, valve. Muscle-spots usually four, linear-oblong, arranged in an obliquely transverse row just above the middle of the ventral margin. Anterior antennæ shortly setiferous, and composed of five joints; the penultimate joint elongated, and bearing on the middle of the anterior margin two hairs; posterior antennæ distinctly five-jointed, flagellum long. Mandibles of moderate size; palp three-jointed, branchial appendage bearing two very small setæ; maxillæ as in the preceding genus. Feet long and slender, with slender terminal claws. Abdomen ending in a long, narrow process; postabdominal lobes bearing three short hairs. Copulative organs of the male armed behind with three spiniform processes, one of which is trifurcate. Eyes wanting.

This is a cosmopolitan genus, containing a considerable number of species, of which the best known are *Cytheropteron latissimum* (Norman), and *Cytheropteron nodosum*, Brady. Both of these are northern species ranging across the Atlantic from Canada to Norway, and extending, in the case of the first named, as far northward as Baffin's Bay and Spitzbergen, and occurring also very plentifully in the Post-Tertiary formations of

Canada, Great Britain, and Norway. Many other forms, both recent and fossil, have been described, ranging as far back as the Cretaceous formations.

1. *Cytheropteron scaphoides*, n. sp. (Pl. XXXIII. fig. 1, *a–d*).

Shell compressed, oblong; seen from the side, elongated, subtriangular, highest in the middle, the greatest height being nearly equal to half the length; anterior extremity depressed, narrowly and sharply rounded, posterior produced, much depressed, subacutely pointed; dorsal margin boldly arched, sloping more steeply behind than in front, ventral gently convex; seen from above, the outline is compressed, oblong, obscurely hexagonal, with rounded angles, width scarcely equal to half the length; sides nearly straight, and converging somewhat abruptly towards the extremities which are subacuminate; end view depressed, broadly oval, ventral surface indented. Surface of the shell smooth, marked with a few faint and distant curved longitudinal striæ. Length, 1-80th of an inch (·325 mm.).

A few specimens found in a dredging from Balfour Bay, Kerguelen Island, 20 to 50 fathoms (Station 149).

This is not unlike in general character to *Cytheropteron subcircinatum*, Sars, but is very much less tumid.

[Pl. XXXIII. fig. 1, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 80 diameters.]

2. *Cytheropteron wellingtoniense*, n. sp. (Pl. XXXIV. fig. 4, *a–d*).

Shell, seen from the side, flexuous in outline, subrhomboidal, highest in the middle, height equal to nearly two-thirds of the length, anterior extremity depressed, rounded off, posterior wider, looking obliquely downwards, produced in the middle into a short, broad, and obtuse beak, dorsal margin boldly and evenly rounded, ventral convex, sinuated in front and behind the middle; seen from above, the outline is subovate, widest behind the middle, where the lateral alæ project only very slightly; from this point the lateral margins slope with a gentle curve towards the anterior extremity, which is obtuse and slightly mucronate, more abruptly and almost in a straight line to the hinder extremity, which is acuminate; width equal to the height; the end view is equilaterally triangular, the angles rounded, and the lateral margins rather boldly curved, ventral line nearly straight. The shell is almost smooth, but marked on parts of its surface with closely-set minute puncta, the ventral surface is indented longitudinally along the median line, and bears also a few faint curved striæ; the lateral alæ are curved, scarcely angular, and but slightly prominent. Length, 1-43d of an inch (·575 mm.).

Several specimens of this species were found in a dredging from Wellington Harbour, New Zealand. They were taken in the tow-net at trawl, but at what depth is not

stated. In shape this is almost exactly similar to *Cytheropteron latissimum* (Norman), a northern species, yet the absence of any but very faint sculpturing of the shells seems to preclude the possibility of uniting it with that species.

[Pl. XXXIV. fig. 4, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

3. *Cytheropteron* (?) *angustatum*, n. sp. (Pl. XXXIV. fig. 5, *a*, *b*).

Valves, seen from side, oblong, subrhomboidal, higher in front than behind, height equal to more than half the length; anterior extremity broad, rounded below the middle, thence sloping almost in a right line to the dorsum, posterior extremity narrower, evenly rounded, dorsal margin short, straight, abruptly angular at both ends, ventral gently convex, slightly sinuated in front, and bent upwards behind; seen from above, the outline is regularly ovate, without any alæform proportion. Shell-surface marked with numerous moderately large angular excavations. Length, 1-50th of an inch (·5 mm.).

The proper generic position of this shell must be considered doubtful; it may possibly be a young undeveloped form, but as specimens have been found in two widely distant localities, it seems best to give it, provisionally, a specific name. Possibly the genus *Cythere* might have been a more fitting receptacle in this case, but from a few detached valves only it is not easy to arrive at an accurate conclusion. The specimens were found at Balfour Bay, Kerguelen Island, 20 to 50 fathoms (Station 149), and Torres' Straits, lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms (Station 185).

[Pl. XXXIV. fig. 5, *a*, *b*. *a* Left valve seen from side, *b* from above. Magnified 50 diameters.]

4. *Cytheropteron intermedium*, G. S. Brady (Pl. XXXIV. fig. 1, *a–d*).

Cytheropteron intermedium, Brady, Ostracoda of the Antwerp Crag (Trans. Zool. Soc., 1878), p. 403, pl. lxix. fig. 3, *a–c*.

Shell elongated; seen from the side, flexuous, subrhomboidal, depressed in front, highest near the middle, height equal to more than half the length; anterior extremity obliquely rounded, posterior produced above the middle into a small, slender beak, below which it looks downwards with an oblique gentle curve, dorsal margin moderately arched, ventral sinuated in front, convex behind the middle; seen from above, the outline is hastate, widest behind the middle where the lateral alæ project at an obtuse angle; from this point the lateral margins converge in a gentle curve towards the front, terminating in a produced subacuminate extremity; backwards the sides converge at first almost rectangularly, then more gradually, the posterior extremity being, like the anterior, subacute; end view equilaterally triangular, obtusely rounded at the apex, lateral angles produced and truncated, sides gently convex. Shell almost smooth; ventral surface slightly nodulated and irregular. Length, 1-50th of an inch (·5 mm.).

The type-specimens of *Cytheropteron intermedium*, which differ scarcely in any degree from those here described, were fossils from the Antwerp Crag (Tertiary). The Challenger specimens are from Vigo Bay, 11 fathoms.

[Pl. XXXIV. fig. 1, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

5. *Cytheropteron abyssorum*, n. sp. (Pl. XXXIV. fig. 3, *a–d*).

Shell tumid; seen from the side, subrhomboidal, highest in the middle, height equal to about two-thirds of the length; anterior extremity obliquely rounded, posterior produced into a median acuminate beak; dorsal margin moderately arched, sloping gently towards the front, and very steeply behind, ventral strongly convex; seen from above, the shape is irregularly hexagonal, widest behind the middle over the alar prominences, width a little greater than the height; from the alar processes the lateral margins converge gently and with a slight sinuation towards the front for about one-third of the length of the shell, then converging abruptly, terminate anteriorly in a large acuminate process; behind the alæ the sides converge for a short space rectangularly, then are directed backwards, meeting at an acute angle in a long acuminate projection; end-view triangular, apex acute, lateral angles broad and produced; lateral margins gently convex, ventral almost straight. Surface of the valves marked partially on the sides with angular excavations, and on the ventral surface with irregular longitudinal sulci. Length, 1-50th of an inch (·5 mm.).

A very well-marked species, if we exclude the possibility of its being a sexual form or the young of that next to be described, *Cytheropteron assimile*, to which it bears considerable resemblance. *Cytheropteron assimile*, however, is much larger, the contours much more rounded, and the lateral alæ not so prominent as in *Cytheropteron abyssorum*. Dredged in lat. 42° 42′ S., long. 134° 10′ E., 2600 fathoms (Station 160).

[Pl. XXXIV. fig. 3, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

6. *Cytheropteron assimile*, n. sp. (Pl. XXXIV. fig. 3, *a–d*).

Shell, seen from the side, oblong, flexuous, subrhomboidal, not much lower in front than behind, highest near the middle, the height being equal to more than half the length; anterior extremity evenly rounded, posterior produced in the middle into a wide, obtusely rounded beak, above which it is rather deeply excavated, nearly straight below and looking obliquely backwards and downwards, dorsal margin boldly arched, ventral convex behind and almost straight in front; seen from above, almost like *Cytheropteron abyssorum*, but narrower in proportion to the length; the end view is much broader and more rounded dorsally than in *Cytheropteron abyssorum*, while the ventral surface is rather deeply indented, and the angles, instead of being produced, are rounded off. The

lateral surface of the shell is thickly beset with subangular excavations, and the ventral surface is longitudinally furrowed. Length, 1-35th of an inch (·75 mm.).

Found off Christmas Harbour, Kerguelen Island, in a depth of 120 fathoms (Station 149), and off Heard Island in 75 fathoms (Station 151).

Though bearing considerable resemblance to the northern species *Cytheropteron latissimum* (Norman), this is easily distinguished by the character of the surface-sculpture, which shows no tendency to run into transverse grooves; the lateral alæ, too, are considerably more prominent.

[Pl. XXXIV. fig. 2, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 50 diameters.]

7. *Cytheropteron patagoniense*, n. sp. (Pl. XXXIII. fig. 7, *a–d*).

Carapace tumid; seen from the side, irregularly rhomboidal, highest a little in front of the middle, height equal to two-thirds of the length, anterior extremity scarcely rounded, depressed, posterior produced in the middle into a narrow truncated beak; dorsal margin high in the middle, irregularly angular, sloping steeply toward the front, but more gently behind, ventral slightly protuberant behind the middle; seen from above, the outline is broadly ovate, widest near the middle, width about equal to the height, extremities obtusely pointed; seen endwise, the outline is subtriangular, the ventral line strongly convex, the apex obtuse. Surface of the valves marked by a broad, rounded, and encircling ridge, which is best developed towards the anterior and ventral margins, the space thus enclosed being crossed obliquely near the middle by another similar ridge, and marked also with numerous small circular impressed punctures; the ventral surface shows similar pittings arranged in curved longitudinal lines. Length, 1-50th of an inch (·5 mm.).

A few valves found in a sounding from 160 fathoms off the Coast of Patagonia (Station 305). Approaching closely in general appearance to *Cytheropteron nodosum*, Brady (a European species), but much more angular in outline and more tumid; different also in some minor details of surface-sculpture.

[Pl. XXXIII. fig. 7, *a–d*. *a* Right valve seen from side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

8. *Cytheropteron fenestratum*, n. sp. (Pl. XXXIV. fig. 6, *a–d*).

Shell, seen from the side, oblong, subovate, much higher in front than behind, greatest height situated in the middle, and equal to more than half the length; anterior extremity broadly rounded and fringed with a series of twelve to fifteen short, broad, and nearly equal teeth; posterior extremity produced and narrowed, bordered with a squamous lamina, which is divided into a number of short, subequal teeth; dorsal margin boldly arched, rather flattened in the middle, and sloping steeply towards each extremity,

ventral very slightly convex; seen from above, the outline is ovate, widest in the middle, the greatest width being fully equal to the height of the shell, the lateral margins are regularly and evenly convex, the extremities broad and subtruncate, with a bimucronate central projection, that of the posterior extremity being very large and stout; end view triangular, sides convex, base straight, with a deep sinuation on each side of the middle, basal angles rounded and slightly produced, apex much produced and subacute. The general surface of the shell is smooth, the sides evenly convex, the ventral surface flattened and irregularly nodulated; within the ventral margin of each valve, and along nearly its whole length, runs an elevated crest, which is pierced by numerous (20 to 30) circular foramina. Length, 1-22d of an inch (1·1 mm.).

Of this fine and very distinct species several specimens were obtained off Christmas Harbour, Kerguelen Island, in a depth of 120 fathoms (Station 149); also at Station 335, north of Tristan d'Acunha, lat. 32° 24′ S., long. 13° 5′ W., 1425 fathoms.

[Pl. XXXIV. fig. 6, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 50 diameters.]

9. *Cytheropteron mucronalatum*, n. sp. (Pl. XXXIII. fig. 8, *a–d*).

In form very similar to the preceding species, but more robust and higher in proportion to its length, and devoid of the fenestrated alæform ridge; seen from the side, broadly subovate, height equal to more than two-thirds of the length; anterior extremity broadly rounded, irregularly and roughly dentate, posterior narrower, but not produced, and bearing a few blunt spines; dorsal margin very boldly arched, not flattened, highest in the middle, ventral gently convex; seen from above the outline is ovate, widest in the middle, width less than the height; the sides are irregularly convex, and converge gradually towards the front, but more abruptly behind, both extremities running out into broad obtusely mucronate projections; end view triangular, the sides only slightly convex, and much longer than the base, which is indented in the middle, angles acute; the general surface of the shell is smooth, sides evenly convex, ventral suface almost flat, except for a central longitudinal depression; within and parallel to the anterior and ventral margins of the valves runs an elevated ridge, which terminates not far from the posterior extremity of the shell in a strong, but not very long spinous projection. Length, 1-20th of an inch (1·3 mm.).

This species, though nowhere abundant, occurred in several dredgings—

Lat. 38° 25′ N., long. 35° 50′ W.,	. .	1675 fathoms,	Station 70
„ 7° 45′ N., „ 144° 20′ E.,	. .	1580 „	„ 224
„ 36° 10′ N., „ 178° 0′ E.,	. .	2050 „	„ 246
„ 38° 6′ S., „ 88° 2′ W.,	. .	1825 „	„ 296
„ 33° 42′ S., „ 78° 18′ W.,	. .	1375 „	„ 300
„ 42° 43′ S., „ 82° 11′ W.,	. .	1450 „	„ 302

From this list it appears that *Cytheropteron mucronalatum* is an inhabitant exclusively

of deep water, these localities ranging from 1375 to 2050 fathoms, while, as to geographical distribution, the range is over the Pacific Ocean, from Japan to Patagonia; and probably also over the Atlantic, seeing that the neighbourhood of the Azores also yielded specimens.

[Pl. XXXIII. fig. 8, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. All magnified 50 diameters.]

Bythocythere, G. O. Sars (1865).

Valves subequal, smooth, or sparingly sculptured, almost destitute of hairs; thin and fragile; hinge-joint quite simple, or composed of a slight bar and furrow; no teeth. Anterior antennæ elongated, seven-jointed; the second joint large and thick, and bearing a seta on its anterior and posterior margins; the other joints suddenly much narrower, forming a long slender lash, which bears several setæ; penultimate joint linear, and destitute of setæ. Posterior antennæ tolerably robust, four-jointed; second joint large; flagellum long, biarticulate, its last joint long and setiform. Mandibles constricted above the distal extremity, and strongly toothed; palp four-jointed, bearing a well-developed branchial plate, which is set with numerous ciliated setæ. Terminal lobes of the first pair of jaws very short and thick; branchial plate large, ovate, bearing numerous marginal ciliated setæ, and at the base four long, deflexed simple setæ. Feet elongated, terminal claw very long and slender, second and third joints bearing each a short apical setæ; basal joint of the first pair furnished at the base with a small lobe which bears two very large and densely ciliated, and two smaller and simple setæ. Abdomen ending in a very large and acuminated process; postabdominal lobes narrow and bearing three hairs. Eyes mostly absent.

This genus is very nearly allied to *Cytheropteron*, and, like it, is represented in the Northern Seas, and in the British Post-Tertiary deposits, by two tolerably abundant species,—*Bythocythere simplex* (Norman), and *Bythocythere constricta*, G. O. Sars,—as well as by others which are less common.

1. *Bythocythere orientalis*, G. S. Brady (Pl. VI. fig. 6, *a–d*, and Pl. XXXII. fig. 2, *a–c*).

Bythocythere orientalis, Brady, Les Fonds de la Mer, tom. i. p. 159, pl. xvi. figs. 21–23.

The outline of the shell of this species is very closely similar to that next to be described (*Bythocythere arenacea*), differing from it chiefly in having the lateral view less acutely pointed behind, the surfaces, both ventral and lateral, less convex, and the shell quite devoid of tubercular ornamentation. The ventral surface is marked with irregular, sinuous, longitudinal furrows, and the general surface is vaguely undulated. Length, 1-48th of an inch (·52 mm.).

One or two detached valves only found in anchor mud, from a depth of 7 fathoms in Hong Kong Harbour, from which place the type-specimens also were brought. Specimens,

perhaps referable to a variety of this species, were dredged in Torres' Straits, and are figured in Plate XXXII. fig. 2, *a–c*; their chief characteristic being a large tubercle on the dorsal portion of the valve.

[Pl. VI. fig. 6, *a–d*. *a* Right valve seen from side, *b* from above, *c* from below, *d* from front; magnified 60 diameters. Pl. XXXII. fig. 2, *a–c*. *a* Right valve seen from side, *b* from above, *c* from front; magnified 50 diameters.]

2. *Bythocythere arenacea*, n. sp. (Pl. XXXIII. fig. 3, *a–g*).

Carapace of the female, seen from the side, oblong, somewhat helmet-shaped, truncated in front, acutely pointed behind, height equal to about half the length; anterior extremity nearly straight, looking obliquely upwards, rounded off at the upper and lower angles, posterior extremity much produced, and ending in an acute median point; dorsal and ventral margins straight, and almost parallel; seen from above the lateral margins are strongly convex, converging with a gradual curve towards the front, and almost at a right angle behind the middle, then running backwards to form a broad, triangular, acutely pointed posterior projection; end-view quadrangular, broadest at the base, ventral line strongly convex, dorsal about one-third as long, and deeply concave, lateral margins moderately convex. The surface of the shell is covered with small tubercular elevations of a coarsely granular or arenaceous appearance; the lateral alæ are only moderately prominent, and end behind in a rounded angle. The shell of the male differs from that of the female chiefly in being more elongated and less tumid. Length, 1-37th of an inch (·7 mm.).

The characters of *Bythocythere arenacea*, both as to shape and surface markings, suffice to distinguish it very obviously from any other species. Several examples occurred in a dredging from Torres' Straits, lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms (Station 185).

[Pl. XXXIII. fig. 3, *a–g*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front; *e* male right valve seen laterally, *f* from below, *g* from front. All magnified 50 diameters.]

3. *Bythocythere pumilio*, n. sp. (Pl. XXXIII. fig. 4, *a–d*).

Carapace elongated, tumid, depressed; seen from the side, oblong, quadrangular, nearly equal in height throughout; height equal to less than half the length, anterior extremity subtruncate, scarcely rounded, posterior rather narrower, imperfectly rounded, obscurely dentated below the middle; dorsal margin nearly straight through its whole length, ventral slightly convex, dentate in front, ending behind in an alæform projection, which is mucronate at the angle; seen from above the contour is hexagonal, with parallel sides, the width equal to somewhat less than two-thirds of the length; sides converging equally and rather abruptly, and ending in a subacuminate process both in front and behind; the posterior

margin is broken also by the projecting mucronate processes of the lateral alæ; end view irregularly quadrilateral, widest near the base, height equal to about two-thirds of the width only; dorsal line nearly flat, ventral deeply excavated in the middle, and ending in broad, well-rounded angles; lateral margins sinuated in the middle. The surface of the shell is ornamented in a manner very similar to that of *Bythocythere arenacea*, but the ventral area is depressed, and marked with longitudinal furrows. Length, 1-66th of an inch (·39 mm.).

Found only at Balfour Bay, Kerguelen Island, in a depth of 20 to 50 fathoms (Station 149).

[Pl. XXXIII. fig. 4, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 80 diameters.]

4. *Bythocythere velifera*, n. sp. (Pl. XXXIII. fig. 5, *a–c*).

Valves, seen from the side, subrhomboidal, height equal to more than half the length, anterior extremity oblique, subtruncate, only slightly rounded, posterior looking obliquely downwards, almost straight, and ending above in an acute angle, dorsal margin straight, slightly curved downwards at the hinder end, ventral margin formed for the most part by a huge lateral ala which occupies the larger part of the inferior half of the valve, its lower border being nearly straight, the anterior joining the surface of the valve with a forwards curve, the posterior almost at a right angle; seen from below the lateral alæ form the entire central part of the shell, the extremities constituting two broad mucronate projections, the margins of the lateral alæ sweep forwards in a full curve from the posterior angle which is slightly produced, while behind they converge in a sinuated line, but almost at a right angle; the width of the complete shell would seem to be greater than the length, but single valves only have been seen. Surface smooth, and slightly undulated. Length, 1-48th of an inch (·52 mm.).

A few detached valves only found in Torres' Straits, lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms.

[Pl. XXXIII. fig. 5, *a–c*. *a* Left valve seen from side, *b* from above, *c* from front. Magnified 50 diameters.]

5. *Bythocythere* (?) *exigua*, n. sp. (Pl. VI. fig. 7, *a–d*).

Carapace, seen from the side, subovate, smaller in front than behind, highest in the middle, the height being equal to more than half the length; anterior margin narrow, and imperfectly rounded, posterior broader, and more distinctly rounded; dorsal margin arched, slightly gibbous in the middle, ventral nearly straight behind the middle, then rather suddenly bent upwards towards the front; seen from above, the outline is broadly oval, widest in the middle, margins fully curved, anterior extremity obtuse, scarcely pointed, posterior narrow, subtruncate and emarginate in the middle, width equal to the height; end view almost circular, slightly keeled in the middle of the ventral margin.

The surface of the shell is smooth, and faintly marked out into polygonal areolæ, the line of junction of the valves on the dorsal surface is depressed in front of and behind the middle, while the contact margins on the ventral surface are produced into a longitudinal keel. Length, 1-55th of an inch (·44 mm.).

This species, which, probably, when the anatomical structure is known, will have to be made the type of a new genus, was found in a dredging from the Straits of Magellan, lat. 52° 20′ S., long. 68° 0′ W., depth 55 fathoms (Station 313).

[Pl. VI. fig. 7, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 80 diameters.]

Pseudocythere, G. O. Sars (1865).

Shell thin, pellucid, compressed, rounded in front, produced behind; hinge-joint simple. Anterior antennæ bearing several long setæ, seven-jointed; second joint stout, having a single seta on the middle of the anterior border, last joint narrow, long, and bearing very long apical setæ; posterior antennæ very slender, five-jointed, flagellum long and slender. Mandibles small, with slender curved claw-like teeth, palp narrow, four-jointed; branchial appendage bearing long setæ. Terminal lobes of the first pair of jaws narrow, and having a large elongated ovate branchial plate, which is provided at the base with three curved and deflexed setæ. Feet very long and slender; abdomen ending in a long slender process; postabdominal lobes narrow and setiferous. No eye.

Though differing from *Bythocythere* to some small extent in anatomical details, this genus is perhaps more distinctly characterised by the structure of the shell, which is extremely thin and delicate, nearly or quite devoid of sculptured ornament or definite microscopic structure, and very much compressed. As regards the species at present known to us, there is no difficulty in locating accurately the members of these two genera, but they approach each other so closely that if, as is most likely, new and intermediate species come to light, it may become impracticable to maintain the separation.

The genus *Pseudocythere* is widely distributed, occurring in the European Seas as well as in those distant regions of the Southern Hemisphere here noted.

As a fossil it has been recognised only in the Post-Tertiary deposits of the British Islands.

1. *Pseudocythere caudata*, G. O. Sars (Pl. I. fig. 6, *a–d*).

Pseudocythere caudata, Sars, Oversigt Norges marine Ostrac., p. 88.
Pseudocythere caudata, Brady, Monog. Recent Brit. Ostrac., p. 453, pl. xxxiv. figs. 49–52, pl. xli. fig. 6.
Pseudocythere caudata, Brady, Crosskey, and Robertson, Post-Tertiary Entomostraca, p. 210, pl. ii. fig. 9.

Carapace compressed, elongated; seen from the side, oblong, subquadrate, scarcely higher in front than behind; height equal to half the length; anterior extremity evenly

rounded, posterior oblique, subtruncate, much compressed, so as to form a thin marginal flange, and produced at the upper angle into a broad, blunt beak, obtusely angulated at its junction with the ventral margin; dorsal margin quite straight, ventral straight in front, and suddenly bent upwards behind the middle; seen from above, the outline is narrow, ovate, widest in the middle, tapering to the extremities, both of which are acuminate, the posterior much attenuated; width equal to rather more than one-third of the length; end view subovate, compressed towards the apex, and strongly mucronate in the middle of the broad ventral border, width equal to two-thirds of the length. Shell perfectly smooth, thin, translucent, colourless or straw-coloured, with blotches of darker brown. Length, 1-40th of an inch (·65 mm.).

This species was noted in dredgings from Balfour Bay, 20 to 50 fathoms; and Christmas Harbour, 120 fathoms, both in Kerguelen Island (Station 149); also from off Prince Edward's Island, 50 to 150 fathoms, and from lat. 35° 39′ S., long. 50° 47′ W., 1900 fathoms (Station 323). The published figures of *Pseudocythere caudata*, in the Monographs of Recent British Ostracoda, and of the Post-Tertiary Entomostraca have been drawn from specimens higher in front, and more compressed laterally than those found in the Challenger dredgings,[1] so that I was at first disposed to refer the latter to a different species, but a re-examination of several sets of British specimens has shown that there is among them considerable variety in shape, and that the published drawings have been done from rather extreme examples as regards the development of the particular characters above referred to. I therefore believe that all, both Northern and Southern, ought to be referred to one species, *Pseudocythere caudata*.

[Pl. I. fig. 6, *a*–*d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

2. *Pseudocythere fuegiensis*, n. sp. (Pl. I. fig. 7, *a*–*d*).

Carapace compressed, elongated; seen from the side, subrhomboidal, rather higher in front than behind, height less than one-half of the length; anterior extremity broadly and obliquely rounded, posterior narrowed and produced in the middle into a broad conical beak; dorsal margin straight, ventral sinuated in front of the middle; seen from above, the outline is ovate, with compressed acuminate extremities, width about equal to the height; end view subcircular. Surface of the shell marked on the posterior half with delicate longitudinal striæ. Length, 1-22d of an inch (1·1 mm.).

One specimen found in a dredging from a depth of 245 fathoms in lat. 52° 50′ S., long. 73° 53′ W.

[Pl. I. fig. 7, *a*–*d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 35 diameters.]

[1] Perhaps sexual characters, or perhaps dependent on growth, but of this I am not at present able to speak positively.

Cytherideis, Jones.

Cytherideis, Jones, Post-Tert. Entom., 1856; Brady, Monog. Recent Brit. Ostrac., 1868; Brady, Crosskey, and Robertson, Post-Tertiary Entom., 1874.

Shell elongated, depressed in front, hinge-margins nearly simple; surface smooth, slightly punctate or grooved; right valve overlapping the left in the middle of the ventral surface. Anterior antennæ five-jointed, slender, sparingly and shortly setiferous; last three joints short, and bearing six tumid setæ; penultimate and antepenultimate joints, each with a single apical seta. Mandibles slender, curved, divided at the apex into about four very small indistinct teeth; palp four-jointed, bearing on the lower margin of the first joint a conical tooth-like process; third joint set along its entire length with a comb-like series of straight equal setæ, and bearing one large branchial seta; in other respects like *Cythere*. First segment of the maxillæ much stouter and larger than the rest, bearing a large branchial plate. The first pair of feet bear on the basal joint a large and stout ciliated process.

The animals belonging to the restricted genus *Cytherideis* are sufficiently well characterised both as to shell-structure and internal anatomy: only one species, however, the British *Cytherideis subulata*, has yet been submitted to any anatomical investigation,[1] and this by no means a complete one. A few details are here added to the generic description from further dissections of fresh specimens which I have, fortunately, had the opportunity of making, but more yet remains to be done. The Challenger specimens are very few, and seem to be all empty shells.

The genus is widely distributed, species having been described from the British Seas, the Mediterranean, the Gulf of St Lawrence, and the Atlantic, in addition to those noticed in the present memoir. It is probable, too, that not a few fossil species described by various palæontologists may belong here. The forms originally referred to *Cytherideis* by Professor T. Rupert Jones belong evidently to several distinct genera.[2]

1 *Cytherideis lævata*, n. sp. (Pl. VI. fig. 5, *a–d*, and Pl. XXXV. fig. 6, *a–d*).

Carapace elongated, compressed, cylindrical; seen from the side, oblong, equal in height throughout, extremities rather oblique and only slightly rounded; dorsal and ventral margins quite straight and parallel, height rather more than one-third of the length; seen from above, somewhat club-shaped, tapering a little toward the front, width greatest behind the middle, and equal to one-third of the length, broadly pointed in front, rounded off behind; end view nearly circular; surface of the shell perfectly smooth. Length 1-32d of an inch (·775 mm.).

[1] See Brady and Robertson on the Distribution of the British Ostracoda in Ann. and Mag. Nat. Hist., ser. 4, vol. ix. (1872).

[2] The name *Cytherideis nana* given in previous pages of this Report (pp. 11, 23) should have been erased. It refers to specimens whose characters are not distinct enough to be made the basis of a new species.

Dredged off Heard Island, in a depth of 75 fathoms. Mud. (Station 151.)

[Pl. XXXV. fig. 6, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

Sclerochilus, G. O. Sars (1865).

Valves elongated, very hard, especially towards the margins; surface smooth and shining, ornamented with minute scattered papillæ. Hinge-joint formed by a projecting median crest of the left valve. Muscle-spots linear, subparallel, arranged in an oblique oval patch below the centre of the valve. Antennæ robust; the anterior bearing on each side of its second joint a single seta, its last five joints successively smaller, and bearing numerous long setæ; posterior antennæ larger than the anterior, five-jointed, flagellum very long and slender. Poison-glands very large, and divided into several lobes. Mouth produced, conical; labrum strongly toothed. Mandibles small, teeth numerous and sharp; palp narrow, indistinctly three-jointed, and having a distinct branchial appendage. Terminal lobes of the first pair of jaws partly wanting; branchial plate narrow, almost lanceolate, and beset with numerous setæ on the outer and inner margins. Feet short and robust, second and third joints bearing in front a sharp seta; first pair armed with a single strong spine at the apex of the basal joint. Post-abdominal lobes larger than usual, forming two broad bilobed laminæ, each bearing five setæ. Eye single.

To this genus we can with certainty refer only the single species here noticed; a species which is, however, generally distributed on the Atlantic shores of Europe, reaching as far north as Spitzbergen. It occurs abundantly in almost all the Post-Tertiary beds of Great Britain and Ireland, as well as in those of Norway and Canada.

1. *Sclerochilus contortus* (Norman), (Pl. XXXV. fig. 8, *a*, *b*).

Cythere contorta, Norman, Ann. and Mag. Nat. Hist., vol. ix. p. 48, pl. ii. fig. 15; Trans. Tyneside Nat. Field Club, vol. v. p. 150, pl. iii. fig. 15 (1862).
Sclerochilus contortus, Sars, Oversigt. Norges marine Ostrac., p. 90 (1865).
Sclerochilus contortus, Brady, Mong. Rec. Brit. Ostr., p. 455, pl. xxxiv. figs. 5–10, and pl xli. fig. 7.
Sclerochilus contortus, Brady, Crosskey, and Robertson, Monog. Post-Tertiary Entom., p. 212, pl. x. figs. 33–35.

Carapace, as seen from the side, elongated, bean-shaped, higher behind than in front, height equal to about half the length; extremities well rounded, dorsal margin boldly arched, inferior deeply sinuated in front of the middle; seen from above, compressed, ovate, extremities acutely pointed, width scarcely equal to one-third of the length; end view ovate, rounded above, pointed below. Shell perfectly smooth. Length, 1-33d of an inch (·77 mm.).

Several specimens, all consisting of separated valves, were found in dredgings from Balfour Bay, Kerguelen Island, 20–50 fathoms; from off Heard Island, 75 fathoms; from Wellington Harbour, New Zealand (in tow-net at trawl).

[Pl. XXXV. fig. 8, *a*, *b*. *a* Right valve seen laterally, *b* the same from above. Magnified 50 diameters.]

Xiphichilus, Brady.

Xiphichilus, Brady, Nat. Hist. Trans. Northumberland and Durham, vol. iii. (1870).
Bythocythere, Norman, British Association Report (1868).

Shell thin and fragile, smooth; valves compressed, elongated, pointed at both ends, nearly equal; ventral margins much compressed, forming a flattened, knife-like plate, which is widest behind the middle, and often marked by several transverse hair-like lines; seen from above, compressed, bifusiform; hinge simple. Limbs excessively long and slender; anterior antennæ six-jointed and quite destitute of setæ; posterior sparingly setiferous. Mandibles very long and slender, styliform; palp (?) biarticulate, slender, and terminating in two long setæ. Abdomen produced into two long tapering processes.

1. *Xiphichilus complanatus*, n. sp. (Pl. XXXV. fig, 4, *a–d*).

Shell much compressed, elongated; seen from the side, oblong, subovate, highest behind the middle, height scarcely equal to half the length; anterior extremity narrow, rounded; posterior produced in the middle into an acute angle; dorsal margin boldly arched, highest behind the middle, ventral margin straight; seen from above, the outline is excessively compressed, somewhat lozenge-shaped, with subacute extremities, greatest width in the middle, and equal to somewhat less than one-fourth of the length; end view ovate, produced below into a keel-like flange. Surface of the shell perfectly smooth. Length, 1-33d of an inch (·77 mm.).

Found in a dredging from Christmas Harbour, Kerguelen Island, 120 fathoms.

[Pl. XXXV. fig. 4, *a–d*. *a* Carapace seen from the left side, *b* from above, *c* from below, *d* from front. Magnified 50 diameters.]

2. *Xiphichilus* (?) *arcuatus*, n. sp. (Pl. XXXV. fig. 2, *a–d*).

Carapace, seen from the side, subarcuate, height greatest in the middle, and equal to rather more than one-third of the length; extremities subacute; dorsal margin forming a continuous arch between the two extremities of the ventral margin, with which it forms an obtuse anterior and a subacute posterior angle; ventral margin rather convex; seen from above, compressed, ovate, widest in the middle, more than thrice as long as broad, extremities subacute; end view ovate, broad on the dorsal, and tapering to a keel at the ventral border. Shell-surface quite smooth. Length, 1-45th of an inch (·53 mm.).

This species was observed only in a dredging from lat. 19° 10′ S., long. 178° 10′ E.; 610 fathoms; bottom of globigerina ooze.

[Pl. XXXV. fig. 2, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

Paradoxostoma, Fischer.

Paradoxostoma, Fischer, Abhandl. d. Kgl. bayerisden Akad. d. Wissenschaften, Bd. vii. (1855).

Shell thin and fragile, smooth, shining, and having no definite structure; valves subequal, mostly much higher behind than in front, usually elongate-ovate. Muscle-spots as in *Sclerochilus*. Hingement simple; ventral margins emarginate in front, so that when the valves are closed there is still an elongated orifice through which the suctorial mouth can be protruded. Anterior antennæ extremely slender, six-jointed, and armed with short setæ; posterior shorter and more robust, five-jointed; flagellum large, and almost as thick as the antenna itself. Poison-glands large, and mostly lobulated. Mouth suctorial. Labrum and labium forming together a large and stout subconical process projecting downwards, and terminating in a disk, with elevated margins, in the middle of which is the orifice of the mouth. Mandibles very slender, protractile, styliform, subulate at the apex; palp very slender and elongated, indistinctly jointed, and without a branchial appendage. Terminal lobes of the first pair of jaws very narrow, branchial plate elongate-ovate, and bearing at the base two deflexed setæ. Feet short and robust, last joint elongated, and bearing a very short, curved, terminal claw; basal joint of the first pair armed at the apex with a single strong spine. Postabdominal lobes bearing two short hairs. One eye.

Not many examples of this genus have been found in the Challenger dredgings, nor is this to be wondered at, seeing that, in the British Seas at any rate, its members haunt almost exclusively the littoral and laminarian zones. Fourteen recent British species are known to us, and Sars has described seven from Norway, some of which are identical with British species; eight species (two of which are rather dubious) have been recognised in the British Post-Tertiary formations; but from other parts of the world we have no record of the occurrence of the genus, except in Dr Fischer's memoir, where one species only (*Paradoxostoma dispar*) is described. The foreign gatherings which have hitherto been described are exclusively from deep water; when littoral gatherings come to be examined, there can be no doubt that we shall have numerous examples of *Paradoxostoma*. We may, indeed, expect, considering the beautifully marked shells of many northern species, that among the sea-weed beds of the tropics wonderfully coloured species may possibly abound; the colouring of the shells of Ostracoda seeming to depend very largely upon that of the plants amongst which they live, and on which, in all probability, some of them, and especially *Paradoxostoma*, feed.

It is not a little remarkable that one of the two species described in this monograph (*Paradoxostoma ensiforme*) is from a European dredging, and is a well known European

species, while the other, also known as an inhabitant of Europe, is from Kerguelen Island, a locality which, of all others, has shown in its entomostracan fauna a close resemblance to that of Europe.

1. *Paradoxostoma ensiforme*, G. S. Brady (Pl. XXXV. fig. 3, *a–d*).

Paradoxostoma ensiforme, Brady, Monog. Recent Brit. Ostrac., p. 460, pl. xxxv. figs. 8-11;
Paradoxostoma ensiforme, Brady, Crosskey, and Robertson, Monog. Post-Tertiary Entom., p. 215, pl. x. figs. 27, 28.

Carapace, as seen from the side,[1] pear-shaped, much lower in front than behind; greatest height somewhat less than half the length, and situated behind the middle; anterior extremity attenuated and sharply rounded off, posterior more broadly rounded and almost angulated in the middle; dorsal margin forming a flattened arch, suddenly sloping and slightly sinuated towards the front, ventral margin nearly straight; seen from above, regularly ovate, widest in the middle, extremities equal and acuminate, thrice as long as broad; end view ovate, broadly rounded above, pointed below. Surface of the shell quite smooth. Length, 1-33d of an inch (·77 mm.).

Found only in mud brought up by the anchor in Vigo Bay from a depth of 11 fathoms.

[Pl. XXXV. fig. 3, *a–d*. *a* Carapace seen from right side, *b* from above, *c* from below, *d* from behind. Magnified 50 diameters.]

2. *Paradoxostoma abbreviatum*, G. O. Sars (Pl. XXXV. fig. 1, *a–d*).

Paradoxostoma abbreviatum, G. O. Sars, Oversigt af Norges marine Ostracoder, p. 94.
Paradoxostoma abbreviatum, Brady, Monog. Recent Brit. Ostrac., p. 458, pl. xxxv. figs. 22–25.
Paradoxostoma abbreviatum, Brady, Crosskey, and Robertson, Monog. Post-Tertiary Entomostr., p. 214.

Carapace, as seen from the side, broadly pear-shaped, highest near the hinder end, height equal to more than half the length; extremities rounded, anterior narrow and depressed, posterior very broad; dorsal margin boldly arched, ventral sinuated in the middle; seen from above, ovate, pointed in front, rounded off behind, greatest width in the middle and equal to one-third of the length; end view ovate, broad above, attenuated below; surface of the shell quite smooth. Length, 1-45th of an inch (·53 mm.).

One or two examples only found in a dredging from Balfour Bay, Kerguelen Island, 20 to 50 fathoms. Though agreeing in general features with *Paradoxostoma abbreviatum*, Sars, these specimens differ in having a more highly arched dorsum and a straighter ventral margin. Still, as no very decided characters appear, and as no sufficient series of specimens of the Balfour Bay form is at hand for comparison, it seems best to identify them, for the present at least, with the European species.

[1] The figures (Pl. XXXV. figs. 1 and 3, *a*, *b*, *c*) are by an oversight placed upside down, the anterior extremity being turned downwards instead of upwards.

[Pl. XXXV. fig. 1, *a–d*. *a* Carapace seen from right side, *b* from above, *c* from below, *d* from behind. Magnified 60 diameters].

Section MYODOCOPA.

Family I. Cypridinidæ, Baird.

Shell mostly hard and compact in structure (sometimes thin and flexible), usually smooth or finely punctate, but sometimes cavernous and strongly ribbed, notched at the antero-inferior angle, so that when the valves are closed there remains a large aperture for the protrusion of the antennæ. Anterior antennæ large, geniculated at the base, many-jointed, and having several long ringed setæ. Basal portion of the posterior antennæ broadly triangular, bearing a small secondary branch (different in the two sexes), and a large natatory branch, which is mostly nine-jointed, and bears several long ciliated setæ. Mandibles rudimentary, the palp very large, geniculated, pediform, four-jointed; first joint large and thick, bearing at the apex a slightly setose appendage like a rudimentary branchial plate; last joint very short and strongly clawed. Three pairs of subpediform jaws, the first pair having four spinous lobes, of which the external is largest and two-jointed, its first joint large, elongated, and subquadrangular, last very short, and beset with numerous spines or claws; second pair short and stout, composed of several setose or unguiculate segments; external segment short, three-lobed, beset with short, finely-ciliated setæ, and bearing at the base a very large semilinear branchial plate, which is provided with numerous marginal setæ; third pair smaller, composed of three spinous lobes, beneath which is a membranous subovate plate, bearing numerous finely-ciliated setæ. Feet, one pair only, forming a very long, flexuous, subcylindrical annulose body, and armed towards the apex with long prickly spines. Postabdomen large, composed of two broad closely adpressed laminæ, and armed on the posterior margin with a series of strong curved claws. Two compound pedunculated eyes, between which is a large simple eye, and a short cylindrical tentacle. Male of less height than the female; eyes more developed; copulative organs of complex structure; ova and embryos borne beneath the shell of the female.

The Cypridinidæ, owing to their considerable size and frequent capture in the surface-net, have attracted more general attention from zoologists than any other division of the Ostracoda; but, compared with the Cypridæ and Cytheridæ, the number both of species and individuals is very small. They appear to be most abundant in the warm surface-waters of the tropical seas, contributing largely to the phosphorescence of those regions. The males only (at any rate of those species which have been thoroughly examined) are endowed with swimming power, the females being non-natatory, and passing their lives wholly at the bottom, a condition imposed upon them by the absence of the tuft of long

filaments attached to the first pair of antennæ which is characteristic of the males. The shape of the shell, too, is usually very different in the two sexes, the male being very long and slender in comparison with the female. Judging from the large number of fossil species belonging to this family which have been found in the Coal Measures[1] and other Palæozoic formations, we must suppose that the Cypridinidæ were much more abundant in old times than now; we may, perhaps, likewise infer that they were chiefly inhabitants of shallow warm water, possibly of brackish and estuarine localities. Some few species have been described from Cretaceous and Tertiary strata, but it would appear that the group attained its greatest development in the Carboniferous era, and has been gradually losing ground since that time, until it has in our days come to be almost swamped by the smaller, hardier, and, doubtless, also more prolific species of the families Cypridæ and Cytheridæ, animals evidently of much more plastic organisation, and more capable of adaptation to varied conditions of environment.

The following list comprises, so far as I know, all the recent species hitherto described. Of these the shell only has in many cases been examined, and in many more the contained animal, though partially described, has not been observed with sufficient accuracy to allow of certain generic reference. Several of the numerous forms here noted as *Cypridinæ* will, doubtless, when better known, be ranged under other genera.

Cypridina reynaudi, M. Edwards, 1840, Hist. Nat. Crust., tom. iii. p. 409, t. xxxvi. fig. 5 (Indian Ocean).

Cypridina (*Asterope*?) *adamsi*, Baird, 1848, Ann. and Mag. Nat. Hist, 2d series, vol. i. pl. viii. (South Atlantic).

Cypridina (?) *bimaculata*, Nicolet, 1849. (Marshes of Chile.)
Cypris bimaculata, Nicolet, Gay, Hist. Fisica y politica de Chile, t. iv. fig. 66.

Cypridina (?) *cærulea*, Nicolet, 1849. (Marshes of Chile.)
Cypris cærulea, Nicolet, Gay, Hist. Fisica de Chile, t. iv. fig. 66.

Cypridina zealandica, Baird, 1851, Proc. Zool. Soc. (Annulosa), t. xvii. figs. 11–13 (New Zealand).

Cypridina (?) *gibbosa*, Dana, 1853, Crustacea of United States' Exploring Expedition, p. 1295, t. xci. fig. 4 (Pacific Ocean).

Cypridina (?) *formosa*, Dana, 1853, Crustacea, United States' Exploring Expedition, p. 1296, t. xci. fig. 5 (Samoan Islands).

[1] See Jones and Kirkby, Entomostraca of the Carboniferous Formations (Palæontographical Society, 1874).

Cypridina (?) *luteola*, Dana, 1853, Crustacea, United States' Exploring Expedition, p. 1291, t. xci. fig. 1 (Sooloo Sea).

Cypridina (?) *punctata*, Dana, 1853, Crust., United States' Exploring Expedition, p. 1293, pl. xci. fig. 2 (Sooloo Sea).

Cypridina norvegica, Baird, 1860, Proc. Zool. Soc., part 28, p. 200, pl. lxxi. fig. 4, *a–d* (Norway and Shetland).

Cypridina (?) *godehevi*, Baird, 1860, Proc. Zool. Soc., part 28, p. 200, pl. lxxi. fig. 2, *a–c* (Madras).

Cypridina (?) *ovum*, Baird, 1860, Proc. Zool. Soc., part 28, p. 201, pl. lxxi. fig. 3, *a–b* (China).

Cypridina (?) *albo-maculata*, Baird, 1860, Proc. Zool. Soc., part 28, p. 201, fig. 1, *a–d* (Swan River, Australia).

Cypridina messinensis, Claus, 1865, Über die Organization der Cypridinen, Zeitsch. f. Wissensch. Zool., Bd. xv. p. 143, &c., pl. x. (Mediterranean).

Cypridina megalops, G. O. Sars, 1871, Undersögelser over Hardangerfiordens Fauna, I. Crustacea, p. 35 (Norway).

Cypridina (?) *japonica*, Brady, 1866, Trans. Zool. Soc., vol. v. p. 386, pl. lxii. fig. 8, *a–d* (Japan).

Cypridina (?) *elongata*, Brady, 1860, ibid., fig. 9, *a–d* (China).

Cypridina (?) *bairdi*, Brady, 1866, ibid., fig. 7, *a–m* (China).

Bradycinetus brenda, Baird, 1850 (North Atlantic, German Ocean, Bay of Fundy, Bay of Biscay).

Cypridina brenda, Baird, British Entomostraca, p. 181, pl. xxiii. fig. 1.

Cypridina excisa, Stimpson, Invertebrata of Grand Manan, Smithson. Contrib. to Knowledge, pl. ii. fig. 28, 1854 (see Baird, Proc. Zool. Soc., 1860, p. 200).

Cypridina globosa, ♀ Lilljeborg, De Crustaceis ex ordinibus tribus, Cladoc., Ostrac., and Copep. in Scaniâ occurrentibus, p. 171, t. xvii., figs. 2–10 (1853).

Bradycinetus globosus, ♀ G. O. Sars, Oversigt af Norges Ostrac., 1865.

Bradycinetus brenda, ♀ G. S. Brady, Monograph of Recent British Ostracoda, 1868.

Asterope groenlandica, ♂ Fischer, Beitrage zur Kentniss der ostracoden (Abhandl. d. Konigl. Bayerisch. akad. der Wissenschaft, Bd. vii. p. 660, t. xx., figs. 26–34, 1854).

Philomedes globosus, Lilljeborg, 1875, De under svenska vetenskalpiga expeditionen till Spetsbergen, 1872–73, derstädes samlade Haf's Entomostraceer, p. 3.

Bradycinetus macandrei, Baird, 1848 (North Atlantic).

Cypridina macandrei, Baird, Ann. and Mag. Nat. Hist., 2d ser., vol. i. p. 21, pl. vi. B. fig. 1–7.

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Cypridina interpuncta, ♂ Baird, Proc. Zool. Soc., part 18, p. 257, pl. xvii. figs. 8–10 (Annulosa).
Philomedes longicornis, Lilljeborg, De Crustaceis ex ord. trib., 1853.

Philomedes folini, Brady, 1871, Proc. Zool. Soc., 1871, p. 294, pl. xxvii. (Bay of Biscay).

Asterope mariæ, Baird, 1850 (North Atlantic, English Channel, Bay of Biscay).

Cypridina mariæ, Baird, Proc. Zool, Soc., 1850, p. 257, Annulosa, pl. xvii. figs. 5–7.
Cylindroleberis mariæ, Brady, Monog. Recent Brit. Ostrac., Trans. Lin. Soc., vol. xxvi. p. 465, pl. xxxiii. figs. 18–22, pl. xli. fig. 1.
Asterope mariæ, Brady, Proc. Zool., 1871, p. 295.

Asterope elliptica, Philippi, 1840, Archiv. für naturgeschicht, 1840, p. 188, pl. iii. figs. 9–11; Ann. and Mag. Nat. Hist., vol. vi. p. 94, pl. iii. figs. 9–11 (Mediterranean).

Asterope oblonga, Grube, 1859.

Cypridina oblonga, Grube, Archiv. f. naturg., 1859, p. 335, t. xii. figs. 2, 3; *idem*. Ein Ausflug. nach Triest und dem Quarnero, p. 93, &c., pl. v. (= *Asterope mariæ* ?).

Asterope teres, Norman, 1861 (North Atlantic, English Channel).

Cypridina teres, Norman, Ann. and Mag. Nat. Hist., ser. 3, 1861, vol. viii. p. 280, pl. xiv. fig. 10.
Cylindroleberis teres, Brady, Trans. Lin. Soc., 1868, vol. xxvi. p. 465, pl. xxxiii. figs. 6–9, pl. xli. fig. 2, 1868.
Asterope teres, Brady, Proc. Zool. Soc., 1871, p. 295.

Asterope abyssicola, G. O. Sars. 1869, Nye Dybvandscrustaceer fra Lofoten, p. 26 (Norway).

Asterope norvegica, G. O. Sars, 1869, Undersögelser over Christianiafiordens Dybvandsfauna, p. 53 (Norway).

Asterope (?) *olivacea*, Dana, 1853 (Sooloo Sea).

Cypridina olivacea, Dana, Crustacea, United States' Exploring Expedition, p. 1294, pl. xci. fig. 3.

Asterope (?) *mediterranea*, Costa, 1845, Illustraz. Cypridina, &c., Dous Acad. Pontan. agli Scienz. d'Ital., p. 57, pl. i. figs. 1–13 (Mediterranean).

Cypridina, Milne-Edwards.

Cypridina, Milne Edwards (1838), Baird (1840), Dana (1855), Claus (1865), Brady (1866–71), Sars (1865).
Cyprella, Bosquet, 1847.
Daphnia, M'Coy, 1844.

Shell smooth, thin, and usually flexible; notch shallow, shell above the notch curved, and more or less sharply uncinate, rounded off below; posterior extremity rounded, or slightly exserted. Anterior antennæ seven-jointed, and bearing a few setæ of moderate length, the fifth joint, however, having one long apical seta; natatory branch of posterior antenna nine-jointed, each joint bearing a single long ciliated seta, except the first, which has none, and the last which has four; secondary branch slender, two or three-jointed. Basal joint of the mandibular foot (the mandible proper), bearing a subconical and densely hairy process; penultimate joint much elongated, and beset on the inner margin with numerous ringed setæ, last joint very short and almost obsolete. Outer lobe of the first pair of jaws provided with a narrow membranous appendage; second pair having two strongly ungulate segments. Eyes widely separated and situated against the central portion of each valve, deeply coloured, and much larger in the male than the female. The oviparous foot is divided into unequal uncinate processes at the apex, and on its distal half bears numerous long divaricating lateral setæ, which are dentated towards the apex, the teeth being opposite, and directed forwards, thus giving the appearance of a number of inverted arrow-heads. The distinctive character of the restricted genus *Cypridina* (as defined by G. O. Sars, whose description is followed with some little modification in the foregoing diagnosis) is the conical process attached to the base of the mandibular foot. It is perhaps doubtful whether the type species, described by Milne-Edwards, really belongs to the genus as thus restricted. Sars, however, excepts *Cypridina luteola*, Dana, *Cypridina messinensis*, Claus, and *Cypridina norvegica*, Baird, as members of the genus, and has himself described another species, *Cypridina megalops*.[1] Probably also *Cypridina japonica*,[2] Brady, may be taken for a true *Cypridina*.

1. *Cypridina formosa* (?), Dana (Pl. XLII. figs. 9–11).

Cypridina formosa, Dana, Crustacea of the United States' Exploring Expedition, p. 1296, pl. xci. fig. 5.

Shell thin and flexible, reticulated in structure, dark brown in colour; seen from the side, broadly oval, height equal to about three-fourths of the length, notch of moderate depth, and situated near the middle of the anterior margin; posterior extremity broadly rounded, and produced in the middle into a broad obtusely rounded prominence; dorsal and ventral margins boldly arched, ventral the more convex of the two; seen from above

[1] Undersögelser over Hardangerfjordlen's Fauna, 1871.
[2] Trans. Zool. Soc., vol. v., 1865.

the outline is regularly ovate. Length, 1-14th of an inch (1·8 mm.); height, 1-17th of an inch (1·5 mm.).

Two specimens taken in the surface-net at Zamboangan, 25th October 1874.

This species belongs probably to the restricted genus *Cypridina*, but the dissection of a single very imperfect specimen has not been sufficient to settle the matter. Dana's description, penned long before the researches of G. O. Sars had led to the breaking up of the old genus *Cypridina*, is not sufficiently minute to help much, even if one were quite sure that it referred to the species here described. The resemblance to Dana's figures is, however, so close that we need scarcely entertain much doubt as to its identity.

[Pl. XLII. figs. 9-11. 9 Carapace seen from left side, magnified 40 diameters; 10 Portion of shell showing reticulated structure; 11 Secondary branch of posterior antenna.]

2. *Cypridina gracilis*, n. sp. (Pl. XXXVII. figs. 1–11).

Carapace oblong, ovate; seen from the side, rather narrower in front than behind, height equal to two-thirds of the length; notch of moderate size, beak short and sharp, posterior extremity broadly and evenly rounded, anterior considerably narrower, dorsal and ventral margins regularly and moderately arched; seen from above, the outline is compressed, ovate, rather narrower in front than behind, more than twice as long as broad; end view ovate, width equal to two-thirds of the height, rounded on the dorsal, and somewhat narrowed towards the ventral, margin. Surface of the shell quite smooth. The first and second joints of the anterior antennæ (fig. 4), are much the largest, the fourth and fifth considerably smaller, the third, sixth, and seventh, the smallest of all. The second joint of the mandibular foot (fig. 6) has at the apex two separate setæ, and a slender short bisetose appendage; the fourth joint is much elongated, constricted in the middle, and bears on its outer edge a series of about eight setæ. Length of the shell 1-5th of an inch (5 mm.).

Dredged in a depth of 1000 fathoms, lat. 37° 24′ N., long. 25° 13′ W., bottom of globigerina ooze (Station 78).

[Pl. XXXVII. figs. 1–11. 1 Carapace seen from right side, 2 from above, 3 from front (magnified 9 diameters), 4 anterior antenna, 5 posterior antenna, 6 mandibular foot, 7 first and third maxillæ, 8 second maxilla, 9 end of oviparous foot, 10 part of a spine of the same more highly magnified, 11 postabdominal laminæ.]

3. *Cypridina danæ*, n. sp. (Pl. XXXVI. fig. 2, *a–d*).

Carapace as seen laterally, irregularly subrhomboidal, notch of moderate size, and seated in the middle of the oblique anterior extremity, beak small and sharp, posterior extremity produced into a truncated or subconical median beak; dorsal margin boldly

arched behind, flattened, and sloping almost in a right line towards the front, ventral margin regularly convex; the greatest height is situated in the middle and is equal to about three-fourths of the length; seen from above, the outline approaches a lozenge shape, is widest in the middle, and tapered to the extremities, which are acuminate; the lateral margins evenly curved, and slightly sinuated towards the posterior extremity; width equal to half the length; end-view oval, width equal to two-thirds of the height. Surface of the shell smooth, and covered with minute closely-set punctations. The ribbed markings and patches shown in the plate are probably the result of shrinkage of the more delicate parts of the shell in drying. The texture of the shell is tolerably firm, and calcareous over the greater portion of its area; but some parts, more especially along the ventral and posterior margins, are thinner and submembranaceous. Length, 23-100ths of an inch (6 mm.). The anatomical structure is in every way like that of the preceding species. One specimen only dredged off Kerguelen Island, in a depth of 120 fathoms. I have much pleasure in dedicating this fine species to the author of the "Crustacea of the United States' Exploring Expedition."

[Pl. XXXVI. fig. 2, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 10 diameters.]

Crossophorus,[1] n. gen.

Shape of the shell as in *Cypridina*, the posterior extremity broadly rounded; texture firm and calcareous; anterior antennæ six-jointed, the second, third, and fourth joints fringed with short setæ on the upper, and each bearing a fascicle of setæ on the lower margin; fifth joint bearing one long ringed "auditory" seta, the last joint four long and several shorter setæ of similar character. Posterior antennæ as in *Cypridina*, except that the secondary branch (Pl. XXXVIII. fig. 5, *a*) is powerfully clawed, the last joint forming a strongly-curved opposable claw; the first and second joints are robust, and each bear fascicles of short, stout setæ. The mandibular foot (fig. 6) is armed at the apex of the basal joint with a bifurcated hairy process, the second joint is very broad, bearing a few marginal setæ, and near the apex a transverse crescentic row of twelve hairs, which gradually increase in length from within outwards; at the apical angle of its outer margin is a slender digitiform process which has two terminal setæ; the third joint is very short and broad, and bears a fringe of about six long setæ; the last joint is long, slender, densely setose on its outer half, and has an apical fringe of about eight or ten stout setæ, and three or four strong curved spines, these latter being fixed to the outer angle. The first pair of maxillæ (fig. 7) consist of one principal biarticulate branch, and several smaller segments; all these are abundantly setiferous, and the apical joint of the main branch bears also several short claw-like spines; the second pair of maxillæ (fig. 8)

[1] Κροσσοί, fringe; φέρω, I carry.

do not differ materially from those of *Cypridina*; each is provided with a large oval branchial plate, and the spines of the various segments have strongly-toothed margins; the third maxilla (fig. 9) is composed of three or four short digitiform segments, which are densely clothed with short, stout setæ, and attached to these is a large subtriangular lamina, which bears along its outer margin several rows of plumose setæ; these are separated by a short interval from another series of about six branchial filaments which are attached to an apical process of the plate. The postabdominal laminæ (fig. 11) are beset with numerous strong curved marginal claws, which appear to be arranged in several series of two or three claws each, those of each set being graduated as to size and strength. Some of these claws are drawn *in situ* in figure 11, while the scars showing the points of attachment of the others show a gradation of size like that here described. The copulative organs of the male (fig. 10) consist of a right and left limb, one of which is hamate, the other obtuse, and beset at the apex with numerous spine-like setæ; both are attached to a large basal segment, from which springs also a stout process bearing on its expanded apex a series of nine curved setæ arranged in a somewhat fan-like manner and regularly graduated in length from one end of the series to the other. Some other points of structure in the organs I have not been able clearly to make out. Oviferous foot, almost exactly like that of *Cypridina*.

1. *Crossophorus imperator*, n. sp. (Pl. XXXVIII. figs. 1–11).

Shell dense, porcellaneous and polished; seen from the side, broadly and regularly oval; height equal to three-fourths of the length, notch of moderate size, and expanded laterally so as to produce two obliquely-placed depressed areas on the anterior face of the shell; beak curved and sharp; posterior extremity broadly rounded, dorsal and ventral margins equally convex; seen from above, the shell is oblong ovate, widest in the middle, subacuminate in front, and rounded behind, width equal to more than half the length; end view ovate. Length, $\frac{1}{3}$d of an inch (8·4 mm.).

Of this noble species, certainly the largest of the known Cypridinidæ, one specimen was dredged in a depth of 1100 fathoms, in lat. 40° 28′ S., long. 177° 43′ E., the bottom temperature being 2·0 C.

The possibility should be borne in mind, however, of the creature having been captured in the upward passage of the dredge through the water. The characters of the genus are very like those of *Bradycinetus*, Sars, but the secondary branch of the posterior antennæ in the latter genus does not end in a claw, while the structure of the third pair of maxillæ, and the general style of setose and spinous armature seem to be so abnormal as to require the establishment of a new genus for their due expression.

[Pl. XXXVIII. figs. 1–11. 1 Carapace of the male seen from right side, 2 from above, 3 from front (magnified 6 diameters), 4 anterior antenna, 5 posterior antenna with (*a*)

secondary branch, 6 mandibular foot, 7 maxilla of first pair, 8 maxilla of second pair, 9 maxilla of third pair, 10 male copulative organ, 11 portion of postabdominal lamina showing six claws *in situ*, with scars of attachment of the remainder.]

Philomedes, Lilljeborg (1853).

Shell of moderate strength and density, notch broad, anterior extremity obtuse, posterior extremity mostly produced or angulated; anterior antennæ six-jointed, in the female short and stout, and bearing several subequal terminal setæ of moderate length; in the male more elongated, two of the terminal setæ of excessive length, the antepenultimate joint bearing a stout and densely setose auditory filament. Natatory branch of posterior antenna nine-jointed, in the female having the first joint very long, the rest short and subequal; in the male the first and third joints long, second much shorter, the rest short and subequal; secondary branch in the female, indistinctly jointed, setose; in the male, long, three-jointed, the last joint forming an opposable curved claw. Mandibular feet nearly alike in both sexes, in the female armed with mandibuliform processes and spines; in the male, bearing on the basal joint a small tubercle with two short hairs representing the incisive portion of the mandible proper; penultimate joint shorter than in *Cypridina*, the anterior marginal setæ fewer and fasciculate; first pair of jaws slender, palp bearing only a small trisetose lobe; second pair in the female only, armed with mandibuliform processes and spines. Third pair as in *Cypridina*. Eyes large, distant, placed at the sides of the animal near the centre of each valve. "Animal swimming with long jerks" (Sars).

This genus was established by Professor Lilljeborg for the reception of a species called by that author *Philomedes longicornis*, but which is identical with the previously-described *Cypridina interpuncta*, Baird.

The females of this genus differ, to a certain extent, both in form of shell and internal structure, from the males, and are seldom or never met with except on the bottom; the males, on the contrary, being active swimmers, are often taken abundantly in the surface-net. Professor G. O. Sars, noticing that he never obtained any egg-bearing females of *Philomedes longicornis*, has expressed an opinion that *Cypridina globosa* (*brenda*) is the true female of that animal. I have already, in the Proceedings of the Zoological Society, April 4, 1871, stated my reasons for dissenting from that view, and have traced, as I think, with sufficient clearness, the true sexual relations of several reputed distinct species. Into this question I need not, therefore, here enter at greater length.

Cypridina olivacea, Dana, Professor Sars thinks fairly referable to the genus *Philomedes*. I am disposed, however, to think that this species may more properly be assigned to the genus *Asterope*. One very fine new species, *Philomedes wyville-thomsoni* (mihi), doubtless belonging to the genus *Philomedes*, is described below, and I have ventured to

refer Professor Dana's *Cypridina gibbosa* to the same group. These, with a European species already described by myself (*Philomedes folini*), comprise all the known members of the genus.

1. *Philomedes gibbosa* (Dana), (Pl. XXXIX. figs. 12–17).

Philomedes gibbosa, Dana, Crust., United States' Exploring Expedition, p. 1295, pl. xci. fig. 4, *a–c*.

Shell membranaceous, pale yellowish-brown, seen from the side (fig. 12), elongated, much higher in front than behind, height equal to more than half the length; beak consisting only of a small acuminate process situated about the middle of the anterior margin, below which is a very shallow curved notch; anterior extremity broad and obliquely truncated, rather concave above, and convex below the beak, fringed below the middle and at the ventral angle with a series of rather long curved setæ; posterior extremity tapering, narrow, forming a rather upturned beak-like process; dorsal margin rather boldly arched, ventral gently convex; seen from above, oblong-ovate, widest in the middle, tapering and compressed towards the posterior extremity; anterior extremity obtusely, posterior very acutely pointed, width equal to half the length. Anterior antennæ (fig. 14) five-jointed (?), fourth joint bearing a moderately long seta which has near its base, and arranged in a pectinate manner, a series of six marginal setæ; the last joint is very small, and has five apical setæ, two long and three short. Secondary branch of posterior antenna (fig. 15) rudimentary, consisting only of three short setæ. Length, 1-20th of an inch (1·3 mm.).

Taken in the surface-net, Zebu Harbour, Philippine Islands.

[Pl. XXXIX. figs. 12–17. 12 Carapace of male seen from right side, 13 the same from above (magnified 50 diameters), 14 anterior antenna (*a*, *a* eyes), 15 secondary branch of lower antenna, 16 mandibular foot, 17 first maxilla.]

2. *Philomedes wyville-thomsoni*, n. sp. (Pl. XXXVI. fig. 1, *a–c*).

Shell stout and calcareous; seen from the side, broadly subovate, greatest height situated in the middle and equal to fully two-thirds of the length; notch shallow, beak rounded off and obtuse; anterior extremity above the notch broad and obtusely angulated, gently curved below, posterior produced in the middle into a short, wide and obtusely-rounded prominence; dorsal margin well and evenly arched; ventral somewhat flattened in the middle but curved upwards at the ends; seen from above, the shell is of irregularly oval shape with obtuse extremities; the lateral margins are curved and somewhat irregularly sinuous in front of the middle where they sink abruptly forming two projecting lateral wings, thence they continue with a gentle curve backwards and are twice deeply sinuated near the hinder extremity; the greatest width is in the middle and is nearly equal to the height; end-view extremely irregular in outline, showing two

conspicuous lateral prominences and several lesser humps and sinuations. Surface of the shell sculptured with numerous large, deep and closely-set angular cavities; the centre of the valves elevated; running nearly parallel with the dorsal and ventral margins, but considerably inside of these are two rounded but very prominent and thick ridges, separated from each other, however, by a distinct interval at the extremities. Length, $\frac{1}{4}$th of an inch (5·2 mm.).

This very fine species, of which one specimen only was obtained, was dredged in a depth of 38 fathoms, off the entrance to Port Philip, South Australia, on a sandy bottom (Station 161). In order to preserve entire so interesting a specimen, the animal has not been submitted to dissection, but the general appearance of the species recalls so vividly that of *Philomedes folini* (described by me in the Zoological Proceedings, *loc. cit.*) that I cannot hesitate to refer it to the same genus. I have much pleasure in dedicating it, as being perhaps the finest of the Ostracoda taken during the Challenger Expedition, to my friend Professor Sir C. Wyville Thomson.

[Pl. XXXVI. fig. 1, *a*–*c*. *a* Carapace seen from the left side, *b* from below, *c* from front. All magnified 14 diameters.]

Asterope, Philippi.

One or two specimens, in an imperfect condition, but probably belonging to this genus were found in a dredging from Station 33, off Bermudas, in a depth of 435 fathoms.

Family II. Conchœciad.æ.

Sub-family Halocyprinæ, Dana.

Shell very thin and flexible, usually neither calcareous nor horny, but almost membranaceous; more or less distinctly notched and emarginate on the anterior surface (as in the Cypridinidæ) for the protrusion of the posterior antennæ. Eyes wanting. Anterior antennæ in the female small, indistinctly jointed, and bearing near the apex a brush of ciliated auditory setæ; in the male, much larger and distinctly jointed; between the antennæ a long tentacle directed forwards, and bearing at the apex a club-shaped dilatation. Posterior antennæ almost like those of *Cypridina*; basal portion large and stout; natatory branch beset with long, plumose setæ, and having a smaller secondary appendage, which in the male is prehensile. Mandibles distinct, toothed at the apex, provided with a large pediform, four-jointed palp, the basal joint of which is very large, extending downwards as far as the apex of the mandible, and, like it, armed with numerous terminal teeth; last three joints slender, and bearing numerous setæ. Two pairs of pediform maxillæ, the first[1] composed of three lobes, of which the two basal

[1] Dana appears to consider this as forming two distinct maxillæ, the two basal lobes constituting the first, the two last the second maxilla.

are dilated and shortly setiferous on their inner margins, the last lobe (or palp) elongated, two-jointed, setiferous, and bearing at the apex three or four slender claws; a branchial plate attached to the base of the maxillæ; second pair geniculated, three or four-jointed, the basal joint produced into an angular setiferous lobe, the apical portion biarticulate, slender, bearing numerous marginal setæ, and three or four slender apical claws. Two pairs of feet; first pair elongated, slender, the two basal joints dilated, and bearing a branchial lamina, the apical portion more slender, and having three or four long terminal setæ; in the male this limb is larger, and has three long, equal terminal setæ; second pair of feet rudimentary, two-jointed, and bearing two unequal apical setæ. Post-abdomen composed of two short, marginally-clawed flat laminæ.

Though closely related to the Cypridinidæ, the Conchœciadæ are clearly separated from the former group by several well-marked characters. The remarkable organ found between the anterior antennæ, called by Dana "spiculum," by Sars "frontal tentacle," is, perhaps, as regards function, an organ of touch. A structure agreeing with this in general character is figured by Grube as occurring in *Cypridina oblonga*, but no other author appears to have noticed anything similar amongst the Cypridinidæ. In Grube's figure two of these organs are shown, whereas in the Conchœciadæ one only is present, situated in the median line. The apparent duplication of the mandible by the abnormal development of the basal joint of the palp is another very extraordinary family mark. The second pair of feet is very small, so as readily to escape observation, and is indeed left without notice by Dana, Lubbock, and Claus.

The animals belonging to this family appear to be generally of pelagic and natatory habit, though Sars' specimens were obtained by dredging in depths of 200 to 300 fathoms. They abound more especially in the tropical seas, few surface-net gatherings made in those regions being without some representatives of the family of which *Halocypris atlantica*, Lubbock, seems to be by far the most abundant and most widely distributed. In the Challenger dredgings I have not recognised any trace whatever of their shells; this, together with a consideration of their structure, which specially fits them for a natatory life, the females being (unlike those of the Cypridinidæ) little less adapted for this mode of existence than the males, leads me to believe their life on the sea bottom to be an exceptional occurrence. Seeing the immense numbers of *Halocypris* which evidently swarm in some parts of the ocean, one might perhaps expect to find their empty shells in plenty at the bottom, but their subsidence in any great numbers would probably be prevented by the abundance of predaceous animals, of whose food these little creatures doubtless form an essential part, and by the excessive lightness and delicacy of their shell-structure which would render subsidence so long a process as probably to ensure the solution or decomposition of the shell before its full accomplishment.

After a careful comparison of Dana's descriptions and drawings of the two genera,

Conchœcia and *Halocypris*, I am unable to find any differences sufficient, in my opinion, to form grounds of generic distinction. These descriptions, owing, doubtless, to paucity of material at the command of the author, are scarcely detailed enough to serve as standards of comparison now that our knowledge of allied forms has been so greatly extended. On the other hand, the very minute and careful description of the genus *Conchœcia*, given by G. O. Sars as the result of the dissection of numerous specimens, leaves nothing to be wished for so far as that genus is concerned. Nor can I find any material difference between the anatomy of *Conchœcia* as described by Sars and that of *Halocypris*, as shown by my own drawings in the plates of this monograph. It can scarcely be doubted that the species taken during the cruise of the Challenger belong to Dana's genus *Halocypris*; but whether Sars is correct in referring his Norwegian specimens to *Conchœcia* rather than to *Halocypris*, is, I think, questionable. In the structure of the mandible, where, according to Dana, one of the most important differences lies, Sars' specimens seem to me to be more in agreement with the latter genus. But if, on the contrary, the Norwegian specimens be rightly assigned to *Conchœcia*, then, as I can see no reason why they may not with equal propriety come under *Halocypris*, it follows that one of the two generic names must lapse. Adopting this view, and seeing that *Halocypris* is already perhaps the better known name, I have here used it to designate the genus.

Halocypris, Dana (1853).

Halocypris, Conchœcia, Dana; *Halocypris*, Claus, Lubbock; *Conchœcia*, G. O. Sars.

Valves usually elongated, and produced in front into a distinct beak-like process, with an underlying notch; surface of the shell more or less delicately striated in a concentric or reticulated manner. Anterior antennæ in the female small, indistinctly jointed, and bearing at the apex four or five setæ, of which three or four are small, and one very long; in the male the antennæ is much larger, four-jointed, and mobile, bearing four apical setæ, one of which is very small, the other three very long, equal, transversely ringed, and densely ciliated, one of the three bearing a series of marginal appendages. Posterior antennæ very large and stout, the basal portion elongated, triangular, and about half as long as the shell of the animal; natatory branch seven or eight-jointed, the first joint occupying about two-thirds of the entire length of the branch; secondary branch biarticulate, the first joint greatly dilated, second very small, bearing in the female a few long subequal setæ, in the male a strongly falcate claw, from the base of which spring a few not very long unequal setæ. Mandibles armed at the free extremity with a single strong tooth, and along the crescentic margin with one or more series of much smaller teeth; palp very stout, four-jointed, the basal joint excessively stout, produced downwards as far as the extremity of the mandible, and divided at the apex into a series of several small teeth. First pair of maxillæ composed of two incisive lobes, which are

strongly toothed on the free margins, and a stout two-jointed palp, the first and largest joint of which bears several long setæ on each margin, the last joint armed with several unequal curved claws; a small branchial plate is attached to the base of the limb.[1] First pair of feet in the female five-jointed, slender, and bearing at the base a narrow semicircular and somewhat lobate branchial palp, the last joint provided with three subequal long and slender terminal claws; in the male the limb is much stronger, and bears three long, curved, and densely ciliated terminal setæ. Second pair of feet rudimentary, two-jointed, bearing two unequal apical setæ, one of which is of moderate length, the other several times the length of the entire limb. Postabdominal laminæ short and wide, rounded, and armed with numerous curved marginal claws, decreasing regularly in length from the apex. Eyes wanting. Copulative organ of the male double, not very complex in structure, consisting apparently of a compressed tubular organ, divided into two terminal, slightly-toothed, and setiferous lips, and enclosing an efferent duct.

Three species of *Halocypris* have been recognised amongst the proceeds of the Challenger tow-net gatherings. Of these *Halocypris atlantica*, Lubbock, is by far the most abundant; *Halocypris brevirostris*, Dana, also occurred not unfrequently; and another species, apparently undescribed, *Halocypris imbricata* (mihi), was met with only seldom.

1. *Halocypris atlantica*, Lubbock (Pl. XL. figs. 1–15, and Pl. XLI. figs. 11, 12).

Halocypris atlantica, Lubbock, Trans. Entom. Soc., vol. iv., 1856, p. 28, pl. xii. figs. 1–8.
(?) *Halocypris*, sp. Claus, Ueber die Geschlechtsdifferenzen von *Halocypris* (Zeitschr. f. Wissensch. Zool., Bd. xv., 4 Heft, 1865).

Carapace of the female (Pl. XL. figs. 1, 2), seen from the side, oblong, rather higher behind than in front;[2] anterior extremity produced at the dorsal angle into a subacute, hood-shaped beak, below which is a deep notch, whence the margin rounds off into a full curve continuous with that of ventral surface, the posterior extremity is rounded off below at its junction with the ventral margin, indented above the middle, and produced upwards so as to join the dorsal margin almost at a right angle; the dorsal margin in its general direction is straight, but shows more or less sinuation; ventral margin gently convex; the height of the shell is equal to more than half its length. Seen from above, the outline is subovate, or tending to the shape of a hexagon with rounded angles, about twice as long as broad; lateral margins subparallel, converging to an acuminate point behind, but in front forming a broadly rounded or subtruncate anterior extremity. Surface of the shell marked with numerous closely-set, irregularly-concentric striæ, the

[1] Sars makes no mention of a branchial plate in connection with the first maxilla, but assigns one to the second maxilla, and a single branchial filament to the mandible palp. These are the most important points of divergence between the observations of Sars on *Conchœcia*, and those here given on *Halocypris*.

[2] The shape, as remarked by Sir John Lubbock, is not unlike that of the capital letter D.

intervals of which are often finely punctate. The shell of the male (Pl. XLI. fig. 11) is smaller, broader in proportion to its length, and the anterior rostriform process is short and obtuse. The margins of the valves at the posterior ventral angle show often a series of minute, irregular serratures (Pl. XL. fig. 3). The setæ of the anterior antennæ in the female (fig. 6) are one long and three short, in the male (fig. 5), one short and three long, the latter being annulated and densely setose; one of the three bears also a series of very delicate marginal loop-like appendages (fig. 5, *a*). The secondary branch of the posterior antennæ has the basal joint very much dilated and bearing two short setæ, while the last joint in the female (fig. 7) has five or six long subequal, densely-ciliated setæ, and in the male (fig. 8) a strongly hooked claw and three setæ, two of which are long and one short. Length, 1-15th of an inch (1·6 mm.).

The following is a list of the localities of the tow-net gatherings in which *Halocypris atlantica* was found; in some of these cases it was scarce, but in others very abundant:—

Lat. 50° 1′ S., long. 123° 4′ E., . . .	Station 158
„ 47° 25′ S., „ 130° 12′ E., . . .	„ 159
Abi to Cape York (Pacific).	
Lat. 35° 11′ N., long. 139° 28′ E., . . .	„ 232
„ 35° 41′ N., „ 157° 42′ E., . . .	„ 241
„ 36° 32′ S., „ 132° 52′ W., . . .	„ 287
„ 42° 43′ S., „ 82° 11′ W., . . .	„ 302
„ 45° 31′ S., „ 78° 9′ W.	
„ 46° 53′ S., „ 75° 11′ W., . . .	„ 304
„ 42° 32′ S., „ 56° 27′ W., . . .	„ 318
„ 12° 16′ S., „ 13° 44′ W., . . .	„ 341
„ 3° 10′ N., „ 11° 51′ W., . . .	„ 348
„ 36° 44′ S., „ 46° 16′ W., . . .	„ 325

Following these references on the map, the very wide distribution of this species becomes at once apparent, the points indicated being spread over the Pacific Ocean from 10° south of the Australian continent to the latitude of Japan in the north, and to Patagonia in the east, while in the Atlantic it occurs from the latitude of Patagonia southward to that of Sierra Leone in the north, this last being also the district in which Sir John Lubbock's type-specimens were taken. If Dr Claus' Messina specimens be taken to belong to the same species, its range will, of course, extend to the Mediterranean.

[Pl. XL. figs. 1–15. 1 Carapace of female seen from left side, 2 from above (both magnified 35 diameters), 3 portion of margin of shell more highly magnified, 4 anterior antennæ of male with tentacle, 5 one of the same more highly magnified, 5*a* portion of central seta showing marginal loops, 6 anterior antenna of female, 7 posterior antenna of female, 8 secondary branch of posterior antenna of male, 9 mandible and palp, 10 first maxilla, 11 second maxilla, 12 first foot of female, 13 first foot of male, 14

second foot, 15 postabdominal laminæ. Pl. XLI. figs. 11, 12. 11 Carapace of male seen from left side, 12 copulative organ and postabdomen of male.]

2. *Halocypris brevirostris*, Dana (Pl. XXXIX. figs. 1–11).

Halocypris brevirostris, Dana, Crustacea of United States' Exploring Expedition, p. 1303, pl. xci. fig. 9, *a–c*.

Carapace, in general shape, very similar to the preceding species, but much shorter, more tumid, and having a much more convex ventral surface, with a less prominent rostrum. Shell of the female (Pl. XXXIX. figs. 1–3) seen from the side, highest in the middle, the height equal to nearly three-fourths of the length; rostrum short, broad obtusely rounded and often fringed with four or five short, broad teeth, notch wide and shallow; ventral margin boldly and evenly convex, forming one continuous curve from the notch to the postero-dorsal angle, both ventral angles well rounded; dorsal margin nearly straight, but sinuated both in front of and behind the middle, and forming an obtuse angle at its junction with the posterior extremity; seen from above the outline is broadly ovate, greatest width equal to two-thirds of the length, and situated in the middle, extremities subacuminate; seen from the front, broadly lanceolate, widest above the middle, the width being a little less than the height; dorsal margin broad, with well rounded angles, compressed below the middle, and subacuminate at the ventral edge. The shell of the male (figs. 4, 5) is smaller, less convex ventrally, when seen from above is much less tumid, and has the greatest width situated behind the middle. The shell in both sexes is perfectly smooth, without any, or only a very faint trace of striation, and is usually much firmer in texture than in the preceding or following species. The anterior antenna (fig. 6) bears five obtusely-pointed and untapering setæ, one of which is much longer than the rest, and annulose; the secondary branch of the posterior antenna in the female (fig. 7) bears five blunt and rather rigid setiform appendages, two of which are longer than the rest; in the male (fig. 8) there is a terminal hook and a fascicle of setiform filaments, in length similar to those of the female, but the longest is dilated at the apex, and filled with a granular stroma. The other limbs almost exactly as in *Halocypris atlantica*. Length, 1-16th of an inch (1·55 mm.).

Halocypris brevirostris was noticed in the following tow-net gatherings:—

Lat. 47° 25′ S., long. 130° 12′ E., . . .	Station 159
Abi to Cape York (Pacific).	
Lat. 35° 11′ N., long. 139° 28′ E., . . .	„ 232
„ 35° 41′ N., „ 157° 42′ E., . . .	„ 241
„ 36° 32′ S., „ 112° 52′ W., . . .	„ 287
„ 42° 43′ S., „ 82° 11′ W., . . .	„ 302
„ 45° 31′ S., „ 78° 9′ W., . . .	„ 303
„ 37° 45′ S., „ 33° 0′ W., . . .	„ 330
„ 12° 16′ S., „ 13° 44′ W., . . .	„ 341
St Vincent, Cape Verde.	

The range of this species appears to be almost exactly identical with that of *Halocypris atlantica*, but it is perhaps not quite so abundant, many of the bottles in which the latter species occurred being destitute of *Halocypris brevirostris*. The almost entire absence of striation, and the subglobose contour of this species, suffice to distinguish it at once from *Halocypris atlantica*.

[Pl. XXXIX. figs. 1–11. 1 Carapace of female seen from left side, 2 the same seen from above, 3 seen from front, 4 carapace of male seen from left side, 5 seen from above, 6 anterior antenna of male and female, 7 secondary branch of posterior female antenna, 8 secondary branch of posterior antenna of male, 9 mandible and palp, 10 foot of first pair of female, 11 one lamina of postabdomen. Figs. 1–5, magnified 25 diameters.] It should be noted that the front view of the shell given in figure 3 is, through an oversight, not shown in the customary position, the ventral (narrow) edge being placed upwards.

3. *Halocypris imbricata*, n. sp. (Pl. XLI. figs. 1–10, and Pl. XLII. figs. 1–8).

Shell compressed, elongated, lower in front than behind, and produced in front into one very long, curved, slender rostrum (Pl. XLII. figs. 1, 2), the dorsal margin also extended into a long spine, which is directed straight backwards, the spine being double, the half belonging to the left valve much smaller than that of the right; the hinder ventral angle of each valve is likewise produced into a wide, sharply-pointed triangular appendage, directed nearly straight backwards; the anterior angles are rounded off, but are fringed with minute teeth, which are arranged in several successive series (fig. 3), each series composed of four or five teeth, increasing regularly in length from the first to the last. Seen from the side, the anterior extremity of the shell is narrowed and rounded, the long, slender rostrum projecting, however, very far beyond it; the dorsal margin is deeply indented in the middle, slightly convex in front, and a little situated towards the posterior extremity; the posterior extremity is produced dorsally into a long spine, below which it is nearly straight, the ventral angle being rounded off, except when it is encroached upon by the pair of triangular spines; ventral margin nearly straight; the texture of the shell is reticulated, the reticulations being arranged in more or less regular transverse rows over a considerable portion of the valves, but a longitudinal striation, especially towards the margins, being also distinctly apparent; in the ventral spinous processes, as well as near the margins of other parts of the shell the areolæ are distinctly imbricated, and might fairly be called scales (fig. 4). The anterior antennæ of the female (Pl. XLI. fig. 1) has four very short granulated appendages, and one long, annulose setæ; in the male (fig. 2) there are two short club-shaped appendages and three long annulose setæ, one of which (fig. 2, *a*) bears on its central portion a fringing armature of about forty closely-set delicate hair-like spines arranged in a pectinate manner, the whole series beginning and ending quite abruptly. The secondary branch of the posterior antenna in the female (Pl. XLII. fig. 5) has two long and two short ringed setæ; in the

male (Pl. XLI. fig. 3) an angularly-curved hook and five setæ, two long and three short. In other respects the animal does not appear to present any special differentiations of structure. Its length is 1-16th to 1-11th of an inch (1·55 mm. to 2·3 mm.).

Only three or four examples have been found, and I am by no means sure that the forms which I here refer to the male and female of the same species may not prove to be specifically distinct. The following are the localities in which the species was taken :— lat. 35° 11′ N., long. 137° 8′ E; lat. 35° 41′ N., long. 167° 42′ E.; lat. 36° 44′ S., long. 46° 16′ W., tow-net at trawl; depth 2650 fathoms.

[Pl. XLI. figs. 1–10. 1 Anterior antenna and tentacle of female, 2 anterior antenna of male, 2*a* portion of central seta more highly magnified, 3 secondary branch of posterior antenna of male, 4 mandible and palp, 5 first maxilla, 6 second maxilla, 7 first foot of male, 8 postabdomen, 9 dorsal angle and spine of male, 10 anterior ventral angle of male. Pl. XLII. figs. 1–8. 1 Female with valves laid open and seen from below, 2 the same seen from side (magnified 20 diameters), 3 portion of anterior margin of shell, 4 posterior angle and spine more highly magnified, 5 secondary branch of posterior female antenna, 6 second maxilla, 7 first foot of female, 8 branchial appendage of first foot.

Section CLADOCOPA.

Family Polycopidæ, G. O. Sars.

Valves subequal, thin, not notched in front. Anterior and posterior antennæ both natatory, terminated by long setæ, and having the basal portion large, stout, and muscular; the anterior pair simple, not geniculate; posterior two-branched, both branches natatory. Mandibles distinct, strongly toothed below; palp short, neither pediform nor clawed. Two pairs only of posterior limbs, scarcely pediform, the first natatory, the second branchial. Abdomen terminated by two short numerously-clawed laminæ. Eyes wanting. No heart. Intestine forming a simple sac.

Polycope, G. O. Sars.

Valves rounded, ventricose, corneo-calcareous. Forehead having no tentacle, but in its place two ciliated setæ. Anterior antennæ three-jointed, last joint short, terminal setæ long and slender; terminal rami of posterior antennæ unequal, one branch many-jointed and similar in structure to that of *Cypridina*, the other shorter and three-jointed. Lower extremity of mandibles strongly inflexed, armed with a few small acute teeth; palp biarticulate, first joint stout, bearing externally a short, bisetose branchial appendage, last joint narrow, beset with long plumose setæ. Incisive portion of the first pair of jaws small, forming a simple setiferous lobe; palp very large, four-jointed, two-branched, second joint bearing a long, narrow, and obsoletely-biarticulate branch, which is ter-

minated by long setæ. Second pair of jaws membranaceous, three-jointed; penultimate joint bearing externally a small branch which terminates in a simple seta, furnished at the base with a large branchial plate. Post-abdominal plates short, posterior margin shortly digitate, and armed between the segments with acuminate claws. Animal swimming actively like the Lynceidæ.

Very few specimens referable to this genus have been observed in the Challenger dredgings. These belong to three species, two of which are undescribed.

1. *Polycope orbicularis*, G. O. Sars.

Polycope orbicularis, G. O. Sars, Oversigt af Norges marine Ostracoder, 1865, p. 122.
Polycope orbicularis, Brady, Monog. Recent Brit. Ostrac. 1868, p. 471, pl. xxxv. figs. 53–57.
Polycope orbicularis, Brady, Crosskey, and Robertson, Monog. Post-Tertiary Entom., p. 219, pl. xii. figs. 22, 23.

Shell of the female, as seen from the side, subcircular, greatest height in the middle, and slightly smaller than the length; anterior margin slightly narrowed and produced, posterior evenly rounded, dorsal and ventral margins boldly convex; outline, as seen from above, ovate, tapering equally to each extremity, greatest width in the middle, and somewhat exceeding half the length. Valves finely punctate, and divided by fine reticulating ribs into numerous polygonal areolæ; colour pale yellow, marked with patches of a darker reddish colour. Basal joint of the anterior antennæ longer than the two others combined, densely hairy on the anterior margin, and provided with a short seta, last joint ending in five long, slender setæ; one branch of the posterior antenna eight-jointed, its last seven joints short and subequal; second branch three-jointed, its first joint longer than the united lengths of the two following, and bearing eight long, partially-ciliated setæ. Mandibles divided at the apex into five teeth, the outermost of which is much the longest; palp shorter than the mandible itself, its last joint equal in length to the basal joint, and bearing seven ciliated setæ. Secondary branch of the anterior maxillæ reaching a little beyond the apex of the palp, and terminating in about eight very long and slender setæ. Branchial plate of the posterior maxillæ narrow, elliptical, bearing sixteen ciliated marginal setæ. Post-abdominal plates armed with six finely-ciliated claws, decreasing gradually in length backwards; behind them two short setæ. Posterior margin of the abdomen bearing three branches of short hairs. Male unknown. Length, 1-85th of an inch (·3 mm.).

Though specimens which may fairly be referred to this species have been met with in several of the Challenger dredgings, none of them are good or well developed, and they have therefore not been figured, while, as regards some of them, doubts may perhaps be entertained as to their specific identity. The species is well known in the seas of Northern Europe, especially in those of Great Britain and Norway; I have seen specimens also from Spitzbergen; and it occurs somewhat sparingly in the Post-Tertiary deposits of

Scotland. A species, perhaps distinct from *orbicularis*, occurs in the Mediterranean. The foregoing description, owing to the unserviceable nature of the Challenger specimens has been drawn up entirely from British and Norwegian specimens,—largely from the published description of G. O. Sars. Amongst the Challenger dredgings *Polycope orbicularis*, or some very nearly allied, form has been found as follows:—In mud, brought up by the anchor in Vigo Bay, from a depth of 11 fathoms; off the Cape of Good Hope (?), 150 fathoms (Station 142); Christmas Harbour, Kerguelen Island, 120 fathoms (?); Torres' Straits, lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms, sand (Station 185).

2. *Polycope cingulata*, n. sp. (Pl. XXXV. fig. 7, *a–d*).

Carapace, seen from the side, subcircular, length not much exceeding the height, which is greatest in the middle; the anterior extremity (?) is broader than the posterior; and, except the middle of the dorsum, which is flattened and nearly straight, the rest of the margin forms one continuous and almost circular curve; seen from above, the outline is ovate, widest in the middle, the width being equal to two-thirds of the length, lateral margins evenly curved, extremities wide, obtuse, and nearly equal; the end-view is subovate, widest in the middle, lateral margins regularly convex; apex broad and deeply emarginate in the middle, ventral margin broadly keeled. The valves are surrounded, except on the dorsal aspect, by a broad, thickened flange or encircling keel, the surface of the shell is perfectly smooth, and marked all over with very minute and closely-set punctures. Length, 1-43d of an inch (·575 mm.).

I have, unfortunately, no record of the locality in which the one specimen of *Polycope cingulata* was found.

[Pl. XXXV. fig. 7, *a–d*. *a* Carapace seen left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

3. *Polycope* (?) *favus*, n. sp. (Pl. XXXVI. fig. 4, *a*, *b*).

Valves seen laterally irregularly subquadrate, equal in height and length; anterior margin wide, truncated, not rounded, posterior produced in the middle, where it forms a rounded obtuse angle; dorsal margin straight, ventral very slightly convex. The shell is bordered throughout by a thickened lip, somewhat as in the preceding species, and the surface is marked by numerous large, deep, and irregular angular pits; there are also two short, blunt teeth near the postero-ventral angle. Length, 1-55th of an inch (·46 mm.).

One or two valves, belonging, doubtless, to some undescribed species, and perhaps referable to this genus, were dredged in Torres' Straits (Station 185); lat. 10° 35′ S., long. 144° 3′ E., 155 fathoms. I propose to call these provisionally *Polycope favus*.

[Pl. XXXVI. fig. 4, *a*, *b*. *a* Left valve, seen from side, *b* the same from above. Magnified 40 diameters.]

Section PLATYCOPA.

Family CYTHERELLIDÆ, G. O. Sars.

Valves unequal, very thick and calcareous, not notched in front. Antennæ very large, the anterior many-jointed and geniculated at the base; posterior broad and flattened, two-branched like the feet of the Copepoda. Mandibles very small, with a large pectinato-setose palp. Three pairs of hinder limbs, scarcely pediform; the two anterior pairs branchial, the others rudimentary. Abdomen terminating in two very small, narrow, and spiniferous laminæ. Ova and embryos borne beneath the shell of the female.

Cytherella, Jones (1849).

Cytherella (sub-genus), Jones, Entom. of Cretaceous Formation (1849), G. O. Sars (1865), G. S. Brady (1865).

Valves elongated, flattened, thick and hard, very unequal; the right much larger than the left, overlapping throughout the whole circumference, and presenting round the entire inner margin a distinct groove, into which the valve of the opposite side is received. Muscle-spots arranged in a curved pinnate series on an oblong, obliquely placed depression near the centre of the shell, the depression appearing internally as an elevation. Spots from twelve to sixteen in number, linear oblong in shape, and increasing in size toward the ventral margin. Anterior antennæ very large, shortly setose or spiniferous, seven-jointed, the first two joints larger than the rest, and forming between them a distinct geniculation; posterior antennæ composed of a large, broad, biarticulate, and geniculate basal portion, from which arise two flattened unequal branches, one biarticulate, the other triarticulate, both beset with very numerous long setæ. Labrum large, sublobose, giving out in front a short subtriangular process. Mandibles very weak, strongly inflexed at the lower extremity, which is obliquely truncate, and set in a pectinate manner with slender teeth; palp large and elongated, almost straight, bearing on its inner side very numerous long, pectinately-arranged setæ, which stretch backwards as in the feet of the Sididæ. First pair of jaws bearing at the base a very large branchial plate, which is beset with numerous ciliated marginal setæ; incisive portion divided into three setiferous lobes; palp very large, scarcely articulated; the posterior margin slightly lobated, inner margin pectinately setose, like the mandibular palp, but smaller. Second pair of jaws membranaceous, bearing, like the preceding pair, a branchial plate, but smaller and narrower; distal portion subovate, beset with a few ciliated setæ, and in the male furnished with a very large and strong hatchet-shaped appendage adapted for prehension. Third pair of jaws, in the female, rudimentary, forming a simple setiferous lobe; in the male, strong, distinctly jointed, and subcheliform. Abdomen beset behind with several bundles of long setæ for supporting the ova. Postabdominal laminæ narrow, slightly dilated at the

apex, and armed before and behind with several marginal setæ or spines. Copulative organs of the male very large and narrow.

The foregoing descriptions of family and genus are borrowed from the work of G. O. Sars on the Norwegian marine Ostracoda. I have myself had no opportunity of seeing the recent animal, all the specimens that have come under my notice having been empty shells. It is at once apparent from the definition of the genus that we have here an animal presenting a type of structure quite different from that of the preceding families, in the conformation of the posterior antennæ approaching the Copopoda, and in that of the mandible-palps and first pair of jaws showing a likeness to the Sididæ. The mode of life of the animal and the manner in which the various limbs are used have not yet been observed.

Many species of fossil *Cytherellæ* have been described, ranging from the Cretaceous (doubtfully from the Carboniferous) to the Tertiary formations; and judging from our present knowledge of the genus, we should be disposed to say that it had attained its greatest development in the Cretaceous epoch, and is perhaps now dying out. But much further observation is required before this can be affirmed with certainty.

The characters of the shells are such as to render generic reference usually a very easy matter. The very unequal valves with the peripheral groove on the right side, the usually distinct cuneate form of the shell, and the pinnately-arranged muscle spots, are marks not to be found in any other group. Many detached valves of *Cytherellæ* were noticed in various dredgings, which it has been impossible to determine specifically.

1. *Cytherella polita*, G. S. Brady (Pl. XLIII. fig. 5, *a–c*, and Pl. XLIV. fig. 1, *a–g*).

Cytherella polita, Brady, Les Fonds de la Mer, p. 161, pl. xix. figs. 5–7.

Shell of the female, as seen from the side, subelliptical, height equal to about two-thirds of the length; extremities nearly equal and well rounded, dorsal margin forming a regular flattened arch, ventral nearly straight; seen from above, the outline is ovate-cuneate, widest near the hinder extremity, obtusely pointed in front, broadly rounded behind, width equal to half the length; end-view broadly oval. Surface of the shell perfectly smooth and polished. Length, 1-31st of an inch (·78 mm.).

The form shown in figures *e–g* is doubtless the male of this species, the points in which it differs from figures *a–d* being just those which are usually characteristic of the sexes.

The type-specimens of *Cytherella polita* were found at Port-au-Prince, West Indies. Those found in the Challenger dredgings are from the following localities:—Wellington Harbour, New Zealand, in tow-net at trawl; mouth of Rio de la Plata, 13 fathoms, mud (Station 321).

[Pl. XLIII. fig. 5, *a–c*. *a* Carapace of male (Wellington specimen) seen from left side, *b* from below, *c* from front. Pl. XLIV. fig. 1, *a–g*. *a* Female (La Plata) seen from left side, *b* from above, *c* from below, *d* from front; *e* male (La Plata) seen from left side, *f* from below, *g* from front. All magnified 40 diameters.]

2. *Cytherella lata*, n. sp. (Pl. XLIV. fig. 5, *a–e*).

Shell, seen from the side, subelliptical, higher in front than behind, greatest height situated near the middle, and equal to two-thirds of the length, extremities well and evenly rounded, the posterior the narrower of the two, dorsal margin boldly arched, ventral slightly convex; seen from above, the outline is regularly ovate. Surface of the shell perfectly smooth. Length, 1-16th of an inch (1·55 mm.).

Figure *c* represents in all probability the left valve of the species, the right valve of which is shown at *a* and *b*. Figures *d* and *e* differ considerably from the rest, but perhaps not more than is consistent with the supposition that they belong to the young of the same species.

The specimens—all of them detached valves—which I refer to this species were dredged as follows:—off Culebra Island, West Indies, 390 fathoms, mud (Station 24); off Azores, lat. 38° 37′ N., long. 28° 30′ W., 450 fathoms, sand (Station 75); off Pernambuco, lat. 8° 37′ S., long. 34° 28′ W., 675 fathoms, mud (Station 120); Torres' Straits, lat. 11° 35′ S., long. 144° 3′ E., 155 fathoms, sand (Station 185); off Ki Islands, 580 fathoms, lat. 5° 26′ S., long. 133° 19′ S., mud (Station 191*a*).

[Pl. XLIV. fig. 5, *a–e*. *a* Right valve seen from outside, *b* from above; *c* left valve from outside; *d* right valve of young (Ki Islands) seen from outside, *e* from above. Magnified 40 diameters.]

3. *Cytherella dromedaria*, n. sp. (Pl. XLIII. fig. 6, *a*, *b*).

Valves, seen laterally, elongated, subovate, rather higher in front than behind, greatest height situated behind the middle, and equal to rather more than half the length; extremities evenly rounded, dorsal margin gently arched and raised behind the middle into a gibbous prominence, ventral margin slightly convex; seen from above, the outline is regularly ovate, widest near the posterior extremity. Surface of the shell perfectly smooth. Length, 1-26th of an inch (·98 mm.).

Except the gibbous enlargement of the dorsal margin, there is no very marked distinctive character apparent in the single valve upon which this species is founded, yet it seems impossible to refer it to any hitherto known form. It was dredged in Simon's Bay, South Africa, in a depth of 15 to 20 fathoms (Station 140).

[Pl. LXIII. fig. 6, *a*, *b*. *a* Left valve seen from the side, *b* from above. Magnified 50 diameters.]

4. *Cytherella pulchra*, G. S. Brady (Pl. XLIV. fig. 3, *a*, *b*).

Cytherella pulchra, Brady, Trans. Zool. Soc. (1865), vol. v. p. 361, pl. lvii. fig. 1, *a–d*.

Valves oblong, subelliptical, nearly equal in height throughout, height equal to more than half the length, rounded evenly in front and obliquely behind, dorsal margin nearly straight, ventral straight or slightly convex; seen from above, the outline is compressed, ovate, widest somewhat behind the middle. Shell-surface smooth. Length, 1-32d of an inch (·77 mm.).

Valves referable, as I think, to this species, were found in dredgings from off Bermudas, 435 fathoms, mud (Station 33); from Port Jackson, Australia, 2 to 10 fathoms; from lat. 39° 32′ S., long. 171° 48′ E., 150 fathoms, grey ooze (Station 167); and from off Ascension Island, 420 fathoms (Station 344). The type specimens were from an Australian dredging.

[Pl. XLIV. fig. 3, *a*, *b*. *a* Valve seen from outside, *b* from above.]

5. *Cytherella truncata*, G. S. Brady (Pl. XXXVI. fig. 3, *a–d*).

Cytherella truncata, Brady, Les Fonds de la Mer, p. 154, pl. xix. figs. 3, 4.

Carapace, as seen from the side, oblong, subelliptical, height nearly equal throughout, and corresponding to about half the length; extremities nearly equal, rounded, dorsal margin straight, ventral slightly concave and obscurely angular at its junction with the posterior margin; seen from above, the outline is compressed, ovate, more than twice as long as broad, widest behind the middle, anterior extremity subacuminate, posterior subtruncate and slightly mucronate in the middle; end view ovate, pointed above and below, widest in the middle. Surface of the shell smooth, and unsculptured. Length, 1-30th of an inch (·85 mm.).

The specimens described in Les Fonds de la Mer were found at Colon-Aspinwall. Those obtained during the Challenger Expedition are from Torres' Straits, 155 fathoms, sand (Station 185).

[Pl. XXXVI. fig. 3, *a–d*. *a* Shell seen from left side, *b* from above, *c* from below, *d* from front. Magnified 40 diameters.]

6. *Cytherella punctata*, G. S. Brady (Pl. XXXVI. fig. 6, *a*, *b*, and Pl. XLIV. fig. 4, *a–g*).

Cytherella punctata, Brady, Trans. Zool. Soc., vol. v. (1865), p. 362, pl. lvii. fig. 2, *a*, *b*.

Carapace oblong, compressed; seen from the side, reniform, of equal height before and behind, extremities well and evenly rounded, dorsal margin nearly straight in the middle, and gently curved towards the ends, ventral deeply sinuated; height equal to at least half the length; seen from above, compressed, ovate, widest behind the middle,

the width equal to somewhat more than a third of the length; extremities sharply rounded and subequal, the front of the shell being but very little more compressed than the hinder end; end view ovate, widest in the middle, pointed above and below, width equal to about two-thirds of the height. The surface of the shell is even, and covered with small and rather closely-set impressed circular puncta. Length, 1-30th of an inch (·85 mm.).

The specimens represented in figures *e–g* (from Station 167) may perhaps be referred to the young of this species; it is, at any rate, undoubtedly identical with the types described in the Zoological Transactions (*loc. cit.*) which were found in sponge-sand, probably from the Levant. Should this supposition be upset by future observations, the larger forms (figures *a–d*) will require to be re-named. The valve shown in Pl. XXXVI. fig. 6, is probably the same species, but ill-grown and distorted.

I have notes of the occurrence of this species in the following localities:—Off Nightingale Island (Tristan d'Acunha), 100 to 150 fathoms, rock and shells (Station 135); (?) Port Jackson, 2 to 10 fathoms; lat. 39° 32′ S., long. 171° 48′ E., 150 fathoms (Station 167); off Ki Islands, 580 fathoms, mud (Station 191*a*); sounding, 160 fathoms (Station 305).

[Pl. XXXVI. fig. 6, *a*, *b*. *a* Left valve seen from side, *b* from above. Pl. XLIV. fig. 4, *a–g*. *a* Adult shell seen from left side, *b* from above, *c* from below, *d* from front; *e* young shell seen from left side, *f* from above, *g* from front. All magnified 40 diameters.]

7. *Cytherella semitalis*, G. S. Brady (Pl. XLIV. fig. 2, *a–e*).

Cytherella semitalis, Brady, Les Fonds de la Mer, tom. i. p. 72, pl. viii. figs. 23, 24.

Carapace compressed, oblong; seen from the side, elliptical, equal in height throughout; extremities well rounded, the posterior somewhat oblique, dorsal and ventral margins straight (or only slightly sinuated) and parallel, height equal to half the length; seen from above, the outline is ovato-cuneate, greatest width near the posterior extremity, and equal to somewhat less than half the length; the extremities are subtruncate, but rounded at the angles, the anterior much narrower than the posterior. The surface of the shell is marked by a broad encircling belt of subangular excavations, somewhat irregularly disposed, but leaving in the centre of each valve a smooth longitudinal patch or track quite free from sculpturing; this patch usually encroaches at some points in a transverse direction upon the sculptured belt, and in some cases the shell bears traces also of irregular transverse grooving. Length, 1-45th of an inch (·54 mm.).

The types of this very well-marked species were found in a sounding from the north of Java. The Challenger specimens were found in dredgings from Booby Island, lat. 10° 36′ S., long. 141° 55′ E., 6 to 8 fathoms (Station 187); lat. 9° 59′ S., long. 137° 50′ E.,

28 fathoms, mud (Station 189); Humboldt Bay, Papua, 37 fathoms; Nares' Harbour, Admiralty Islands, 16 fathoms. All these stations, it will be seen, belong to the Malayan or Melanesian Province.

[Pl. LXIV. fig. 2, *a–c*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front; *e* old shell (variety) from left side. All magnified 50 diameters.]

8. *Cytherella venusta*, n. sp. (Pl. XLIII. fig. 4, *a–d*).

Carapace oblong, cuneiform; seen from the side, somewhat obliquely quadrangular, height equal to half the length; extremities nearly equal, the anterior scarcely rounded, somewhat oblique, and obscurely angulated at its junction with the dorsal margin; posterior obliquely subtruncate; dorsal margin almost straight for the anterior half of its course, then sloping gently backwards, ventral very slightly sinuated; seen from above, the shell is oblong-cuneate, widest at the hinder end, the width at that joint being considerably less than half the length; the posterior extremity is truncated, and has a broad mucronate prominence in the middle, the lateral margins converging very gradually towards the front, which is obtusely rounded and has a couple of minute teeth, one on each valve; end view regularly ovate. The surface of the shell is smooth, but marked with a very delicately impressed reticulated pattern. Length, 1-37th of an inch (·7 mm.).

This is a very elegant and distinct species, well characterised by its distinctly cuneate shape and reticulated surface. Several specimens of it occurred in a dredging from 40 fathoms depth off the reefs at Honolulu.

[Pl. XLIII. fig. 4, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. Magnified 60 diameters.]

9. *Cytherella cribrosa*, n. sp. (Pl. XXVI. fig. 5, *a–d*).

Carapace oblong, rather tumid; seen from the side, subquadrate, somewhat higher in front than behind, height equal to more than half the length; anterior extremity broadly rounded, posterior slightly rounded, obliquely subtruncate, and obscurely angular in the middle; dorsal margin nearly straight, gently sloping backwards, ventral straight or slightly convex; seen from above the outline is cuneiform, broadest at the posterior extremity, where the width is equal to nearly half the length; anterior extremity broadly rounded; lateral margins nearly straight, ending behind in an obtuse angle, thence converging abruptly to the posterior extremity; end view broadly ovate. Surface of the shell destitute of ridges or undulations, but marked with numerous rather large oblong excavations. Length, 1-52d of an inch (·49 mm.).

Found only off Nuknalofa, Tongatabu, 18 fathoms (Station 172).

[Pl. XXVI. fig 5, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

10. *Cytherella carernosa*, G. S. Brady (Pl. XXXVI. fig. 5, *a–d*).

Cytherella carernosa, Brady, Les Fonds de la Mer, p. 65, pl. viii. figs. 13, 24.

Carapace compressed, cuneiform; seen from the side quadrangular, equal in height throughout; height equal to nearly two-thirds of the length; anterior extremity somewhat flattened, rounded off at the angles, posterior subtruncate, abruptly rounded at the angles and sinuated in the middle, dorsal and ventral margins parallel, the former nearly straight, the latter slightly sinuated; seen from above elongated cuneate, widest behind; anterior extremity obtusely pointed, bimucronate, posterior truncated, slightly mucronate in the middle, width equal to rather more than one-third of the length; end-view irregular, ovate, much higher than broad. The surface of the valves is marked by irregularly-disposed flexuous rounded ridges, the two principal ones running nearly parallel to each other for about three-fourths of the length of the shell from its anterior margin, one near the middle, the other between it and the ventral margin; there are also several smaller ridges running transversely across the longitudinal ridges towards the posterior and upper margins of the shell, the interspaces being marked with closely-set minute punctures. Length, 1-34th of an inch (·75 mm.).

The type specimens of *Cytherella carernosa* were from Java; those got during the Challenger Expedition were dredged off East Moncœur Island, Bass' Strait, in 38 to 40 fathoms (Station 162), and off Booby Island, lat. 10° 36′ S., long. 141° 55′ E.; 6 to 8 fathoms (Station 187).

[Pl. XXXVI. fig. 5, *a–d*. *a* Carapace seen from left side, *b* from above, *c* from below, *d* from front. All magnified 40 diameters.]

11. *Cytherella cingulata*, G. S. Brady (Pl. XLIII. fig. 1, *a–g*, and fig. 2, *a–d*).

Cytherella cingulata, Brady, Les Fonds de la Mer, tom. i. p. 159, pl. xvii. figs. 24, 25.

Carapace oblong, irregularly cuneiform; seen from the side subquadrangular, equal in height before and behind, anterior extremity well rounded, posterior rounded and somewhat produced in the middle, obtusely angulated at its junction with the dorsal and ventral margins; dorsal margin straight, or nearly so, ventral rather deeply sinuated in the middle; seen from above, the outline is irregularly cuneiform, widest at the posterior extremity where the width (in the female) equals nearly half the length; the anterior extremity is wide, subtruncate, the inner edges of the valves projecting in a bimucronate manner; posterior extremity truncated and rounded, crenulated; the lateral margins are doubly sinuated, with a central boss-like prominence; end-view quadrangular, height (in the female) not much greater than the width, angles rounded. Surface of the shell more or less rugose and pitted, the edges of the valves much thickened and raised into a broad rounded ridge which runs round, and just within, the anterior, superior and inferior margins and terminates behind in a prominent rectangular elevation. The proportions of

the male carapace (fig. 2, *a–d*) are much more slender than those of the female. Length, 1-40th of an inch (·65 mm.).

The type specimens described in Les Fonds de la Mer were dredged at Hong Kong; those described in the present monograph are from lat. 9° 49′ S., long. 137° 50′ E., 28 fathoms, mud (Station 189); and from Hong Kong Harbour, 7 fathoms, mud; Port Jackson, 2 to 10 fathoms; off Booby Island, 6 to 8 fathoms.

[Pl. XLIII. fig. 1, *a–g*. *a* Carapace of female seen from left side, *b* from above, *c* from below, *d* from front; *e* young shell seen from left side, *f* from above, *g* from front; fig. 2, *a–d*, *a* shell of male seen from left side, *b* from above, *c* from below, *d* from front. All magnified 60 diameters.]

12. *Cytherella irregularis*, n. sp. (Pl. XLIII. fig. 3, *a–c*).

Valves as seen from the side subquadrangular, scarcely higher in front than behind, height equal to nearly two-thirds of the length, anterior extremity well rounded, posterior flattened, obliquely truncate, dorsal margin slightly excavated, ventral somewhat convex along its whole course; seen from above the lateral margins are nearly straight, ending in an obtusely angular fashion before and behind and thence tapering abruptly to the extremities. The shell-surface is undulated, having a large irregular elevated central patch which is filled with small oblong puncta arranged in obscurely concentric series. Length, 1-50th of an inch (·5 mm.).

One or two detached valves of this species were noticed in a dredging from 435 fathoms off Bermudas (Station 33).

[Pl. XLIII. fig. 3, *a–c*. *a* Left valve seen from outside, *b* from above, *c* from front. All magnified 60 diameters.]

13. *Cytherella latimarginata*, n. sp. (Pl. XXVI. fig. 7, *a–d*).

Carapace compressed, oblong; seen from the side, subovate, scarcely higher in front than behind, height equal to about half the length; extremities well rounded, dorsal margin slightly convex, ventral somewhat sinuated in the middle; seen from above, the outline is subcuneiform, but only very little broader behind than in front, the greatest width being equal to fully one-third of the length; the lateral margins are subparallel, with a long central protuberance, terminating abruptly at each extremity, and thence converging at an obtuse angle towards the median line of the shell; end-view irregularly ovate. The surface of the shell is irregularly undulated, the margins raised into a broad rounded lip, which forms an encircling fillet, except at the anterior margin, where it is partially absent. Length, 1-50th of an inch (·5 mm.).

Two or three specimens only of this species were found in a dredging from Torres' Strait, 155 fathoms, sandy bottom. The shells figured in the plate represent, probably,—judging from the difference of size,—different stages of growth, the essential characters of

all being the same. The sloping dorsal margin of the smaller example, if it be really the young, is only an illustration of what is well known to be a juvenile character in *Cypris* and other Ostracoda of both marine and fresh water habitat.

[Pl. XXVI. fig. 7, *a*–*d*. *a* Left valve of full-grown form seen from the side, *b* shell of young form seen from left side, *c* from below, *d* from front. All magnified 60 diameters.]

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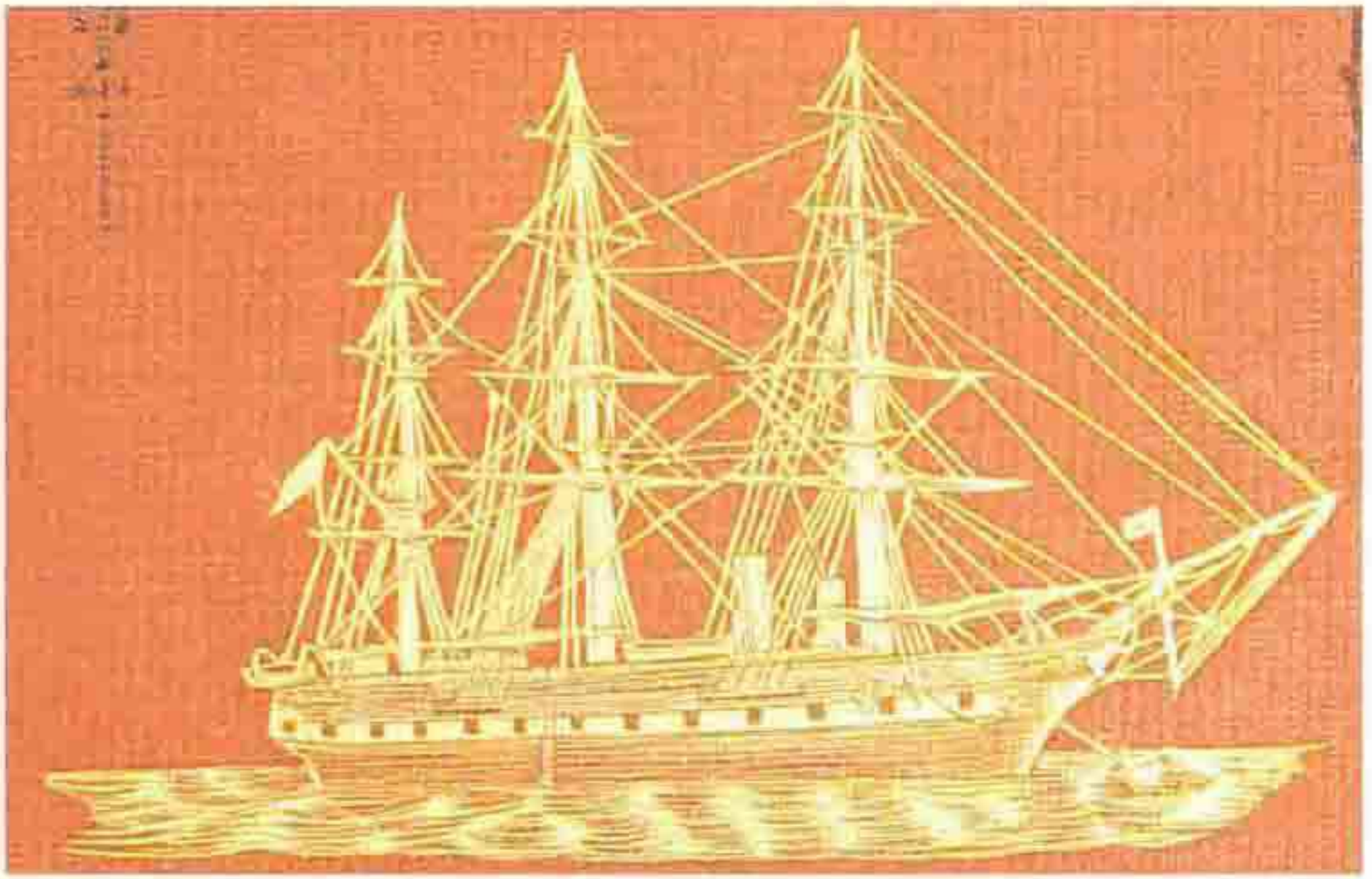

H.M.S. CHALLENGER

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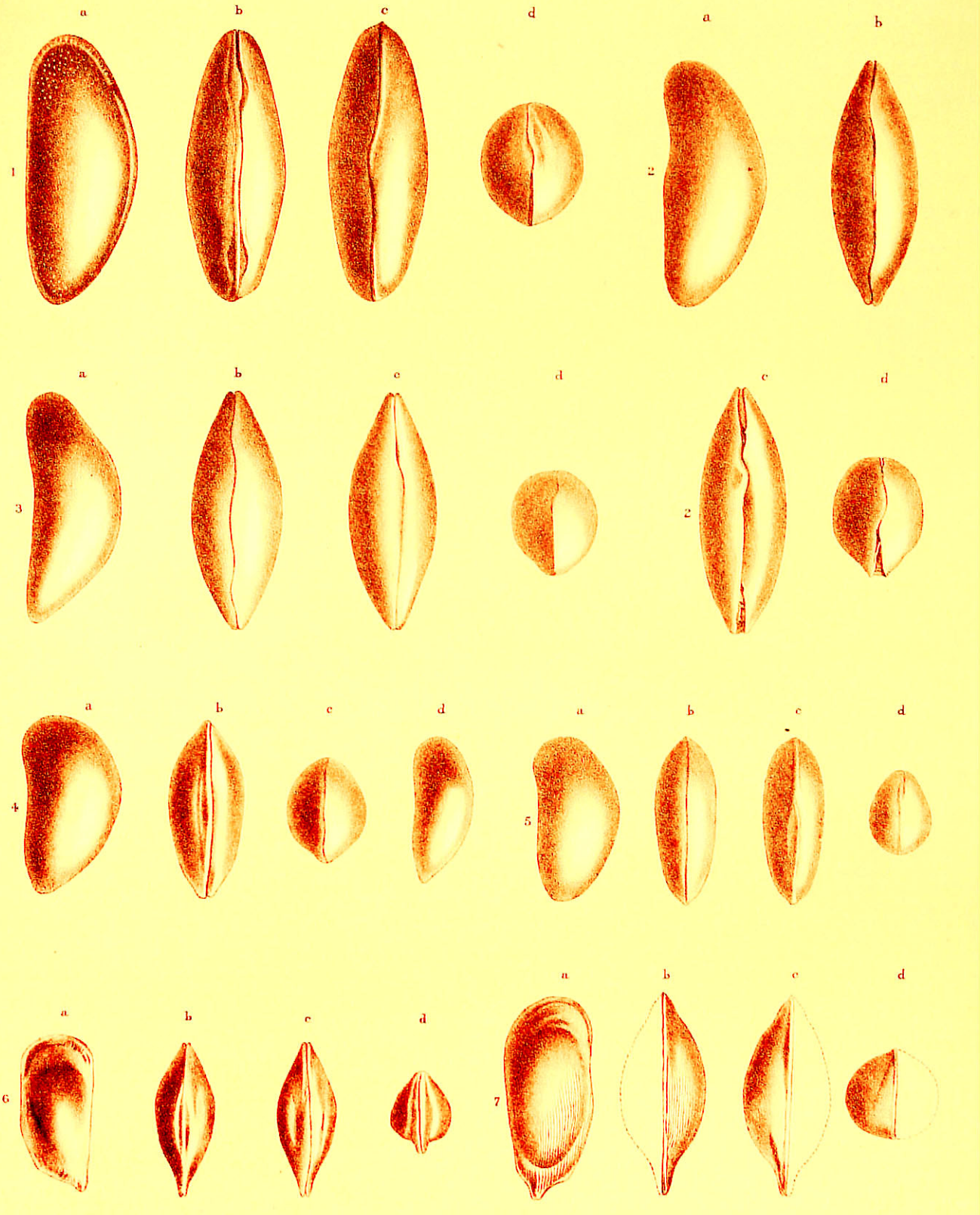
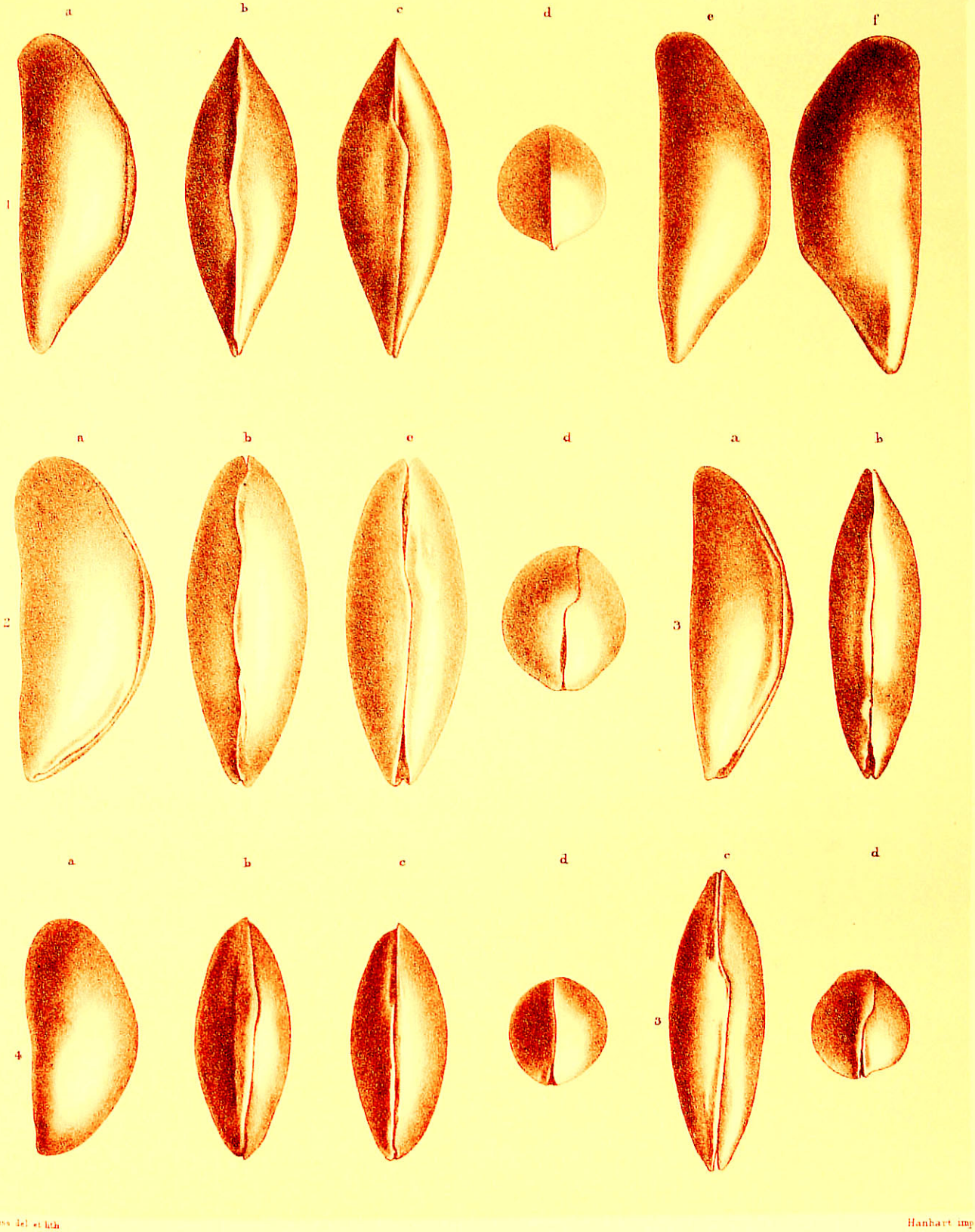


Burkiss del et lith Hanhart imp

1, a.d MACROCYPRIS SETIGERA, Sp nov
2, a.d " MACULATA, G.S.Brady
3, a.d " DECORA, G.S.Brady
4, a.d PONTOCYPRIS FABA? (Reuss).
5, a.d " SIMPLEX, Sp nov
6, a.d PSEUDOCYTHERE CAUDATA, G.O.Sars
7, a.d PSEUDOCYTHERE FUEGIENSIS, Sp nov.



Parkinson del. et lith.

Hanhart imp.

1 a f MACROCYPRIS TENUICAUDA, Sp. nov.
2 a d " SIMILIS, Sp. nov.
3 a d " CANARIENSIS, Sp. nov.
4 a d " ORIENTALIS, G.S.Brady

G.S. Brady del. et lith.

Hanhart imp.

1. a-m PHLYCTENOPHORA ZEALANDICA, Gen. & Sp. nov. 2. a-b MACROCYPRIS TENUICAUDA, Sp. nov.
3. a-b BAIRDIA VILLOSA, Sp. nov.

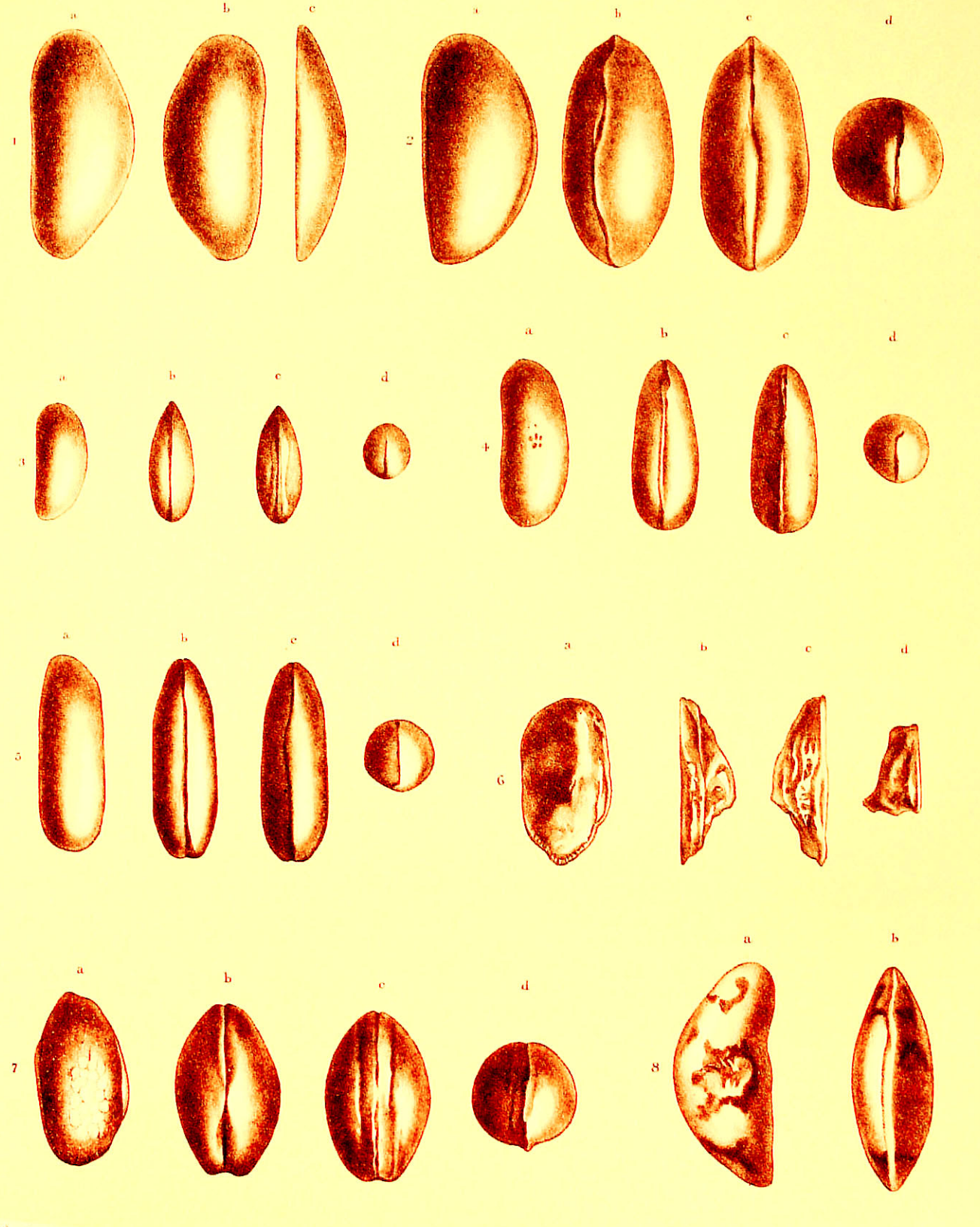
Gilt. del. et lith.

Hanhart imp.

1–15. ARGILLŒCIA EBURNEA, Sp. nov.
16–18. CYTHERE KERGUELENENSIS, Sp. nov.

G.S.Brady del et lith. Hanhart imp

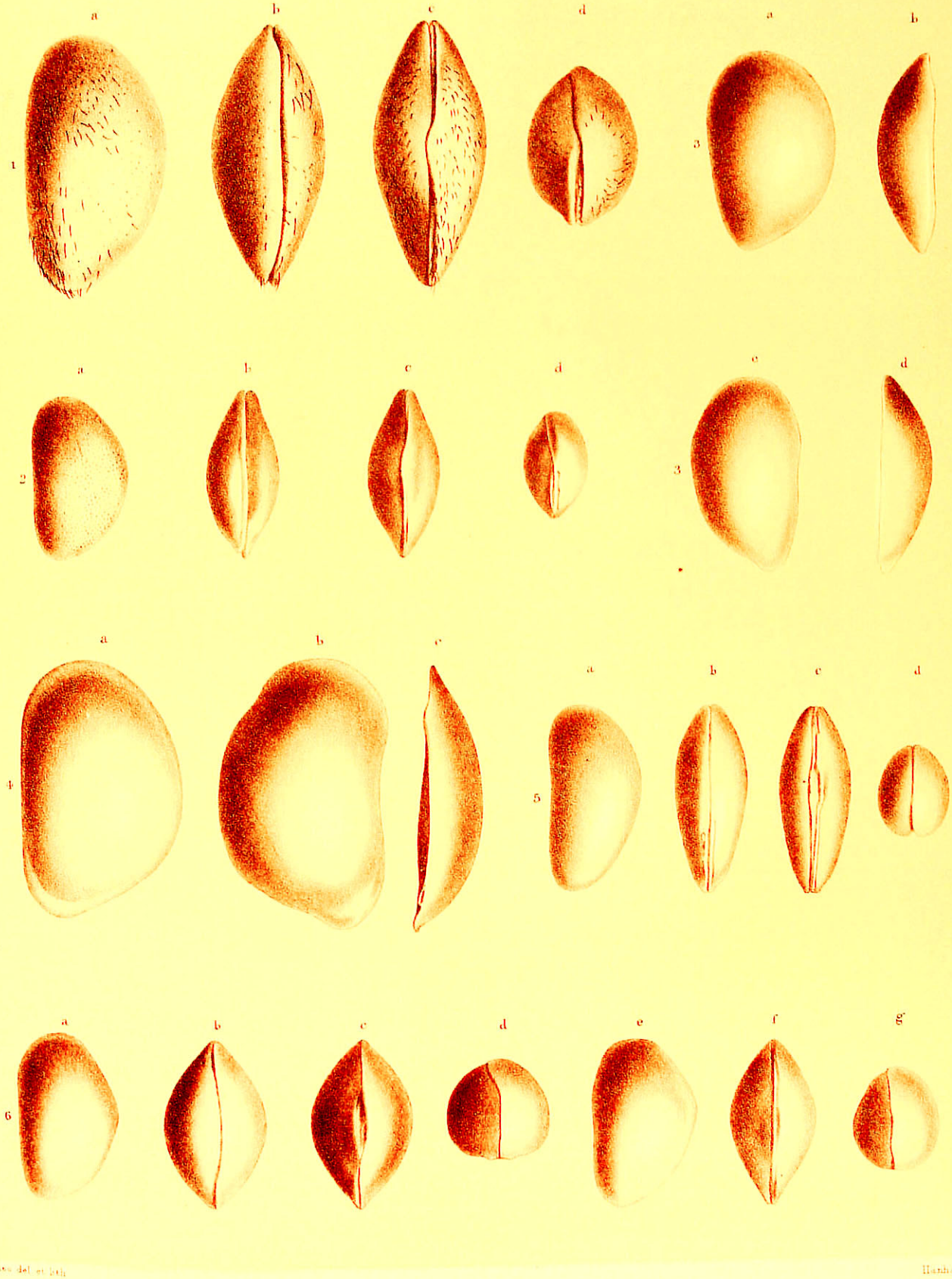
1,a–l BYTHOCYPRIS RENIFORMIS, Gen & Sp nov 2 a–g BAIRDIA VILLOSA, Sp nov



W Parkins del et lith

Hanhart imp

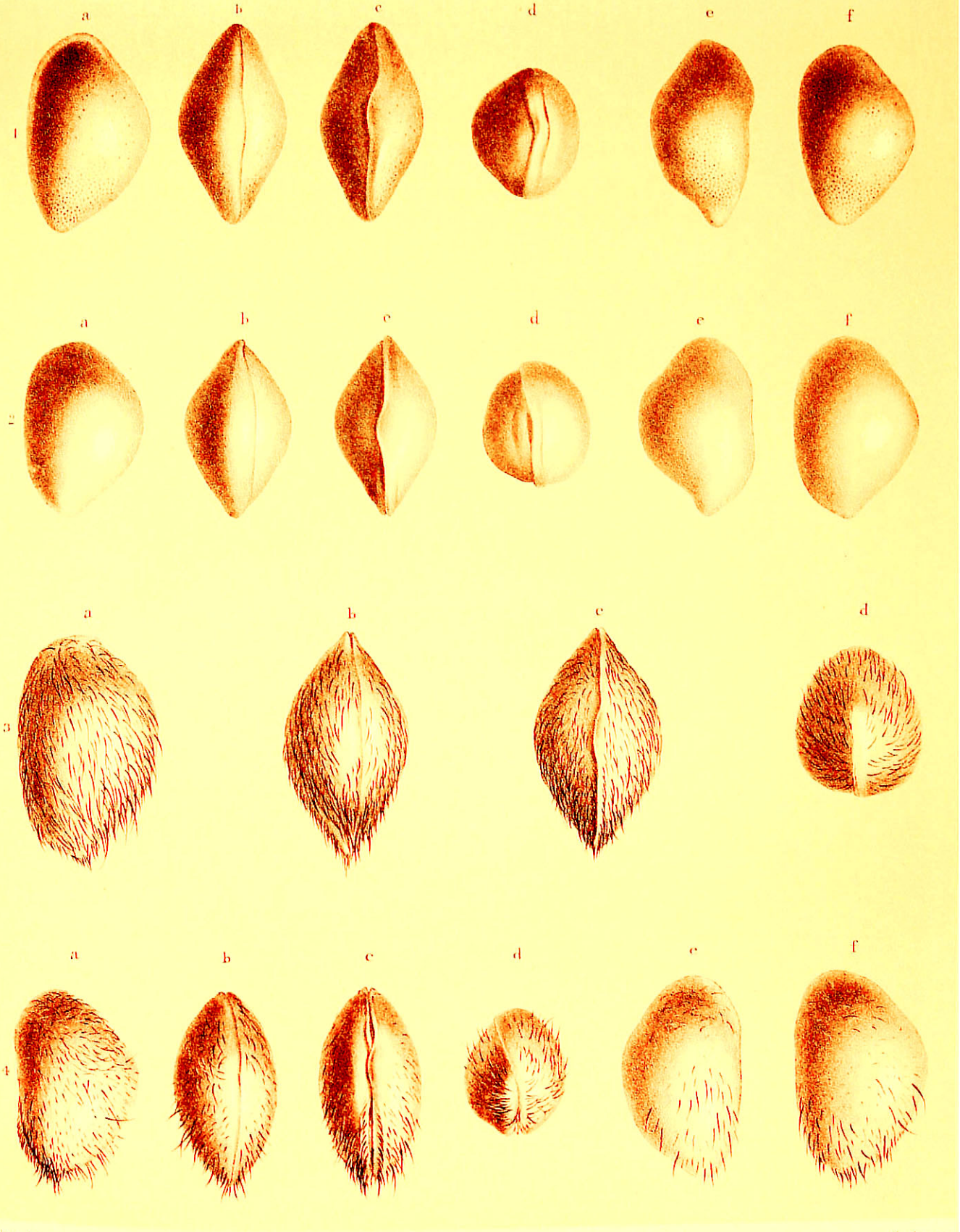
1, a–c BYTHOCYPRIS ELONGATA, gen & Sp nov
2, a–d MACROCYPRIS TUMIDA, Sp nov
3, a–d ARGILLÆCIA BADIA, Sp nov
4, a–d AGLAIA CLAVATA, Sp nov
5, a–d CYTHERIDEIS LÆVATA, Sp nov
6, a–d BYTHOCYTHERE ORIENTALIS, G S Brady
7, a–d " (?) EXIGNA, Sp nov
8, a, b MACROCYPRIS DECORA, G S Brady



Parkins del et lith

Hanhart imp

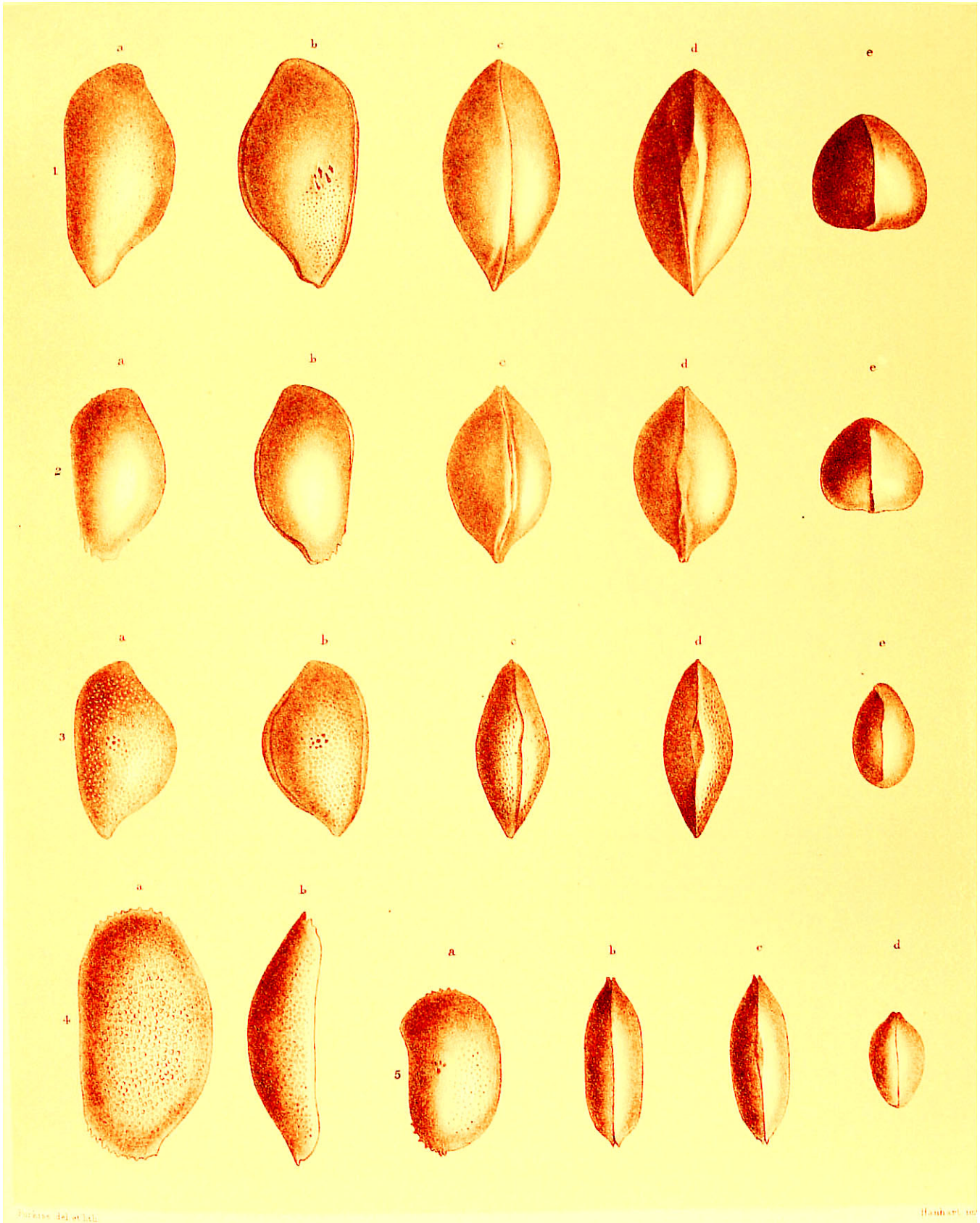
1 a–d BAIRDIA SIMPLEX, Sp nov
2 a–d " FUSCA, G S Brady
3 a–d " OVATA, G S Brady
4 a–c BAIRDIA ABYSSICOLA, Sp nov
5 a–d PONTOCYPRIS SUBRENIFORMIS, Sp nov
6 a–g BAIRDIA MINIMA, Sp nov



1,a.f BAIRDIA FOVEOLATA, G.S.Brady
2,a.f " " "
3,a.d BAIRDIA HIRSUTA, Sp. nov
4,a.f " VILLOSA, Sp. nov

1.a-d BAIRDIA GLOBULUS, Sp nov
2.a-d " EXALTATA, Sp nov
3.a-c BAIRDIA CROSSKEIANA, G S Brady
4.a-c " ACANTHIGERA, G S Brady
5.a-f BAIRDIA AMYGDALOIDES, G S Brady

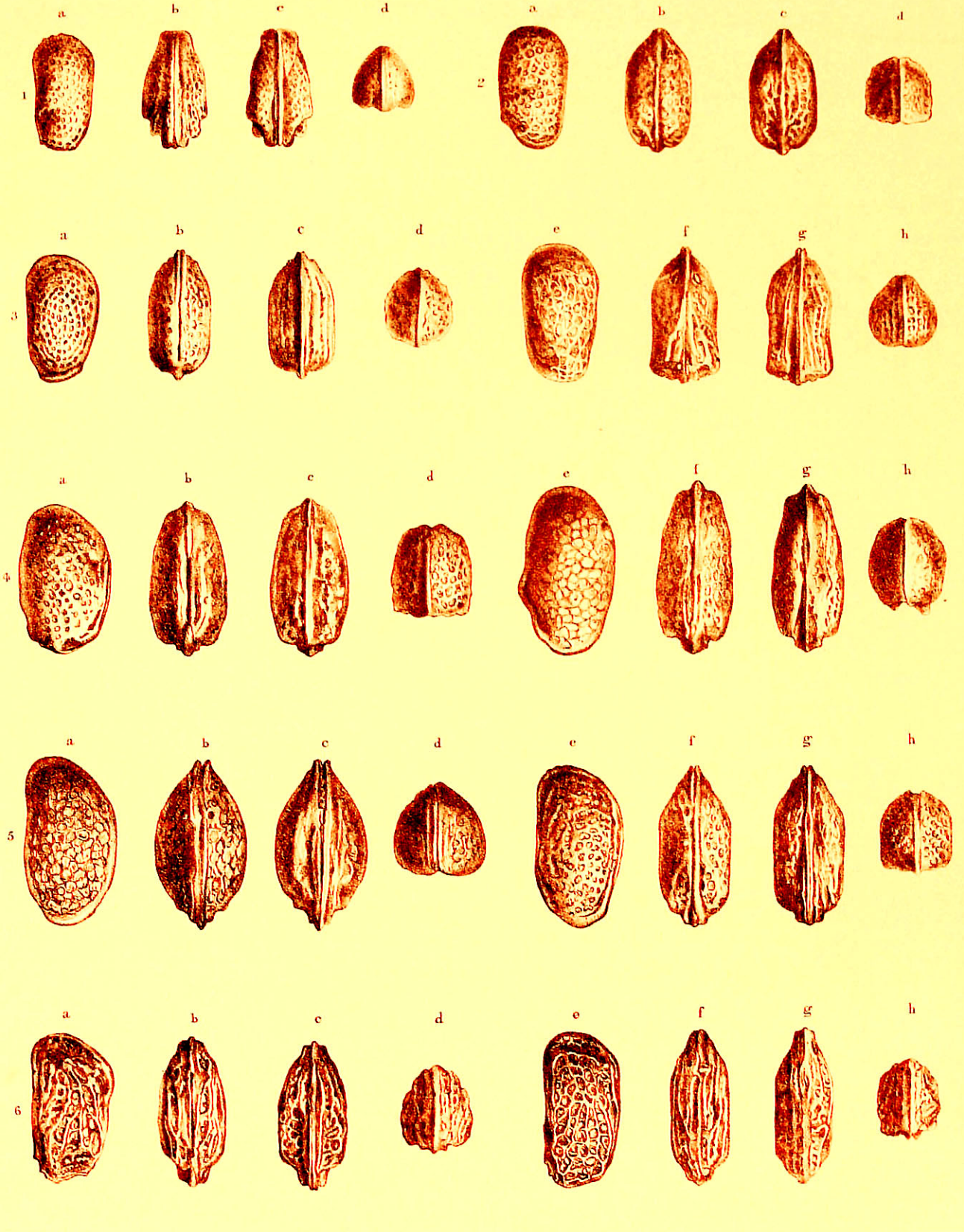
1,a–e BAIRDIA FORMOSA, G.S.Brady
2,a–c " AMYGDALOIDES, G.S.Brady
3,a–d BAIRDIA TUBERCULATA, G.S.Brady
4,a–g " MILNE-EDWARDSII, G.S.Brady
5,a–d BAIRDIA VICTRIX, G.S.Brady



1,a–e BAIRDIA WOODWARDIANA, Sp nov
2,a–e " EXPANSA, Sp nov
3,a–e BAIRDIA ATTENUATA, Sp nov
4,a,b " FORTIFICATA, Sp nov
5,a–d BAIRDIA ANGULATA, G S Brady

Pinkus del et lith. Hanhart imp.

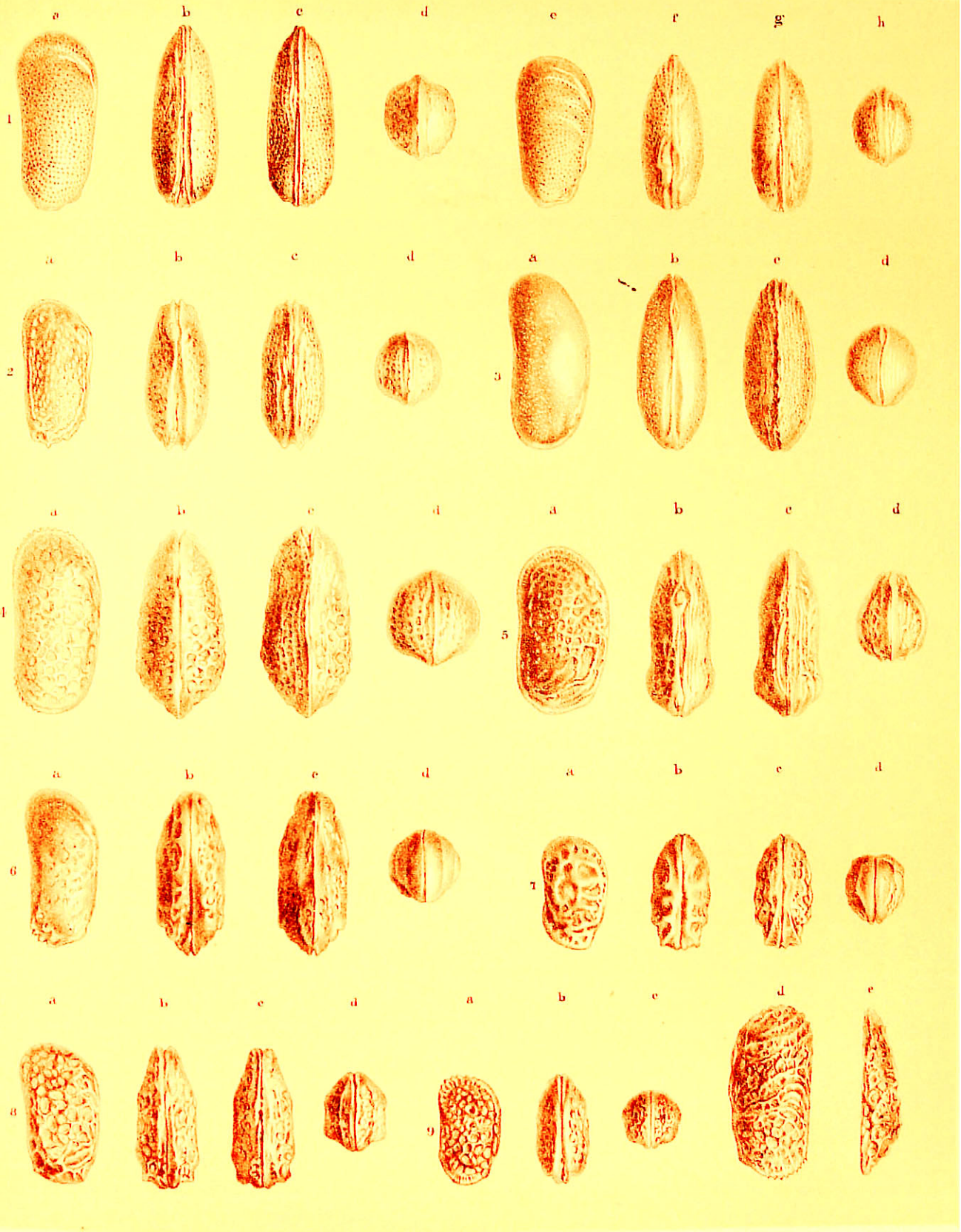
1, a–c CYTHERE OBTUSALATA, Sp. nov. 4, a–d CYTHERE CURVICOSTATA, Sp. nov.
2, a–d " VELLICATA, Sp. nov. 5, a–f " MOSELEYI, Sp. nov.
3, a–f " TENERA, G.S. Brady 6, a–f " FALKLANDI, Sp. nov.
7, a–j CYTHERE DEMISSA, G.S. Brady



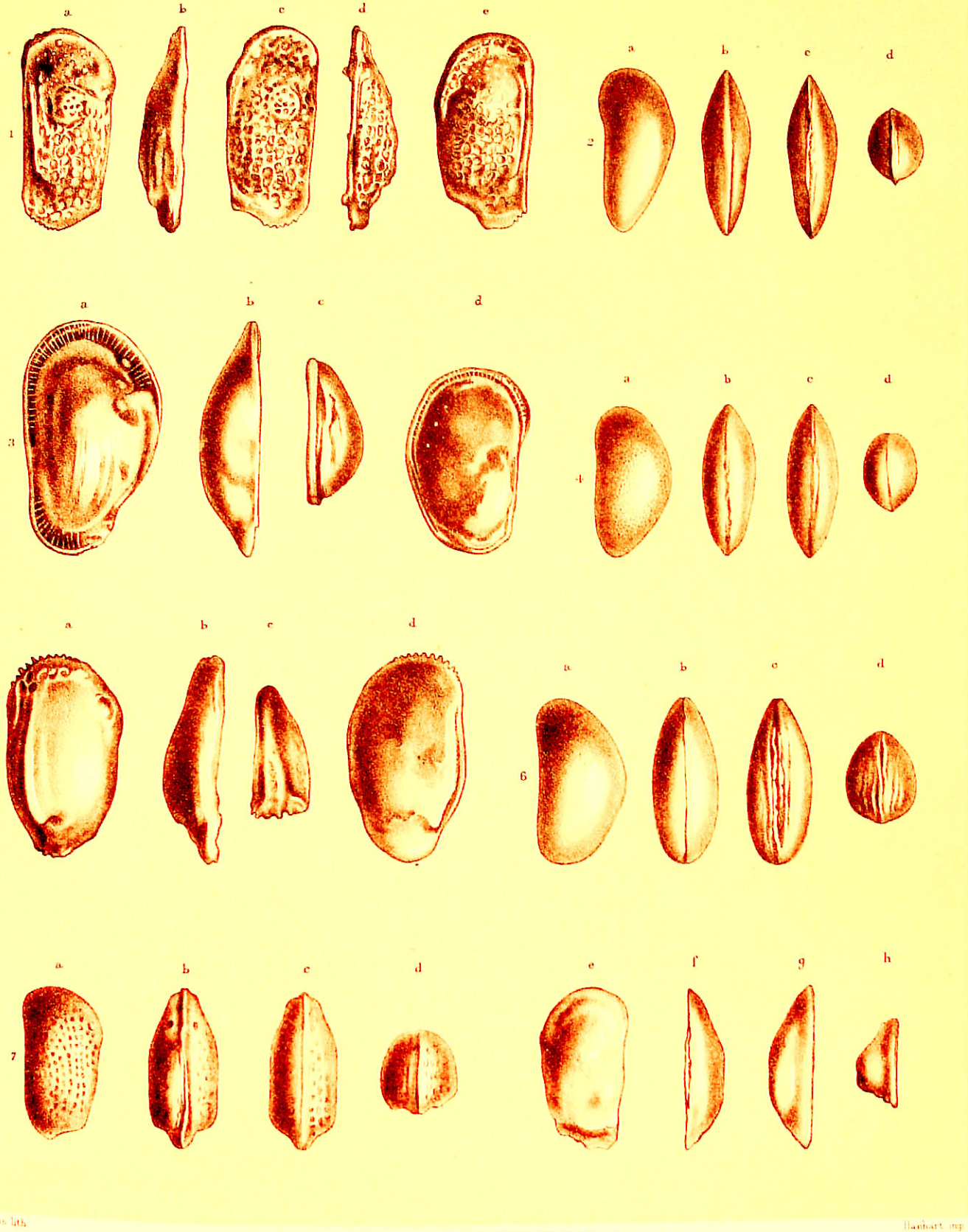
Parkins lith.

Hanhart imp.

1 a–d CYTHERE INCONSPICUA, Sp nov
2 a–d " CUMULUS, Sp nov
3 a–h " FLOS-CARDUI, Sp nov
4 a–h CYTHERE SECURIFER, Sp nov
5 a–h " FOVEOLATA, Sp nov
6 a–h " FLABELLICOSTATA, Sp nov



1,a–h CYTHERE ACUPUNCTATA, Sp. nov. 5,a–d CYTHERE FULVOTINCTA, Sp. nov.
2,a–d " REUSSI, G.S.Brady 6,a–d " LUBBOCKIANA, Sp. nov.
3,a–d " SCINTILLULATA, Sp. nov. 7,a–d " CANALICULATA, Reuss.
4,a–d " OVALIS, Sp. nov. 8,a–d " CRISPATA, G.S.Brady.
9,a–e CYTHERE CANCELLATA, G.S.Brady.



1 a–e CYTHERE PARALLELOGRAMMA, Sp nov.
2 a–d PONTOCYPRIS ATTENUATA, G S Brady
3 a–d CYTHERE PYRIFORMIS, Sp nov
4 a–d PONTOCYPRIS TRIGONELLA, G O Sars
5 a–d CYTHERE CYTHEROPTEROIDES, Sp nov
6 a–d PONTOCYPRIS (?) SUBTRIANGULARIS Sp nov
7 a–h CYTHERE AUDEI, G S Brady

Parkins lith

Hanhart imp

1 a-d, 2 a-d CYTHERE RASTROMARGINATA, Sp nov.
3 a-d " IMPLUTA, Sp nov
4 a-h " MURRAYANA, Sp nov

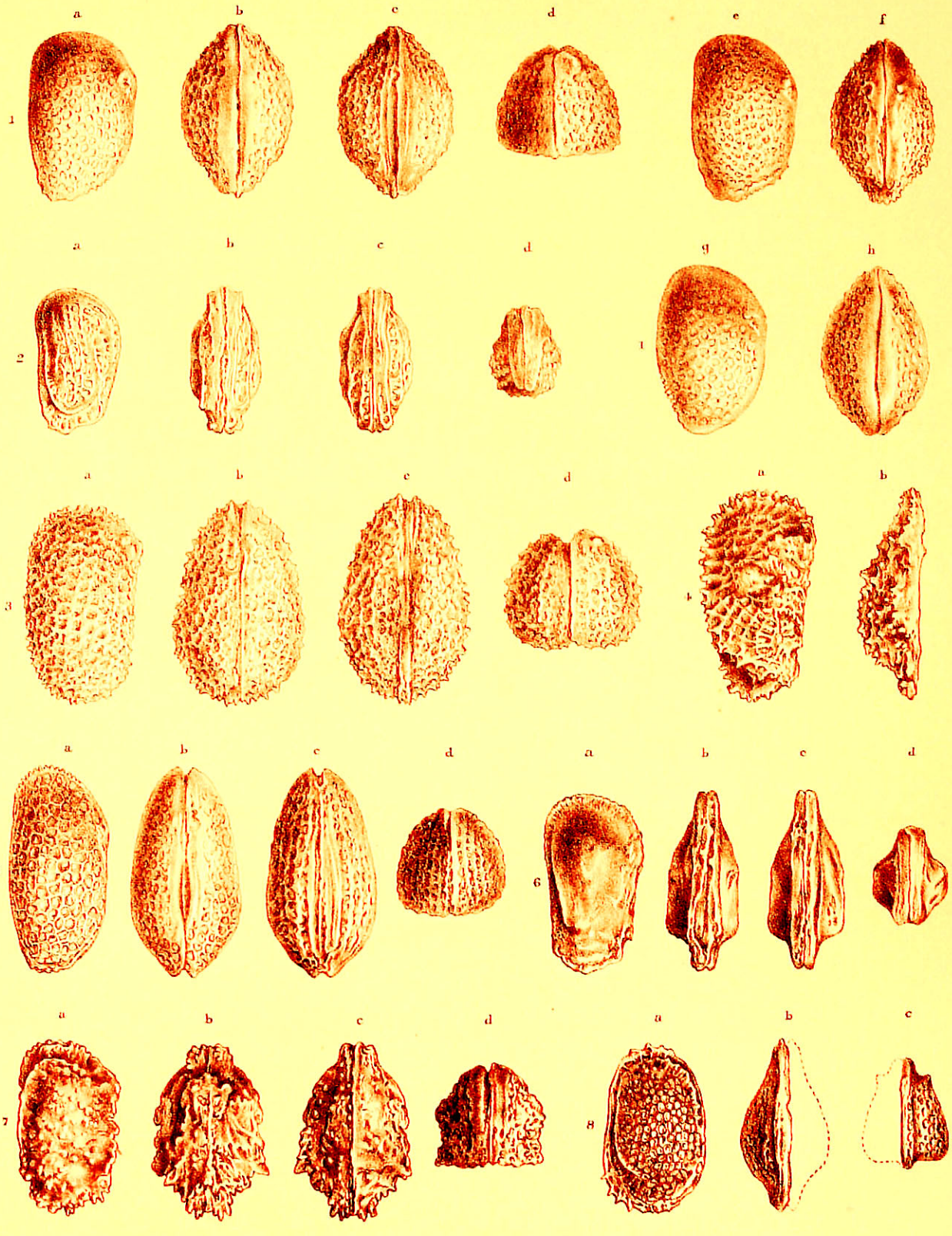
5 a-h CYTHERE EXILIS, Sp nov
6 a-d " BICARINATA, Sp nov
7 a-d " LAGANELLA Sp nov

Parkins lith. Hanhart imp.

1 a–d CYTHERE ERICEA, Sp nov.
2 a–d " IRPEX, Sp nov.
3 a–d CYTHERE NORMANI, G.S.Brady
4 a–f " DASYDERMA, Sp nov
5 a–f CYTHERE SCABROCUNEATA, Sp nov

W. Purkiss, lith. Hanhart, imp.

1 a g CYTHERE MELOBESIOIDES, G.S.Brady
2 a d " IRRORATA, Sp. nov.
3 a c CYTHERE VIMINEA, Sp. nov.
4 a f " DASYDERMA, Sp. nov.
5 a e CYTHERE ACANTHODERMA, Sp. nov.

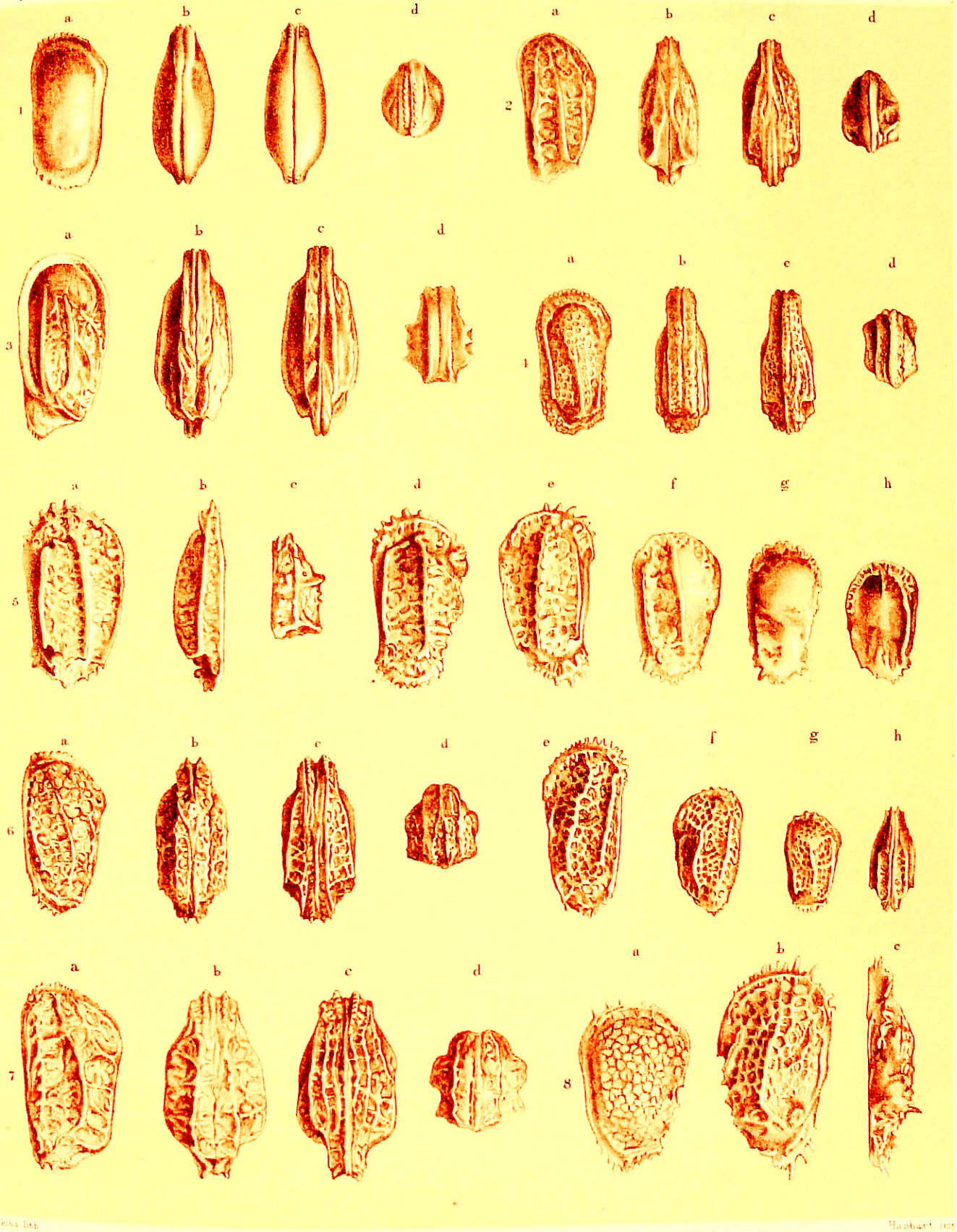


Parkes, lith.

Hanhart, imp.

1 a–h CYTHERE FABULOSA, Sp nov
2 a–d " PACKARDI, Sp nov
3 a–d " CRIBRIFORMIS, G S Brady
4 a, b " RADULA, Sp nov
5 a–d CYTHERE LEPRALIOIDES, Sp nov
6 a–d " CRISTATELLA, G S Brady
7 a–d " FUNGOIDES, G S Brady
8 a–c " TORRESII, Sp nov

1, a f CYTHERE KERGUELENENSIS, Sp nov
2, a f " SPEYERI, G.S.Brady
3, a f CYTHERE SUBRUFA, Sp nov
4, a f " WYVILLE THOMSONI Sp nov
5, a f CYTHERE CYMBA, G.S.Brady

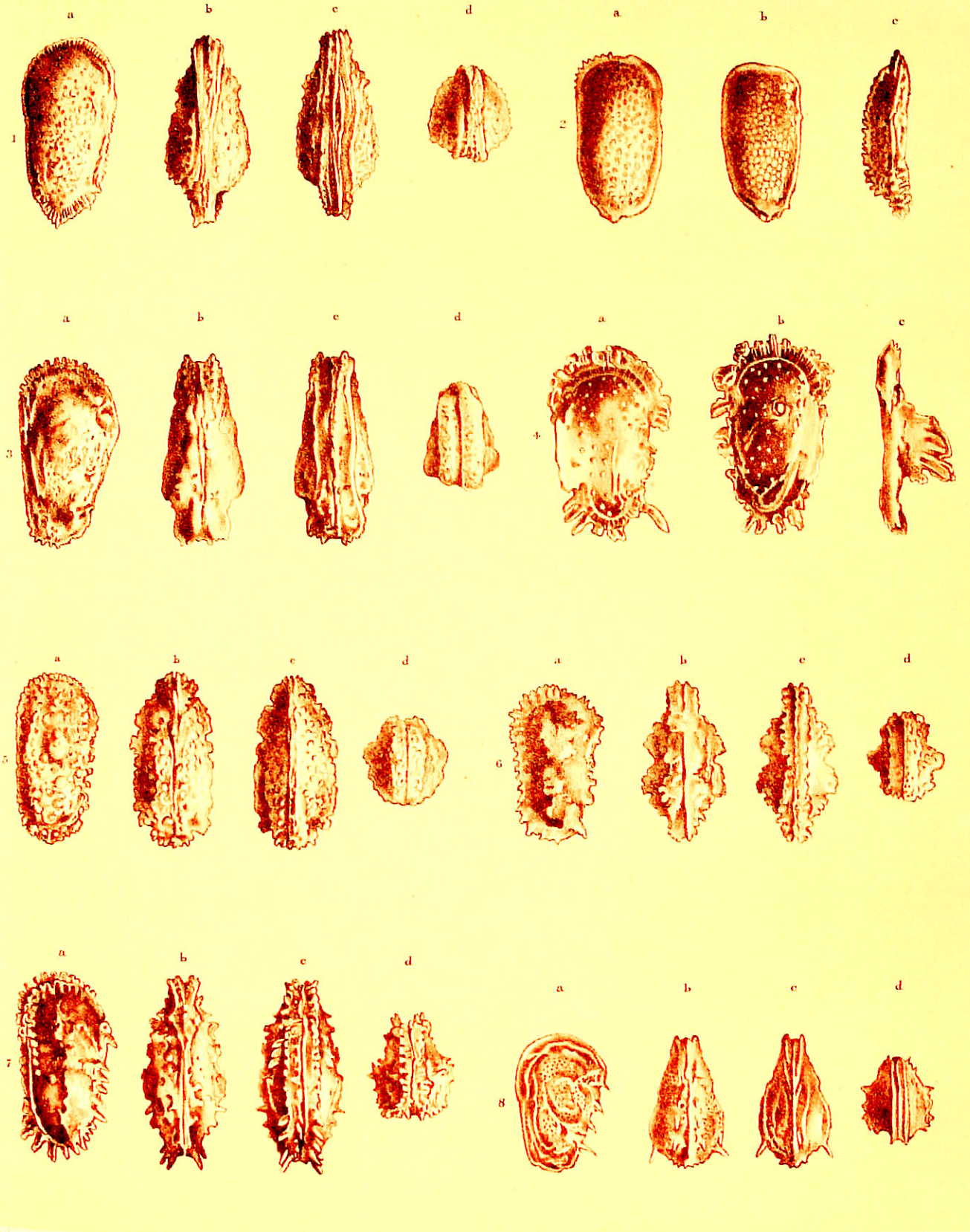


1 a–d CYTHERE FORTIFICATA, Sp. nov.
2 a–d " BERMUDÆ, G.S.Brady
3 a–d " STOLONIFERA, Sp. nov.
4 a–d " LAUTA, Sp. nov.
5 a–h CYTHERE POLYTREMA, G.S.Brady
6 a–h " STIMPSONI, G.S.Brady
7 a–d " CRATICULA, Sp. nov.
8 a–c " SCALARIS, Sp. nov.

W. Parkins lith.

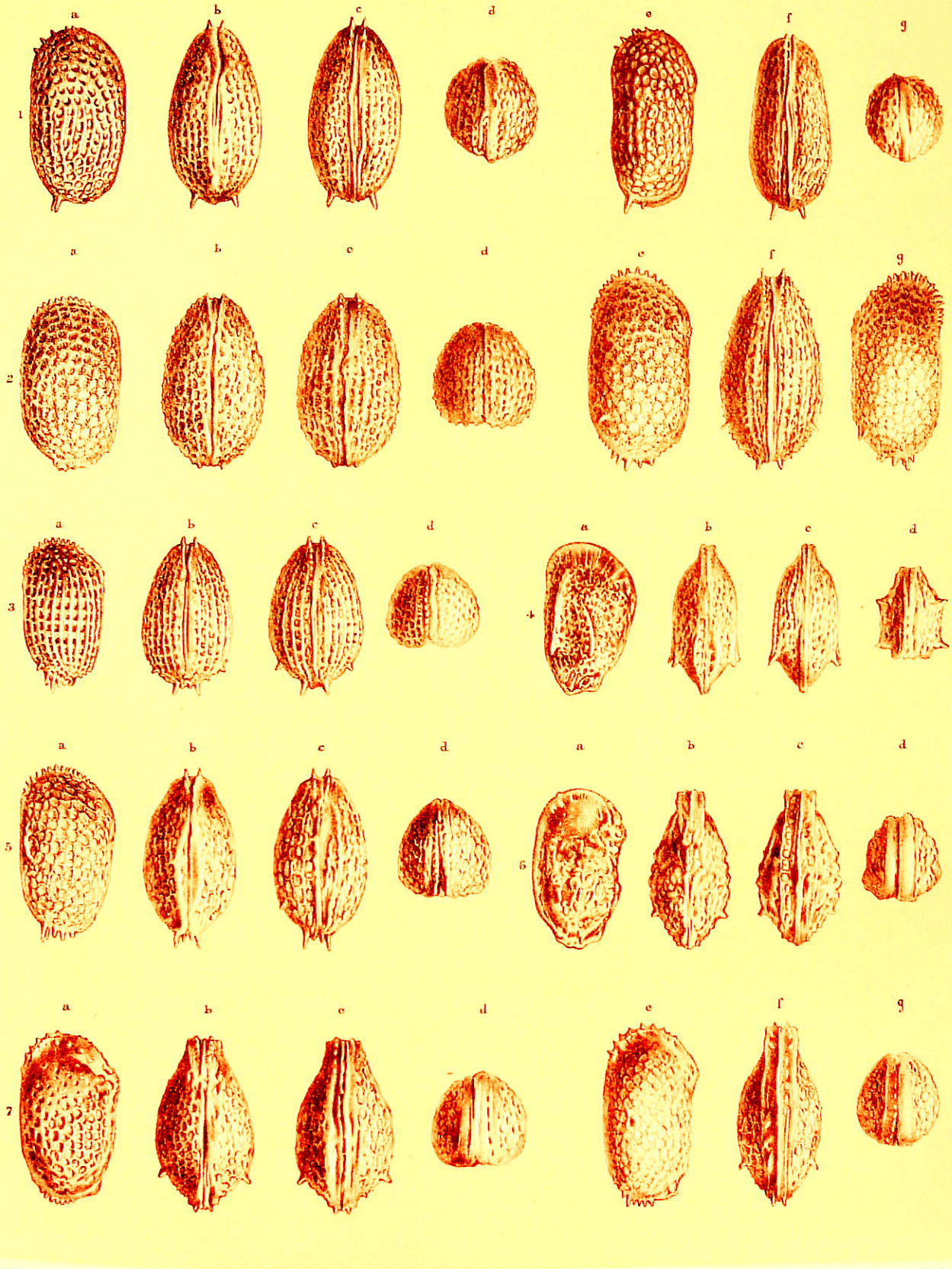
Hanhart imp.

1 a d CYTHERE LACTEA, G.S.Brady
2 a d " QUADRIACULEATA, Sp. nov
3 a d CYTHERE CONVOLUTA, G.S.Brady
4 a f " PRAVA, Baird
5 a f CYTHERE SCUTIGERA, G.S.Brady



1 a–d CYTHERE DORSISERRATA, Sp nov
2 a–e " SCABROCUNEATA, Sp nov
3 a–d " PATAGONIENSIS, Sp nov
4 a–e " VELIVOLA, Sp nov
5 a–d CYTHERE TETRICA, Sp nov
6 a–d " TRICRISTATA, Sp nov
7 a–d " CLAVIGERA, Sp nov
8 a–d " SQUABIDENTATA, Sp nov

1 a y CYTHERE DICTYON, Sp nov
2 a c " ARATA, Sp nov



W. Purkiss lith. Hanhart imp.

1 a–g CYTHERE HODGII, G.S.Brady

2 a–g CYTHERE DARWINII, G.S.Brady
3 a–d " EUPLECTELLA, G.S.Brady
4 a–d " QUADRIACULEATA, Sp. nov.
5 a–d CYTHERE PAPUENSIS, Sp. nov.
6 a–d " ADUNCA, G.S.Brady
7 a–g " GOUJONI, G.S.Brady

1 a–d CYTHERE SULCATOPERFORATA, Sp. nov.

2 a–e CYTHERE CIRCUMDENTATA, Sp. nov.

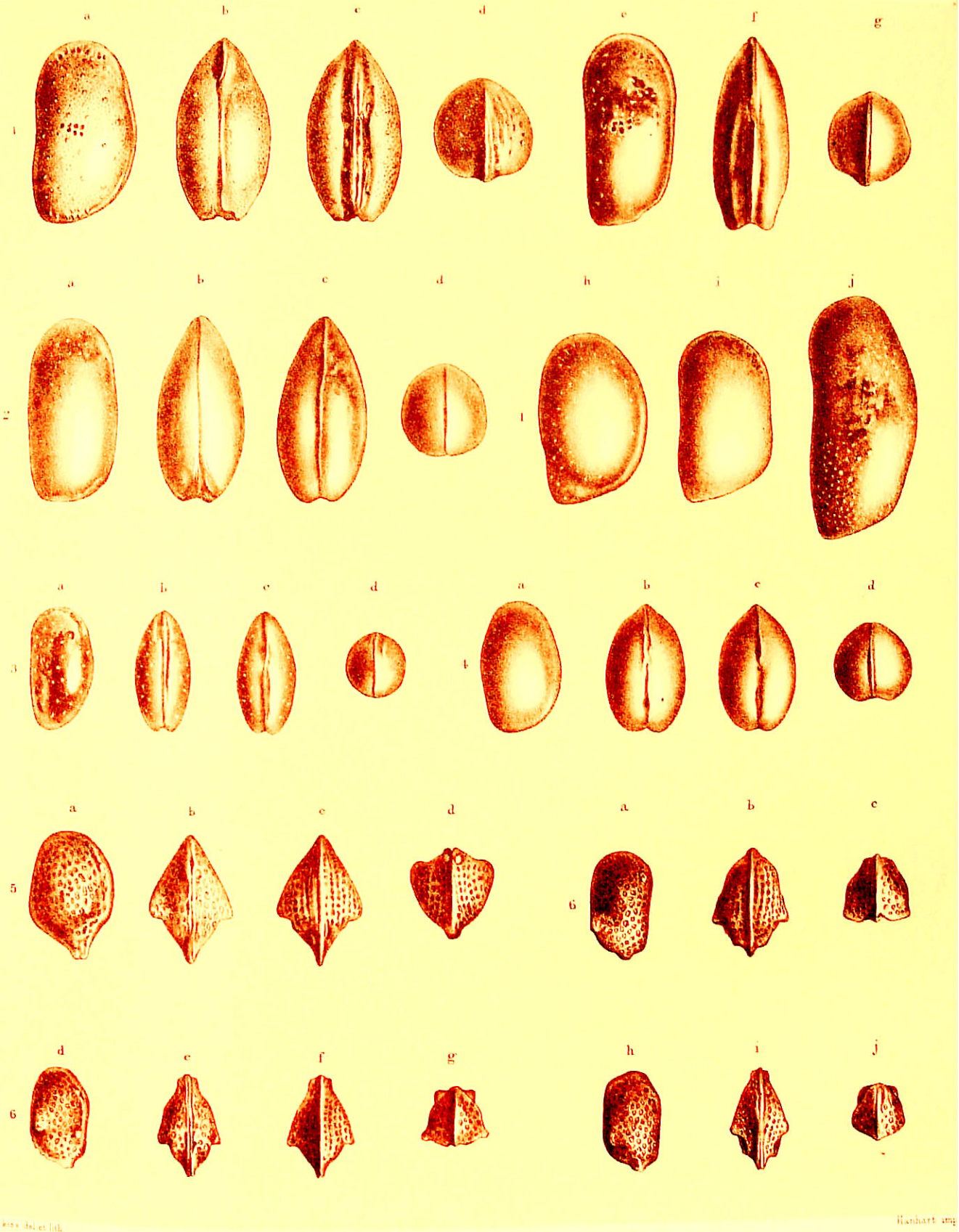
3 a, b " SUHMII, Sp. nov.

4 a, b " NORMANI, G.S. Brady

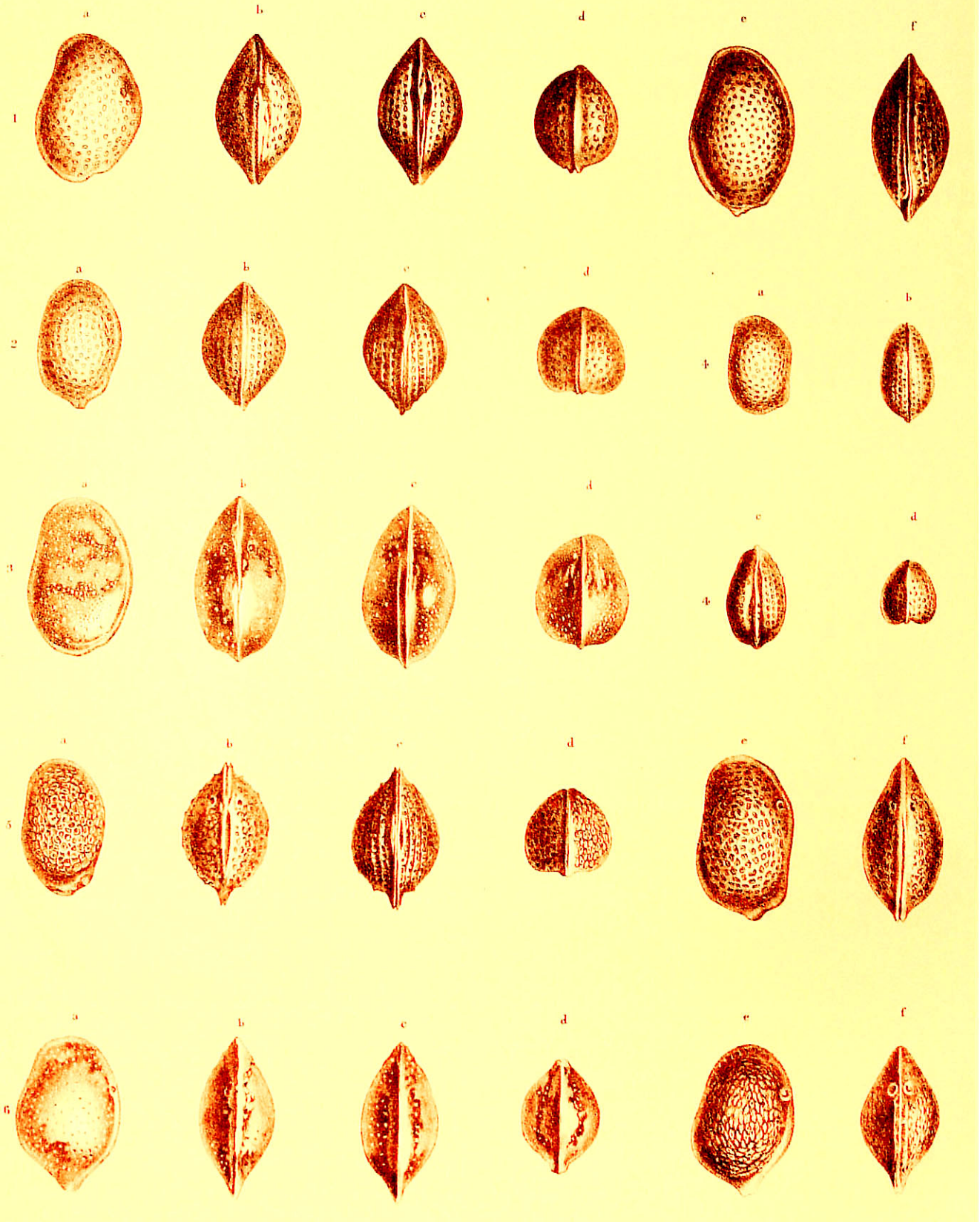
5 a–d CYTHERELLA CRIBROSA, Sp. nov.

6 a–d CYTHERE IMPLUTA, Sp. nov.

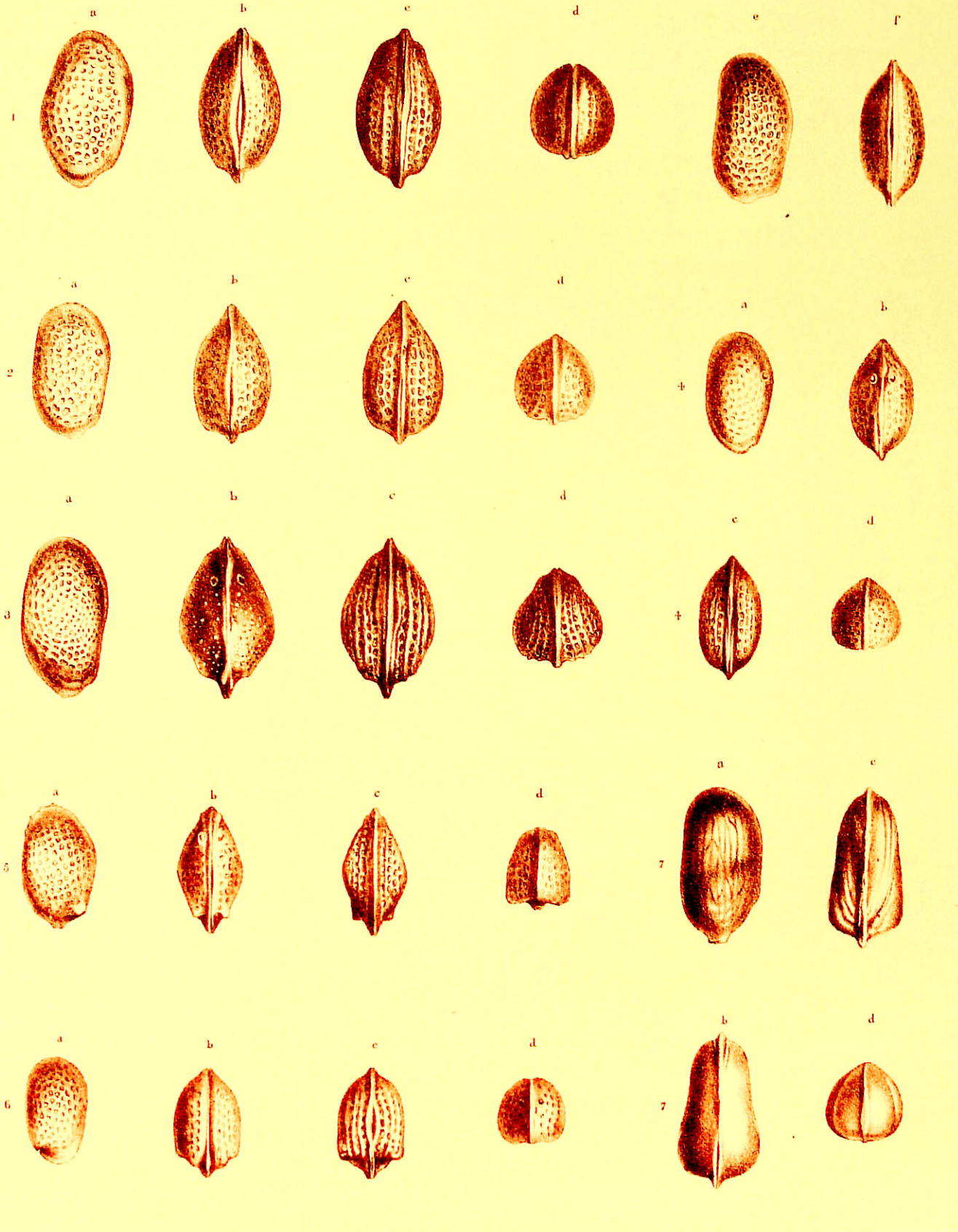
7 a–d CYTHERELLA LATIMARGINATA, Sp. nov.



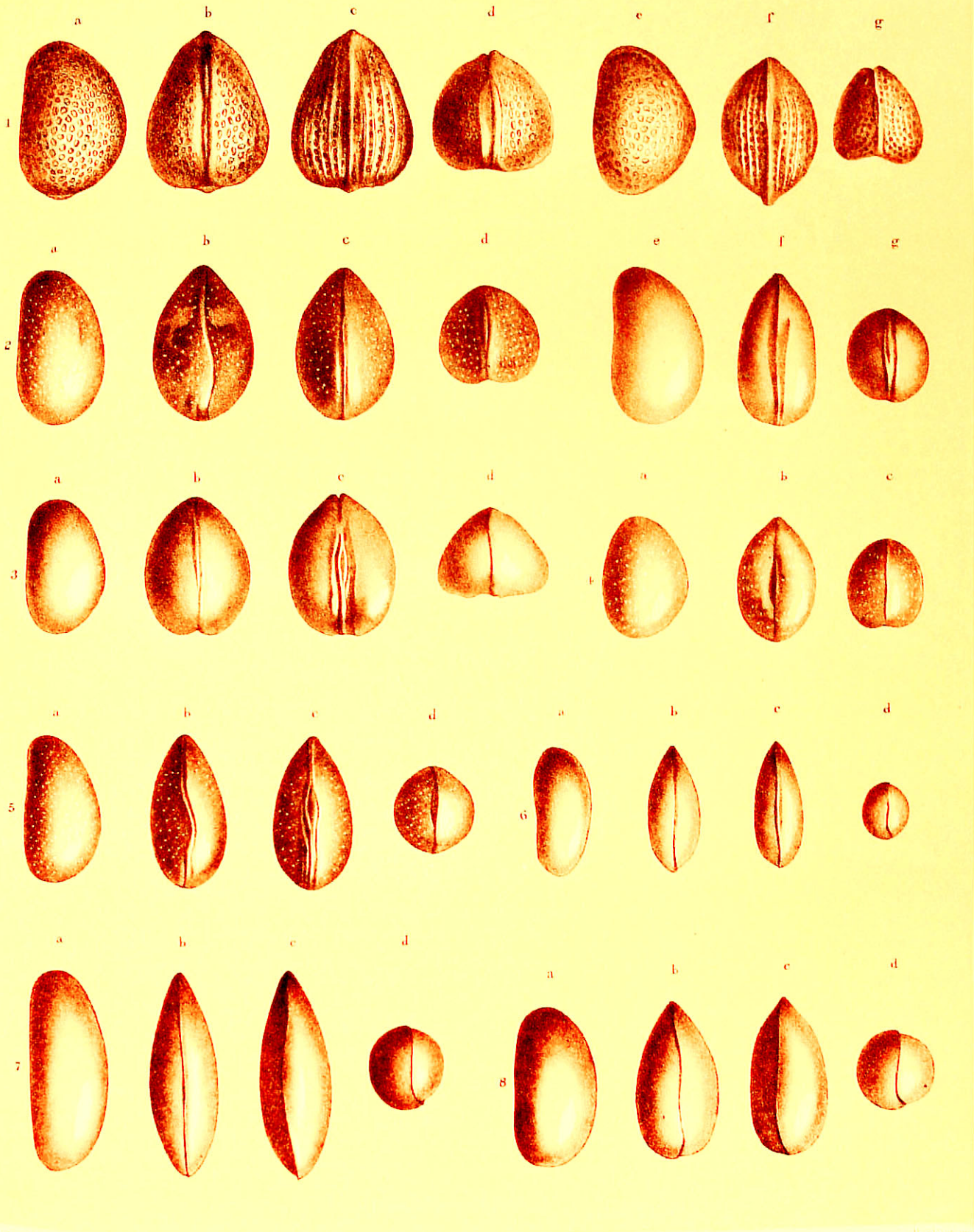
1, a–j KRITHE PRODUCTA, Sp nov
2, a–d " BARTONENSIS, (Jones)
3, a–d " HYALINA, Sp nov
4, a–d KRITHE TUMIDA, Sp nov
5, a–d LOXOCONCHA ANOMALA, Sp nov
6, a–j " ALATA, G.S.Brady



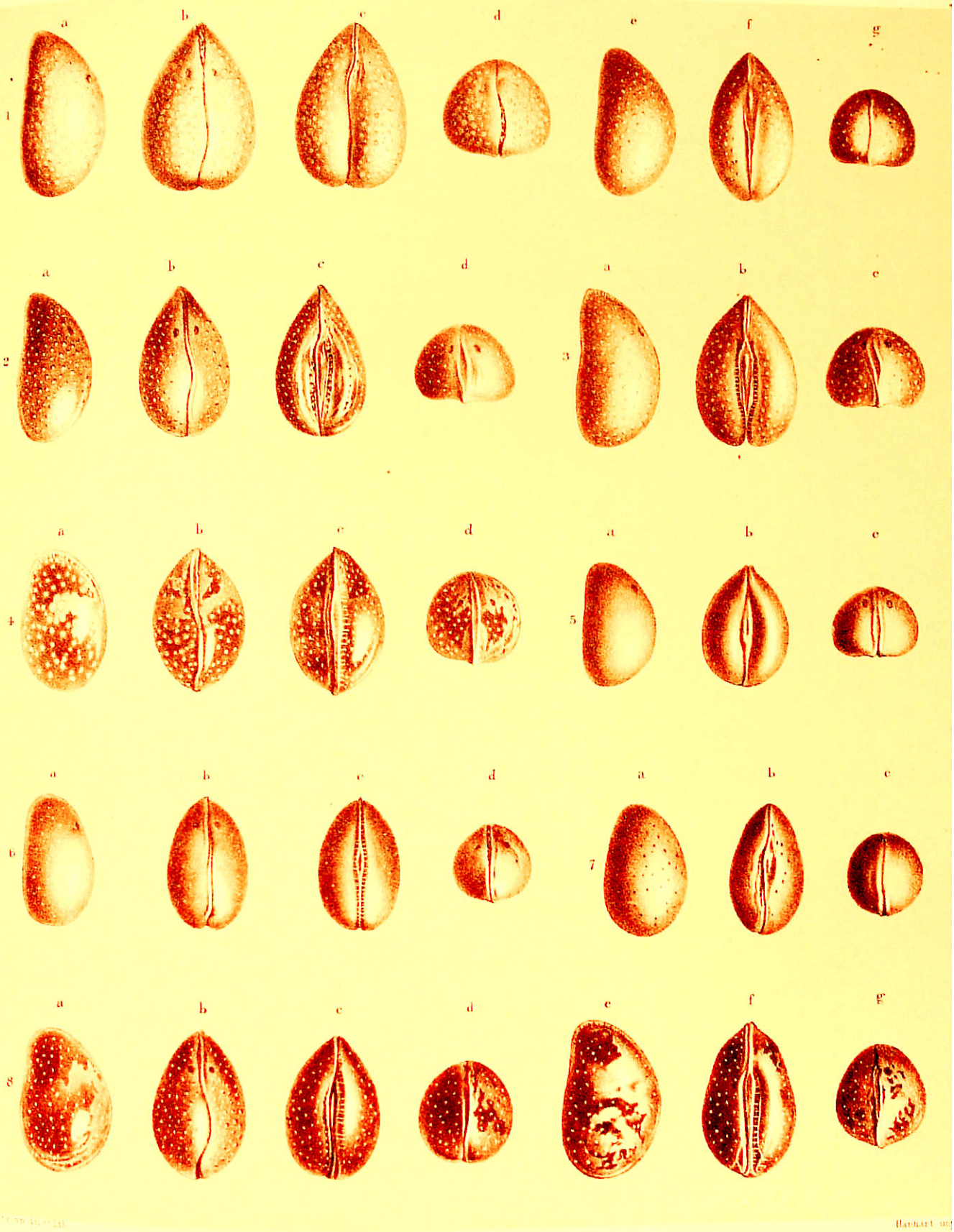
1.a-f LOXOCONCHA AVELLANA, G.S.Brady
2.a-d " PUMICOSA, Sp. nov.
3.a-d " AFRICANA, Sp. nov.
4.a-d LOXOCONCHA SUBRHOMBOIDEA, Sp. nov.
5.a-f " AUSTRALIS, Sp. nov.
6.a-f " HONOLULIENSIS, Sp. nov.



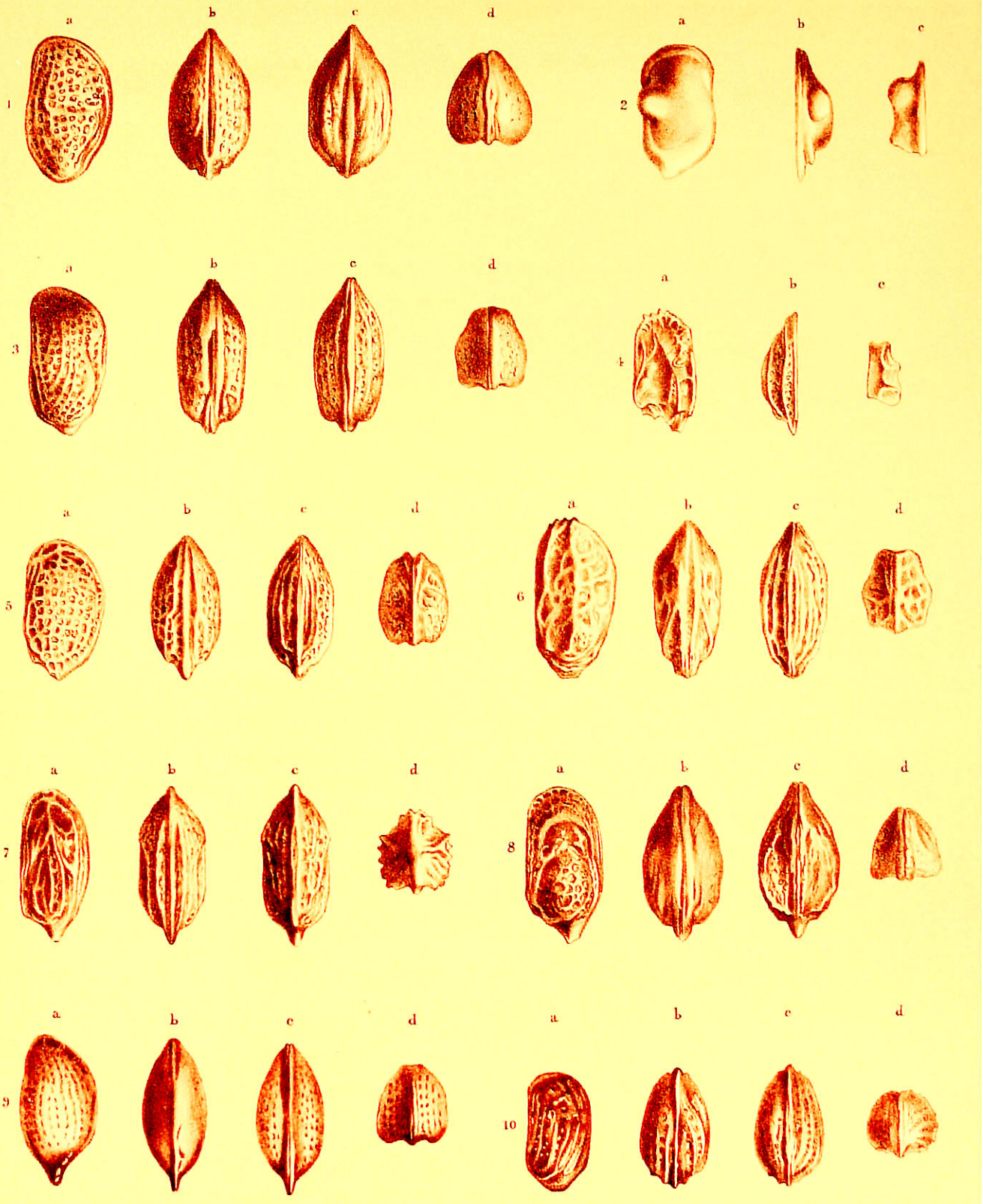
1, a–f LOXOCONCHA GUTTATA, (Norman)
2, a–d " SINENSIS, G.S.Brady.
3, a–d " AUSTRALIS, Sp. nov.
4, a–d LOXOCONCHA SINENSIS, *var.* Brady
5, a–d " SCULPTA, G.S.Brady
6, a–d " VARIOLATA G.S.Brady
7, a–d CYTHERURA CLAVATA, Sp. nov.



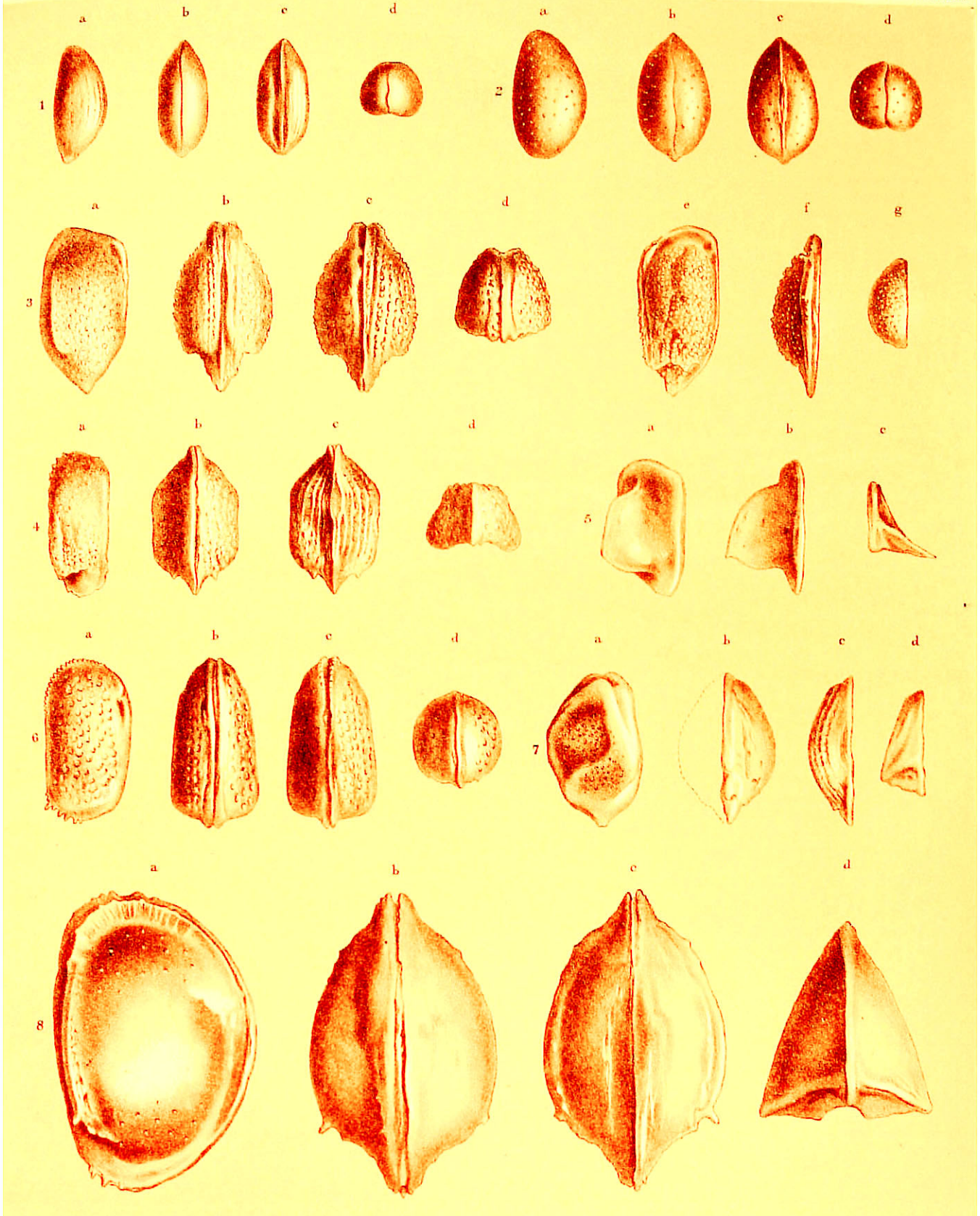
1, a g XESTOLEBERIS FOVEOLATA, Sp nov
2, a g " MARGARITEA, G S Brady
3, a d " EXPANSA, Sp nov
4, a c " AFRICANA, Sp nov
5, a d XESTOLEBERIS GRANULOSA, Sp nov
6, a d AGLAIA PUSILLA, Sp nov
7, a d " (?) MERIDIONALIS, Sp nov
8, a d " (?) OBTUSATA, Sp nov



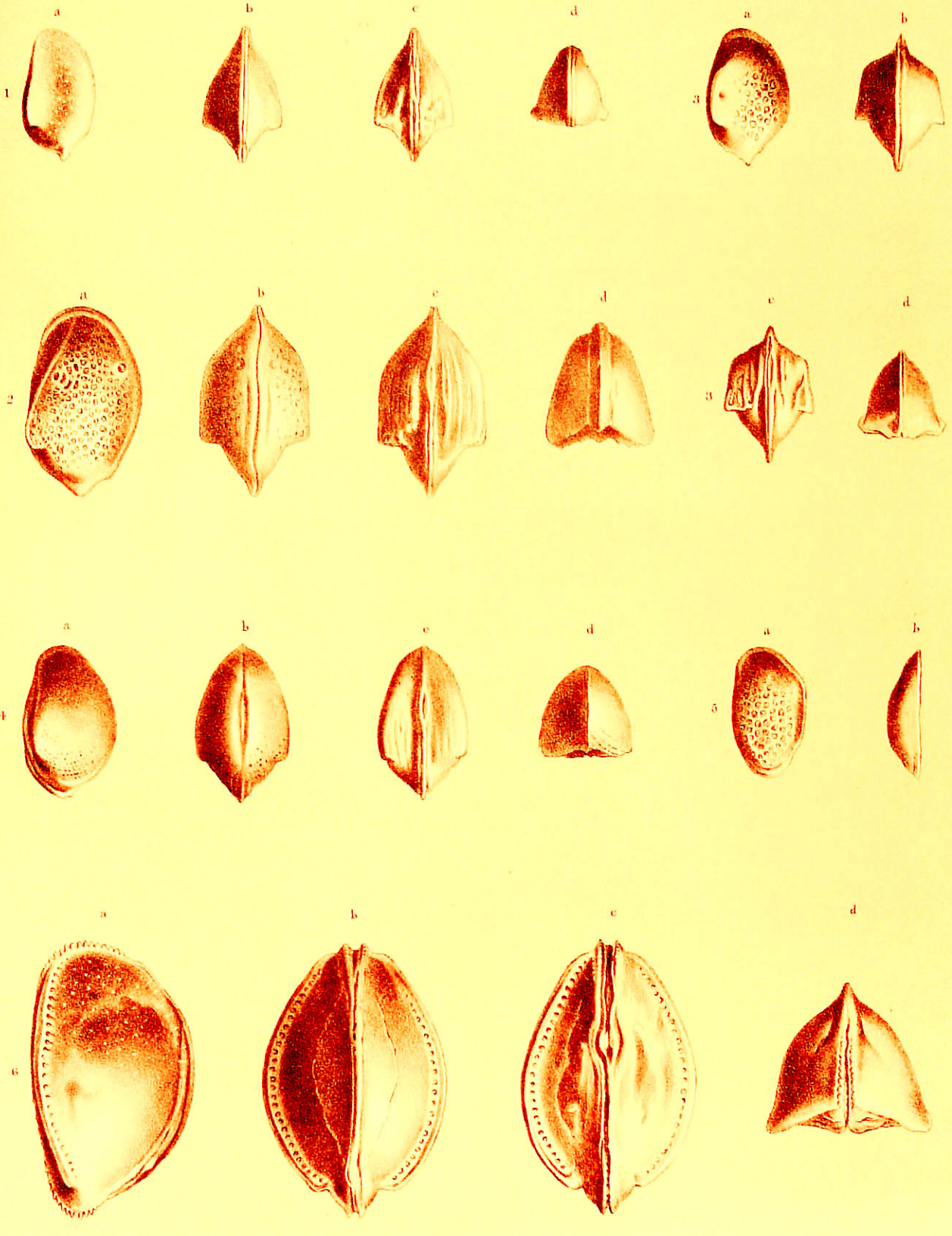
1 a–g XESTOLEBERIS DEPRESSA, G.O.Sars
2 a–d " SETIGERA, ♂, Sp. nov
3 a–c " ♀ "
4 a–d " TUMEFACTA, Sp. nov
5 a–c XESTOLEBERIS NANA, Sp. nov
6 a–d " CURTA, G.S.Brady
7 a–c " POLITA, Sp. nov
8 a–g " VARIEGATA, Sp. nov



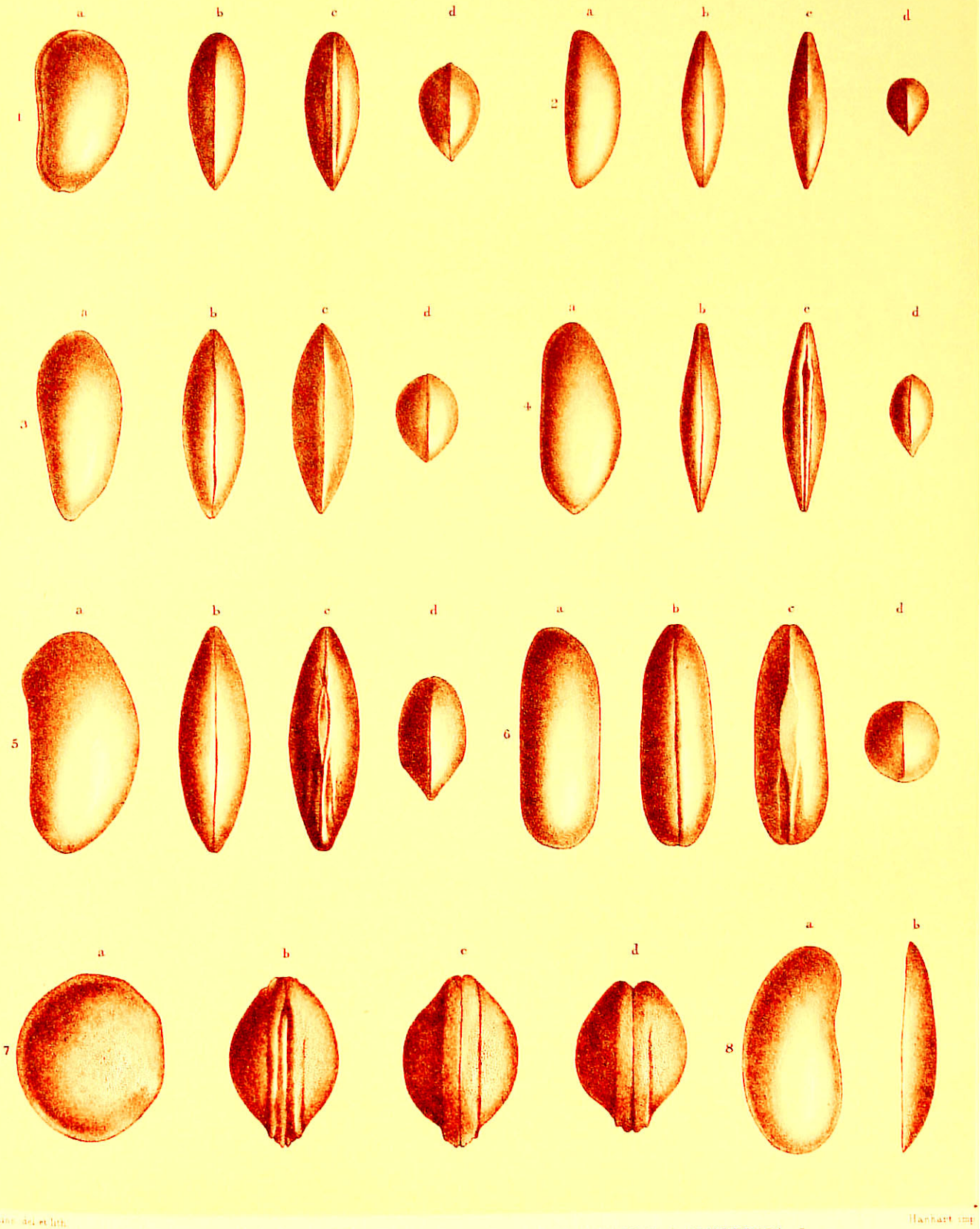
1, a d CYTHERURA OBLIQUA, Sp nov
2, a c BYTHOCYTHERE ORIENTALIS, *gen* Sp nov
3, a d CYTHERURA RUDIS? G & Brady
4, a c " CRYPTIFERA, Sp nov
5, a d " CRIBROSA, Sp nov
6, a d CYTHERURA LILLJEBORGII, Sp nov
7, a d " COSTELLATA, Sp nov
8, a d " CLAUSII, Sp nov
9, a d " MUCRONATA, Sp nov
10, a d " CURVISTRIATA Sp nov



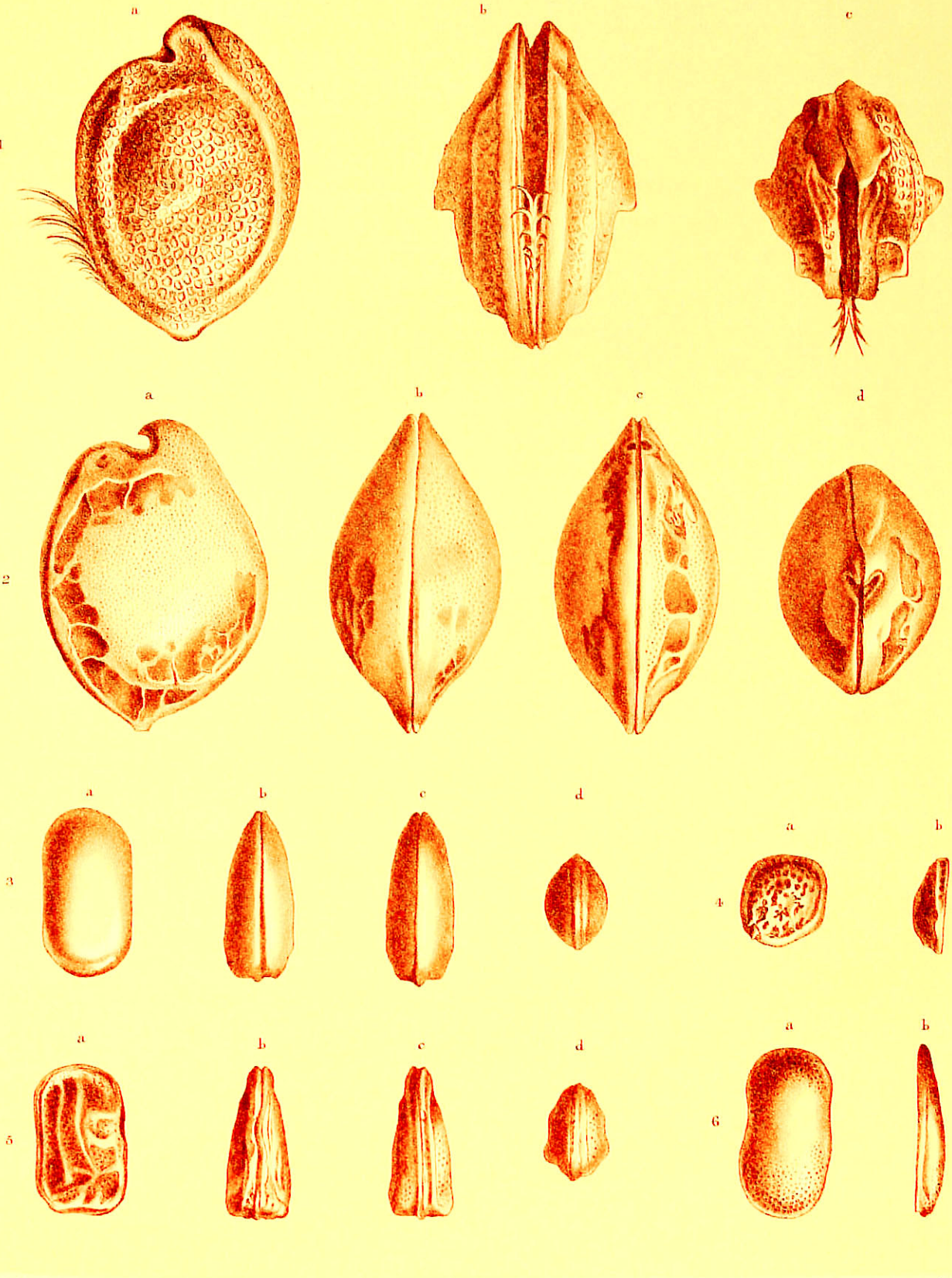
1, a–d CYTHEROPTERON SCAPHOIDES, Sp. nov.
2, a–d XESTOLEBERIS INTERMEDIA, ? G.S.Brady
3, a–g BYTHOCYTHERE ARENOSA, Sp. nov.
4, a–d " PUMILIO, Sp. nov.
5, a–c BYTHOCYTHERE VELIFERA, Sp. nov.
6, a–d CYTHERIDEA SPINULOSA, G.S.Brady
7, a–d CYTHEROPTERON PATAGONIENSE, Sp. nov.
8, a–d " MUCRONALATUM, Sp. nov.



1 a–d CYTHEROPTERON INTERMEDIUM, G.S.Brady
2 a–d " ASSIMILE, Sp. nov.
3 a–d " ABYSSORUM, Sp. nov.
4 a–d CYTHEROPTERON WELLINGTONIENSE, Sp. nov.
5 a–b " ANGUSTUM, Sp. nov.
6 a–d " FENESTRATUM, Sp. nov.



1, a d. PARADOXOSTOMA ABBREVIATUM, G.O.Sars.
2, a d. XIPHICHILUS ARCUATUS, Sp. nov.
3, a d. PARADOXOSTOMA ENSIFORME? G.S.Brady.
4, a d. XIPHICHILUS COMPLANATUS, Sp. nov.
5, a d. BYTHOCYPRIS? COMPRESSA, Sp. nov.
6, a d. CYTHERIDEIS LÆVATA, Sp. nov.
7, a d. POLYCOPE CINGULATA, Sp. nov.
8, a b. SCLEROCHILUS CONTORTUS, (Norman).

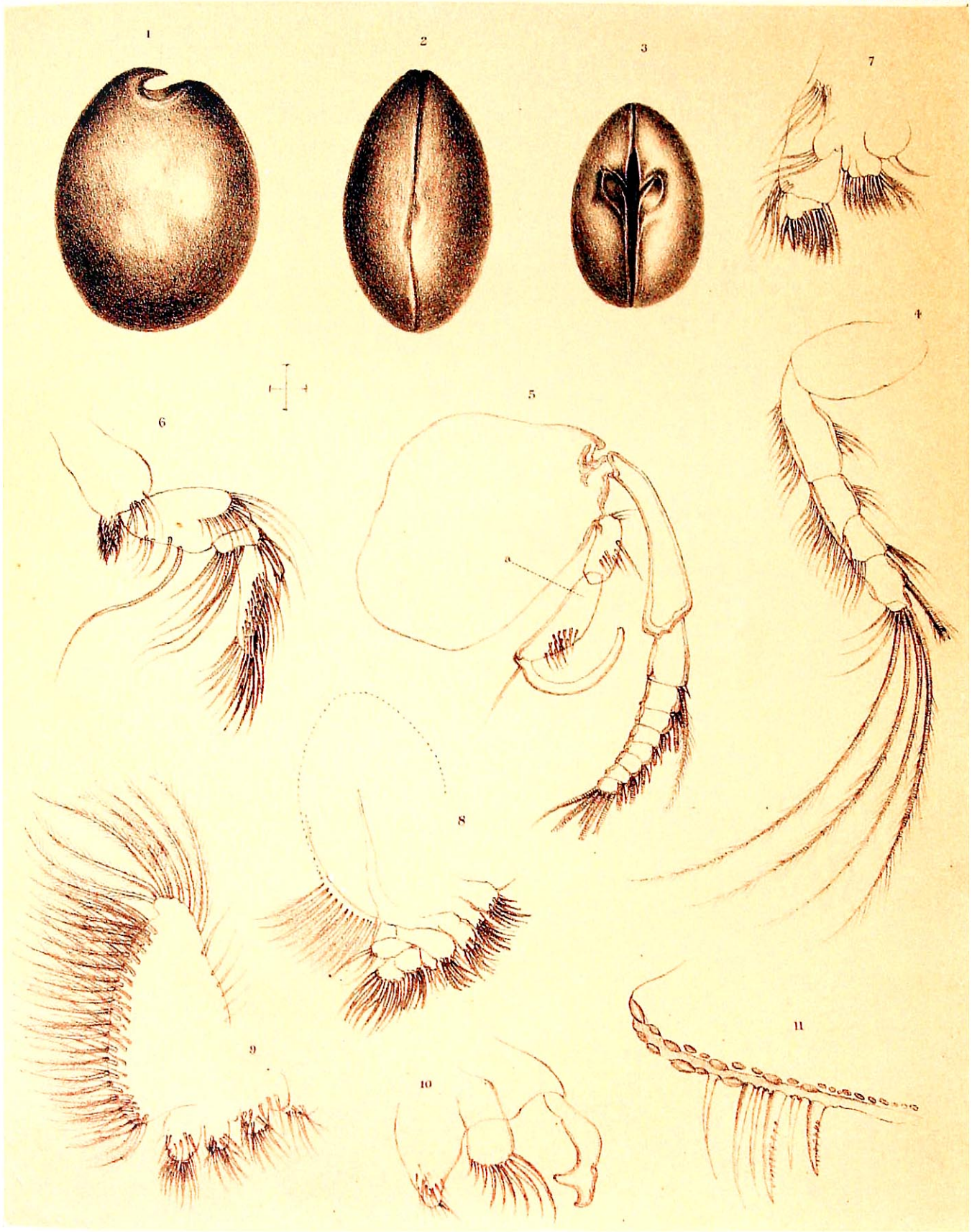


Hanhart imp.

1. a–c PHILOMEDES WYVILLE THOMSONI, Sp. nov.
2. a–d CYPRIDINA DANÆ, Sp. nov.
3. a–d CYTHERELLA TRUNCATA, G.S.Brady
4. a, b POLYCOPE FAVUS, Sp. nov.
5. a–d CYTHERELLA CAVERNOSA, G.S.Brady
6. a, b " PUNCTATA, G.S.Brady

G.S.B. del. et lith. Hanhart imp.

CYPRIDINA GRACILIS, Sp nov.



J.S.B. del. et lith.

Hanhart imp.

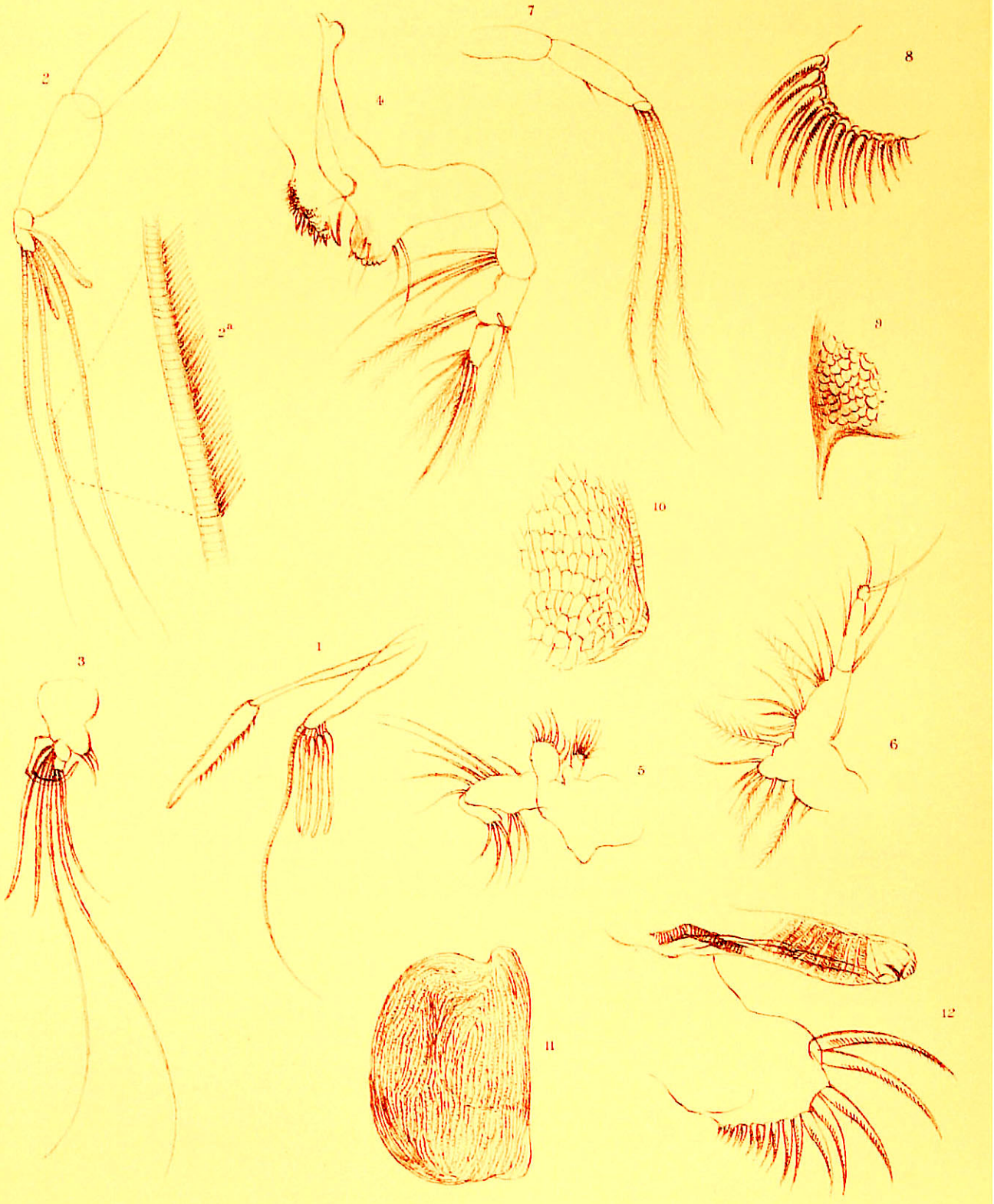
CROSSOPHORUS IMPERATOR, nov. gen. & Sp.

1–11 HALOCYPRIS BREVIROSTRIS, Dana.
12–17 PHILOMEDES GIBBOSA, (Dana.)

G.S. del. et lith.

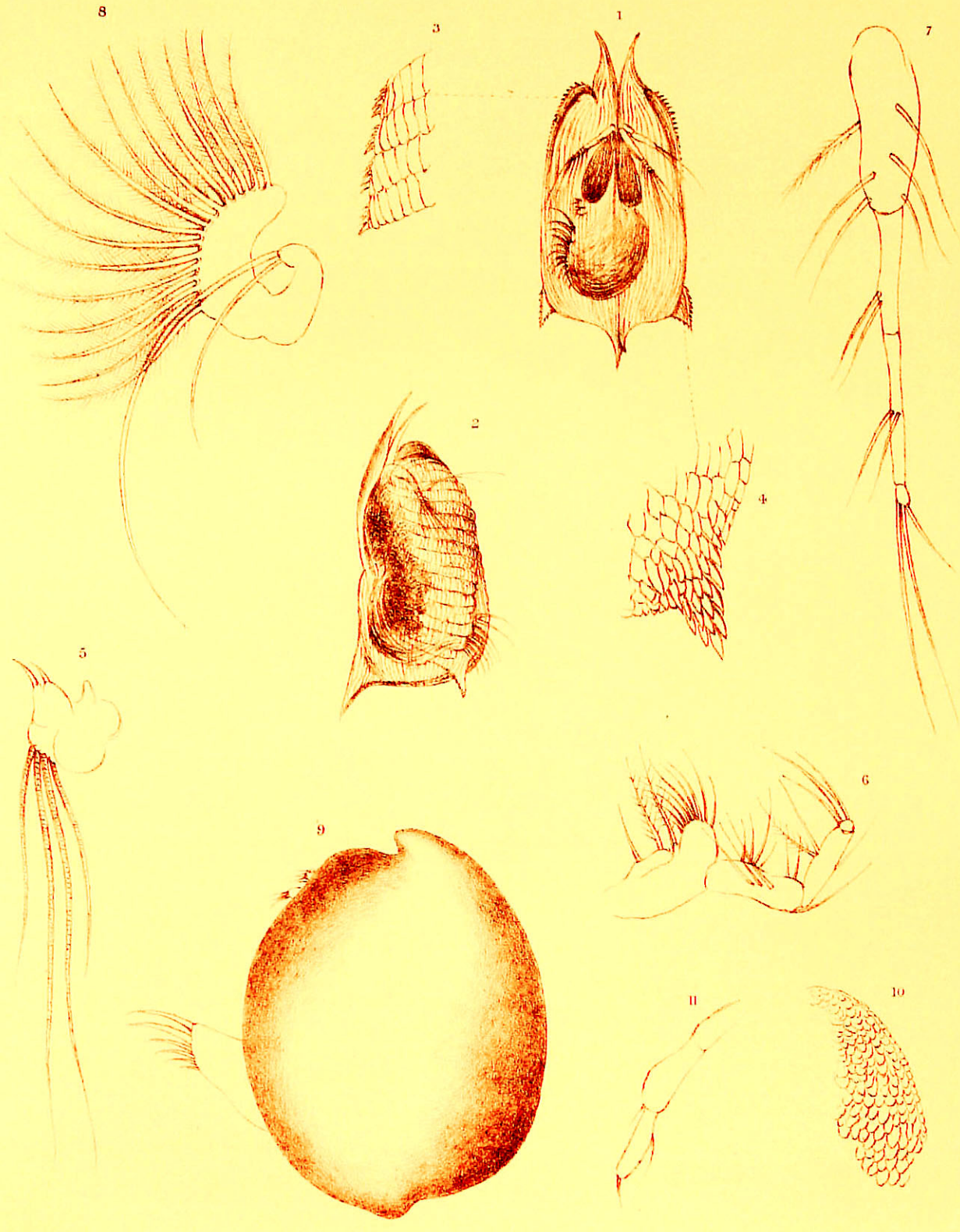
Hanhart imp.

HALOCYPRIS ATLANTICA, Lubbock.



G.S.E. Sc. et Ath. Hanhart. im

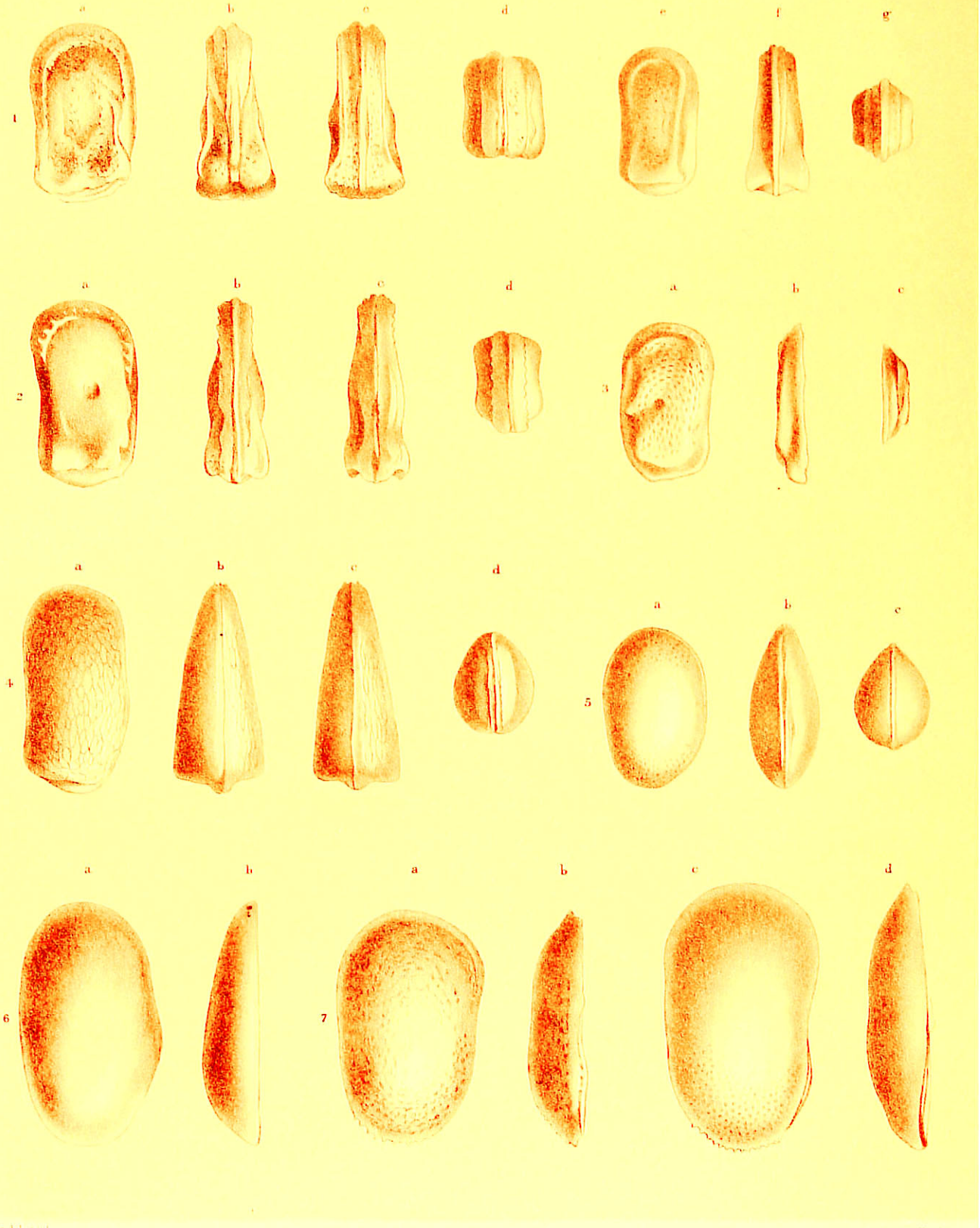
1–10. HALOCYPRIS IMBRICATA, ♂&♀ Sp nov.
11,12 " ATLANTICA, ♂ Lubbock.



G.S.B. del. et lith.

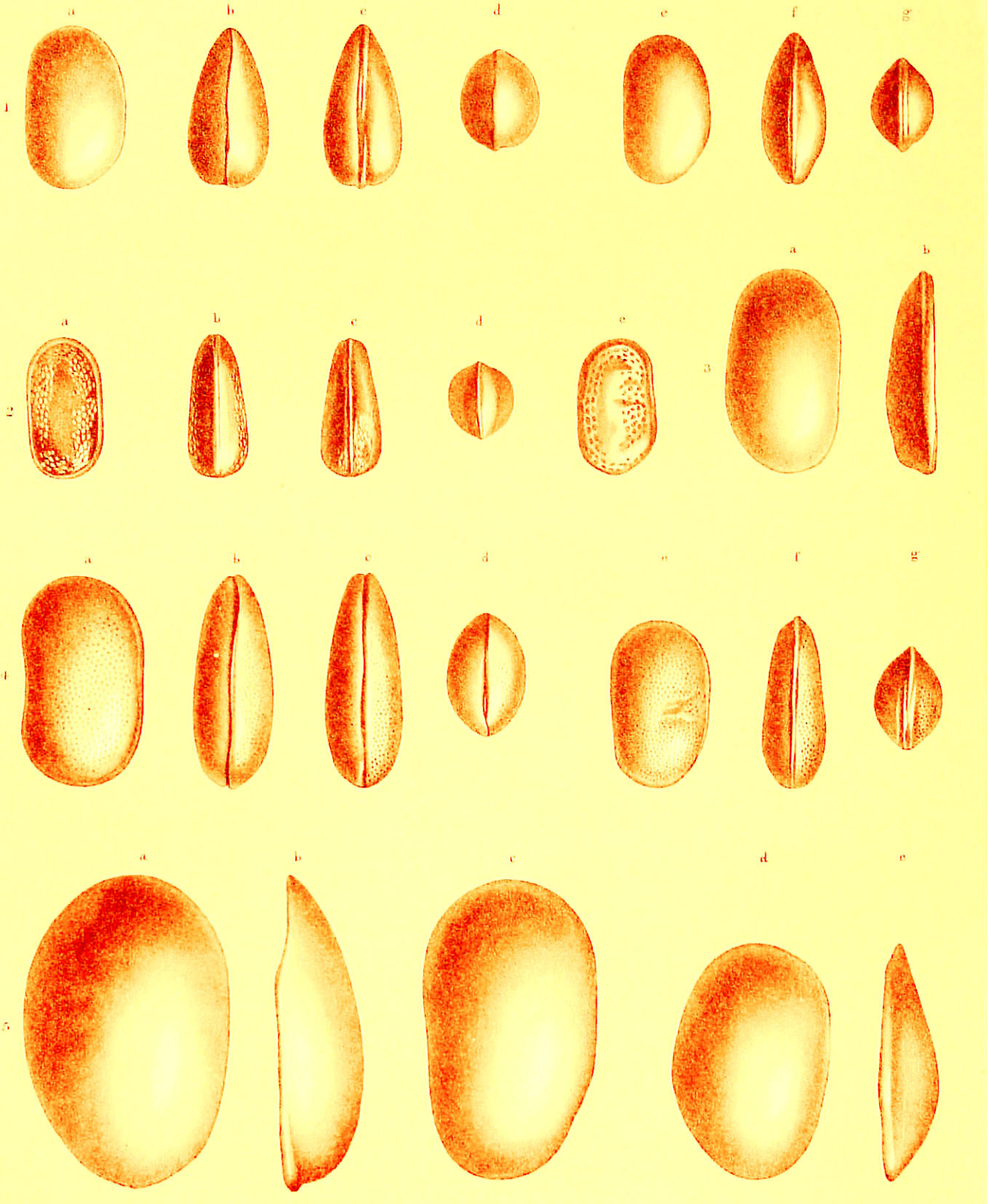
Hanhart imp.

1–8. HALOCYPRIS IMBRICATA, ♀ Sp. nov.
9–11. CYPRIDINA FORMOSA?, Dana.



Parkins del. et lith. Hanhart imp.

1, a–g CYTHERELLA CINGULATA, G.S. Brady
2, a–d " " "
3, a–c " IRREGULARIS, Sp. nov.
4, a–d CYTHERELLA VENUSTA, Sp. nov.
5, a–c " POLITA, G.S. Brady.
6, a, b " DROMEDARIA, Sp. nov.
7, a–d CYTHERE SERRATULA, Sp. nov.



Dickie del. et lith.

Hanhart imp.

1 a–g CYTHERELLA POLITA, G.S.Brady.
2 a–e " SEMITALIS, G.S.Brady.
3 a, b " PULCHRA, G.S.Brady.
4 a–g " PUNCTATA, G.S.Brady.
5 a–e " LATA, Sp. nov.