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XV.—*Remarks on the Habits and Distribution of Marine Crustacea on the eastern shores of Port Philip, Victoria, Australia; with Descriptions of undescribed Species and Genera.* By JOHN ROBERT KINAHAN, M. B. T. C. D., M. R. D. S., Acting Professor Natural History, Department of Science and Art, &c., &c. With two Plates.

[Read Friday Evening, April 25, 1856.]

THE following brief summary of personal observations made during a six weeks' sojourn in 1855 on the shores of Port Philip, during which time I had ample opportunities of thoroughly examining a range of about twenty miles of the coasts of this lovely bay, does not purport to be by any means a perfect list of the crustacea to be found there, but merely a list of those which came under my notice at that time.

The meagreness of the published descriptions of the habits of the foreign members of this large family of animals must plead my apology for entering so fully as I have done into details which are chiefly intended as illustrative of the Australian crustacea lately presented to your Museum.

I have also taken occasion to add a few general remarks on their distribution, as contrasted with the distribution of the denizens of our Irish coast.

But before proceeding further, a brief description of the Port Philip district will be indispensably necessary to the due understanding of my remarks.

Port Philip, one of the finest land-locked harbours in the world, has a narrow entrance, from whence the shores rapidly

receding form a magnificent bay, with deep inlets running off it for some distance into the surrounding country. On the two principal of these, cities have been built, i. e. on Geelong Bay and on Hobson's, or, as it is also called, Melbourne Bay. Within four miles of the shores of the latter stands the capital of the province, on the banks of the Yarra-yarra, which river, falling into the north-west end of Melbourne Bay, divides it into an eastern and western portion.

On the western shores stands Williamstown, whilst on the eastern the rapidly rising township of Sandridge nearly connects Melbourne with the sea. We will call, for convenience sake, the two districts on either side of the Yarra, the Williamstown and Sandridge districts, including under the latter the coast to the eastward beyond the Red Bluffs.

The Williamstown district, as examined by me, is but small in extent, its shores muddy and flat, such as are generally met with at the mouths of tidal rivers.

The other, or Sandridge district, demands a more particular description.

Commencing at Sandridge, the beach is at first steep, made up of fine sand, the tide falling but a short way—the shores are a raised beach of blowing sand. This district, which extends for about four miles to St. Kilda, is but poor collecting ground for the carcinologist, the only species at all common being the wrinkled mining crab (*M. subverrucatus*), which is thrown up dead on the beach.

At St. Kilda there is a low point, from whence a reef of rocks of small extent runs out into the sea; surrounding the reef are a few detached low rocks covered with seaweed, and generally left bare at low water. On these, after high gales, that singular-looking crab, the winged ear crab (*Halimus auritus*) may be found dead in some numbers, the females much more numerous than the males.

The coast now taking a turn, forms a beautiful sandy bay with a gently shelving beach, and an extensive strand left dry at low water, and a few sandy pools scattered over it. This extends nearly to the signal station at the old quarantine ground, where a small inland stream empties itself into the bay,—low precipitous cliffs bounding the cove. Between the stream and cliff an artificial oyster bed has been established. As we approach this stream the character of the strand alters, becoming more muddy,—circular shingly patches of rounded, flattened stones replacing the sand in parts. An extensive reef of rocks, interspersed with a few sandy patches and rock-pools, bound the district to the eastward.

This, as might be presumed, is one of the best localities for crustacea along the coast, both species and individuals, either alive or dead, being exceedingly numerous.

On the sandy flats, thousands of the wrinkled mining crab (*M. subverrucatus*), and a few of the smooth box crab (*P. lævis*), these latter generally dead, occur.

Under the stones in the rock-pools the entire-fronted swimming crab (*P. integrifrons*) is tolerably common, occupying the same position as his congener, the arch-fronted swimming crab (*P. arcuatus*) of European coasts.

Where the pools are muddy, the saw-fronted ooze crab (*O. serratifrons*) of every size abounds, whilst in the deeper pools, surrounded by *Chitons* and innumerable *Phasianellæ* of many colours and large size, the flattened filmy crab (*H. planatus*)—its carapace so covered with algæ and zoophytes as to be scarcely visible—is seen clinging to the stones with its hooked claws.

Among and under the shingle patches, and also running about the dry rocks, the eight-toothed beach crab (*H. octodentatus*) occurs; the males being the greatest rovers, the females keeping more closely hid under the shingle, where they are to be met with in great numbers.

The winged ear crab, as well as the other larger species, may also be generally found more or less abundantly here after every gale; and here, too, I picked up two macrourous mining crustacea, which appear to be as yet nondescript, though closely allied to *Trypea Australiensis* of Dana.

The eastern side of the reef differs in its character from the western, being composed almost entirely of ledges of serpulæ, which same reefs also occur detached in various parts along the coast. A narrow beach of large shingle, thrown up by the current, separates the reef from the base of the cliffs, with which it is evidently continuous.

The coast line soon returning to its old sandy nature, the beach of the next cove presents the appearance of a level sandy flat, covered even at low tides by a few inches of water. This cove is of great extent, and, like the other, is bounded by a shingly reef, as we approach which the bottom becomes more muddy in its nature. Near the centre of the cove, at Elsternwick, a gully of fresh water runs down into it, and at its mouth we find what are called cockle beds in the colony. These are grassy sand patches, but partially dry at low water, with numerous deep holes in them, and burrowed in all directions by a species of *Tapes*, the cockle of the colony, the

beds being composed of a mixture of tenacious black mud and white sand.

In the portion of the cove next St. Kilda, after gales, all the drift crabs already named may be met with; here also I picked up a single dead specimen of the dotted beach crab (*C. punctatus*).

Under the banks of the holes in the cockle beds are long, wide burrows, submerged, and tenanted by one or more of the six-toothed beach crab (*Hemigrapsus sexdentatus*). In the shallower pools the four-toothed beach crab (*Hemigrapsus quadridentatus*) is found lurking under the stones in abundance, though not in anything like the number in which the eight-toothed beach crab (*Heterograpsus octodentatus*) occurs.

On the shingly reef here we meet, in addition to the two crabs last mentioned, the smooth box crab (*P. lævis*) in small number, and the ooze crab (*Ozius serratifrons*); in a small muddy cove inside the reef this last absolutely swarms.

From this point to Brighton Hotel, the shore presents appearances similar to those already described,—sandy coves interspersed with reefs and patches of either shingle or mud. Here another imperfect specimen of the dotted beach crab was found. All the other species, except *Hemigrapsus sexdentatus*, also occur.

From Brighton Hotel to Picnic Point there is a splendid cove, but the tide falling but a little way, and the shores being steep sand, no crustacea are to be seen, except a stray wrinkled mining crab, or dead crabs washed in by the tide, until we reach the latter point, which is bounded by a reef of shingle, dry at low water, and connecting a stony semi-island to the shores. The crabs found are similar to those met with at St. Kilda—the beach crabs in greatest abundance—and do not call for particular notice, except the smooth box crab, whose proper feeding-grounds are situated near the Brighton Hotel. These are low flats of loose white sand, covered with patches of an ulvaceous alga, just within low water-mark, which are never left entirely dry; here this crab is found either running about, or else buried in the sand.

The rest of the shore examined does not call for minute description here, as nothing very remarkable was found on it. I forgot to mention that a single half-dead specimen of the dotted beach crab was picked up near Picnic Point.

The western, or, as I called it, the Williamstown side of the bay, near the town is oozy, the coast composed of muddy, grass-clad flats, broken up by the force of the sea into those peculiar squared masses found generally in estuaries of a simi-

lar kind. In the narrow creeks between these tussocks the saw-fronted ooze crab abounds, and these appear to be its most congenial quarters, being larger in size and more numerous than along the eastern coast.

Along with these, the only other species I met alive here was the active little eight-toothed beach crab (*Heterograpsus octodentatus*), which might be seen in all directions making rapid forays in search of prey among the grassy tufts left bare by the tide. The winged ear crab (*H. auritus*) occurs here in quantity, but all dead; and an occasional wrinkled mining crab (*M. subverrucatus*) may also be met with.

Of the capabilities of this harbour as a station for the dredger I can say little, but the results of an hour's dredging in a row-boat with a small naturalist's dredge,[a] were such as to cause regret on my part that, owing to circumstances, I was unable to follow out this mode of examination more fully. In addition to other objects of interest, no less than two nondescript species of Brachyura, besides other crustacea, rewarded my hour's toil; these will be found described below.

List and Distribution of Species found in Port Philip.

*Halimus auritus (?) (*Edw.*) Williamstown, Sandridge.
Litocheira bispinosa (*Mei*) (*n. g. et s.*) Dredged near Point Gellibrand.
*Ozius (?) serratifrons (*Mei*), (*n. s.*) Williamstown and Sandridge.
*Pilumnoides perlatus (*Edwards and Lucas*). Dredged.
*Portunus integrifrons (*Latr.*) St. Kilda.
*Halicarcinus planatus (*A. White*). Dredged. St. Kilda.
*Myctiris subverrucatus (*A. White*). Sandridge.
Elamena (———) Dredged.
Cyclograpsus punctatus (*Edw.*) St. Kilda, Brighton, Picnic.
*Hemigrapsus quadridentatus (*Edw.* sp.) St. Kilda to Picnic.
*Hemigrapsus sexdentatus (*Edwards'* sp.) Elsternwick.
*Heterograpsus octodentatus (*Edwards'* sp.) Williamstown, Sandridge.
*Philyra lævis (*Bell*). St. Kilda to Picnic.
Bellidilia undecim-spinosa (*Mei*) (*n. s.*) Dredged.
*Trypæa porcellana (*Mei*) (*n. s.*) St. Kilda.
Hippolyte ignobilis (*Mei*) (*n. s.*) Dredged.

Where no locality is specialized, the species is found generally through the district. Thus marked (*) are represented in the Society's collection (the others are in my own).

[a] This dredge, which is similar to those reported so favourably on by the Arctic Exploring Expedition, was kindly given me by Dr. Robert Ball, of Trinity College, Dublin, and ought to form part of every naturalist's stock when proceeding abroad, as, owing to its small size, it can be very easily carried. In the Chincha Roads, Peru, I found it also most useful.

The Macrouræ met with were two in number only. Others exist, but were not specially sought for. One (Hippolyte?) was obtained by dredging, and is too imperfect to be easily identified; of the other, two specimens were washed in at St. Kilda. It is evidently allied to *Trypæa Australiensis* of Dana, though a different species.

From this list it will be seen that I have been led to propose two new genera, whose characters will be found fully detailed further on.

The first of these, Litocheira (λιτος χειρ, from its slender claws), is intended for the reception of an anomalous crustacea, which appears to approach very closely to Dana's great division, Cancroidea, in some characters at least, and, as far as I can judge, will be found to range there; whilst in other characters, as will be shown when treating of the species (*q. v.*), it approaches the Grapsoidea of the same author.

The weight of evidence derivable from external characters points to the neighbourhood of Platyonychidæ of Dana as its proper place. The character of the anterior pair of feet is excessively Portunian, and the posterior pair are at least as natatorial in their characters as those of Carcinus, which is generally ranged under the Portunians. Had it not been for the characters, "Palatium colliculo utrinque divisum," the Portunidæ would appear its proper place.

The chief obstacles in the way of thus connecting them are the quadrate form of the carapace and the size of the epistome.

The other genus, Bellidilia, differs remarkably from the genera of the Leucosiadæ, as described in the Horæ Carcinologicæ, *vide* Linnæan Transactions, vol. xxi. part 4.

The new species described do not call for more particular remarks than will be found attached to the detailed descriptions. The generic nomenclature has been adopted from Dana's magnificent work, the Crustacea of United States Exploring Expedition.

Descriptions of Genera and Species obtained.

DECAPODA BRACHYURA.

Family—LITOCHEIRIDÆ (?) Genus—LITOCHEIRA (*Kinahan*).

GEN. CHAR.—Testa subquadrata, convexa, vix angustior postice quam antice. Fronte arcuatâ, antice subproductâ, dimidio carapacis latitudinis æquali, fossas antennarias celante. Antennæ internæ tranversales. Articulus antennæ externæ primus infra oculum insitus, et hiatu orbitali occupans, fronte suturâ disjunctus. Epistoma

satis amplum, spatium præ labiale sine colliculo. Articulus maxillepedûm 3tius subquadratus, 2do articulo brevior, cum angulo interno truncato, articulum 4tum angulo interno sistens. Pedum anterius par elongatum, subcompressum digitis suis elongatis, tenuibus serratis, in apice terminantibus. Paria posteriora longa, quintum ultimis articulis lanceolatis, hirsutis, natatoriis. (An ad Cancroidea (Dana) pertinet?)

Species—Litocheira bispinosa (*n. s.*)

Family—LEUCOSIADÆ. Genus—BELLIDILIA (*Kinahan*).

GEN. CHAR.—Testa, orbiculari-ovata, lævis, postice spinis tribus (?) acutis, quarum media longior et altior, armata; margine posteriore fere rectâ, carinatâ, costis spinis aut tuberculis ornatis. Orbita aperta, supra emarginata fissuris duabus. Fossæ antennariæ fere transversales, orbita non communicantes. Frons, epistomate brevior, fere integer; epistoma angustissimum. Pedipalpi externi, caule exteriore margine ejus externâ subcurvâ, apice obtuso, margine internâ rectâ; caule interiore, articulo penultimo fere quadrilaterali, ultimo trangulari, minute granulato. Angulus pterygostomianus tuberculum triangularem productus. Pedes: par anterius politum, et lævе, fere bis longius testâ, *manibus subcompressis, digitis tenuibus elongatis lamellosis*. Abdomen: maris (?) et fœminæ, segmentis a tertio ad sextum coalitis.

Species—Bellidilia, undecim-spinosa (*n. s.*)
„ „ serrato-costis (?) (*n. s.*)

Family—MAIADÆ. Genus—HALIMUS (*Latreille*).

HALIMUS AURITUS (?) (*Edwards*), Winged Ear Crab.

Carapace armed with spines. One small pointed spine in front of orbit; behind orbit, a lamellar prolongation armed with two strong spines, beneath and behind which is a short, thick spine. Border of hepatic region armed with two strong, distinct spines. Two strong spines on branchial region, posterior to the inferior of which there is a short rounded spine. Five small spines on the stomachal region, one rounded tubercle on the intestinal, and a single tubercle on the posterior margin of the carapace. Pterygostomian region furnished with two spines.

Anterior pair of legs of full-grown males, rather robust, much larger than, or at least equalling, following pair; strong. Females and immature males, anterior feet slender, weak, and shorter than succeeding pairs.

Colour, yellowish green, spotted with darker; the claws and under part paler; the former almost white, with a tinge of blush. Carapace generally thickly covered with algæ, and very hairy.

The description of this species by Milne Edwards, with regard to the above points, is obscure; in other particulars it is correct. Dana's *H. tumidus* approaches it very closely, if not identical.

This crab is thrown up in abundance along the coast after every gale, especially near St. Kilda and Brighton in the

Sandridge district, and near the town in the Williamstown district. The specimens, almost invariably, are dead. On one occasion only I procured a live specimen on the shore near Elsternwick.

Though I never succeeded in finding it *in situ*, from the numbers found dead in such situations I am inclined to think that its native haunts are the weedy reefs.

Its habits, as far as observed, are sluggish, resembling those of the scorpion spider-crabs of Britain. The ludicrous resemblance in external form between it and an individual of a far removed genus—*Pisa tetraodon*—must strike even the most unobserving.

Family—ERIPHIDÆ. Genus—OZIUS (??) (*Edwards*).

OZIUS (?) SERRATIFRONS (*n. s.*)

Testâ, fere depressâ, lineis hirsutis stratâ. Fronte infra productâ, lamellosâ, bilobatâ, cum dente parvo extra orbitæ angulum, margine serratâ. Carapacis margine antero-laterali, tribus dentibus latis (angulo orbitæ externo excluso) ornatâ; margine postero-laterali contractâ, quam margine ant. lat. fere bis longiorè. Orbitis, ovalibus, supra duabus fissuris, infra fissurâ unâ emarginatis. Hiatu orbitali lato, articulo antennæ externæ basilari occupato; margine orbitali inferiore, bilobatâ, in dentem longum triangularem obtusum orbita superantem, productâ. Fossis antennariis, infra frontem excavatis; regionibus pterygostomianis, granulatis, hirsutis, spinâ brevissimâ ornatis. Pedibus: par primum, sæpe impare, robustum, minute granulatum, manu subcompressâ; paria posteriora quatuor, subcompressa, supra costis hirsuta, ultimo articulo styliformi hirsuto. Abdomine segmentis septem, distinctis. Colore brunneo, digitis nigricantibus.

Habitat: ad oras limosas et infra saxa sinûs Victoriæ, Australiæ, "Port Philip," dicti.

The Saw-fronted Ooze Crab (*n. s.*) (Plate IV., Fig. 1.)

Carapace slightly depressed; its anterior portions covered with tuberculated, hairy, curved ridges.

Front *produced, lamellar, directed downwards, two-lobed*, a small triangular tooth at the base of each lobe; *lobes finely serrated, covering and in part concealing antennary fossettes.* A deep narrow sulcus beneath, corresponding to fissure between lobes.

Anterior lateral margin scarcely attaining edge of genital region, *armed with three flattened teeth* (the external angle of orbit being excluded), the posterior, triangular; anterior, rounded and lamellar; the borders finely tuberculated; posterior lateral margin retreating rapidly; posterior edge curved.

Anterior feet strong, often unequal in length, finely granulated, especially on upper edges; hand compressed, swollen in centre, curved; fingers moderate, curved, rounded; the movable one marked with a longitudinal depression on its exterior edge; wrist finely granulated; a strong spine on its superior internal angle.

Foot-jaws: third joint quadrilateral, giving insertion to fourth on its internal angle.

Basal joint of external antennæ short, soldered to the front, not completely filling orbital hiatus; second joint also short; palp long and slender; internal antennæ, of moderate length, folded transversely.

Orbits oval, open above, their superior border finely tuberculated, marked with two short fissures, separated from inferior border externally by a deep narrow fissure; orbital hiatus broad, well marked; inferior border, two-lobed, finely denticulate; internal lobe produced as a long, triangular blunt tooth, projecting beyond plane of orbit.

Pterygostomian region granulated, hairy; a small spine beneath fissure at external angle of orbit.

Abdomen of male lanceolate, segments all separate; female, ovato-lanceolate, segments distinct.

Colour, yellowish brown; claws brownish black.

HABITAT: the muddy shores of Williamstown, also under stones in muddy pools near St. Kilda, and generally in similar situations.

This species closely, in external appearance and organization, resembles *Pilumnus hirtellus*. The chief points of distinction are, the carapace more depressed anteriorly, the fine hairs placed in irregular lines over the anterior part of carapace; the produced lamellar sides, the subcompressed hands, and the lobed instead of spiny lateral margin. The produced front differs in its direction from that of Ozius, under which I have placed it, and with which its other characters agree.

This crab in its habits, as well as its external appearance, closely approaches the hairy Pilumnus (*P. hirtellus*) of our coast; it also, to a certain extent, partakes of the habits of the common green crab (*C. mænas*) of Britain. It is found wherever there is mud, generally lurking under the stones, of all sizes from two lines to as many inches in breadth. It is also met with, as already mentioned, in the creeks on the marshy shores of Williamstown. In this latter locality its carapace is often found covered with growing algæ, and here, when seeking its prey, keeping pace with the advancing tide, marching deliberately from side to side, now searching this cranny, now that, advancing to the edge of the water, and then retreating again into the depths; the resemblance between it and *C. mænas* is almost complete. It also occurs, though rarely and small in size, on the reefs, but never wandering over the strands, nor at any great distance from the pools.

It may, perhaps, be the type of a genus; a South American species (*Panopæus crenatus*) from Callao, in many characters approaches it very closely, though differing in the degree of consolidation of the joints of the abdomen; but I think too

much stress is often laid on this latter character. I am unwilling, however, to separate it as a genus on such slight characters.

Family—Eriphidæ. Genus—Pilumnoides (*Edwards and Lucas*).

Species—Pilumnoides perlatus (*Edwards and Lucas*), Pearly Raspberry Crab.

Length of specimen, 0·3 inch; greatest transverse diameter, 0·4 inch.

Hand armed with three rounded teeth along its superior internal border, succeeded by three principal irregular slanting lines of warted tubercles, a few small tubercles scattered between them; beneath these are the three slender costa of tubercles characteristic of the genus; the tubercles on the upper part of the hand all curiously mammilated; posterior part of carapace quite smooth.

Chelæ equal in size; fingers black; tips white.

Abdomen; joints distinct, seven; second narrower than first; third broadest, thence gradually narrowing to sixth, which is broader than fifth; seventh triangular apex slightly obtuse.

One specimen (female) dredged outside Point Gellibrand, Port Philip, on a gravelly bottom (twelve fathoms).

Though so minute, I have been enabled, principally through comparison with an adult male specimen, obtained at Callao Reef, Peru, to identify this species, showing rather an extensive range in its distribution. The only difference between the specimens is that the tubercles are slightly more prominent and more numerous in my Australian specimen.

It may be seen, the species belongs to the division of the family having the portion of the carapace posterior to the curved lateral line, smooth.

Family—Portunidæ. Genus—Portunus.

Portunus integrifrons (*Latr.*), Entire-fronted Swimming Crab.

This species is local, though not rare where it occurs, found under stones in clear pools among the reefs near the old quarantine station, and in suitable situations, generally along the coast between that point and Elsternwick.

Its habits are precisely similar to those of the velvet swimming crab (*Portunus puber*) of British seas, except that I never detected it roving the pools in pursuit of prey, as the latter species frequently does.

Its close similarity in appearance and conformation to the arched-

fronted swimming crab (*Portunus arcuatus*) of Europe, from which species it only differs in the absence of the fifth tooth on its lateral edge, is most remarkable.

It is occasionally thrown up on Williamstown strand, and rarely also at Brighton. The species is too well known to require description. When alive, its colour is reddish brown.

Family—LITOCHEIRIDÆ (?) Genus—LITOCHEIRA (*Kinahan*).

LITOCHEIRA BISPINOSA (*n. s.*)

Testâ lævissimâ politâ; fronte lamellosâ, integrâ, infero-aspiciente, vix dimidio carapacis latitudinis æquali, margine inferiore fossâ angustâ circumsulcatâ. Oculis moderatis. Orbitis integris, ovalibus, supra apertis, cum angusto hiatu ad angulum inferiorem internum. Margine laterali carapacis spinâ curtâ curvâ armatâ. Margine posteriore carinatâ. Aperturâ buccale, margine inferiore angulatâ fere latitudine marginis prælabialis æquali. Regionibus pterygostomianis, lævibus, colliculo e margine prælabiali infra originem pedum anteriorum. Abdomine fœminæ rotundato totum thoracem celante, segmenta *septem*, *distincta*.

HABITAT: ad oras sinûs Victoriæ, "Port Philip" dicti; etiam "Torres' Straits."

The Two-spined Slender-clawed Crab (*n. s.*) (Plate III., Fig. 1.)

Carapace *almost quadrilateral*, convex anteriorly, posterior diameter scarcely shorter than anterior. Surface of carapace *smooth, and highly polished.*

Front *entire, slightly arcuated, produced and lamellar, directed downwards; its edge excavated into a transverse sulcus, half width of carapace.*

Orbits oval, entire, looking slightly backwards, and surrounded by a raised, *continuous* margin; a narrow hiatus at the internal inferior angle, lodging basal joints of external antennæ, the external angle slightly produced.

Lateral edges of carapace *armed with a short, sharp, curved spine*, a little below the external angle of orbit.

Posterior margin slightly contracted, keeled.

Antennary fossettes beneath and in part concealed by front, *transversal.* Internal antennæ folded transversely.

External antennæ *moderate, first joint longer than second*, separated from front by a suture, and *filling hiatus in angle of orbit.*

Epistome *extensive and somewhat quadrilateral;* buccal orifice, *with its lower margin nearly the same width as superior*, and acutely angled at its centre; prælabial margin somewhat curved and biemarginate; *no longitudinal ridge* on prælabial space.

External foot-jaw: second joint nearly twice the length of third, which is *truncated at its superior internal* angle; the superior edge nearly obsolete; the fourth and succeeding articles borne on its *internal* angle; a slight sulcus running outward from internal angle of second article. The foot-jaws of opposite sides touching by their

internal edges; the appendix of second article somewhat linear, long and obtuse at its apex.

Pterygostomian region smooth, marked with a *curved, raised ridge, running outwards from, and continuous with prælabial margin.*

Anterior feet *longer than second pair*, somewhat robust; the wrist armed with a single spine; the hand bent, *subglobose, compressed inferiorly*, a raised keel along its inferior margin. The movable finger *compressed, elongated, and grooved along its upper edge*, armed with fine teeth.

Posterior pairs *long and slender*, somewhat compressed; third pair longest; second and fourth about equal, terminated by a *long, styliform nail*, which is hairy along its edge; the fifth pair slightly shorter than fourth; the terminal joint lanceolate, hairy, and fitted for swimming.

Abdomen of female, ovate; joints, *seven distinct*, covering the entire thorax.

Colour, pale-yellowish brown.

Habitat.—Port Philip, 15 fathoms.

Of this remarkable species a single specimen only was obtained when dredging on a rocky bottom near the Black Buoy, Port Philip Harbour; there are several specimens of the same species in the British Museum unnamed, marked as obtained by Macgillivray at Torres' Straits.

Differing as it does so remarkably from all other Brachyura, I have ventured to propose a new genus for it, though in doubt as to whether it should be referred to the Grapsoid or Cancroid alliance of Dana; combining, as it does so remarkably, the characters of both, this point can be alone decided by a careful dissection of the branchial pyramid, which, unfortunately, the paucity of materials at my command has precluded my doing. The external shape of the carapace, the form and direction of the front, the form of the epistome, as well as many minor characteristics, point to the Grapsoidea, whilst the structure of the foot-jaws—especially the mode of insertion of the third article; the extent and position of the epistome; the characters of the feet—especially those derived from the anterior pair, the fingers of which resemble very closely those of Portunus, being pointed and slender instead of spoon-shaped, as in all Grapsoids I am acquainted with; the position and relations of the internal antennæ, point to the Cancroidea, with which I am inclined to believe the other characters will be found, on further examination, to agree. In addition to the distinctions pointed out above between Litocheira and Cancroidea, another important difference will be found in the characters of the orbits, which are entirely continuous around,

except the hiatus at the internal angle; however, the clearing up of its true relations must be left to future investigations. But see remarks, *ante*, after list of species.

Family—MYCTIRIDÆ. Genus—HALICARCINUS (*White*).

HALICARCINUS PLANATUS (*White*). Flattened Filmy Crab.

Rare, local, under stones in rock-pools at St. Kilda; its carapace generally completely concealed by growing algæ and zoophytes; in its slow movements and manner of elevating its chelæ, it resembles the spider-crabs of our coasts. It clings firmly to the rocks, hiding itself in the crannies, like *Porcellana platycheles*, so as to require some force to detach it. Its colour, when recent, is a dingy white.

I also dredged a single specimen of this species off the western shores of the bay, and in the same cast a mutilated specimen of an *Elamena*,—the latter, however, too much broken for identification, which was to be regretted, as it was the only specimen of the genus obtained.

My specimens, which are small (the largest not exceeding five-twelfths of an inch), differ in their comparative lengths and breadths from the specimens in the British Museum, but in all other particulars they agree with them.

Family—MYCTIRIDÆ. Genus—MYCTIRIS (*Latreille.*)

MYCTIRIS SUBVERRUCATUS (*A. White*).

M. PLATYCHELES (*Edw.*)(?) 1852.

Testâ magis longâ quam latâ, in regiones tres, duobus sulcis profundis, divisâ. Regionibus branchialibus valde convexis cum lateribus exterioribus suis, tribus duplicatis lineis contortis, sulcatis. Totâ testâ, tuberculis spinosis, conferte stratâ. Margine, antero laterali cristatâ, bilobatâ, lobo anteriori denticulatâ, posteriori tuberculatâ. Pedibus, pare primo contorto, curvo, multis tuberculûm granulatûm lineis, strato; *brachio* spinâ *unâ* longâ armato. Paribus posterioribus etiam tuberculis confertis. Colore, albidâ, regione branchiali purpurescente; brachiis et digitis, albis.

Habitat: ad oras arenosas sinûs, Victoriæ, "Port Philip," dicti; etiam auctore Catalogi Musei Brittanici Tasmania, et "Torres' Straits."

The Wrinkled Mining Crab. (Plate IV., Fig. 3.)

Carapace much longer than broad; rostrum triangular, produced between maxillipeds; surface of carapace covered with fine spinous tubercles.

Antero-lateral margin, continuous with edge of orbits, crested, the crest divided into lobes, of which the anterior is finely denticulate, the posterior tuberculated on its edge.

The carapace divided by longitudinal sulci into three portions, which are very prominent, the portion on either flank tuberculated

and *marked on its external face with tortuous narrow fossæ*, generally three in number, each fossa divided by a raised ridge running through its length.

Anterior pairs of legs curved, moderate, each joint marked with several lines of granular tubercles arranged in a longitudinal manner; a *single* curved spine at internal angle of the carpus; posterior pairs of legs also tuberculated.

Colour, very pale purplish white, the raised branchial regions being of a beautiful purple; the chelæ and anterior legs shining white.

HABITAT: the sandy shores of Port Philip, exceedingly abundant; also Tasmania and Torres' Straits, on the authority of specimens in the British Museum.

This species, first established by A. White (British Museum Catalogue), may be easily distinguished from its congeners by the absence of spines on the anterior pair of legs, the contracted form of its carapace, its curious wrinkled sides, the numerous small tubercles scattered all over the carapace, and the absence of any spine exterior to the orbit.

This singular-looking crab is by far the commonest of the species found along the sandy beaches. The grotesqueness of its form and colouring can scarcely fail to strike even the most careless wanderer along these strands, and, consequently, I found almost every one acquainted with it, though under the name of a "spider."

It is found almost everywhere where there is a patch of sand large enough for it to mine and form its curious rounded sandy hill with pinhole opening at its apex. It may also be seen wandering up and down over the rippled strands, the claws held up on guard. Immediately on any one's approach, down drop the claws, and, hard at work, they go burying themselves. This is effected very rapidly, and managed differently from any other burrowing crab I know of,—the whole five pair of legs being used in a very curious manner, the chelæ first tracing out a perfect circle on the strand, the body at the same time rotating on itself, giving rise to a double compound motion, impossible to be conveyed in words: it is from this habit I have Anglicized their generic name as mining crab.

There is another common manœuvre, the purport of which it is not so easy to unravel. A crab would emerge from his mine, and, after a march of a few yards across the strand, deliberately set to work and bury himself, after a while emerge from his lair, advance a few yards, and again mine. Could

this have been done for the purpose of moistening their branchiæ, as this took place at some distance from the tide line? When many of them are thus at work, their labours are quite audible.

None but an eye-witness can have any conception of the myriads of them which may be seen in favourable localities. In such situations the ground seems quite alive with them, the ripple-marks all deformed with their hillocks and half-mined holes.

In the sandy bay to the westward of St. Kilda they were probably seen to greater advantage than anywhere else along this coast.

Here, when the tide was out, the sands along the edges of the pools, for a foot wide all round, and the borders of the pools themselves, were quite purple with them. On approaching one of these pools the first thing remarked was an elevated purple border, in perpetual waving motion. This, on nearer approach, resolved itself into a number of living points in perpetual motion. Soon hurry-skurry would be the order of the day. Some hasting into the depths of the pool till they were submerged, all save their great claws and tips of their foot-jaws,—myriads hurrying in every direction over the strand till they had attained what seemed to them a safe distance from the intruders, and then soon concealing themselves beneath the moist sand. Sometimes, before this operation was half finished, a sudden panic would seize them, and then, leaving their mine half completed, they would hurry off to a greater distance, and then conceal themselves.

A third set, too frightened to stir, would then and there conceal themselves around the border of the pool, so that after a few seconds of a seething, bubbling, yeasty noise, all would be still, and not a trace of the myriads lately visible would remain, save some hundreds of white tips of claws just visible above the top of the water in the pools, a number of rounded hillocks defacing the sands around, and scarce a score or so of straggling runaways scampering over the rippled strands to conceal themselves from the impending danger.

Let all remain still for a few moments, and they would again gain courage, begin to emerge, first probably from the depths of the pool, coming out cautiously, ready to retreat on the first sign of danger, and then from their subterranean hiding holes—those which were most remote generally first emerging, and, after running a few yards, burrowing hastily again. All being yet still, they soon collect again, and soon

would be hard at work—the larger males chasing the smaller over the strand, the chased crab eventually finding safety in an ignominious flight, ended by burrowing in the sands. Hundreds of pools, surrounded by scenes like this, may give a faint conception of their numbers. Their dead bodies make up probably two-thirds of the drift specimens found along the coast.

Family—Grapsidæ. Sub-Family—Sesarminæ. Genus—Cyclograpsus.

Cyclograpsus punctatus (*Edwards*), Dotted Beach Crab.

A single specimen found dead on the shore at the old quarantine station—a carapace obtained near Brighton—and a half dead specimen washed ashore at Picnic Point, but which was afterwards unfortunately lost, are the only traces of the existence of this species met with. These specimens fully corroborate the accuracy of Milne Edwards's descriptions.

Family—Grapsidæ. Sub-Family—Grapsinæ. Genus—Hemigrapsus (*Dana*). Cyclograpsus (*Edwards*).

Hemigrapsus sexdentatus (*Edwards'* sp.), Six-toothed Beach Crab.

My specimens differ from Milne Edwards' description in the following points:—

Front channelled in the middle, lateral edges granulated, divided into three teeth, of which the second is larger than the others, but moderate in size.

Length, $1\frac{1}{4}$ inches.

Colour pale yellowish, covered over with round purple dots.

A local species, found inhabiting submerged burrows around tide-pools in the *cockle-beds*, Elsternwick; nocturnal, and much less active in its habits than its congeners, although equally quick in its movements.

Hemigrapsus (?) quadridentatus (*Edwards'* sp.), Four-toothed Beach Crab.

Anterior legs of female smaller than those of male.

Colour, yellowish brown, with small purple dots; a number of circular, white, depressed dots arranged in a semicircular manner on each hepatic region.

Length, $\frac{3}{4}$ths of an inch.

Common among rock-pools and on reefs, generally found concealed under the stones, but also met wandering over the reefs, and but seldom on the strand.

I have referred this species to Hemigrapsus, in doubt, as it does not quite come up to Dana's definition of the group.

Genus—HETEROGRAPSUS (*Dana*).

HETEROGRAPSUS OCTODENTATUS (*Edwards' sp.*) CYCLOGRAPSUS OCTODENTATUS (*Edwards*), Eight-toothed Beach Crab.

This species, well described by Milne Edwards, differs much from the other Cyclograpsi described by that writer, and in fact ought not to have been included in that genus; its bosselated carapace, and the characters of its foot-jaws, separate it widely from the other species included there; and although not enumerated by Dana, it falls into his genus Heterograpsus, to which I have accordingly referred it.

Carapace slightly longer than broad, rapidly retreating posteriorly.

Anterior legs of female minute, much smaller than those of male.

Colour, yellowish brown; legs faintly banded with purple.

Length, ¾ths of an inch.

This species, at the same time the most active and most extensively diffused of the family, occurs at Sandridge all along the coast, except in pure sand; it may be met with at great distances from the pools, and, as already stated, is to be seen in numbers roaming over the grassy tufts of the Williamstown slobs, exactly as *C. mœnas* may be seen in similar situations on the shores of Rush or Malahide; they seem to be in perpetual motion, and are decidedly the most active of the family, as well as the most wary; merely looking over the ledge of the rocks is sufficient to cause them to conceal themselves: the males appear to be more numerous than the females.

Family—LEUCOSIADÆ. Genus—PHILYRA (*Bell*).

Species—PHILYRA LÆVIS (*Bell*), Smooth Box Crab.

Length, about 1 inch; transverse breadth, 1¼ inches; anterior legs, male, 2½ inches; female, 1 inch.

Colour, yellowish brown, with several circular white spots, of which five are situate on the cardiac region; claws paler in colour. The female is more quadrilateral than the male.

Abdomen, in the male lanceolate, the third to sixth segment being consolidated. In the female, much swollen, elliptical, second to sixth joint consolidated; last segment prolonged, lanceolate.

A raised *curved* keel bounds the posterior margin of carapace. Carapace sometimes covered with algæ.

For further particulars see "Linnæan Transactions," vol. xxi. part 4.

Although generally distributed along the coast, the proper haunts of this species are low flats near low-watermark, where a loose sandy bottom is covered with a green ulvaceous alga, and where, even at the lowest tides, two or three inches of water cover the strand. Such a station exists near the Brighton hotel, and here the peculiar habits of the species are easily observed, as it is by no means a shy species.

When in company with their mates, far from avoiding an intruder, the males run courageously at him, carrying their long anterior claws outstretched in a threatening manner, generally snapping them viciously until the female has concealed herself. The male then generally follows her example, stirring up the loose sand with the four posterior pairs of legs, the crab gradually sinking in the puddle thus made till the entire crab, except the front of the carapace and anterior chelæ are covered: any one who has watched the common green crab (*C. mœnas*) of our Irish coast will understand how this is done.

This same attitude is also often adopted by them even when undisturbed, the crab probably then being on watch for food. They are exceedingly restless, and seem to be always in motion, and are to be met with at great distances from their head-quarters, roaming over the sands, but never, as far as I could learn, hiding under rocks or stones, nor, indeed, unless when driven in by storms, to be found among shingle at all. I have never seen them west of St. Kilda.

Genus—Bellidilia (*Kinahan*).

Bellidilia undecim-spinosa (*n. s.*)

Spec. Char.—Testâ ut in *genus*, medio subcarinatâ, lienâ medianâ dente curvo spinoso terminante. Margine laterali quatuor spinis brevibus armatâ, i. e. duæ rotundatæ parvulæ ad regionem branchialem, una triangularis anterior; et ultima posterior et regione intestinali insitæ. Margine posteriori, rectâ, acute carinatâ, carinâ utrinque dente lamelloso productâ. Regione pterygostomianâ angulatâ medio; angustatâ supra: *cum margine superiori et inferiori dentibus terminante, dens inferior longus angustus orbitaque superante.* Testâ pedibusque fulvo-rubris. Habitat sinus Victoriæ, Australiæ, "Port Philip" dictum, extra caput Gellibrand in limo. Altera species nondescripta in Coll. Mus. Brit. vidi, duas quæ spinarum posteriarum caret et angulum costarum denticulatum habet. An hoc genere pertinet, nomine *Bellidilia serrato-costis?*

Eleven-spined Box Crab (*n. s.*) (Plate III., Fig. 2.)

Carapace, orbicular-ovate, smooth, and polished, obscurely divided into regions, *slightly keeled along the median line*, terminating posteriorly in a long, somewhat triangular tooth, curved upwards.

Front nearly entire, a slight depression rendering it faintly two-lobed, obscurely quadridentate, shorter than the very linear epistome.

Anterior lateral edge raised; posterior lateral edge armed *with four pointed spines*, two rounded, minute, and side by side on the branchial region, one anterior, small, and triangular, and the last, which is posterior, situated on a plane, slightly superior to the others, on the intestinal region.

Posterior edge *straight, acutely carinated*, the carina terminated on either side by a triangular lamellar tooth.

Pterygostomian region very much contracted above, its superior margin terminating anteriorly in a projecting tooth. *The inferior margin, which is angled in the middle, also terminates as a narrow lamellar tooth, which projects beyond, and at first sight appears to form the external angle of the orbit*, its upper third covered with very fine granular tubercles.

Antennary fossettes transversal, not communicating with the orbits.

External article of foot-jaws, having its outer margin slightly curved, blunt at the apex, inner margin straight; second article of foot-jaws somewhat quadrilateral, longer than third, which is triangular, and finely tuberculated at its extremity; legs moderate, anterior pair nearly twice the length of carapace, smooth and polished; *hands subcompressed;* the fingers much *compressed, elongated, lamellar, and armed with exceedingly fine, short, sharp teeth.*

Abdomen: male (?) and female, third to sixth segments united.

Colour: a yellowish fawn brown.

Dredged on rather a muddy bottom outside Point Gellibrand, Port Philip. A single specimen (female) only obtained.

In the collection in the British Museum there is a male specimen of a crab, which may be referred to the same group as the species above described. The specimen is unnamed, and marked as having been obtained in Tasmania.

The chief points of distinction between it and *Bellidilia* 11-*spinosa* are as follows—two of the posterior spines are wanting, and the lateral angle is denticulate, or rather finely serrated. Probably the name *Bellidilia serrato-costis* might be suggested as applicable to it. For the opportunity of particularly examining this as well as the other fine specimens of crustacea in the British Museum collection, I am indebted to

the courtesy of Mr. Adam White, a name already well known in connexion with this class of animals.

This handsome crab differs so remarkably from all the described genera of this numerous family, that I have ventured to propose a new genus for the reception of it and the species last mentioned,—characterized by the somewhat polygonal outline of the carapace; the straight, carinated, posterior border; the spiny lateral armature; and, above all, the compressed lamellose fingers, and curious arrangement of the parts about the orbits, including the pterygostomian regions. These latter characters are very distinct.

Its affinities appear to be either with Phlyxia, Persephona, or Ilia (*vide* "Hora Carcinologia," by Thomas Bell, "Transactions of Linnæan Society," vol. xxi. pt. iv.) It appears to be an active species, though of its habits I know nothing. I have dedicated the genus to Thomas Bell, President of the Linnæan Society, the great illustrator of the genus Leucosiadæ, to whose paper, quoted above, I would refer the reader.

The macrourous stalk-eyed crustaceans next demands our attention. The first belongs to the same division of these animals as Callianassa of British seas, and is apparently specifically nondescript; I have, therefore, figured it.

DECAPODA MACROURA.

Family—CALLIANASSIDÆ. Genus—TRYPÆA (*Dana*).

GEN. CHAR.—"*Callianassæ* maxillepedibus externis pedibusque affinis. Antennæ internæ subpediformes, flagellis articulo basi ultimo brevioribus."—DANA.

TRYPÆA PORCELLANA (*Mei*) (*n. s.*)

Frons paulo triangulata. Pedes anteriores valde compressi; brachio, carpo, manuque pedis majoris, supra acutis, lamellosis. Manus major lata, lævis et polita carpo paullulo longior. Digitis fere dimidii manus longitudine, non hiantibus, marginibus spinulosis, *intus lævibus:* superiore paulo longiore, basin magno triangulari dente producto, subtiliter denticulato versus apicem, bene arcuato, apice adunco; Inferiore basi recto, margine excavatâ. Carpo paullulo quam manus minor: Brachio cum processu cultriforme juxta basem infra armato. Segmentum caudæ non longius quam latius postice-arcuatum. Color: Purpureus albus. Ad oras S. Kildæ, "Port Philip," duas, æquore vento perturbato, ejectas dum viventes inveni.

Porcelain Burrowing Shrimp (*n. s.*) Plate IV., Fig. 2.

Front triangular; anterior pair of feet compressed, unequal in size; the large chela broad, longer than the carpus, highly polished; superior margin lamellar, reflexed at base; fingers scarce half the length of hand; rictus *without any tooth or tubercle*, bordered by a narrow edge of stiff hairs; a few spinulose hairs scattered along margins of fingers; movable finger *with a large triangular tooth next*

the rictus; the inner curve of the finger very finely denticulate on its outer edge, the tip smooth, well arched, and hooked, slightly longer than lower finger, which it overlaps; lower finger slightly curved, a small triangular projection, about one-third its length from the tip; its superior margin excavated on the inner edge.

Carpus nearly as long as hand; its superior margin lamellar, reflexed. Forearm: superior margin acute, but not lamellar; a broad cultriform appendix, which is finely denticulated, near the lower articulation; arm narrow, keeled, a small curved tooth at its base; finely denticulate along upper margin.

Segments of swimming tail, seven, the middle segment much shorter than the others, nearly quadrilateral, as broad as long.

Length, taken when fresh, 3½ inches; great claw, 1½ inches; carapace, body, and claws, pearly white, with a slight tinge of purple; great claw, a dazzling, porcellaneous white, whence the trivial name.

The great claw in one of my specimens is on the right side; in the other, on the left.

The eyes in this species are almost sessile; *vide* Figure.

Two specimens washed up at St. Kilda; both were obtained alive, and one of them continued so for two days in damp sand.

This fossorial crustacean evidently belongs to the above genus, established by Dana for the reception of a species obtained from Illawarra, New South Wales, hence called *Trypæa Australiensis*. This, judging by plate and description, differs from *T. porcellana* in wanting the triangular teeth on the movable finger and forearm (?), in having the inner part of fingers finely denticulate, and in not having the front of carapace produced as a small triangular rostrum.

Family—PALÆMONIDÆ. Sub-Family—ALPHÆINÆ. Genus—HIPPOLYTE (*Leech*).

Species—HIPPOLYTE IGNOBILIS (*Mei*) (*n. s.*)

Rostro longo (basi antenn. intern. multo longiore), dorso bene producto. Apice ejus bifido, supra 10-spinoso spinulosis inæquis, infra 5-spinoso, spinulis inter se æque remotis, antennas internas dimidio longitudinis ejus superante. Maxilliped. extern. satis longis non chela bene attingentibus, apice spinuloso ultimo articulo pubescente. Pedibus anticis gracillimis, paulo pedibus 2dis crassioribus. Pedibus secundis, maximè gracillimis 3tiis brevioribus, cum carpo elongato spinuloso. Colore: griseo. Habitat: extra caput Gellibrand, "Port Philip."

The Ignoble Hippolyte (*n. s.*)

Rostrum long (far surpassing the basal joint of the internal antenna), produced over three-fourths of the length of cephalo-thorax;

apex slightly bifid. Ten teeth above, of which two small ones belong to cephalo-thorax, eight to beak, proper; seventh and eighth very short, all equidistant; five teeth below.

Internal antennæ two-thirds of length of beak; their lesser palp of sufficient length, extending beyond beak.

Outer maxilliped moderate, not attaining to anterior extremity of carpal joint of first pair of legs; its termination finely spinulose; last joint pubescent.

First pair of legs slender, stouter than second. Second pair of legs very slender, shorter (?) than third; carpus elongated, covered with spinules.

Tail having its median plate free from spines along its surface, but terminating in three long spines, with three shorter alternating them.

Colour, gray.

Length, 1·5 inch.

Captured in dredge, Port Philip.

The specimen is somewhat imperfect; it differs from *H. spinicaudus* of Edwards, among other particulars, in the median plate of tail being unarmed, except at its posterior border, and in the length of the rostrum.

General Remarks and Observations on Distribution of the Species.

On comparison of the Fauna of any two distant districts, it will be found that the following fixed laws, within certain limits, govern them. First, certain species of the one are in the other replaced by species (often of widely different genera) which copy closely their external form, rendering their identification at first glance difficult. We also find in the two districts certain species, which are in localities, similar in their nature, replaced by others of identical habits, though often dissimilar in appearance and genus; and, lastly, we find certain species which are peculiar to each, and have no true analogue in the other. To the first we may give the name of the law of representative form, and to the second, of representative habit. Of all three, good examples are found on contrasting the shores of Port Philip with similar localities on our own Irish coast, not only in the case of the crustacea, but also, I may add, in that of mollusca, as I hope at some future period to show.

This law of representative form is not, as might be supposed, identical with the laws of generic distribution, but has a much wider field, and is often so palpable as to strike

even the unlearned colonist, who transfers the names of his country's beasts and birds to species which in foreign climes, in obedience to this law, copy them sufficiently closely to suggest at least a resemblance.

Among the species recorded, the following particularly illustrate it:—*Portunus integrifrons*, Port Philip, and *Portunus arcuatus*, Ireland. More remarkably still, *Halimus auritus*, Port Philip, and *Pisa tetraodon*, Ireland; for here we find it prevail between widely removed genera in a most remarkable manner; and lastly, *Ozius*(?) *serratifrons*, and (here the resemblance is more general than particular) *Pilumnus hirtellus*.

Representative habit is best seen by comparing particular districts: the southern side of Dublin Bay supplies us with an exact counterpart of the cove stretching eastward from St. Kilda, and here we find *Ozius serratifrons* represented in part by *Carcinus mœnas*, and in part by *Pilumnus hirtellus*[a]. *Portunus integrifrons* by *Portunus puber* and *P. corrugatus*,—this we might expect, as both species belong to the one genus. *Cyclograpsus octodentatus*, *quadridentatus*, and *sexdentatus*, by *Portunus depurator* and *pusillus*, and *Carcinus mœnas*. *Halimus auritus* replaced by *Hyas coarctatus* and *araneus*, and *Inachus Dorsettensis*. *Halicarcinus planatus* replaced by *Stenorrhynchus phalangium* and *Porcellana platycheles*. The *Leucosiadæ* replaced by *Carcinus mœnas;* and perhaps I may add *Portumnus variegatus;* whilst *Myctiris subverrucatus* remains totally unrepresented on the one side, and *Cancer pagurus* on the other. I have excluded the dredged species altogether from the above comparison, as we are only dealing with representative habit, not specific or generic representatives. The Anomoura and Macroura are also excluded for similar reasons; and this comparison must be understood to be only instituted between the littoral or sublittoral species of the two localities.

In the same manner a comparison might be instituted between the muddy shores of Williamstown, Australia, and the North Bull, or slobs of Malahide and Rush, where we will find that *Ozius serratifrons* and *Cyclograpsus octodentatus* would supply analogues to *Carcinus mœnas* and *Cancer pagurus:*—but enough has been said on the subject.

Of generic representatives we find among the Maiadæ, Halimus replacing Pisa, Hyas, Inachus, and Maia. Ozius and Pilumnoides replacing Pilumnus, of the Eriphidæ. Of the

[a] This species is recorded as from Dublin on Mr. Thompson's list; I have not obtained it myself.

Portunidæ, Portunus common to both. In the Platyonychidæ, Litocheira representing Carcinus and Portumnus. Of the Leucosiadæ, Phylira and Bellidilia replacing Ebalia; and the following families entirely unrepresented in Port Philip: the Leptopodidæ, Parthenopidæ, Canceridæ, Gonoplacidæ (unless Litocheira belong here), Corystidæ, and Pinnotheridæ. In Dublin Bay, the Grapsidæ and Myctiridæ,—the latter, however, represented by Pinnotheres of the Pinnotheridæ.

These conclusions only relate, of course, to the observed species, and will, probably, receive great modifications, as far as the families are concerned, when further research shall have been made into the many treasures which lie locked up, waiting to reward the naturalist's research amidst the pleasant waters of Port Philip.

REFERENCES TO PLATES AND FIGURES.

PLATE III.

FIG. 1.—*Litocheira bispinosa* magnified:—*a*, foot-jaw; *b*, female abdomen; *c*, front inferior surface; *d*, chela magnified four diameters.
FIG. 2.—*Bellidilia undecim-spinosa*, life size:—*a*, foot-jaw; *b*, abdomen, female; *d*, chela; *e*, side view.

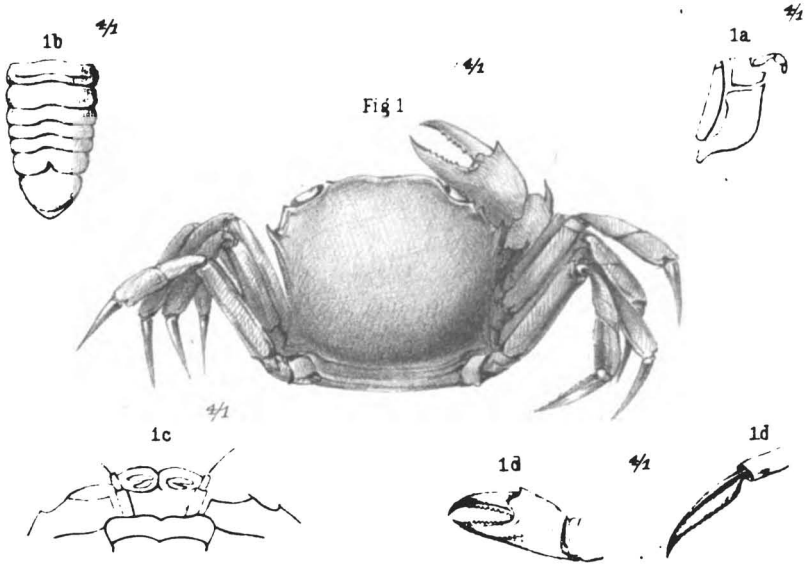
PLATE IV.

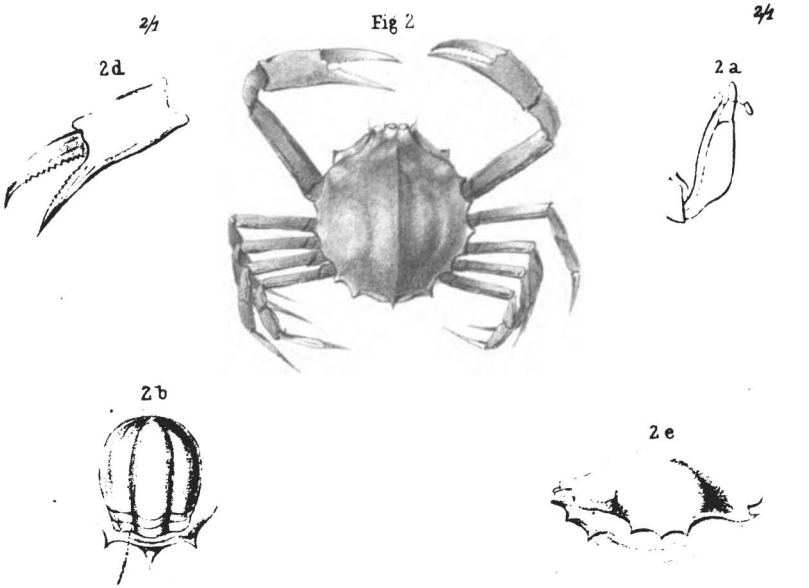
FIG. 1.—*Ozius serratifrons*, size of life:—*a*, foot-jaw, two diameters; *b*, abdomen, ♂ male, ♀ female; *c*, lower view of front.
FIG. 2.—*Trypœa porcellana*, size of life:—*b*, middle plates of tail; *c*, upper view of front; *d*, movable finger, two diameters; *f*, second joint of greater claw, magnified two diameters.
FIG. 3.—*Myctiris subverrucatus*:—*b*, abdomen; *c*, front; *e*, side view.

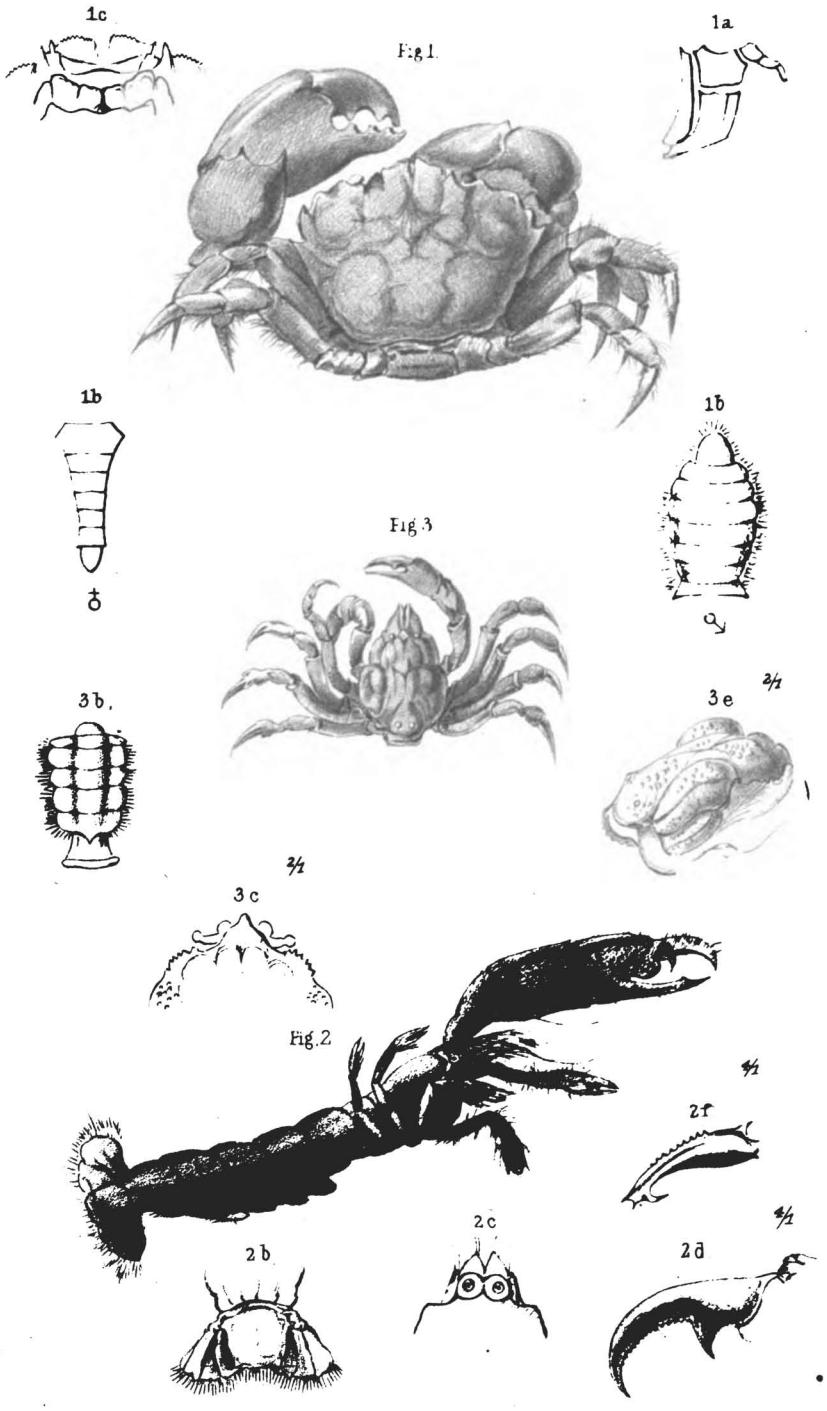
XVI.—*An Account of some Miscellaneous Experiments made to determine the relative Deodorizing Powers of different Substances.* By EDMUND DAVY, F. R. S., M. R. I. A., F. C. S. L., &c., Professor of Agricultural Chemistry to the Royal Dublin Society.

[In continuation of a Paper read November 30, 1855.]

THESE experiments are a continuation of those which appeared in the Society's Journal for April last; the results are given in a tabular form, to avoid repetition, and for the facility of reference. What I have done I regard only as an introduction to a novel subject of inquiry, which may lead to useful







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