A. Milne-Edwards

RECUEIL DE FIGURES DE CRUSTACÉS NOUVEAUX OU PEU CONNUS,1883

Nouvelle édition en fac-similé avec des commentaires et annotations
New facsimile edition with comments and annotations

par / by

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3. Notes on the origin of the figured specimens collected by the "Travailleur" and the "Blake".

4. Remarks on the figured species and in particular their present taxonomic status.

5. A list in tabular form of the species in the order in which they appear in the "Recueil". Of each the name as used by A. Milne-Edwards is given, followed by the present valid name, the year of the expedition and the number of the station where the specimen was taken (if known), as well as the depository of the type material. The greater part of the types are still extant, either in the Muséum National d'Histoire Naturelle in Paris (for the specimens collected by the "Travailleur" and some of the "Blake"), or in the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U.S.A. (for most of those taken by the "Blake").

6. It was considered of interest to reproduce here in the appendices (see pp. 113-115) some documents relating to the "Recueil", that are present in the Paris Museum. In the first place these are (1) the original pencil drawings after which several of the engraved plates were made, (2) colour sketches of Crustacea made by A. Milne-Edwards, (3) preliminary sketches, (4) layouts for the plates indicating to the engraver the position of the figures, and (5) a 45th plate, printed but not included in the "Recueil". Finally we added the station lists of the various expeditions that provided the material studied here. For the "Travailleur" expeditions of 1880 and 1881, the lists are those published by A. Milne-Edwards in his reports on the cruises, while the station list of the 1882 cruise was produced by A. Milne-Edwards by a kind of hectographic method, but was not published by him. The original of the 1882 list is reproduced here facsimile.

Chapter One

ORIGIN OF THE MATERIAL STUDIED BY A. MILNE-EDWARDS

A. THE CRUISES OF THE "TRAVAILLEUR"

Marquis Léopold de Folin (1817-1896) may be considered the initiator and first promotor of oceanographic research in France. He started his career as a naval officer. Later he became harbour master, his last and longest station being Bayonne, dépt. Basses-Pyrénées, S.W. France, on the east coast of the Bay of Biscay, where he was employed from 1868 until his retirement in 1880.

He had a passionate interest in marine life, which was said to be triggered by a lecture by A. Milne-Edwards given in 1861 to the French Académie des Sciences. This dealt with the discovery of living organisms on a telegraph cable brought up from depths of 2000 to 2800 m. Since that time De Folin devoted part of his activities to the study of the sea bottom and in particular to molluscs, his speciality. During 10 years (1870-1879) he undertook the exploration of the "Fosse de Cap Breton", a trough in the Bay of Biscay off Biarritz; he did this with any means at his disposal: a rowing boat with 8 rowers, dredges, small trawls and tangles. At the same time, throughout this entire period, he continued to stress the importance of deep sea research, referring to what had already been done in this respect by foreign nations. In the serial publication "Les Fonds de la Mer", which he had established with L. Périer de Pauliac in 1867, he often brought forward his views. His communications to the official authorities stressing the importance of deep sea research, in particular a letter adressed in the beginning of 1880 to the Minister of Public Instruction ("Instruction Publique"), Jules Ferry, triggered the appointment by the latter of a scientific commission. This commission was presided by Henri Milne Edwards, and charged with organizing a first exploration of the great depths of the Bay of Biscay.

In May 1880, the Minister of the Navy placed at the disposal of the commission the paddle-wheeled dispatch-boat "Travailleur" of the French navy. This ship was stationed at Rochefort on the east coast of the Bay of Biscay, S.W. France. It was 47 m long with a displacement of 829 tons, it had a steam engine of 150 horse power, but could also be navigated under sail. The normal crew consisted of 85 men.

a. The 1880 cruise in the Bay of Biscay

Immediately upon being notified that the "Travailleur" was to be used for sounding and dredging operations, its commander, Lieutenant Commander ("lieutenant de vaisseau") E. Richard (for whom A. Milne-Edwards later named the Stenopodidean genus *Richardina*), proceeded to equip the ship for its new task. Inspired by the methods used by the foreign oceanographic expeditions, he acquired sounding instruments, dredges, trawls and tangles. The winch was worked by a movable steam engine of 16 horsepower. Its drums were provided with 12.000 meters of hemp rope, with a diameter of 19 to 24 mm for the benthic gear, and with 25.000 m steel wire for sounding.

The "Travailleur" was transferred from Rochefort to Bayonne, the starting point of the expedition. On 17 July 1880 she left Bayonne with the crew increased to 145 men, to make it possible to work day and night. The scientific staff, presided by Alphonse Milne-Edwards, professor of the Paris Museum (son of Henri Milne Edwards), consisted of L. de Folin, L. Vaillant, likewise of the Paris Museum, P. Fischer "aide-

naturaliste" at the Museum, E. Marion, professor at the Faculty of Science of Marseilles and L. Périer de Pauliac, professor at the faculty of medicine and pharmacy of Bordeaux. Two British scientists were also invited on board, J. Gwyn Jeffreys, who had been in charge of scientific investigations of the north-east Atlantic during two of the cruises (1869, 1870) of the British ship the "Porcupine", and the Rev. Canon A.M. Norman, who had studied much of the British deep sea material.

On this first expedition the "Travailleur" followed a course practically parallel to the south coast of the Bay of Biscay, as far as about 70 miles east of Santander, Spain; then she returned to Bayonne, where the expedition ended on 1 August 1880. The principal object of this short cruise was to try out the collecting equipment and to test the possibilities of the ship to explore the deep sea. In the course of these two weeks about a hundred soundings and 22 hauls with the dredge or trawl were made, especially between 600 and 2600 m depth. The effectiveness of the benthic gear was shown by the capture of numerous specimens.

Shortly after the end of the expedition, on 9 and 16 August 1880, A. Milne-Edwards (1880a) submitted to the Academy of Sciences his "Compte rendu sommaire d'une exploration zoologique faite dans le Golfe de Gascogne à bord du navire de l'Etat le Travailleur" (Short report of a zoological exploration in the Bay of Biscay on board the ship le Travailleur). This communication contained general remarks on the progress of the expediton and of the conditions under which it took place, as well as the principal zoological groups represented in the collections. The author drew the attention to the most interesting objects that were collected and provided the identification of a certain number of genera and species, listing, or even briefly describing the new forms.

Among the Crustacea, several were identified with known species: *Dorhynchus* [= *Lispognathus*] *thomsoni* Wyville Thomson, *Amathia carpenteri* Wyville Thomson (placed in the new genus *Scyramathia*), *Geryon tridens* Krøyer, *Ethusa* [= *Cymonomus*] *granulatus* Norman in Wyville Thomson, *Munida tenuimana* Sars, *Gnathophausia zoea* Willemoes-Suhm. Others were reported to be new, but were not named.

A report to the Minister of Public Instruction followed, containing the text of the paper submitted to the Academy, with additional details.

No special publication was devoted to the Crustacea obtained during this first expedition; they would be studied together with those of the following cruises.

b. The 1881 cruise in the Mediterranean and along the Atlantic coast of the Iberian peninsula

The experimental cruise of July 1880 had shown that the "Travailleur" could successfully undertake dredging and trawling at great depths. Therefore the ship was now placed at the disposal of a commission, with H. Milne Edwards as chairman, to prepare for a new expedition. This new expedition was to be more extensive than the previous, and had the object to investigate the Mediterranean. The expedition was to confirm that the deep sea in the Mediterranean was far from being azoic as had been assumed in the past; also the Mediterranean deep sea fauna was to be compared with that of the Atlantic.

During the months preceding the start of the expedition, the "Travailleur", then back at Rochefort, was equipped with additional gear, the need for which was experienced during the 1880 cruise. The commander was still Lieutenant Commander E. Richard. Dredges of various sizes were constructed as well as trawls, the largest of which had a width of of seven metres and could function regardless which side touched the bottom. The drums of the winch carried 15.000 metres of hemp rope.

The "Travailleur" left Rochefort on 9 June 1881 and reached Marseilles on the 28th

of the same month, having made 13 dredge stations during this trip, the first off Cape Finisterre (N.W. Spain), the last six in the Mediterranean. She left Marseilles on 4 July with the same scientific staff as during the 1880 cruise, with the exception of Léon Périer, who was replaced by Edmond Perrier, professor at the Paris Museum, while H. Viallanes was added to the staff. Twenty five dredge stations, most between 500 and 2600 m deep, were made during the first tract, which extended from Marseilles east along the south coast of France to Villefranche, then south towards Corsica as far as the Bouches de Bonifacio (= Strait of Bonifacio), after which the ship returned to Marseilles which she reached on 18 July. The "Travailleur" left Marseilles again on 20 July and went through the Balearic Sea in the direction of Oran, Algeria. From there five dredge stations were made off the coast of Morocco. This leg of the cruise ended in Tangiers on 28 July.

The three weeks spent in the Mediterranean had produced collections which, although interesting, were on the whole of modest, if not mediocre size. Therefore, it seemed more profitable, in order to make the expedition a success, to continue by exploring Atlantic waters. A. Milne-Edwards received the authorisation to prolong the second part of the cruise along the Atlantic coast of the Iberian Peninsula and the Bay of Biscay. After a stay of two days in Tangiers, the "Travailleur" again put to sea on 30 July, and undertook a new series of, often successful, dredgings, mostly between 800 and 2500 metres. On 17 August, a last dredge station which was to be the crown on the work of the expedition, was made in the center of the Bay of Biscay at a depth of 5100 m. For this delicate operation it was necessary to let out and haul in 8000 m of heavy hemp rope; it took 13 hours to complete the station. Although the dredge was continuously washed during the long way in, it still brought up small benthic organisms like a mollusc, an annelid worm, bryozoans, ostracods, as well as Foraminifera and Radiolaria.

At noon on 19 August the "Travailleur" moored again at Rochefort after a cruise of 72 days, during which 58 dredge- or trawl-stations were made, sometimes with two or three hauls at one station, but not infrequently with poor results due to bad weather conditions.

The zoological collections were important. The numerous samples taken contained many undescribed species, among which a considerable number of Decapod Crustacea.

Three months after the end of the cruise, on 28 November 1881, A. Milne-Edwards submitted to the Académie des Sciences a paper entitled "Compte rendu sommaire d'une exploration zoologique, faite dans la Méditerranée, à bord du navire de l'Etat "Le Travailleur". In this paper he mentioned the most remarkable forms among the molluscs, coelenterates and echinoderms, as well as several crustaceans, that in 1880 had already been collected in the Bay of Biscay, like *Ebalia nux* and *Cymonomus granulatus*. A species of *Geryon* was found to be the same as one collected by the "Travailleur" in 1880, but different from *Geryon tridens* Krøyer; it was given the name *Geryon longipes*, but no description was provided. Likewise, *Heterocrypta marionis* and *Ergasticus clouei* were simply named and not described. On the basis of the results obtained, A. Milne-Edwards drew the conclusion that the deep sea of the Mediterranean was populated by the immigration of a restricted number of Atlantic forms, namely those that were able to adapt themselves to the conditions of this new environment.

Eight days later, on 5 December 1881, in a second communication to the Académie A. Milne-Edwards (1881a) reported on the work done in the Atlantic. Numerous representatives of various groups were identified, among these several species of Crustacea Decapoda, of which seven were described as new: *Galathodes acutus*, *G. rosaceus*, *Elasmonotus vaillantii*, *Diptychus rubro-vittatus*, *Pontophilus jacquetii*, *Richardina spinicincta* and *Acanthephyra purpurea*.

On 22 January 1882, in a lecture delivered before the Association scientifique de France, A. Milne-Edwards (1882b) discussed the results of the 1881 cruise and on 17 February 1882, he (1882c) sent a report on the explorations of 1880 and 1881 to the Société de Géographie of Paris. Some pages of this paper were devoted to the history of the marine exploration of the Mediterranean, and referred to the early investigations of the littoral fauna that V. Audouin and H. Milne Edwards started in 1825, and the first collections made in 1844 with diving equipment by H. Milne Edwards during his journey with E. Blanchard and A. de Quatrefages to Sicily. A. Milne-Edwards' publication includes a succinct account of the two cruises made by the "Travailleur", lists of the stations (those in the Mediterranean given separately) and has two folding charts.

Somewhat later, A. Milne-Edwards (1882d) submitted to the Minister of Public Instruction a report of the results of the 1881 expedition, with some references to that of 1880. This report contains a list of stations, tabulated hydrological observations made in the Mediterranean and the Bay of Biscay, as well as the two charts mentioned above. In this paper the data and remarks on the composition of the deep sea fauna of the Mediterranean were more numerous and more detailed than in his communications to the Académie. For instance, diagnoses or at least the mention of some morphological features, validated the names *Geryon longipes, Ergasticus clouei* (usually incorrectly attributed to A. Milne-Edwards, 1883 or to Studer, 1883), *Heterocrypta marionis, Galathodes marionis* and *Chlorotocus gracilipes*. Of the Atlantic fauna several species of ostracods, molluscs, coelenterates, bryozoans, echinoderms and sponges were identified, while generic and species names with diagnoses were given in footnotes. However, of the Decapod Crustacea no new species were described here, the information given of such species was additional to, or identical with, that already given by A. Milne-Edwards in the paper of 28 November 1881.

Excerpts from or parts of the contents of this last report were reproduced in the periodicals of several scientific societies.

c. The 1882 cruise from the Bay of Biscay to the Canary Islands and Madeira

On 2 July 1882 the "Travailleur" left Rochefort for a third expedition in the Atlantic Ocean going as far south as the Canary Islands and Madeira. Her collecting gear had been improved and replenished; for instance trawls had been constructed, modelled after those used by the "Blake", with iron frame work and an opening of 2 or 3 metres.

This time the ship was commanded by Lieutenant Commander J. Parfait, and the scientific staff, still under the direction of A. Milne-Edwards, consisted of L. de Folin, P. Fischer and A. Sabatier, professor of the Faculty of Science of Montpellier University, who left the expedition at Ferrol, N.W. Spain. H. Viallanes and Mr. Bertholus joined the expedition as adjunct members of the scientific staff.

Between 6 and 18 July the "Travailleur" made about 20 dredge and trawl stations off the Cantabrian coast of northern Spain between Gijón and La Coruña. After that she went south and made some stations on the way to Lisbon, where she stayed for 3 days. On 23 July Lisbon was left for a cruise along the Atlantic coast of Morocco, and as far south as the Canary Islands, then to Madeira, where the expedition stayed from 10 to 13 August. After that the course was directly back to Lisbon, which was reached on 18 August. The ship left Lisbon the next day, and on the home stretch to Rochefort about 10 deep stations were made. Rochefort was reached on 30 August. During these two months the expedition often encountered bad weather, but notwithstanding this, 71 benthic stations were made, 16 of which between 1500 and 4500 m.

Also this time the collections were quite important: numerous new species could be added to those collected in 1880 and 1881.

It is peculiar that A. Milne-Edwards seems not to have devoted any special note or report to this expedition, like he did for the previous two cruises; neither did he publish a detailed map of the stations. In a lecture dealing with the results of the three expeditions of the "Travailleur", which he (A. Milne-Edwards, 1882e) gave in a joint public meeting of the five Academies on 25 October 1882, the last (1882) expedition is briefly mentioned in the following terms: "This past summer our gallant little ship went as far as the Canary Islands and its harvest was even richer than in the previous years".

An anonymous report published in February 1883 in the Revue maritime et coloniale sketched the progress of the 1882 expedition and provided numerous illustrated details of the equipment and techniques used for sounding, dredging and trawling. But the work done during this third cruise of the "Travailleur" was described most completely in the 1887 book by L. de Folin, "Sous les Mers", where an almost day-by-day or hour-by-hour account of the activities is given. A. Milne-Edwards' reticence over the very successful work of this expedition is doubtlessly due to the fact that he foresaw a fourth expedition that would cover the same grounds and he intended to study the zoological material of these two expeditions simultaneously.

The collections of the expedition of 1882, indeed encouraged A. Milne-Edwards to propose a new expedition, which would follow the route of the last as far as the Canary Islands, but then would extend its range to the Cape Verde Islands and the Azores. However, in order to realize this project, it would be necessary to use a more powerful ship. The "Travailleur" was too slow, used too much coal, and at the end of every 5 or 6 days at sea she had to put into port for provisions and fuel; therefore she was forced to stay in the vicinity of victualling stations. Her oceanographic gear, although quite appropriate for obtaining good catches at depths of up to 2000 metres, proved less suitable for working at greater depths.

A. Milne-Edwards was successful in his efforts: the authorities of the navy placed at his disposal for the planned 1883 expedition the steamer ("éclaireur d'escadre") "Talisman", a rather old but renovated propeller-driven ship. The "Talisman" had a length of 70 metres, a water displacement of 1270 tons and was provided with an engine much more powerful than that of the "Travailleur". The "Talisman", which in the past had been used for service in distant regions, had a large action radius. She received an equipment far more sophisticated than that of the "Travailleur", especially as far as dredging gear was concerned: 8000 m of steel wire with a diameter of 10 mm and a breaking-strain of 4.5 tons, replaced the rope cable. In the course of its 3 months cruise, from 1 June to 31 August 1883, the "Talisman" made 140 dredge- or trawl-hauls, most of these between 1000 and 5000 metres depth, and amassed considerable zoological collections, the study of which took several decennia.

It is not the place here to go deeper into this expedition, as the "Talisman" left on its first expedition two months after the publication of the "Recueil de Figures de Crustacés nouveaux ou peu connus", which is practically exclusively devoted to collections made by the "Travailleur" and the "Blake".

B. THE 1877-1880 CRUISES OF THE "BLAKE"

The first American investigations of the deep sea fauna were carried out on board the ships "Corwin" in 1867, and "Bibb" in 1868 and 1869; later the "Hassler" explored the deep sea around the American continent in 1871 and 1872. All these expeditions were instigated by Louis Agassiz and L.F. de Pourtalès. In 1874 the United States put into service the U.S. Coast Survey steamer "Blake", which was specially equipped for oceanographic investigations. The "Blake" was 43 m long with a water displacement of 350 tons; it was driven by an engine of 270 horse power.

From 1877 to 1880 the "Blake" carried out three large oceanographic expeditions, with soundings and dredgings in the Straits of Florida, the Gulf of Mexico, the Caribbean Sea, and along the east coast of North America. The first of these expeditions was under the command of Lieutenant-Commander C.D. Sigsbee, the two others under that of Commander J.R. Bartlett. Most of the dredging operations were supervised by Alexander Agassiz, son of Louis.

The first expedition (December 1877 to March 1878) operated mostly in the Gulf of Mexico north of the west coast of Cuba; the greater part of the 43 successful stations were between 550 and 3500 m. During the second expedition (December 1878 to March 1879) the explored area extended from N.W. Cuba and Jamaica to the Lesser Antilles. Finally, the third expedition (28 June to 21 July 1880) dredged off the east coast of U.S.A. between Cape Cod, Massachusetts and Charleston, South Carolina; 47 dredging stations were made at depths between 24 and 1632 fathoms (= 44 to 2985 m).

As could be expected, the zoological material collected by the "Blake" in the bathyal zone and the upper half of the abyssal region was very rich in specimens and species. In order to have this material studied under the best possible conditions, Alexander Agassiz decided to entrust the various groups to the most competent American and foreign specialists. For the Crustacea Agassiz asked A. Milne-Edwards, whom he sent all the samples of the first two expeditions, while those of the third, collected off the American east coast north of Florida, were entrusted to Sidney I. Smith, who was already engaged in the study of material previously collected by the U.S. Fish Commission in that area.

A. Milne-Edwards, in collaboration with E.-L. Bouvier, studied the "Blake" Decapoda in detail and a series of memoirs on them was published, the first of these, dealing with Paguridea, in 1893, the second, on Galatheidea, in 1897, while the following appeared after A. Milne-Edwards' death, the last in 1924. However, before this, a good number of species collected by the "Blake" were illustrated in the "Recueil de Figures de Crustacés nouveaux ou peu connus", which in its turn was preceded by some preliminary notes that A. Milne-Edwards published on the material. The most important of the latter appeared in the Bulletin of the Museum of Comparative Zoology, Harvard College, in 1880; it included numerous descriptions, mainly of Brachyura and Anomura. A similar paper was published the next year by A. Milne-Edwards in Annales des Sciences Naturelles (Zool.), Paris: here 8 genera and 19 species were described as new, all belonging to the Caridea, with the exception of *Phoberus coecus*, a nephropoid lobster. As far as we know no other preliminary descriptions of the "Blake" material were published by him. In 1881 a general comment on the groups dealt with in his 1880 publication was given by A. Milne-Edwards under the title "Considérations générales sur la faune carcinologique des grandes profondeurs de la mer des Antilles et du Golfe de Mexique" (General considerations on the carcinological fauna of the great depths of the Caribbean and Gulf of Mexico) published in Bull. hebd. Ass. scient. France, (2)2; and in the C.R. Acad. Sc. Paris, 92.

Chapter Two

DESCRIPTION AND HISTORY OF THE "RECUEIL DE FIGURES DE CRUSTACÉS NOUVEAUX OU PEU CONNUS"

As stated above, the species figured in the "Recueil de Figures de Crustacés nouveaux ou peu connus" were mainly collected during the 1880, 1881 and 1882 cruises of the "Travailleur" (Mediterranean and Atlantic Ocean between the Bay of Biscay and the Canary Islands), and by the 1877-1879 cruises of the "Blake" (Antillean region and the Gulf of Mexico). In addition three of the figured species were taken at Newport (Rhode Island, U.S.A.) and one at Upolu, Samoa Islands in the South Pacific.

The book consists of a single volume containing 44 plates, 13 of which are copper engravings printed on heavy paper, and 31 are on ordinary paper and consist of stencilled line drawings.

The engravings show exclusively species that were collected during the "Travailleur" cruises. The only captions of these plates consist of the name of the species and the indication "Expédition du Travailleur". Each plate shows a single species, except the first which has two. Of each species a dorsal view is given as well as figures of details, but without any explanatory text or indications for such a text. The engravings show 8 species of Brachyura (on 7 plates), 2 Galatheidae, and also *Pontophilus jacquetii, Richardina spinicincta* and *Gnathophausia zoea* (the latter on 2 plates). It seems that all these figured specimens were collected by the "Travailleur" in 1880 or 1881, and it is possible that the plates were made before the start of the 1882 expedition.

As to the stencilled plates, they show 2 Brachyura, 4 Galatheidae, 2 Paguridae, 1 lobster, 39 Carideans (on 23 plates), and 1 Penaeid, the specimens being collected by the "Travailleur" and the "Blake". Each plate shows a single species, except in the Carideans where some plates have two, one even three species. For each species, figures of morphological details, like regions of the body or appendages, are placed next to the figure of the entire animal. Some figures are accompanied with a sign indicating the sex of the animal, the magnification, and with abbreviated indications like the number of carpal articles in pereiopods 1 and 2 in Pandalidae, etc. When two or more species are shown on one plate, the numbers 1, 2 and eventually 3, are used to distinguish them. Every total figure is accompanied by the species name and that of the expedition, written in script letters. For the "Travailleur" specimens the date, number and depth of the station is mentioned, and for those of the "Blake" only the locality and the depth.

In the original edition the plates are preceded by a title page and two pages containing the "Liste des Planches formant cette livraison"(List of the plates forming this fascicle). All three are lithographed and the letters in italics. On the title page, the title and the name of the author are followed by the lines "1ère Livraison (comprenant 44 planches)"(First part containing 44 plates) and "Avril 1883". The Liste des Planches was originally published without indication of the plate-numbers, in most copies these are later added by hand. In A. Milne-Edwards' own copy the plates in this list are correctly numbered 1 to 44. However, in some copies, the number 35a is given to pl. 36, as the indication for this is placed on one line with that for pl. 35; as a consequence the numbers of plates 37 to 44 become 36 to 43. The plates themselves, as issued, carry no number, these are usually added later by hand.

Very little is known of the circumstances under which the "Recueil de Figures de

Crustacés nouveaux ou peu connus" was published. It is probable that A. Milne-Edwards wanted to illustrate as quickly as possible the species collected by the "Travailleur" and the "Blake" of which he had already published preliminary descriptions, and to name others which at that time were still unpublished.

At first, after the 1880 and 1881 expeditions of the "Travailleur" A. Milne-Edwards had engravings made of 13 of the species then collected. Later, to save time, he used line drawings and a rapid method of reproduction for the other material, and especially for the numerous shrimps of the "Blake" and the 1882 "Travailleur" expeditions. The fact that the illustrations were made at two different times with different methods explains the heterogeneity of the illustrations of this work.

The main object of the author was to acquaint the carcinologists, with whom he was in correspondence at that time, with the new forms that he had discovered. It seems clear that he wanted to send this work to a limited number of persons only, which explains why the number printed was so small. The first mention of this work in a review journal is that by G.H. Fowler (1887: 343), who remarked when dealing with this publication: "Obwohl ursprüngl. für private Verbreitung (50 Ex.[1]) bestimmt, sind doch einige Exempl. in der Buchhandel gelangt". The number of copies printed and the private character of the distribution of the book are confirmed in a note published by R.I. Pocock in his controversy with A.M. Norman on the authorship of *Ebalia nux*, a controversy which is discussed below when we deal with the origin of some of the copies of the "Recueil" that still exist. Pocock (1890a: 471) cited the following passage from a letter that he had received from A. Milne-Edwards (in translation): "I have indeed figured *Ebalia nux* in a work entitled Recueil de Figures de Crustacés nouveaux ou peu connus, in-4°, 44 plates, April,1883. This work was issued in only 50 copies[1], which I have immediately distributed to naturalists who, at that time, were engaged in carcinology. Only a few copies were put on sale; thereby the work has become rare and almost unobtainable. I have only one copy, which makes it impossible for me to send you one, but I am sending you the plate of *Ebalia nux*, which might be of use to you".

What is left of the 50 (?) copies of the "Recueil de Figures de Crustacés nouveaux ou peu connus" printed and distributed in 1883? In trying to find an answer to this question we had the most enthusiastic help of many of our colleagues. Thanks to the efforts of Dr. H.-E. Gruner, Zoologisches Museum, Berlin, Dr. Ludwig Tiefenbacher, Zoologische Staatssammlung, München, and Drs. Michael Türkay and M. Sieling, Senckenberg Museum, Frankfurt, the German libraries were almost fully covered. The Zentralkataloge of 11 states were consulted as well as the libraries of various museums that were not covered by these catalogues. Notwithstanding the intense efforts of so many librarians and scientists, only a single copy of A. Milne-Edwards' work was discovered in Germany: the Zoological Museum in Berlin owns the copy that F. Hilgendorf, former curator of the Museum, received from A. Milne-Edwards.

Mr. Paul Clark, The Natural History Museum, London, checked numerous libraries in the United Kingdom and Ireland, and could confirm the presence of two original copies of A. Milne-Edwards' book in England. The first of these, now in the possession of the library of the Crustacea Section of the Natural History Museum, was presented by A. Milne-Edwards to Edward J. Miers, curator of the Museum; it was later donated by Miers to the Museum. The fact that the title page of this copy was missing evidently has been the reason that at first it was not catalogued. In his controversy with the Canon

[1] The number of copies printed might be even smaller. Among the documents relating to the "Recueil" left by A. Milne-Edwards, we found about 20 copies of a printed plate, that was not included in the "Recueil" (*Polycheles typhlops*, see appendix 4, p. 68). It seems rather unlikely that the published plates were printed in a greater number than the discarded one.

A.M. Norman (see below), R.I. Pocock (1890a: 472) remarked that "there is no copy of this work in the library of the Natural History Museum". Also in the catalogue of the library of the British Museum (Natural History) (1904, 2: 507-509) the "Recueil" is not mentioned among A. Milne-Edwards' publications held by the Museum. It is listed, however, in the supplement to the catalogue issued in 1922 (6: 292), where the remark is made that the title page is lacking in this copy. It seems likely that Pocock's (1890) statement, that no copy was present in the British Museum library, caused the well known bibliographer C. Davies Sherborn to look into this matter. On the handwritten replica of the title page of Miers' copy, namely, the following note is written at the bottom of the page: "This Title Page is lithographed and is found in Canon Norman's copy sent to me in 1890. [signed] C. Davies Sherborn". Evidently Sherborn's rediscovery of the copy was too late (1) to make it possible for Pocock, in his argument with Norman, to refer to it, and (2) to have it inserted in the 1904 catalogue.

In the Norman-Pocock controversy concerning *Ebalia nux*, A. Milne-Edwards' publication played a crucial role. The entire problem started when Pocock (1889: 426-427, fig.) described as a new species "*Ebalia nux*, Norman, MS." Norman (and others), namely had used the name *Ebalia nux* in print, without, however, providing a description. G.C. Bourne (1890: 315), in a paper in which he dealt with zoological collections trawled off S.W. Ireland, under *Ebalia nux* cited the following remark made by Norman in a letter addressed to him: "Mr. Pocock seems to have been unaware that *Ebalia nux* had been admirably figured by Prof. A. Milne-Edwards", and a reference to A. Milne-Edwards' figure was given. Pocock (1890: 101-103) took issue with Norman's remark, and defended himself against it, as he thought that it implied unethical behaviour on his (Pocock's) part. Norman (1890: 342-346) in his reaction, blamed Pocock, "an Assistant at the British Museum, who has a magnificent library at his elbow", not to have consulted A. Milne-Edwards' "Recueil", whereupon Pocock (1890a: 472) made his above cited remark that no such publication was in the library of the British Museum (Natural History).

That the Canon A.M. Norman owned a copy of the "Recueil" is clear from the above controversy and from Sherborn's note on the new title page of Miers' copy. Mr. Clark, after some unsuccessful efforts, managed to bring to light Norman's copy, which is now held by the Balfour and Newton Library of Cambridge University, Cambridge, England, where it is bound with reprints of other publications of A. Milne-Edwards.

In the United States only a single original copy of the "Recueil" is known to us, viz., the one in the library of the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts. It is listed in the catalogue of this library by G.K. Hall (1968, 5: 842, no. 9062, Crust. 150). This copy was donated by A. Milne-Edwards to Alexander Agassiz, whose signature is shown in the upper right hand corner of the title page. Agassiz evidently donated this copy on 4 May 1883 to the library, as that is the date given as the accession date. A photocopy of this original copy is present in the library of the Crustacea Section of the National Museum of Natural History, Smithsonian Institution, Washington, D.C. The number 9062, found in the upper left hand corner of the title page of the Harvard copy, also is visible in the Washington copy, which like the Harvard copy has no numbers entered in the list of plates on pp. 2 and 3, except for no.16 *Phoberus coecus*. There are two more photocopies of this book in American libraries, namely in the University of Washington Libraries, Seattle, Washington, and in the Libraries of the University of Southwestern Louisiana, Lafayette, Louisiana. In both cases the copy is a negative (white letters on a black background) made from the same original, which evidently is the Harvard copy as the title page carries the number 9062 in the upper left hand corner. However, in both copies the plate numbers on pp. 2 and 3 are entered, and each plate in this list is checked with a check sign or with a cross,

and a typed list of the plates is added after the printed one. The plates in these two copies are numbered 1 to 43, while pl. 36 is given the number 35a (*Stylodactylus serratus*) and the numbers of the following plates are one too low. It seems likely that there exists (or has existed) a photocopy of the Harvard original in which the plate numbers are entered by hand and to which a typed list of the plates has been added; and that both the Seattle and Lafayette copies must have been made from it. We are most thankful to Mr. Robert Young, Special Collections Librarian of the Museum of Comparative Zoology, to Dr. Raymond B. Manning, Curator, Division of Crustacea of the National Museum of Natural History, Washington, D.C., to Mrs. Beate N. Kukainis, Head of the Acquisitions and Serials Department, Libraries of the University of Southwestern Louisiana, Lafayette, and to Mr. Gary L. Menges, Head of the Special Collections and Preservation Division, University of Washington Libraries, Seattle, for the most prompt and efficient help with our queries regarding the copies of the "Recueil" under their care.

In France, although original drawings, loose plates and sketches for the "Recueil" were long known to be present in the Crustacea section of the Muséum National d'Histoire Naturelle of Paris, no complete copy could be found until very recently, when A. Milne-Edwards' own copy was located in the manuscript division of the library of the Muséum. This copy, which is in an excellent condition, is now used for the present facsimile edition. In four of the plates of this copy coloured figures are found, five in all. The colouration was undoubtedly added by A. Milne-Edwards himself, as during the expeditions he made numerous colour notes and sketches of the living animals (four of these figures are reproduced here as Appendix 2, p. 67).

Notwithstanding the good relations that A. Milne-Edwards had with Prince Albert I of Monaco and with Jules Richard, the first director of the Musée Océanographique of Monaco, no copy of the "Recueil" could be located in the library of that Institute (information kindly provided by Mrs. J. Carpine-Lancre, curator of the library).

In the Netherlands an original copy of the "Recueil" is found in the "Artis-Bibliotheek", the library of the Amsterdam Zoological Gardens "Natura Artis Magistra". This copy was received from A. Milne-Edwards by J.G. de Man, who in April 1883 was curator of Invertebrates of 's Rijks Museum van Natuurlijke Historie (at present Nationaal Natuurhistorisch Museum) in Leiden. De Man, who died 19 January 1930, bequeathed his books to the Artis-Bibliotheek. One more copy of the "Recueil" exists in the Netherlands, but it is not one of the 50 originals. This copy was formed by A. Milne-Edwards in 1896, after he received a request for it from professor d'Arcy W. Thompson of St. Andrews, Scotland. In a letter accompanying this copy (dated Paris, 16 January 1896), A. Milne-Edwards wrote that since long the book was out of print, but that he had been able to find almost all the plates; this incomplete copy was sent by him to d'Arcy Thompson. According to Milne-Edwards' letter the missing plates were nos. 21, 23, 24, 26, 27, 31 and 32, but evidently nos. 21 and 32 were added later by him, as they now are present in d'Arcy Thompson's set. The first three lithographic plates of this set (pls.1-3), lack the printed inscriptions, which are added in pencil. This copy was offered for sale in 1952 by Messrs Wheldon & Wesley Ltd., London and acquired by the second author (L.B.H.). Photocopies of the missing or incomplete plates were made from De Man's copy and the whole was bound in 1953.

Thanks to the efforts of Dr. Marit E. Christiansen, Oslo, Dr. Anders Warén, Stockholm, and Dr. Torben Wolff, Copenhagen, a search was made in the Scandinavian libraries, but no copy of the "Recueil" could be located there.

Dr. V.A. Spiridonov, Zoological Museum, Moscow, informed us that the libraries of his Museum and that of the Society of Naturalists of Moscow, as well as the library of the Zoological Institute of the Academy of Sciences at St. Petersburg, do not possess

the "Recueil" and that it seems unlikely that there is a copy of this publication in Russia.

Dr. K. Wouters, Koninklijk Belgisch Instituut voor Natuurwetenschappen in Brussels kindly checked the library of his Institute, but no copy of the "Recueil" is present there.

Thus, in all only 6 original copies (plus the one of d'Arcy Thompson) are at present known to be still in existence.

The peculiar way in which the book is arranged, and the fact that there is no true text, may have been the cause that it sometimes was considered not to be an actual publication and therefore either was not catalogued or treated as a manuscript. In some cases copies may have been taken apart and the plates may have been used separately. It is quite likely therefore that several copies or parts of copies exist of which we are not aware at this moment.

Chapter Three

ORIGIN OF THE FIGURED SPECIMENS

On the 44 plates of the "Recueil de Figures de Crustacés nouveaux ou peu connus" 59 species and 2 varieties [subspecies] of Decapoda and one species of Mysidacea are figured. For the Decapoda 31 species (one of these figured as a subspecies) were collected by the "Travailleur" and 25 species plus a subspecies of one of these, by the "Blake". To these should be added 3 species labelled as from Newport (Rhode Island, U.S.A.) without other details, and one species from Upolu (Samoa Islands). The latter, from the Museum Godeffroy in Hamburg, was described by A. Milne-Edwards in 1873; it now forms part of the collection of the Paris Museum.

It is interesting to try to find out from which stations the figured specimens originate. To do this, the specimens figured on the engraved plates should be considered separately from those figured by line drawings.

As said before, the specimens shown on the engraved plates all are taken by the "Travailleur". However, it is not easy to decide during which of the expeditions they were collected, as apart from the indication "Expédition du Travailleur", the plates contain no information as to the locality. Of course, the reports by A. Milne-Edwards, and especially the final one published by him with Bouvier as co-author in 1900, which contains detailed lists of the examined Brachyuran and Anomuran material, are of great help. By consulting these it is possible, by inference, to determine the year of capture and sometimes even the station-number for part of these specimens. In this way it can be ascertained that the following species were collected in the Bay of Biscay: *Dicranodromia mahieuxii* and *Gnathophausia zoea* obtained during the expedition of 1880, *Galathodes acutus, Pontophilus jacquetii* and *Richardina spinicincta* during that of 1881, and *Scyramathia carpenteri* and *Geryon longipes* during one of these two expeditions. *Heterocrypta marionis, Ergasticus clouei* and *Ebalia nux* must have been collected in the Mediterranean in 1881. As far as *Lispognathus thomsoni, Munida tenuimana* and *Cymonomus granulatus* are concerned, the figured specimens could have been taken during either the 1880 or the 1881 expeditions, in either the Bay of Biscay or the Mediterranean.

The origin of the specimens shown as line drawings, can be more precisely determined. Each illustration has an explanation containing the name of the species, and that of the ship. In addition to that, the "Travailleur" specimens also have the collecting date, the station-number and the depth; and of the "Blake" specimens the locality and the depth are given, which usually is sufficient to determine the station-number.

There is not a single line drawing of a "Travailleur" specimen taken in 1880; such specimens are only shown on some of the engraved plates. Seven of the line drawings show specimens collected in 1881, and 12 are of those collected in 1882.

Of the 32 figured taxa collected by the "Travailleur", 7 are of species described before 1883 by various authors (other than A. Milne-Edwards), and one species, *Homolopsis rostratus* was established by A. Milne-Edwards in 1880 after a specimen of the "Blake". The names of eleven of the 24 remaining taxa were valid in 1883, as they had been published with diagnoses by A. Milne-Edwards, seven of them in 1881 and four in 1882. The remaining 12 species and one subspecies were for the first time validly published in the "Recueil de Figures de Crustacés nouveaux ou peu connus"; the eventual mention of their names in previous publications concerned nomina nuda.

The 25 species and one subspecies of the "Blake" material figured here, all have A. Milne-Edwards as their author. A great proportion of the species shown (a much larger percentage than for the "Travailleur" material) had already been described before 1883. Three were described in the preliminary note of 1880 and 17 in the 1881 paper in Annales des Sciences Naturelles. The names of the five remaining species and the subspecies had not been published before.

It appears that the "Recueil de Figures de Crustacés nouveaux ou peu connus" established or validated the names of 17 species and 2 subspecies of Decapoda. In Table I these taxa are indicated with an asterisk. Certain of the species named in the "Recueil" have subsequently been transferred to other genera and 5 at present are generally considered to be synonyms. The two subspecies, *Acanthephyra* [= *Systellaspis*] *debilis europaea* and *Gonatonotus* [= *Eugonatonotus*] *crassus longirostris*, seem not to be different from their respective nominate species.

Chapter Four

REMARKS ON THE ILLUSTRATIONS AND ON THE FIGURED SPECIES

As mentioned before, several of A. Milne-Edwards' species, whether they were established in the "Recueil" or in his 1880, 1881 and 1882 papers, have been synonymised with previously described species. Others, while still considered valid, have been transferred to other genera. The synonymies and new combinations are given in Table I, which indicates, in the following order:

1. The number of the plate, followed by the letter G, if the figure is an engraving.
2. Whether the material was collected by the "Blake" (B), or the "Travailleur" (T).
3. The name of the species as it appears in A. Milne-Edwards' list of the plates, with the exception, however, that (a) eventual capital letters in specific names are changed to lower case and (b) unjustified parentheses are omitted. Incorrect author's names are kept, but placed in square brackets; they are corrected in the remarks and comments on the relevant illustrations (see p. 48 and following). Furthermore, in the case of A. Milne-Edwards' species, the date at which the specific name became valid is added, so that this date can be consulted even when the species is placed in synonymy.
4. The species name that at present is generally accepted as valid.
5. The origin of the figured specimens. For the "Travailleur" the abbreviated date of the expedition (80, 81, 82) is followed by the station number in parentheses. As for those specimens figured on the engraved plates for which the station data cannot be ascertained, only the year is provided. For the "Blake" material, in this column only the station number is given (see the list on pp. 127-128).
6. Information on the type material. Apart from the few specimens that A. Milne-Edwards may have sent to other zoologists, and which may still exist in other musea, the Crustacean specimens of the "Travailleur" and "Blake" expeditions that are figured in the "Recueil", if still extant, at present are preserved either in the Muséum National d'Histoire Naturelle in Paris or in the Museum of Comparative Zoology, Harvard University, Cambridge, Mass., U.S.A. All these specimens have been checked and their status (holotype, syntype, or non-type) has been clarified, or, as the case may be, corrected. The results of this re-examination have been entered in a condensed form in the column "Types" of Table I. In this column the following data are given for every species: first its type status, next its catalogue number (preceded by one or two letters for the Paris Museum, and MCZ for that of Harvard), followed by the indication "(fig.)" when the specimen is figured in the "Recueil".

The following remarks and comments, dealing with certain species are meant to give information additional to that in the table or explaining the latter. First the choice of the name that is considered valid is discussed. Where the locality data given in the legends of the illustrations differ from those found on the labels and/or in the published station lists, we have tried to give the correct, and usually more detailed, information of the locality and depth of the station where the species was actually collected. Also the considerations that led to our decision to call a specimen a holo- or syntype are discussed. Finally, the taxonomic problems encountered during the examination of the material are dealt with.

Pl. 1, upper figure.- *Ergasticus clouei* A.M.E., 1882: In recent years the specific

name was generally attributed to Studer, 1883, who validly published the name before the publication of the "Recueil". But A. Milne-Edwards (1882) gave a detailed diagnosis of the nominal species in his 1881 report on the first expedition of the "Travailleur".

Pls. 2 and 3.- *Scyramathia carpenteri* and *Lispognathus thomsoni*: Both names were attributed to Norman in the table of contents, but both were first validly published by Wyville Thomson in 1873.

Pl. 4.- *Geryon longipes* A. Milne-Edwards, 1883: It is probable that the figured specimen comes from the Bay of Biscay. Actually, A. Milne-Edwards mentioned the species from the Mediterranean in his publications of 1881 and 1882, but most likely after specimens from there in the collection of the Paris Museum; A. Milne-Edwards & Bouvier (1900) do not list any Mediterranean capture of the species by the "Travailleur".

Pl. 5.- *Ebalia nux* Norman: The attribution of the species to Norman is not justified. The plate in the "Recueil" is the first valid publication of the species, which therefore should be known as *Ebalia nux* A. Milne-Edwards, 1883.

Pl. 6 fig. 1.- *Homolopsis rostratus* A. Milne-Edwards: The "Travailleur" specimen figured on pl. 6, fig. 1,1 A, and identified by A. Milne-Edwards as *Homolopsis rostratus* (at present placed in the genus *Homologenus*), does not belong to the same species as the "Blake" specimen that A. Milne-Edwards described in 1880 under that name. The eastern Atlantic specimens collected by both the "Travailleur" and the "Talisman", have to be assigned to *Homologenus boucheti* Guinot and Richer de Forges, 1995; the true *Homologenus rostratus* proves to be restricted to the Western Atlantic.

Pl. 7.- *Dicranodromia mahieuxii* A. Milne-Edwards,1883: The male holotype figured on this plate was taken in 1880 at Station 9 of the "Travailleur" in the Bay of Biscay. It was mentioned by A. Milne-Edwards & Bouvier (1900: 14-17, pl. 3, fig. 4, pl. 9, figs.1-11) together with five specimens collected by the "Talisman" in 1883 off the west coast of the Sahara. The authors redescribed the species after the male holotype and one of the females taken by the "Talisman". It seems that their figures illustrating this redescription, or at least the figure of the complete animal are not those of the holotype, as the second and third pereiopods are far shorter than in that specimen. A study, at present undertaken by D. Guinot, shows that the specimens of the "Talisman" belong to a new species quite distinct from *D. mahieuxii*, the latter being known only from the Bay of Biscay.

Pl. 8.- *Cymonomus granulatus* A. Milne-Edwards: The author of this species is not A. Milne-Edwards, but Norman in Wyville Thomson, 1873. Wyville Thomson (1873, Depths of the Sea, (ed.1): 176), namely, in his book quoted verbatim a part of a letter by the Rev. A. Merle Norman in which the species was described under the name *Ethusa granulata*. The species should correctly be cited as *Cymonomus granulatus* (Norman, in Wyville Thomson, 1873).

Pl. 9.- *Xylopagurus rectus* A. Milne-Edwards, 1880: There are nine syntypes, seven in the Museum of Comparative Zoology, and two in the Paris Museum. One of the latter, a female, has exactly the same size as the one of which the measurements are given in the original description, but it is different from the figured specimen, which is larger.

Pl. 11.- *Munida tenuimana* Sars, 1872: A. Milne-Edwards & Bouvier (1894a: 83) placed this species in the synonymy of *Munida bamffia* (Pennant, 1777) (= *M. rugosa* (Fabricius, 1775)). However, in the same year (1894: 257), they had established a new species, *M. perarmata*. In 1900 (:300,306) they assigned a part of the *Munida* collected by the "Travailleur" in the Bay of Biscay to the first species (*M. bamffia*), while the other specimens, both from the Bay of Biscay and the Mediterranean were identified with the second species (*M. perarmata*). What is the identity of the figured specimen? In a revision of the taxonomy and nomenclature of several species of the genus, A. Rice

and M. de Saint Laurent (1986) considered this illustration to truly show a *Munida tenuimana*. The problem becomes complicated because in his own copy of the "Recueil", A. Milne-Edwards made pencil annotations on this pl. 11: next to the figure of the third maxilliped he wrote "1 épine" with an arrow to the distal external angle of the merus of the maxilliped. The presence of this spine is very characteristic for *Munida intermedia* A. Milne-Edwards & Bouvier, and it lacks in the two other large-eyed species of the genus, *M. sarsi* Huus and *M. tenuimana*. This manuscript correction could be explained as follows: the original drawing of *M. tenuimana* was correct and agreed with the species of that name. But, after the publication of the "Recueil", A. Milne-Edwards compared the illustration with a specimen of *M. intermedia*, which caused him to add the "correction" to the figure of the third maxilliped.

There are other pencil notes on this pl. 11. Near the third maxilliped is written "pas d'articulation à la base" (no articulation at the base). Furthermore, next to an isolated appendage (the fifth pereiopod) figured to the left of the habitus figure, A. Milne-Edwards wrote "à supprimer" (to be deleted). On a loose copy of pl.11 this appendage is marked "mauvaise figure" (poor figure).

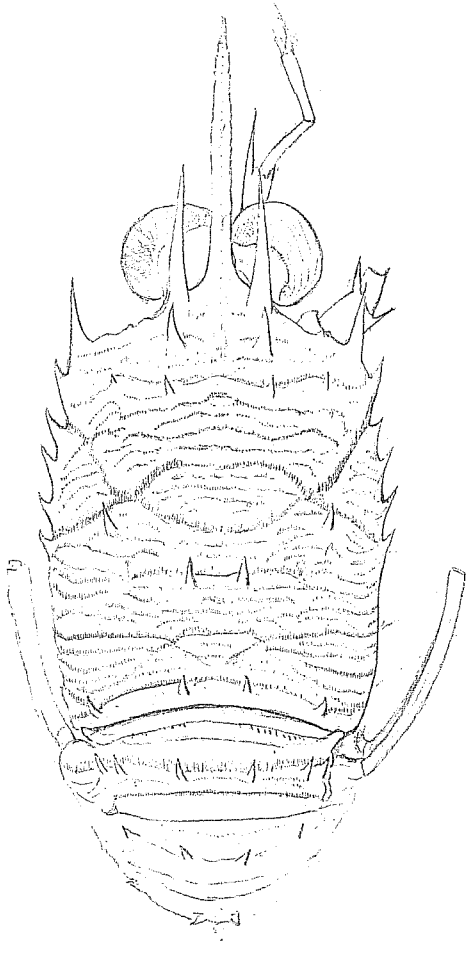

Figure 1. Original drawing of *Munida tenuimana*: dorsal view of the body, with the thoracic appendices sketched in or omitted.

The Crustacea division of the Paris Museum holds the original pencil drawings that served for this plate, as well as the model for the plate with indications to the engraver. We reproduce here (1) one of these original drawings, namely the one of the body in dorsal view with the thoracic appendages roughly sketched in or omitted (fig. 1), and (2) the model for the plate (see Appendix 3 and pl. D). A study of these reproductions confirms the identification of the figured specimen as *Munida tenuimana,* and shows that there are inaccuracies in the engraved plate. For instance, in this pl.11 the two cardiac spines, which are very clearly shown in the original drawings (and according to Rice and de Saint Laurent, 1986, are present in most of the mediterranean specimens of *M. tenuimana* and in half of those from the Atlantic), are completely absent in the engraving. Likewise, the supra-ocular spines, which in A. Milne-Edwards' drawing reach distinctly beyond the eyes, are shown on the plate as not even reaching the anterior margin of the cornea. The third maxilliped, which is more exact in the drawing than in the engraving, in the former shows the merus without the distal external spine, which confirms that the absence of this spine in the engraving is not due to an error by the engraver. A comparison of the original pencil drawings reproduced here, with the engraved plate, shows also other discrepancies, namely in the ornamentation of the posterior region of the abdomen.

It seems useful to note that the rather enigmatic group of squares shown on the plate above the figure of the abdomen, is marked in the original pencil drawing as: eye.

Pl. 12.- *Diptychus vittatus* A.M.E., 1881: This name has been used both on the plate itself and in the list of plates. But in the original diagnosis of the species of 1881, A. Milne-Edwards used the name *Diptychus rubro-vittatus*. In the original diagnosis of the species the "Travailleur" station depth is given as 900 m (A. Milne-Edwards, 1881a: 933, footnote 1). In the redescription of the species A. Milne-Edwards & Bouvier (1900: 356, pl. 32, figs. 6-14) give more information about the station, but made several errors: the number of the station of 16 August 1881 is not 16 but 42, the depth is not 899 m, but 896 m, and the co-ordinates given as the station position are those of station 41. A. Milne-Edwards & Bouvier (1900) mentioned that two specimens were collected, a male and a female. They took the female as "type" and figured it, noting the differences with the other specimen. However, the specimen figured in the "Recueil" is the male, and shows a rostrum and a scaphocerite, that are distinctly longer than those of the female figured in 1900. The latter is the only syntype left in the collection, the male could not be located anymore.

Pl. 14.- *Galathodes acutus* A. Milne-Edwards, 1881: The illustration of *Galathodes acutus* poses some problems, first regarding the taxonomic status and the synonymy of the figured specimen, and second, whether the specimen in the collection of the Paris Museum, that is marked "type" indeed is a type.

The first point could be solved: the figures of pl. 14 agree completely with the original diagnosis of the species described under the name *Galathodes acutus* by A. Milne-Edwards (1881: 932); this specimen was captured by dredge during the 1880 cruise of the "Travailleur" in the Bay of Biscay at about 1950 m (its size was not given in the diagnosis, and, as the plate has no scale, cannot be deduced from the illustration either). Anyhow, there can be no doubt that the name *Galathodes acutus* (= *Munidopsis acuta*) is that of the species described in 1881 and figured in 1883 under that name.

The collection of the Paris Museum holds a small specimen (carapace length 2.5 mm), that is marked "type", but that cannot be the specimen figured in the "Recueil". A. Milne-Edwards & Bouvier (1900: 312) in their study of the "Travailleur" and "Talisman" Brachyura and Anomura, discussed the differences between this specimen, which they considered the probable type of the species and the illustrations in the "Recueil", but they made no reference to the original diagnosis. They wrote (in translation): "This species [*Munidopsis acuta*] is represented in the "Talisman" ["Travailleur" is meant] collections by a very small male individual, that, however, lacks many of the characters shown on pl. 14 of the Recueil de Figures, which one of us published in 1883. Is this specimen really the type from which the figures of the plate are made? We are inclined to believe so, and think that the differences between our specimen and the figures of the plate are due to errors made by the draughtsman and the engraver. If, however, contrary to our expectations, new discoveries will show us wrong, it will be necessary to consider the animal that we are describing here to belong to a different species and to retain the name *acutus* for those Crustacea that show the characters figured in the just mentioned plate of the Recueil". Among other things the authors indicated that in the specimen that they described the second somite of the abdomen bears a spine (as shown on the plate), but that contrary to what one observes on pl. 14, the following two somites are unarmed. The dorsal and lateral views of the animal in pl. 14 clearly show a spine on each of the three somites; and this agrees with the original diagnosis of 1881, which explicitly mentions (in translation): "The second, third and fourth somites of the abdomen each are armed on the median line with a forward directed spine".

The differences between the specimen described and figured by A. Milne-Edwards & Bouvier (1900) under the name *Munidopsis acuta* (and considered by them the type

of *Galathodes acutus*), and the figures published in 1883 on pl. 14, in all probability are not due to errors in the execution of these figures, but to the fact that the two specimens belong to two different species. A possibility, that had already been envisaged by A. Milne-Edwards & Bouvier themselves.

This confusion could be explained as follows: at least two specimens of *Munidopsis* were collected in the Bay of Biscay during the expedition of the "Travailleur" at about 1950 m depth. One of these was very small and incorrectly named the type. This is the one which A. Milne-Edwards (1880: 356) in his account of the work of the "Travailleur" in 1880, immediately after mentioning *Munida tenuimana*, referred to as follows (in translation): "Another very interesting Galatheid was found at 1960 m; it is blind; its eyes have become simple spines; it strongly resembles the species from great depths of the seas near Florida, for which I have established the genus *Galathodes*". This specimen indeed has the ocular peduncles armed with a lateral spine and fused with the epistome, and has the cornea reduced. In the second specimen the ocular peduncles are without spines, and the cornea is well developed; it was incorrectly considered to belong to the same species as the previous. The diagnosis of 1881, that validated the name *G. acutus*, is based on this second specimen, which is figured on pl. 14 of the "Recueil". Unfortunately this specimen has not been rediscovered later.

At present it is impossible to establish the identity of the pseudo-type, that was incorrectly described and figured by A. Milne-Edwards & Bouvier (1900) as *Munidopsis acuta*. It is a juvenile and incomplete specimen, which cannot be assigned with certainty to any of the described species of the genus. It belongs to a group of *Munidopsis* in which the ocular peduncles bear one or more spines, are fused with the epistome, and have a reduced cornea; it seems closely related to *M. antonii* Filhol, 1884.

The most important characters of the real *G. acutus* are shown also by a species captured during the "Talisman" expedition and described by A. Milne-Edwards & Bouvier (1897: 365; 1900: 314, pl. 4, fig. 1, pl. 30, figs. 5-9) under the name *Munidopsis longirostris*. A comparison of the figures and the type material of *M. longirostris* with the illustrations on pl. 14 of the "Recueil", however, shows two important differences: 1) In the habitus drawing of *G. acutus* the antennulae, of which the first segment is very strong and swollen, do not resemble those of *G. longirostris*. In fact, this figure of the whole animal seems to be composite: in all probability the antennules belong to another species collected by the "Travailleur", namely *M. marionis*. In the type of *M. marionis* the antennules are lacking, and one of them was found in a vial containing the type of a third species, *Munidopsis vaillantii* A. Milne-Edwards (1881). 2) The carapace of the specimen figured in 1883 on pl. 14 is much wider anteriorly and the anterolateral spines are better developed than those of the types of *M. longirostris*; this difference may be caused by the fact that the specimen of the first species is younger than the others. Recent collections made in the Bay of Biscay captured several specimens of this species, the smallest of which had a carapace resembling that of the true *G. acutus*.

Dr. Michèle de Saint Laurent, who made a special study of the problems concerning *Galathodes acutus* and who provided us with the most important of the above observations on that species, gave the following opinion (in translation): "I think that *Munidopsis longirostris* A. Milne-Edwards & Bouvier, 1897, has to be considered a junior synonym of *Munidopsis acuta* (A. Milne-Edwards, 1881). It is true that *Munidopsis longirostris* until now was considered to be synonymous with *M. curvirostra* Whiteaves, 1874, but in my opinion the latter is a distinct species; I have identified numerous specimens of *M. curvirostra*, all of which differ in numerous characters from the syntypes of *M. longirostris* and from the illustration of *Galathodes acutus*; in particular the rostrum is shorter and less slender, and, even more important, the merus of the chelipeds is

unarmed behind the distal margin, while there are at least two or three long and sharp spines on the mesial margin of the merus in *M. acuta*".

Pl. 15, fig. 1.- *Galathodes rosaceus* A. Milne-Edwards, 1881: A. Milne-Edwards & Bouvier (1900: 331) placed this species in the synonymy of *Galathodes tridentatus* Esmark,1857) (= *Munidopsis serricornis* (Lovén, 1853)), and at the same occasion mentioned three male specimens from "Travailleur" Sta. 42 of 16 August 1881. Now, in the report of that expedition A. Milne-Edwards (1881: 932) wrote (in translation): "Another species [of *Galathodes*] was taken on 16 August on the north coast of Spain" and added a foot-note that provided a diagnosis of *Galathodes rosaceus*. Therefore we may confidently assume as certain that the illustrations of *Galathodes rosaceus* in the "Recueil" are those of one of these three specimens, which have to be considered syntypes of the species. The "Travailleur" sample is present in the collection of the Paris Museum, but it shows on its only label, in Bouvier's handwriting, the name "*Galathodes tridentata* Esmark, Edw. et Bouvier det. (ex. figuré)", as well as the data of Sta. 42 of 16 August 1881. The original label with *Galathodes rosaceus* evidently has been removed from the vial, which does contain three male specimens, of which all appendages are loose and in one the carapace is detached from the body; the sample furthermore contains the body of a fourth much smaller specimen. A. Milne-Edwards & Bouvier (1900: 331, pl. 31, fig. 5) gave the dimensions and an illustration of the largest specimen. The second largest specimen (cl. 9.1 mm against 11.3 mm in the largest) can be identified by the shape of its rostrum as the one shown on pl. 15 of the "Recueil"; it seems best to designate that specimen as the lectotype. The carapace length of the fourth specimen measures only 4.3 mm. This is the specimen that A. Milne-Edwards & Bouvier (1900: 333, pl. 31, fig. 7) mentioned and figured separately as an "unidentified specimen", which they provisionally assigned to the same species as the other three, but with much doubt.

Pl. 18, upper figure.- *Pandalus ensis* A. Milne-Edwards, 1881: In the legend of the plate is printed "*Pandalus ensis* (A.M.E.) = *Acanthephyra ensis*". This of course refers to the fact that A. Milne-Edwards (1881) in the original description of the species erroneously placed it in the genus *Acanthephyra*. That the species is a true Pandalid is clearly shown by the figure on pl. 18. At present the species is placed in the pandalid genus *Plesionika* and is known as: *Plesionika ensis* (A. Milne-Edwards, 1881).

Pl. 18, lower figure.- *Pandalus miles* A. Milne-Edwards, 1883: The legend for this species gives "Depth 200 fathoms - Martinique". The Museum of Comparative Zoology no longer has any of the type specimens but there are two lots in the Paris Museum (nos. Na 2024, and Na 2025), both collected by the "Blake". The labels of both lots give the locality St. 86, 98 fathoms, Dominica; and on one there is the indication "Type". The station number evidently needs to be corrected, it is Sta. 186. As these two specimens were collected in a locality and at a depth different from those given in the legend of the figure, one is inclined at first not to consider them actual syntypes. However, it is not impossible that the indications "Martinique" and "200 fathoms" in the legend are incorrect. Firstly, the "Blake" made no station at a depth of 200 fathoms near Martinique; the two stations that come closest as far as depth is concerned are no. 202 (190 fathoms) and 210 (191 fathoms). Also, the specimen marked "Type" by A. Milne-Edwards, judging by its dimensions could be the one figured in the "Recueil". Therefore it seems justified to consider the two specimens from Sta. 186 to be possible syntypes and to enter them in Table I as ?Sy.

Pl. 20.- *Pandalus longipes* A. Milne-Edwards, 1881: There are certain discrepancies in the information concerning localities and depths as found in the original description, in the legend of the illustration and on the labels. The description gives the locality as

near Barbados at a depth of 204 fathoms (A. Milne-Edwards, 1881a: 51). The 14 specimens held by the Museum of Comparative Zoology are from "Blake" station 291 at 200 fathoms; this depth is also given in the legend of the illustration. The Paris Museum owns the following three lots collected by the "Blake": (1) a specimen labelled with the locality "Blake" Sta. 241, Barbados, 200 fathoms, and the indication "type"; (2) an ovigerous female with a handwritten label by A. Milne-Edwards, giving the same information as that of no.1; (3) three specimens with two "Blake" labels, both with "Barbados, no. 274"; however, one of these labels has in addition "204 fms", the other "209 fms". In the station list the depth of station 274 is given as 209 fms.

As "Blake" station 241 was off the Grenadines in 163 fathoms, the station number as given on the labels of the specimens under (1) and (2) must be incorrect. These specimens must be from Sta. 291, like the specimens of the Museum of Comparative Zoology.

Thus the different specimens can have been taken at 200, 204, or 209 fathoms. It is impossible to decide on which of the lots the original description is based. However, as they all originate from the type locality, Barbados, it seems logical to consider everyone of them as syntype. As the single ovigerous female (Na 10533), with a label in A. Milne-Edwards' handwriting, has exactly the same measurements as given in the original description and furthermore doubtless is the specimen figured on pl. 20 of the "Recueil", it is the obvious choice for lectotype of the species.

Pl. 21, lower figure.- *Pandalus martius* A. Milne-Edwards,1883: The figure in the "Recueil" has as locality indication: Atlantic Ocean, 400 to 1200 m. The 1882 "Travailleur" expedition collected numerous specimens of this species, thirty of which are still in the collection of the Paris Museum. It is impossible to decide whether or not one of these specimens is the one figured on pl. 21. As A. Milne-Edwards must have studied all this material at practically the same time, all specimens may conveniently be considered syntypes. The material originates from the stations 1, 2, 3, 38, 39, 56, 61 and 69, situated roughly between 34° and 44° N and from depths between 512 and 1290 m; the specimens are registered under nos. Na 1209, 2082, 2084, 2085, 2089, 2091, and 2093.

Pl. 23.- *Pandalus sagittarius* A. Milne-Edwards, 1883: The figured specimen is indicated in the legend as coming from "Travailleur" Sta. 54 of 18 August 1882, depth 400 m. According to the station list this station was made on 10 August 1882, which date also is shown on the label of the 6 syntypes. The largest of these, with a carapace length (inclusive of the rostrum) of about 40 mm, evidently is the one figured on the plate. Other specimens of this species were collected during the same 1882 expedition at stations 8 and 32, with depths of 156 and 440 m, respectively.

Pl. 25, upper figure.- *Pandalus longicarpus* A. Milne-Edwards, 1883: The largest of the four syntypes, which were all taken at "Travailleur" Sta. 26 (24 July 1882, depth 370 m), can be recognized as the specimen figured on pl. 25, by its size and the fact that the tip of the rostrum is lacking. The three other syntypes are in poor condition. A further specimen of this species was taken at "Travailleur" Sta. 25 in 460 m depth.

Pl. 26, lower figure.- *Pandalus brevirostris* Rathke,1837: The legend on the plate correctly gives Rathke as the author of *Pandalus brevirostris*. In the list of the plates the species is incorrectly attributed to A. Milne-Edwards. The figure shows that the figured specimen actually belongs to *Pandalina profunda* Holthuis, 1946.

Pl. 27, upper figure.- *Heterocarpus ensifer* A. Milne-Edwards, 1883: According to the station list the depth at "Blake" Sta. 148 is not 200, but 208 fathoms.

Pl. 29, upper figure.- *Tozeuma cornutum* A. Milne-Edwards, 1881: On the plate the depth of "Blake" Sta. 285, where the holotype was collected, is given as 40 fathoms, one station list gives the depth of this station as 7- 40 fathoms; but a different station list

has 13 fms for this station. The station number is not provided in the legend, nor in the original description, but was found on the label of the holotype.

Pl. 29, lower figure.- *Tozeuma serratum* A. Milne-Edwards, 1881: The depth of "Blake" Sta. 292 (the station number indicated on the label of the holotype) is not 50 fathoms, as indicated on the plate, but 56 fathoms as shown by the station lists and by the original description.

Pl. 30, upper figure.- *Oplophorus gracilirostris* A. Milne-Edwards, 1881: For the locality of the holotype ("Blake" Sta. 181), read Dominica (as given in the original description) instead of St. Kitts.

Pl. 33, fig. 1.- *Acanthephyra armata* A. Milne-Edwards, 1881: In the original description the measurements of one of the specimens are given, its total length is indicated as 145 mm. The locality is given on the plate as "Antilles"; it is more detailed in the original description: St. Lucia, 422 fathoms ("Blake" Sta. 222). A single specimen of this species in the Paris Museum (Na 394) is accompanied by a label giving the same locality and depth, and has the indication "typique". This specimen, however, is not the one of which the measurements are given in the original description, as it has a length of only about 90 mm. However, judging by the shape and denticulations of the rostrum, it doubtless is the animal figured on pl. 33 of the "Recueil", although the enlargement is not 2 as indicated in the figure but about 1.75. Now, what actually is the status of this specimen? The "Blake" undoubtedly collected at least two specimens at Station 222, of one of which the measurements are given in the original description, in which no type is indicated.Therefore one can consider the specimens taken at this station (2 or more) to be syntypes, of which only one remains, namely the one preserved in the Paris Museum.

Pl. 33, fig. 2.- *Acanthephyra debilis* A. Milne-Edwards, 1881: This is the name mentioned in the list of plates, but the legend on the plate says: "*Acanthephyra debilis* (A.M.E.) Var. *europaea* = *Miersia gracilis* (Smith)". The specimen figured here thus is the type of *Acanthephyra debilis europaea* A. Milne-Edwards, 1883. Although in this case the locality of the animal is not indicated as it is in most other instances, the name chosen, *europaea*, shows that it must have been a specimen collected by the "Travailleur". None of the lots in the Paris Museum is labelled with this trinomen, but a specimen collected on 22 August 1882, in the Bay of Biscay at Station 42 of the "Travailleur", was later identified as *A. debilis*.

Pl. 33, fig. 3.- *Acanthephyra purpurea* A. Milne-Edwards, 1881: No specimen of this species collected by the "Travailleur" could be found in the Paris Museum, where there are numerous lots collected by the "Talisman", but of course those are not types. The type lot came from Sta. 36 of the 1881 cruise of the "Travailleur" from a depth of 2590 m (see A. Milne-Edwards, 1881a: 933) off the Berlinga Islands, Portugal , 39°33'N 12°11'30" W (of Paris = 9°51'16" W. of Greenwich).

Pl. 34, upper figure.- *Gonatonotus crassus longirostris* A. Milne-Edwards, 1883: In the "Blake" station list there are no stations near Sand Key of 29 fathoms, actually there are no "Blake" stations of 29 fathoms at all. The three "Blake" stations (9, 70, 72) off or near Sand Key have depths of 111 (Sta. 9 and 70) and 50 (Sta. 72) fathoms.

Pl. 36.- *Stylodactylus serratus* A. Milne-Edwards, 1881: The depth at "Blake" Sta. 190 was not 500 fms as indicated on the plate, nor 524 fathoms as mentioned in the original description, but 542 fathoms as shown in the station lists.

Pl. 37.- *Nematocarcinus cursor* A. Milne-Edwards, 1881: The original description provides no locality (apart from "la mer des Antilles" = Caribbean Sea, in the title of the paper), but it is said there (in translation) that "This species is common at a depth of 500 fathoms". On plate 37 the legend indicates "500 fathoms, Caribbean Sea".

In the collection of the Paris Museum there is a lot (Na 642) of five specimens of this

species from "Blake" Sta. 151, 365 fathoms, with the label "typique". A second lot (10 specimens in poor condition) has no locality label but it is provided with a slip of paper with in A. Milne-Edwards' handwriting the remark: *"Nematocarcinus* different from those of Sp. Bate". It seems permissable, in view of the many inaccuracies in the indication of the depths, to consider the specimens of both lots to be syntypes.

Pl. 39.- *Glyphocrangon aculeatum* A. Milne-Edwards, 1881: According to the original description the type locality is St. Vincent, 593 fathoms. However, the "Blake " station list does not mention any station near St. Vincent with this depth. The label of the 10 syntypes in the Museum of Comparative Zoology reads "Blake" Sta. 227, St. Vincent, 573 fms", which agrees with the data of this station in the station list. The depth indicated in the original description evidently is incorrect. The specimen figured in the "Recueil" at present is in the collection of the Paris Museum (no. Na 11944); it is not a syntype, as it originates from Sta. 200 off Martinique, depth 472 fathoms.

Pl. 40, fig. 1.- *Glyphocrangon spinicauda* A. Milne-Edwards, 1881: The type locality is St. Kitts, 250 fathoms ("Blake" Sta. 147). Three specimens of the type lot are still in existence, one in the Museum of Comparative Zoology labelled "holotype", and two in the Paris Museum both having labels of the "Blake" expedition, one being marked "type". All three specimens should be considered syntypes, were it not that the specimen marked "holotype" has been published as such by Holthuis (1971, Bull. mar. Sci. Univ. Miami, 21(1): 296, 301), who was unaware of the existence of the two specimens in the Paris Museum. According to Art.74(b) of the International Code of Zoological Nomenclature "the first subsequent author [i.e., subsequent to the establishment of a species based on syntypes] to have published the inference that one of the original specimens is the "holotype" is deemed, should another syntype or syntypes be discovered, to have designated a lectotype". The specimen in the Museum of Comparative Zoology thus has to be considered the lectotype of the species, the specimens of the Paris Museum are paralectotypes. Judging by their size none of the three specimens could be the one figured. However, it is possible that A. Milne-Edwards made an error in giving pl. 40, fig. 1 as being of natural size; his figure shows an animal with a carapace length of 54 mm. In Holthuis' (1971: 299) quite extensive material (more than 400 specimens), the largest specimen (namely the male lectotype) had a carapace length of 44 mm; in ovigerous females the carapace length varied between 30 and 43 mm.

Pl. 40, fig. 2.- *Glyphocrangon nobile* A. Milne-Edwards, 1881: The holotype of this species from Dominica ("Blake" Sta. 182, depth 1131 fms), is no longer extant (see Holthuis, 1971: 346). Both the Paris Museum and the Museum of Comparative Zoology hold "Blake" material of this species, but from stations other than no. 182. The Paris Museum has three juveniles from Sta. 185 (off Dominica, 333 fms), the Museum of Comparative Zoology has 9 lots, viz. from stations 41 (N.W. of Cuba, 860 fms.), 130 (off St. Croix, 451 fms), 162 (off Guadeloupe, 734 fms), 174 (off Guadeloupe, 878 fms), 176 (off Dominica, 391 fms), 179 (off Dominica, 824 fms), 211 (off Martinique, 357 fms), 222 (off St. Lucia, 422 fms) and 227 (off St. Vincent, 572 fms). As the holotype was lost, Holthuis designated the specimen from "Blake" Sta. 179 (off Dominica, 824 fms) as the neotype of *Glyphocrangon nobilis* A. Milne-Edwards. For the zoologists who think that all the "Blake" material listed here are syntypes, the same specimen from Sta. 179 is selected to be the lectotype. As the generic name *Glyphocrangon* is of the feminine gender the specific name *nobile* should be corrected to *nobilis* and that of *G. aculeatum* (Pl. 39) to *G. aculeata.*

Pl. 42.- *Benthesicymnus bartlet*[*t*]*i* Smith, 1882. In the legend to this figure the name is followed by a question mark. The specimen actually belongs to *Benthonectes filipes* S.I. Smith, 1885. This latter name was written by A. Milne-Edwards in pencil on one

of the loose plates. This is the species that for a long time figured in the popular deep sea literature as "*Hapalopoda investigator* (A. Milne-Edwards)". This name, evidently a manuscript name by A. Milne-Edwards, and never used by him in print, was first published by Filhol (1885, 12 September) in a paper entitled "La vie au fond des mers" that was published in installments in the journal "La Nature". The fact that Filhol gave a brief description and a figure of *Hapalopoda investigator*, made this name available as from 12 September 1885. It is a junior synonym of *Benthonectes filipes* Smith (1885, 26 January) which was published 8 months earlier (see Holthuis, 1980: 185-187).

TABLEAU I.- Liste des espèces avec leur nom valide actuel, provenance des spécimens figurés et données sur les types

TABLE I. - List of the species with their present valid name, data of the origin of the figured specimens and information about the types

Pl	Navire Vessel	Nom dans la table des matières Name in the table of contents	Nom valide actuel Present valid name	Date expedition n° station	Types
1 G	T	Ergasticus clouei A.M.E., 1882	Ergasticus clouei A.M.E., 1882	81	Sy (3) B 17892
1 G	T	*Heterocrypta marionis A.M.E., 1883	H. maltzani Miers, 1881	81	
2 G	T	Scyramathia carpenteri [Norman]	Rochinia carpenteri (Wyville Thomson, 1873)	80-81	
3 G	T	Lispognathus thomsoni [Norman]	Dorhynchus thomsoni (Wyville Thomson, 1873)	80-81	
4 G	T	Geryon longipes A.M.E., 1882	Geryon longipes A.M.E, 1882	80-81	Sy (2) B 6435
5 G	T	*Ebalia nux [Norman]	Ebalia nux A.M.E., 1883	80-81	
6	T	Homolopsis rostratus A.M.E., 1880	Homologenus rostratus (A.M.E., 1880)	82 (n° 40)	
6	B	Homolodromia paradoxa A.M.E., 1880	Homolodromia paradoxa A.M.E., 1880	n° 151	Hy MCZ 6512 (fig.)
7 G	T	*Dicranodromia mahieuxii A.M.E., 1883	Dicranodromia mahieuxii A.M.E., 1883	80 (n° 9)	Hy B 21681 (fig.)
8 G	T	Cymonomus granulatus [A.M.E.]	Cymonomus granulatus (Norman in Wyville Thomson, 1873)	80-81	
9	B	Xylopagurus rectus A.M.E.,1880	Xylopagurus rectus A.M.E., 1880	n° 192	Sy(2) Pg 462- Sy(7)MCZ 4097
10	B	Pylocheles agassizii A.M.E., 1880	Pylocheles agassizii A.M.E., 1880	n° 291	Hy MCZ 4010 (fig.)
11 G	T	Munida tenuimana Sars	Munida tenuimana G.O. Sars, 1871	80-81	
12	T	Diptychus vittatus A.M.E.,1881	Uroptychus rubrovittatus (A.M.E., 1881)	81 (n° 42)	Sy(1) Ga 514
13	T	Elasmonotus vaillantii A.M.E., 1881	Munidopsis vaillantii (A.M.E., 1881)	81 (n° 2A)	Sy (2) Ga 303 (fig.)
14 G	T	Galathodes acutus A.M.E., 1881	Munidopsis acuta (A.M.E., 1881)	80 (n° 10)	
15	T	Galathodes rosaceus A.M.E., 1881	Munidopsis serricornis (Lovén, 1853)	81 (n° 42)	Sy (3) Ga 297 (Ly fig.)
15	T	Galathodes marionis A.M.E., 1882	Munidopsis marionis (A.M.E., 1882)	81 (n° 9?)	Hy Ga 304 (fig.)
16	B	Phoberus coecus A.M.E.,1881	Acanthacaris caeca (A.M.E., 1881)	n° 264	Hy MCZ 4040 (fig.)
17	T	Chlorotocus gracilipes A.M.E.,1882	Chlorotocus crassicornis (Costa, 1871)	81 (n° 28)	Hy Na 8212 (fig.)
18	B	Pandalus ensis A.M.E., 1881	Plesionika ensis (A.M.E., 1881)	n° 283	Hy MCZ 4134 (fig.)
18	B	*Pandalus miles A.M.E., 1883	Plesionika miles (A.M.E., 1883)	n°186,202,210?	Sy(2) Na 2024,2025 (fig.)
19	T	*Pandalus quadridentatus A.M.E., 1883	Plesionika quadridentatus (A.M.E., 1883)	82(n°54)	
19	T	*Pandalus stylopus A.M.E., 1883	Plesionika narval (Fabricius, 1787)	82(n°39)	
20	B	Pandalus longipes A.M.E., 1881	Plesionika longipes (A.M.E., 1881)	n°291	Sy(5)Na 2023,10533(fig.=Ly),14365 Sy(14) MCZ 4129, 4412
21	T	*Pandalus parfaitii A.M.E., 1883	Plesionika acanthonotus (Smith, 1882)	82(n°19)	
21	T	*Pandalus martius A.M.E., 1883	Plesionika martia (A.M.E., 1883)	82(n°1,2,3,38,39,56,61,69)	Sy(30) (voir p. 28, 45)
22	-	Pandalus leptocerus Smith	Dichelopandalus leptocerus (Smith, 1881)	Newport	
22	-	Pandalus propinquus Sars	Pandalus propinquus Sars, 1869	Newport	
23	T	*Pandalus sagittarius A.M.E.,1883	Plesionika heterocarpus (Costa, 1871)	82(n°54)	Sy(6) Na 2039 (fig.)
24	-	Pandalus serratus A.M.E.,1873	Peripandalus serratus (A.M.E., 1873)	Upolu	Hy Na 2040 (fig.)
24	-	Pandalus tenuipes Smith	Plesionika tenuipes (Smith, 1881)	Newport	
25	T	*Pandalus longicarpus A.M.E., 1883	Plesionika heterocarpus (Costa, 1871)	82(n°26)	Sy(4) Na 2067 (fig.)
25	T	*Pandalus geniculatus A.M.E., 1883	Plesionika acanthonotus (Smith, 1882)	82(n°19)	Sy(2) Na 2056 (fig.)

Pl	Navire Vessel	Nom dans la table des matières Name in the table of contents	Nom valide actuel Present valid name	Date expedition n° station	Types
26	B	*Pe[a]ntomus parvulus A.M.E., 1883	Pantomus parvulus A.M.E., 1883	n°36	Sy (++) Na 2015 Sy (++) MCZ 4148
26	T	Pandalus brevirostris [A.M.E.]	Pandalina profunda Holthuis, 1946	81(n°2A)	
27	B	Heterocarpus ensifer A.M.E., 1883	Heterocarpus ensifer A.M.E., 1883	n° 275	Hy Na 1992 (fig.)
27	B	Heterocarpus oryx A.M.E., 1881	Heterocarpus oryx A.M.E., 1881	n° 29	Hy Na 2402 (fig.)
28	B	*Heterocarpus laevis A.M.E., 1883	Plesionika laevis (A.M.E., 1883)	n° 193	Hy Na 213 (fig.)
28	B	.*Heterocarpus alexandrii A.M.E., 1883	Heterocarpus alexandri A.M.E., 1883	n° 2	.Hy MCZ 4145(fig.)
29	B	Tozeuma cornutum A.M.E., 1881	Tozeuma cornutum A.M.E, 1881	n° 285	Hy Na 1529 (fig.)
29	B	Tozeuma serratum A.M.E., 1881	Tozeuma serratum A.M.E., 1881	n° 292	Hy Na 1528 (fig.)
30	B	Oplophorus gracilirostris A.M.E., 1881	Oplophorus gracilirostris A.M.E., 1881	n° 181	Hy Na 6110 (fig.)
30	T	*Oplophorus spinicauda A.M.E., 1883	Janicella spinicauda (A.M.E., 1883)	82(n° 38)	Hy Na 3451 (fig.)
31	B	Notostomus elegans A.M.E., 1881	Notostomus elegans A.M.E., 1881	n°29	Hy Na 420 (fig.)
32	T	*Notostomus corallinus A.M.E., 1883	Kemphyra corallina (A.M.E., 1883)	82(n°20)	
32	B	Nostostomus gibbosus A.M.E., 1881	Notostomus gibbosus A.M.E., 1881	n°267	Hy Na 442 (fig.)
33	B	Acanthephyra armata A.M.E., 1881	Acanthephyra armata A.M.E. 1881	n°222	Hy Na 394 (fig.)
33	T	*Acanthephyra debilis [var. europaea A.M.E. 1883]	Systellaspis debilis (A.M.E., 1881)	82 ?	
33	T	Acanthephyra purpurea A.M.E., 1881	Acanthephyra purpurea. A.M.E., 1881	81(n°36)	
34	B	*Gonatonotus crassus var. longirostris A.M.E. 1883	Eugonatonotus crassus (A.M.E., 1881)	n°10 ou 12	Hy Na 1803 (fig.)
34	B	Gonatonotus crassus A.M.E., 1881	Eugonatonotus crassus (A.M.E., 1881)	n°249	Hy Na 1804 (fig.)
35	B	*Stylodactylus rectirostris A.M.E, 1883	Stylodactylus rectirostris A.M.E., 1883	n°220	Sy(2) Na 1848(fig.),11512
36	B	Stylodactylus serratus A.M.E., 1881	Stylodactylus serratus A.M.E., 1881	n°190	Hy Na 7992 (fig.)
37	B	Nematocarcinus cursor A.M.E., 1881	Nematocarcinus cursor A.M.E., 1881	n°?	Sy (14) Na 642, 643
38 G	T	Pontophilus jacquetii A.M.E., 1881	Metacrangon jacquetii (A.M.E., 1881)	81	
39	B	Glyphocrangon aculeatum A.M.E., 1881	Glyphocrangon aculeata A.M.E., 1881	n°200	Sy(10) MCZ 4049, 4024 Na 11944 (fig., non Sy)
40	B	Glyphocrangon spinicauda A.M.E., 1881	Glyphocrangon spinicauda A.M.E., 1881	n°147	Sy(1)MCZ 4427 =Ly Sy(2) Na 1168, 6108
40	B	Glyphocrangon nobile A.M.E., 1881	Glyphocrangon nobilis A.M.E., 1881	n°182	Sy(3) Na 1166, 6107 Sy(17) MCZ
41 G	T	Richardina spinicincta A.M.E., 1881	Richardina spinicincta A.M.E., 1881	80(n°7)	Hy Na 2943 (fig.)
42	T	Benthesicymnus bartlet[t]i Smith	Benthonectes filipes Smith, 1885	82(n°40)	
43 G	T	Gnathophausia zoea W.S.	Gnathophausia zoea Willemoes-Suhm, 1873	80(n°14)	
44 G	T	Gnathophausia zoea W.S	Gnathophausia zoea Willemoes-Suhm, 1873	80(n°14)	

G : planches gravées - B : "Blake" - T : "Le Travailleur"

Dans la colonne "Date campagne - n° station" sont indiqués:
Pour "Le Travailleur", la date de la campagne (80, 81 ou 82), suivie, entre parenthèses, lorsqu'il a pu être déterminé, du numéro de dragage. (voir listes, appendice 5a-c). En 1881, deux séries de stations ont été effectuées : les numéros de la première sont affectés de la lettre A.
Pour le "Blake", seulement le numéro de station, qui renvoie à la liste 1877-1879 (appendice 5d). Les stations du "Blake" ont une numérotation continue.
Dans la colonne "Types", Hy = holotype, Sy = syntypes (leur nombre entre parenthèses), Ly = lectotype. Ces abréviations sont suivies des numéros de catalogue, les exemplaires du Museum of Comparative Zoology se distinguant par le sigle MCZ . La mention (fig.) placée après un numéro indique qu'il s'agit d'un exemplaire figuré dans le "Recueil". Les numéros non précédés d'Hy ou Sy sont ceux de spécimens non-types, mais figurés.
L'astérisque * signale les espèces nouvelles publiées dans le "Recueil".

G: engraved plates - B: "Blake" - T: "Travailleur"

In the column "Date expedition, n°. station" are indicated:
For the "Travailleur" the abbreviated year of the expedition (80, 81 ou 82), followed in parentheses by the station number, if known (the 1881 cruise had two series of stations, the numbers of the first series are followed by the letter A). For station lists see Appendix 5a-c.
For the "Blake" only the station number is given, the details of which can be found in appendix 5d. The "Blake" stations are consecutively numbered throughout.
In the column "Types", Hy = holotype, Sy = syntype (the number of syntypes is given in parentheses), Ly = lectotype. These abbreviations are followed by the catalogue numbers (those of the Paris Museum preceded by one or two letters, those of the Museum of Comparative Zoology by MCZ). The indication (fig.) placed after a catalogue number indicates that a specimen of this lot is figured in the "Recueil". The numbers not preceded by Hy or Sy are those of non-types figured here.
An asterisk * is placed before those species names that were first validly published in the "Recueil".

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1

Recueil de Figures de Crustacés

nouveaux ou peu connus

par

M.r H. Milne-Edwards

1ère Livraison

(Comprenant 4 4 planches.)

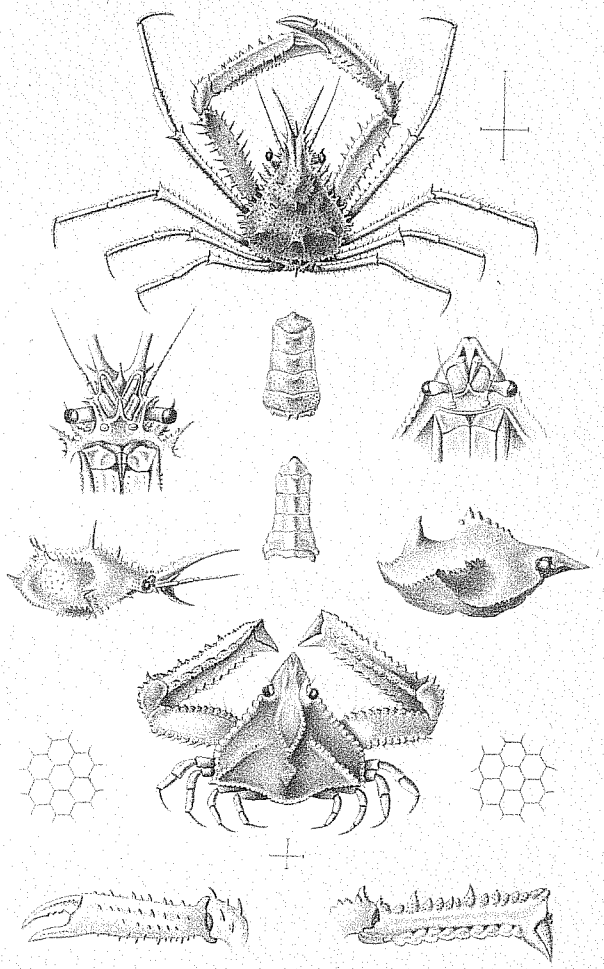
Avril 1883.

Liste des Planches
formant cette Livraison

Pl. 1 Ergasticus Clouei (a. M. E.)
Heterocrypta Marionis (a. M. E.)
Pl. 2 Scyramathia Carpenteri (Norm.)
Pl. 3 Lispognathus Thomsoni (Norm.)
Pl. 4 Geryon longipes (a. M. E.)
Pl. 5 Ebalia nux (Norm.)
Pl. 6 Homolopsis rostratus (a. M. E.)
Homolodromia paradoxa (a. M. E.)
Pl. 7 Dicranodromia Mabieuxii (a. M. E.)
Pl. 8 Cymonomus granulatus (a. M. E.)
Pl. 9 Xylopagurus rectus (a. M. E.)
Pl. 10 Pylocheles Agassizii (a. M. E.)
Pl. 11 Munida tenuimana (Sars)
Pl. 12 Diptychus vittatus (a. M. E.)
Pl. 13 Elasmonotus Vaillantii (a. M. E.)
Pl. 14 Galathodes acutus (a. M. E.)
Pl. 15 Galathodes rosaceus (a. M. E.)
Galathodes Marionis (a. M. E.)
Pl. 16 Rhoberus caecus (a. M. E.)
Pl. 17 Chlorotocus gracilipes (a. M. E.)
Pl. 18 Pandalus ensis (a. M. E.)
Pandalus Miles (a. M. E.)
Pl. 19 Pandalus quadridentatus (a. M. E.)
Pandalus stylopus (a. M. E.)
Pl. 20 Pandalus longipes (a. M. E.)
Pl. 21 Pandalus Parfaitii (a. M. E.)
Pandalus martini (a. M. E.)
Pl. 22 Pandalus leptocerus (Smith.)
Pandalus propinquus (Sars.)
Pl. 23 Pandalus sagittarius (a. M. E.)

Pl. 24 Pandalus serratus (a. M. E.)
Pandalus tenuipes (Smith.)
Pl. 25 Pandalus longicarpus (a. M. Edw.)
Pandalus geniculatus (a. M. E.)
Pl. 26 Pentomus parvulus (a. M. E.)
Pandalus brevirostris (a. M. E.)
Pl. 27 Heterocarpus ensifer (a. M. E.)
Heterocarpus oryx (a. M. E.)
Pl. 28 Heterocarpus laevis (a. M. E.)
Heterocarpus Alexandri (a. M. E.)
Pl. 29 Cozenma cornutum (a. M. E.)
Cozenma serratum (a. M. E.)
Pl. 30 Oplophorus gracilirostris (a. M. E.)
Oplophorus spinicauda (a. M. E.)
Pl. 31 Notostomus elegans (a. M. E.)
Pl. 32 Notostomus coralinus (a. M. E.)
Notostomus gibbosus (a. M. E.)
Pl. 33 Acanthephyra armata (a. M. E.) = A. purpurea (a. M. E.)
Acanthephyra debilis (a. M. E.)
Pl. 34 Gonatonotus crassus var. longirostris (a. M. E.)
Gonatonotus crassus (a. M. E.)
Pl. 35 Stylodactylus rectirostris (a. M. E.) - Pl. 36 Stylodactylus serratus (a. M. E.)
Pl. 37 Nematocarcinus cursor (a. M. E.)
Pl. 38 Pontophilus Jacquetii (a. M. E.)
Pl. 39 Glyphocrangon aculeatum (a. M. E.)
Pl. 40 Glyphocrangon spinicauda (a. M. E.)
Glyphocrangon nobile (a. M. E.)
Pl. 41 Richardina spinicincta (a. M. E.)
Pl. 42 Benthesicymus Bartletti (Smith)
Pl. 43 Gnathophausia Zoea (M. S.)
Pl. 44 Gnathophausia Zoea (M. S.)

Pl. 1

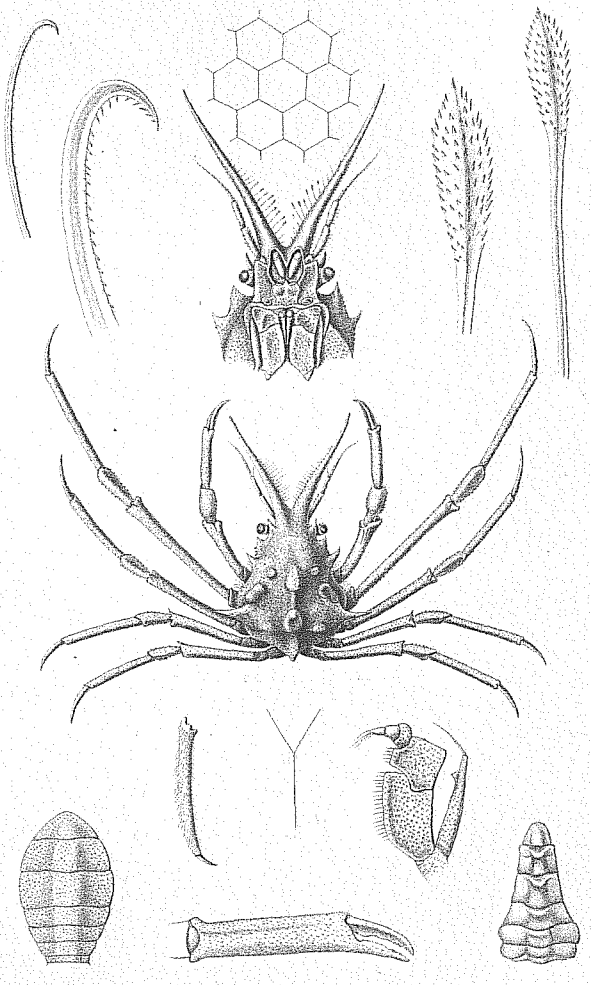


Ergasticus Clouei (A.M.E.)

Heterocrypta Marionis (A.M.E.)

Expédition du Travailleur

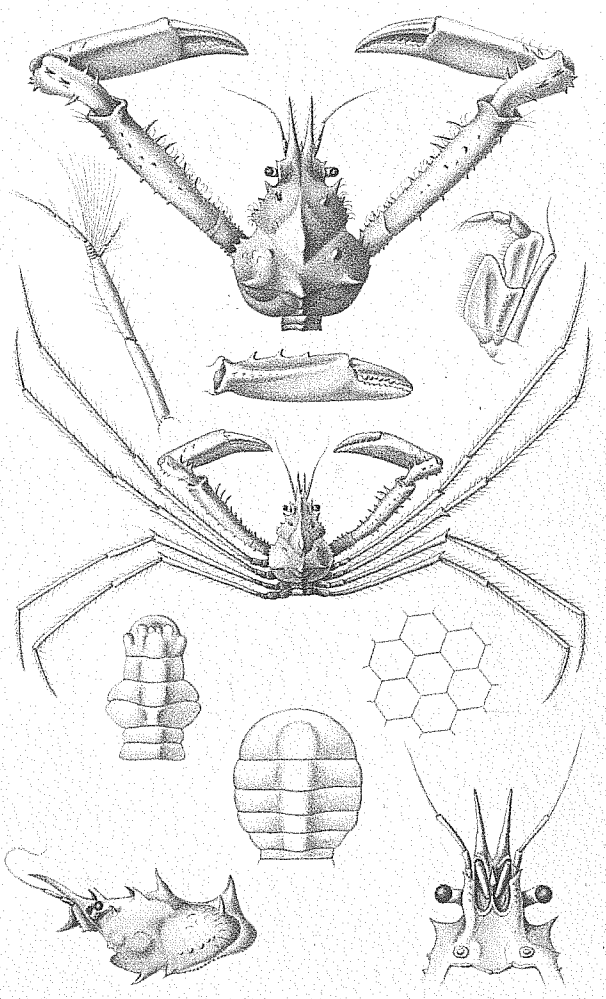
Pl. 2



Scyramathia Carpenteri (Norm.)

EXPÉDITION DU TRAVAILLEUR

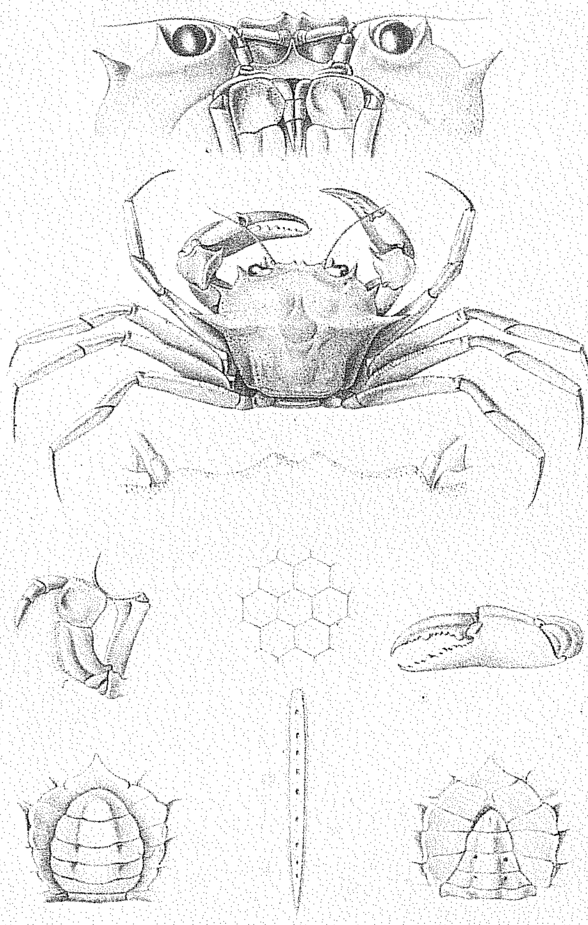
Pl 3



Lispognathus Thomsoni (Norm.)

EXPÉDITION DU TRAVAILLEUR

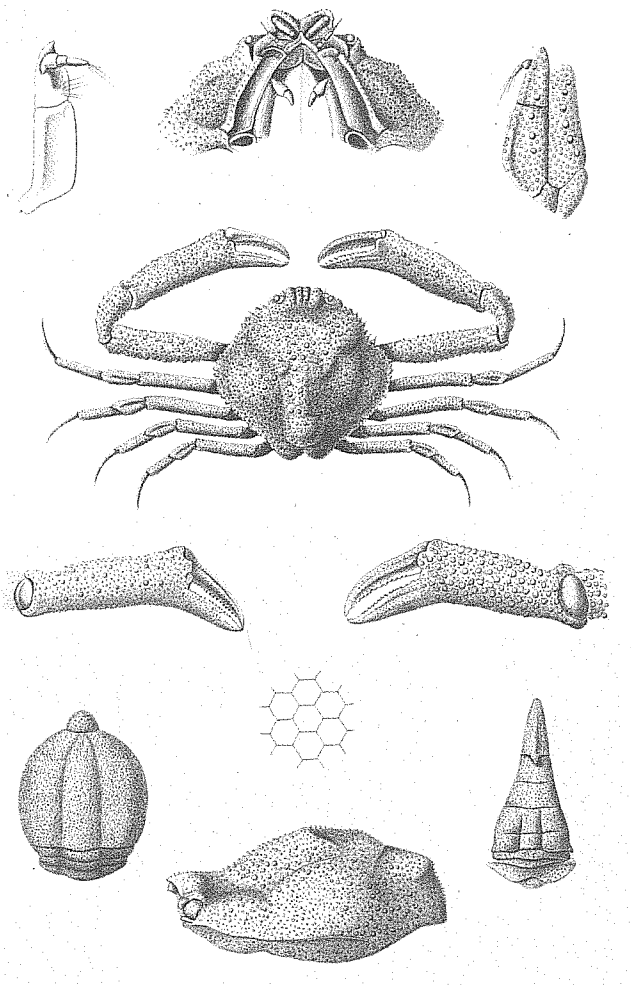
Pl 4



Geryon longipes (A.M.E.)

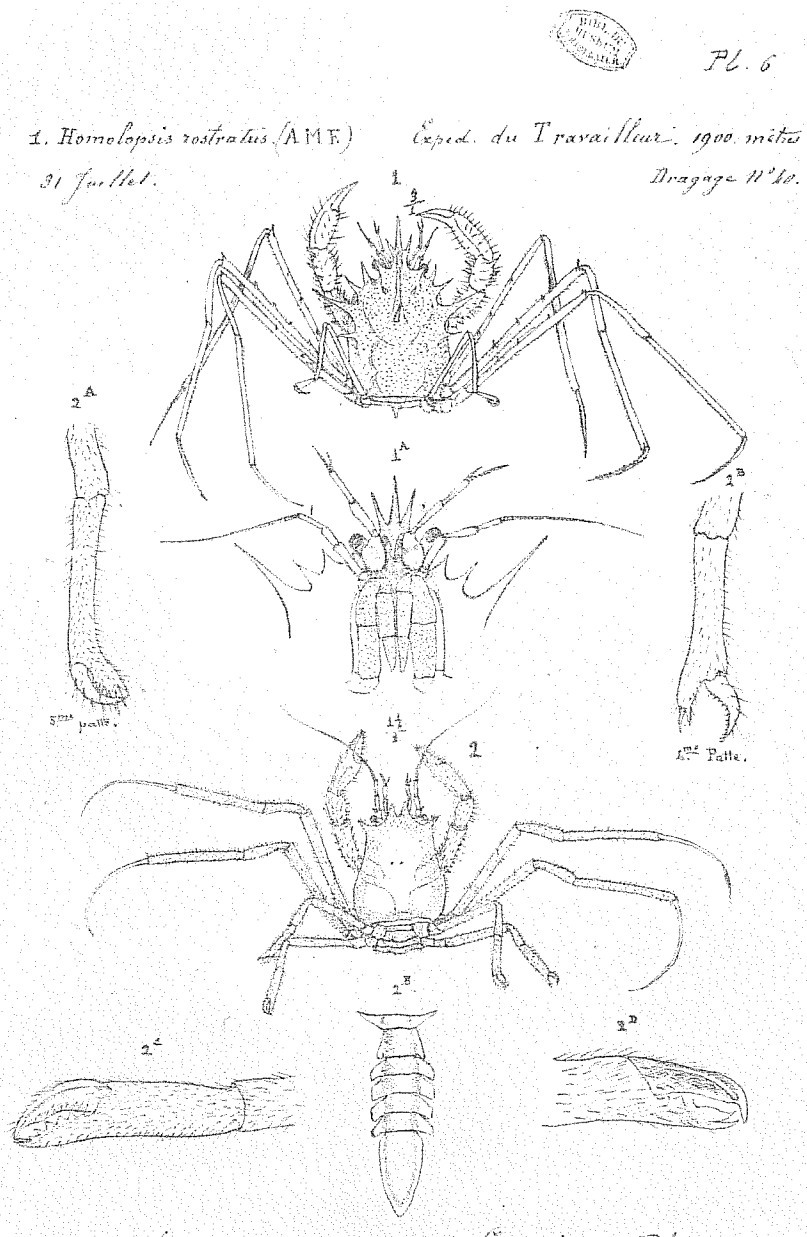
Expédition du Travailleur

Pl 5



Ebalia nux (*Norm.*)

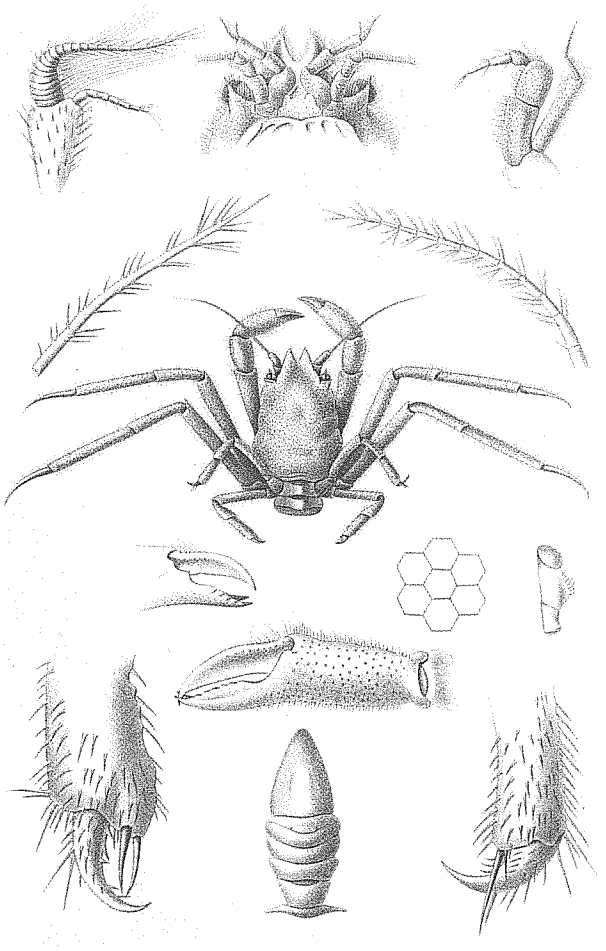
Expédition du Travailleur



2. Homolodromia paradoxa (AME.) Expedition du Blake

Station N° 151. Profondeur 356 brasses — Nevis.

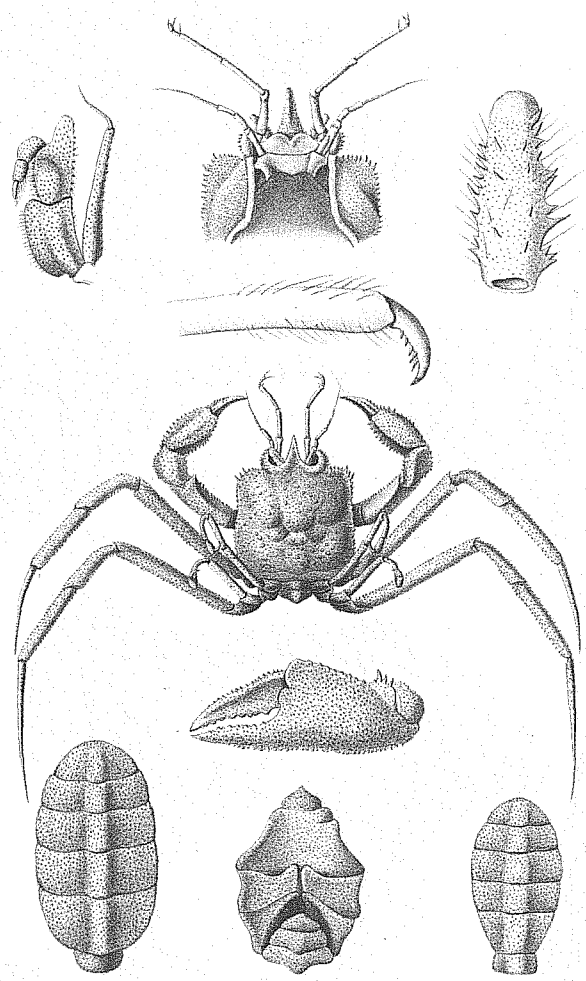
Pl. 7



Dicranodromia Mahieuxii (A.M.E.)

Expédition du Travailleur

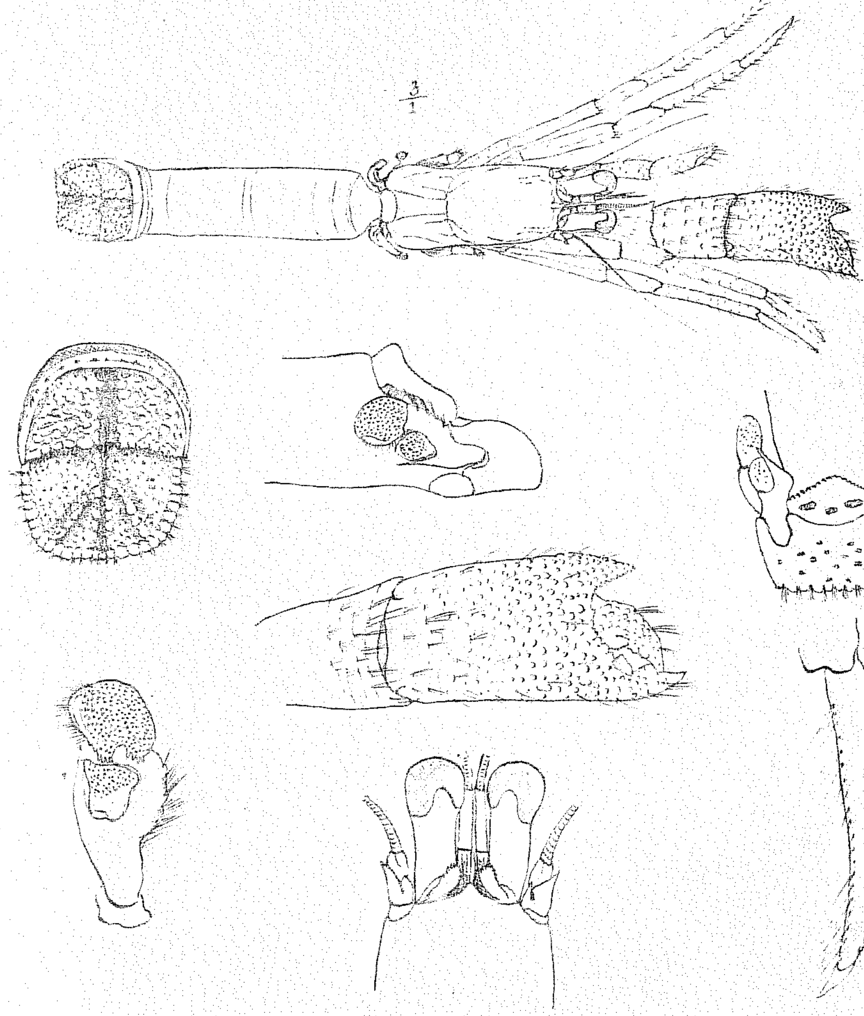
Pl. 8



Cymonomus granulatus (Norm.)

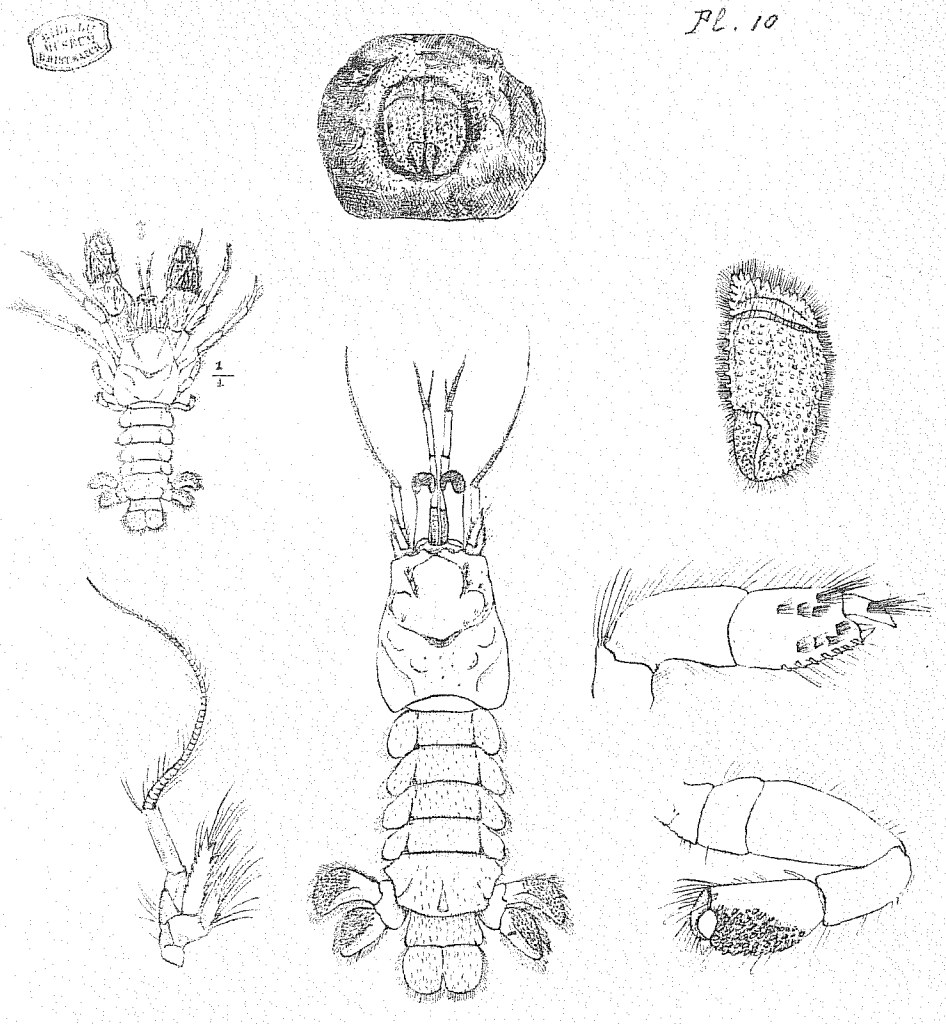
EXPÉDITION DU TRAVAILLEUR

Pl 9.



Xylopagurus rectus. (A.M.E.) Exped. du Blake

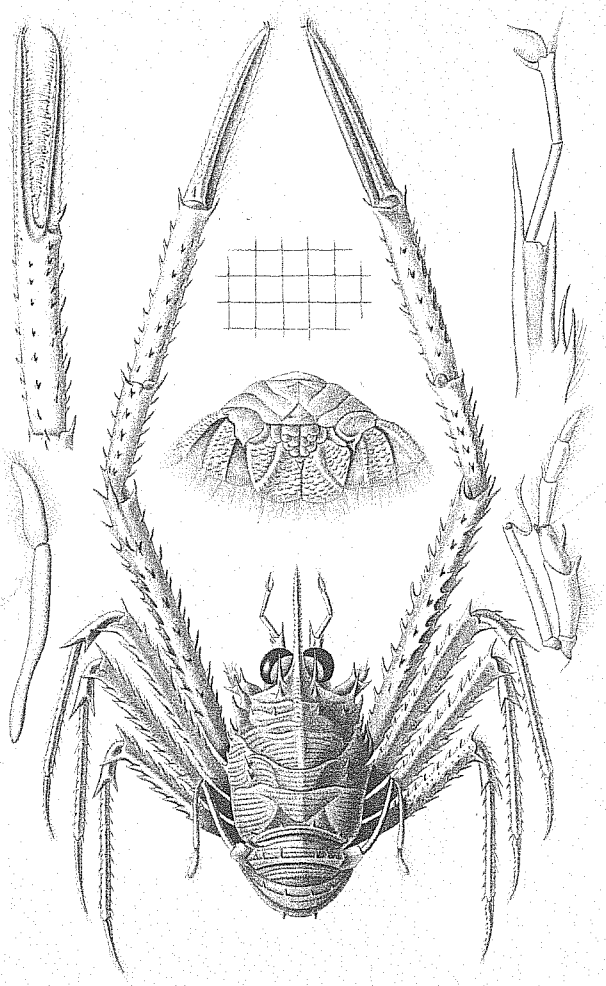
La Dominique . 220 brasses.



Pylocheles Agassizii (A.M.E) Barbades

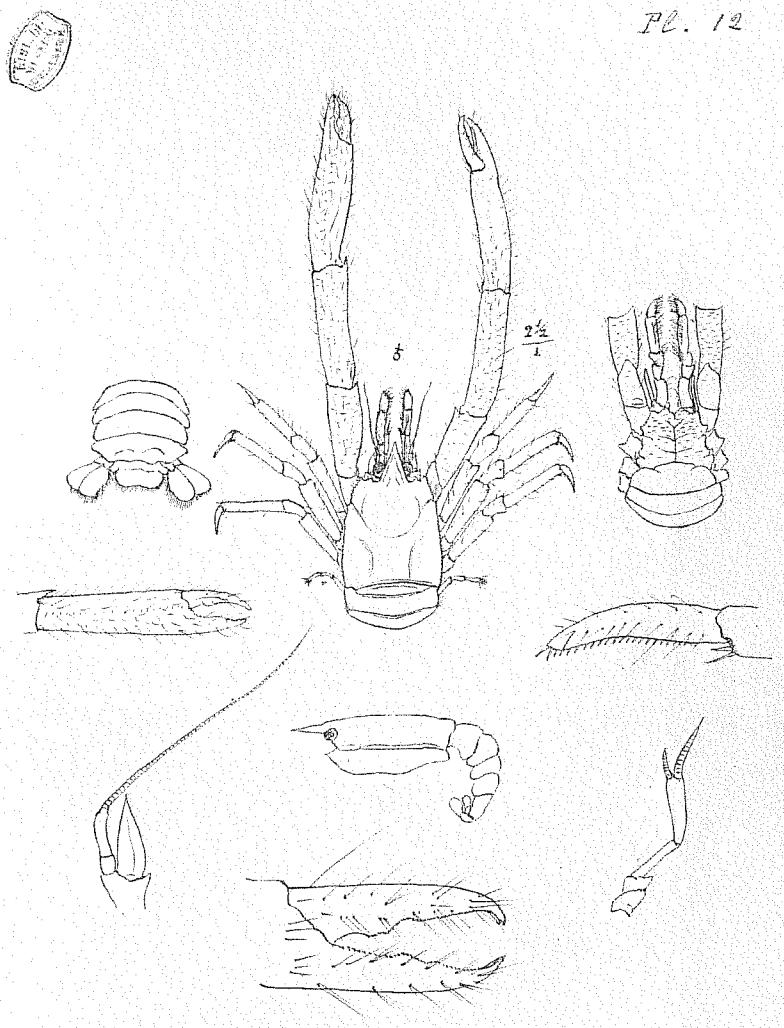
Expédition du Blake - 200 brasses

Pl 11.

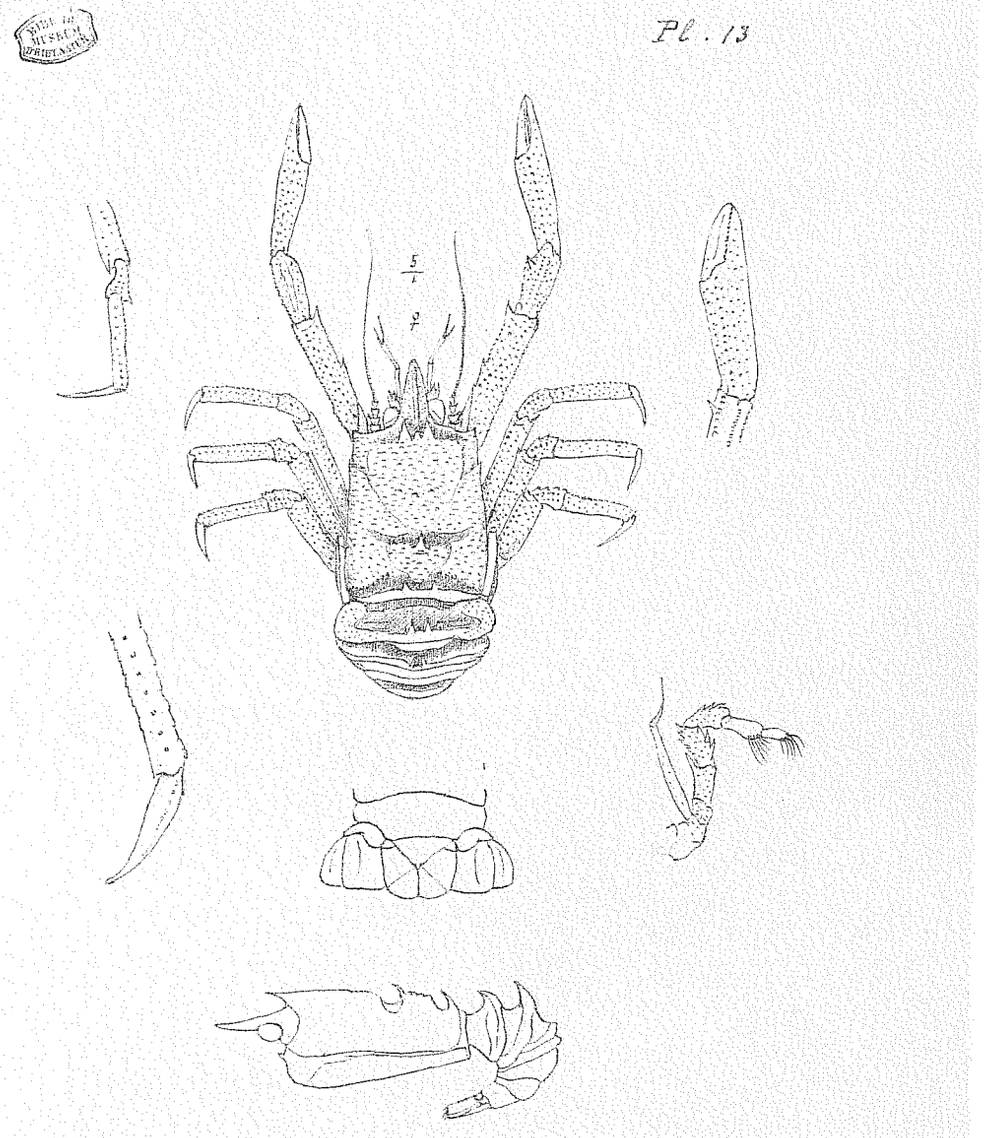


Munida tenuimana (*Sars.*)

Expédition du Travailleur

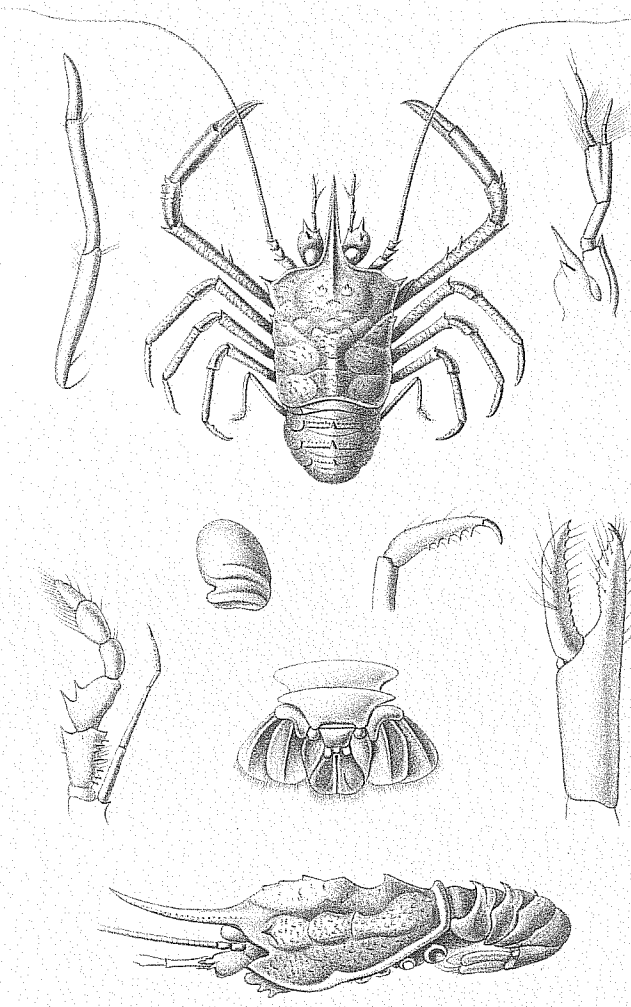


Diptychus vittatus (A.M.E.) Expédition du Travailleur
16 Août 1881 Dragage N° 42. Profondeur 900 mètres



Elasmonotus Vaillantii (AME) Exped. du Travailleur
14 Juin 1881 – Dragage N° 2. Profondeur 1068 mètres

Pl. 14

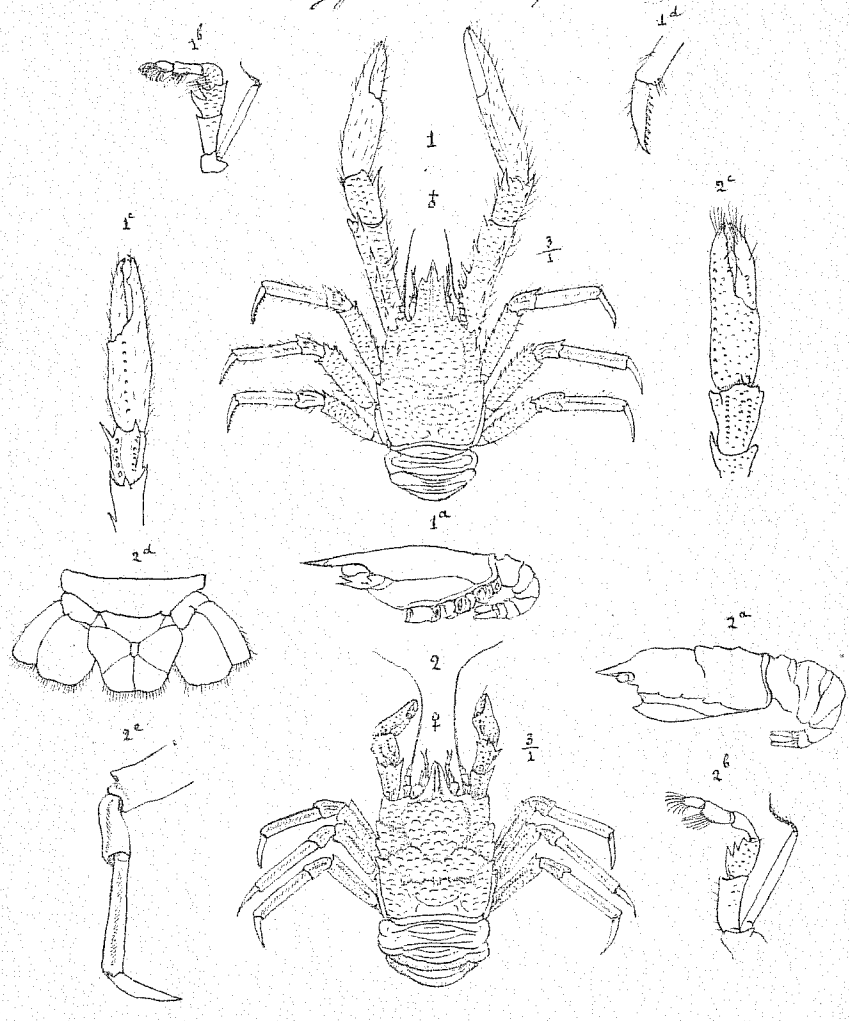


Galathodes acutus (A.M.E.)

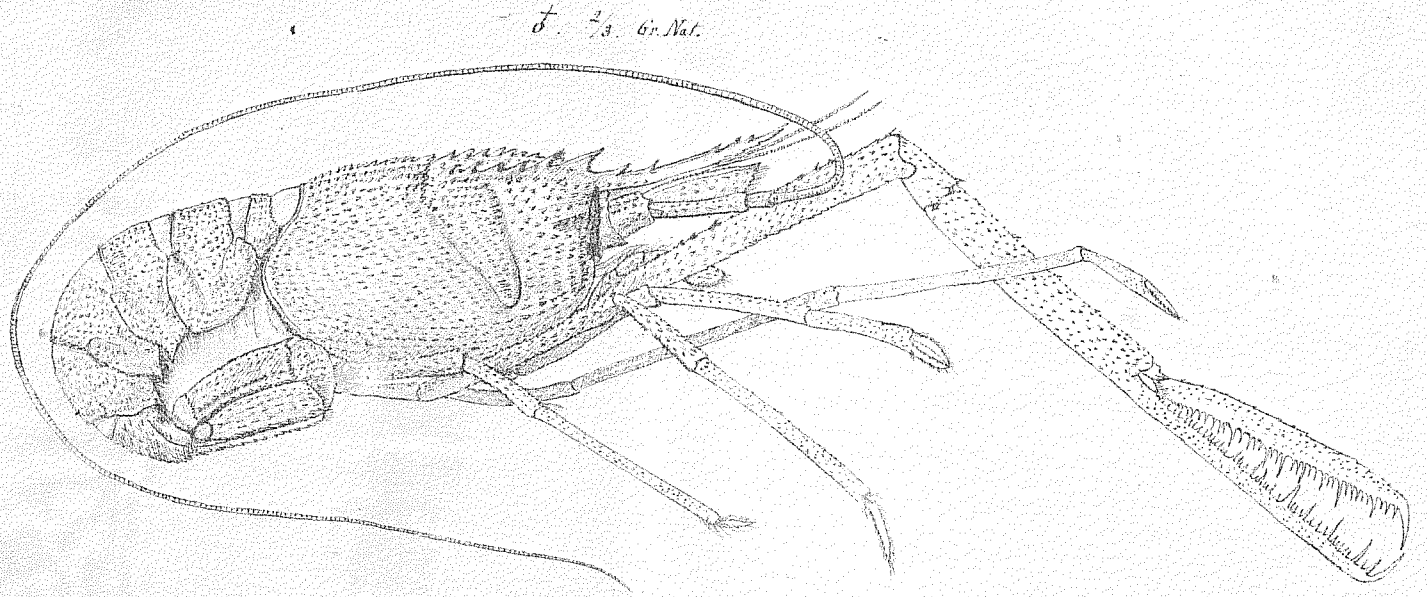
Expédition du Travailleur

15

1. Galathodes rosaceus (A.M.E.) Exped. du Travailleur.
16 Août 1882. Dragage 42. Profondeur 899 m.

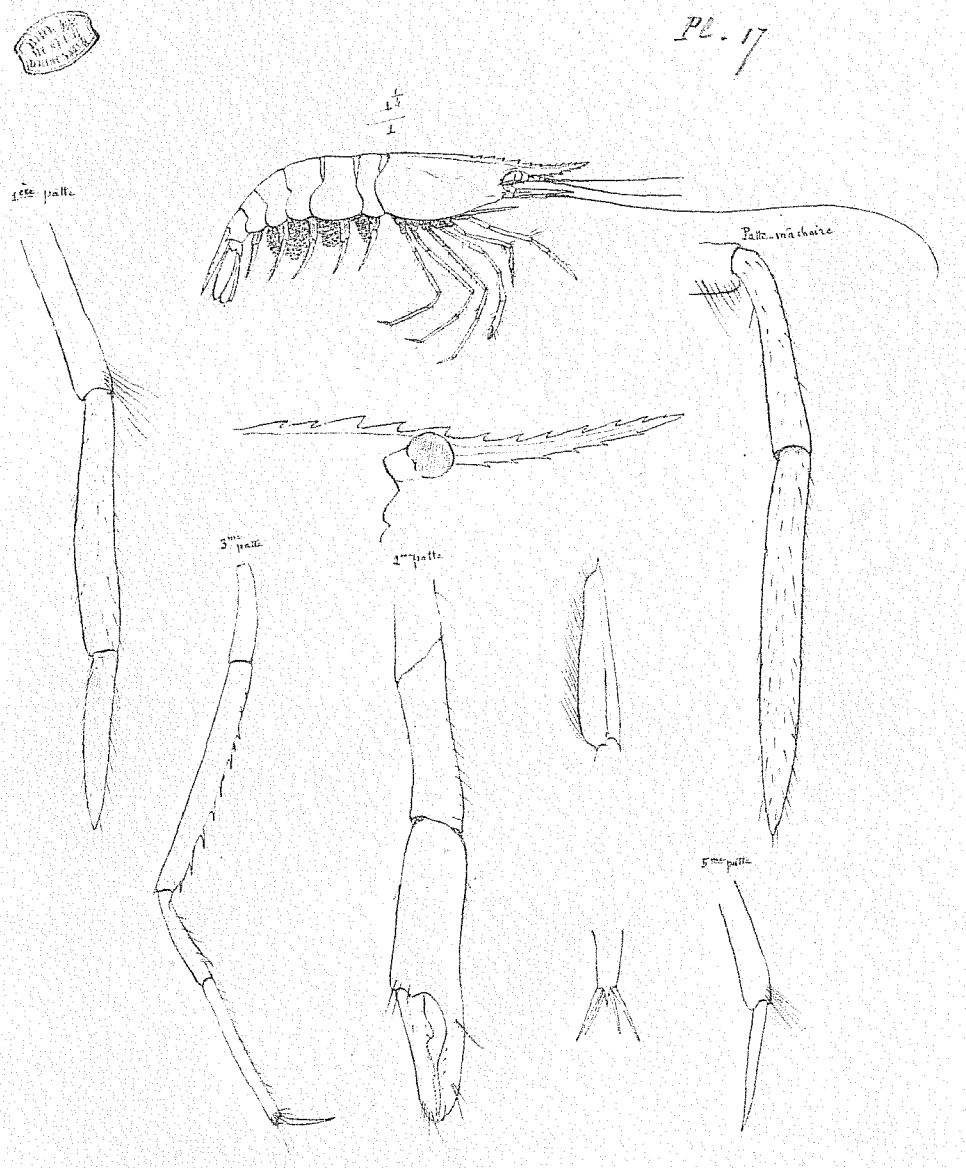


1.2. Galathodes marionis. (AME) Exp. du Travailleur. Méditerranée
450 mètres.

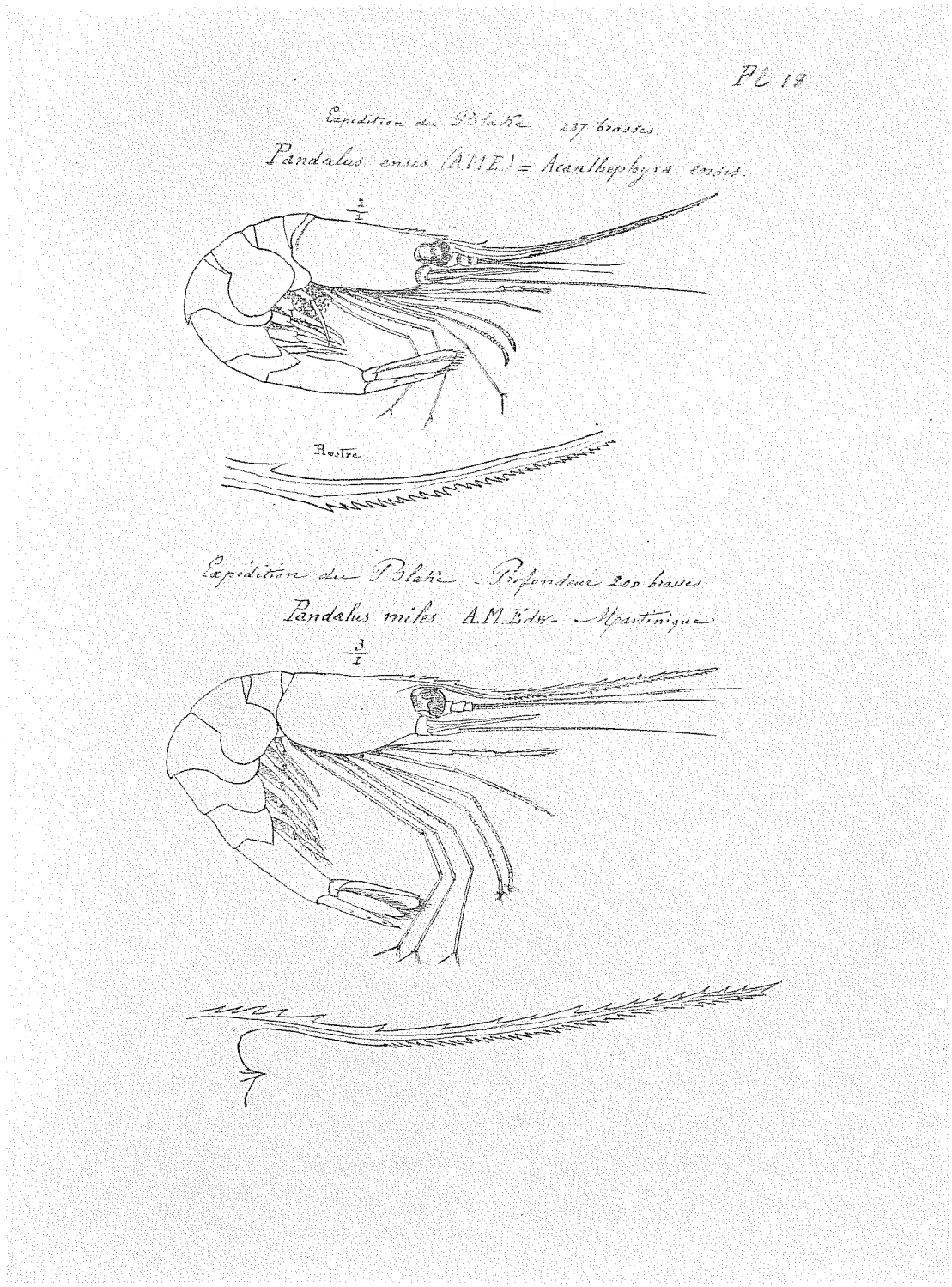


Phoberus cœcus (A. M. Edwards) — Grenada

Expedition du Blake — Profondeur 410 Brasses

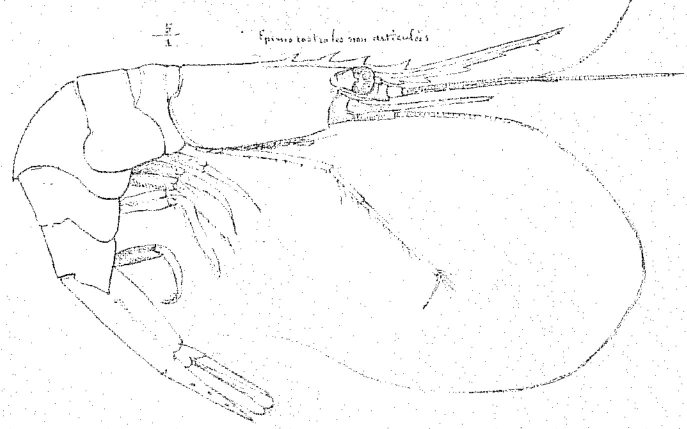


Chlorotocus gracilipes (A.M.E.) Expédition du Travailleur
27 juillet 1881. Dragage n°28. profondeur 332 à 370 mètres

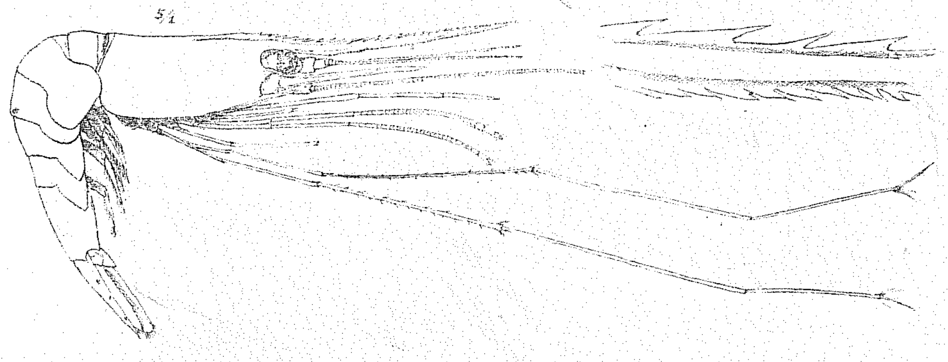

Pl 19
Expedition du Blake 237 brasses
Pandalus ensis (A.M.E.) = Acanthephyra ensis
2/1
Rostre
Expédition du Blake Profondeur 200 brasses
Pandalus miles A.M.Edw. Martinique
3/1

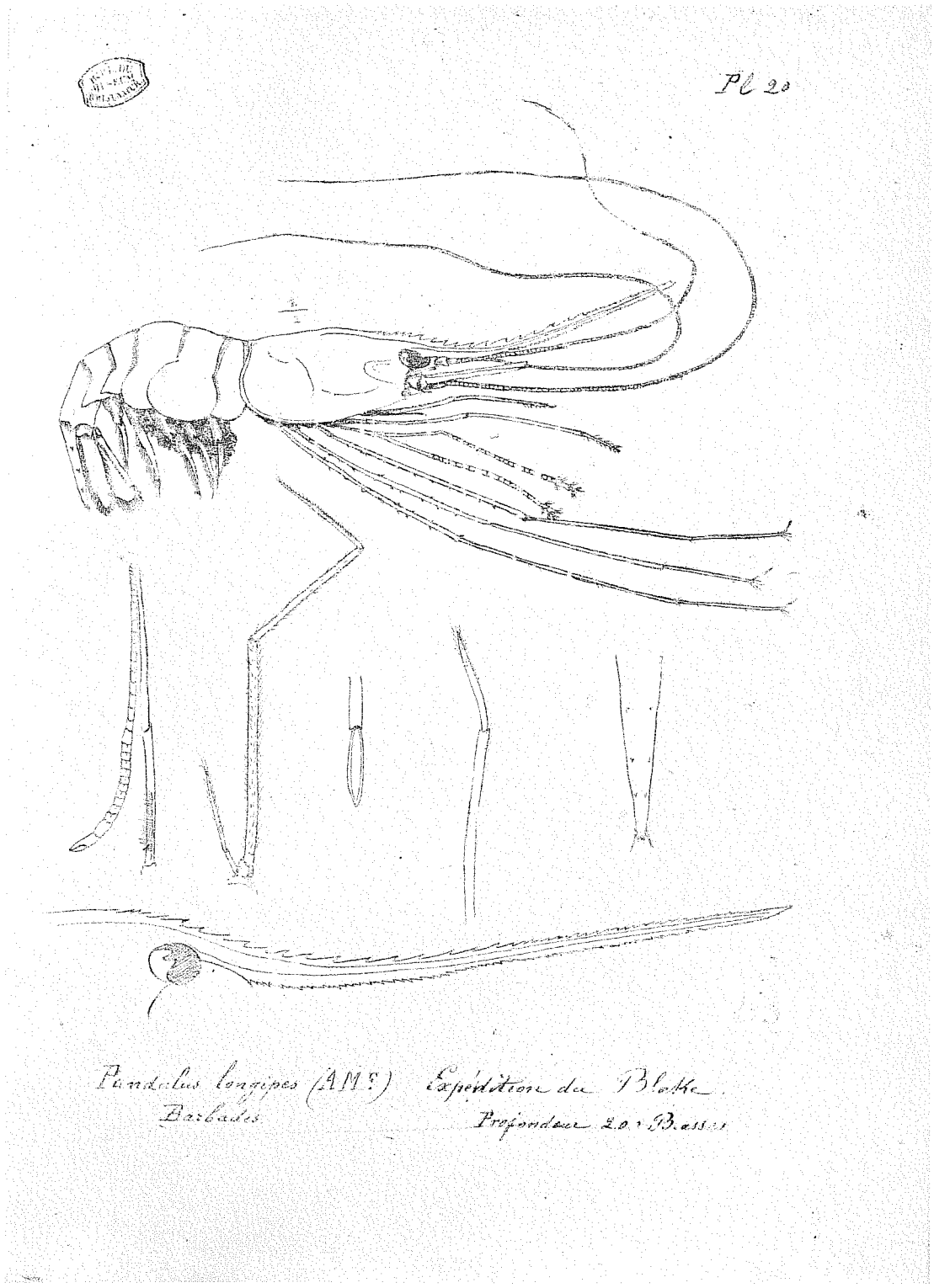
Pl 19

Exped. du Travailleur.
10 Aout. 1882. Dragage 54. Prof. 400 m.
Pandalus quadridentatus (A.M.E.)



Drag. N° 39.
Prof. 530.
Pandalus stylopus (A.M.Edw.) — Exped. du Travailleur 30 Juillet 1882.

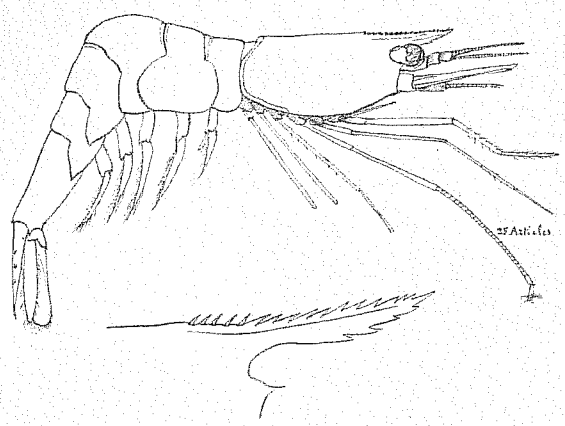



Pl 20
Pandalus longipes (A.M.E.) Expédition du Blake.
Barbades
Profondeur 20 à Brasses

Pl 21.
duplicata

Pandalus Parfaitii. A.M.Edw.

Expéd. du Travailleur. 19 Juillet 1882. Drag. N° 19. 1350 m.

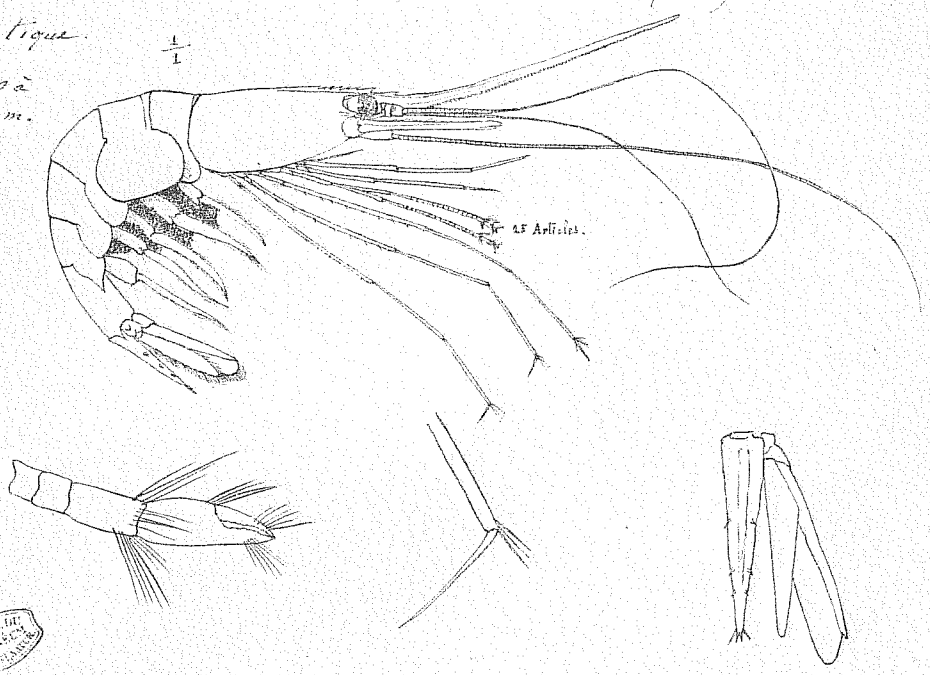


Pandalus spinicaudus. Expéd. du Travailleur & Talisman. (AME)

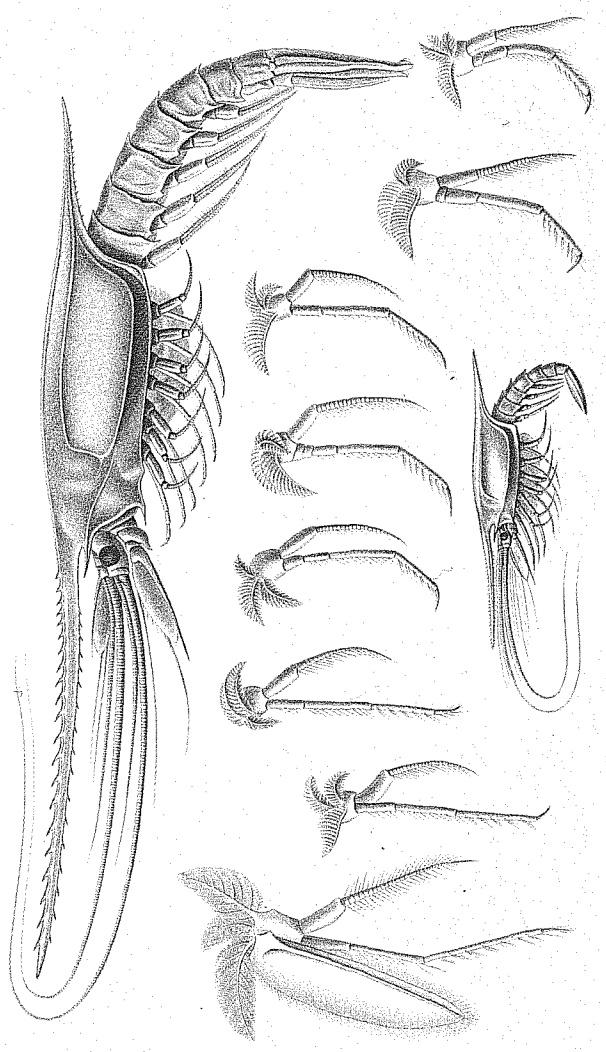
Océan Atlantique.

Profondeur 1100 à 1200 m.

1/1



Pl. 14



Gnathophausia Zoea (*W.S.*)

Expédition du Travailleur

Appendices

EXPLICATIONS ET COMMENTAIRES

Appendice 1.- Reproduction des dessins de quatre crevettes Carides coloriés par A. Milne-Edwards (planche A).

Au cours des campagnes du "Travailleur", A. Milne-Edwards avait noté les couleurs de crustacés vivants, sous la forme d'aquarelles. C'est d'après ces aquarelles qu'il a colorié cinq des dessins de son exemplaire personnel du "Recueil", à savoir celui de *Galathodes rosaceus* et ceux reproduits ici de quatre espèces de crevettes Carides, à savoir, de haut en bas:

Acanthephyra debilis var. *europaea* A.M.E. [= *Systellaspis debilis* (A.M.E., 1881)] (pl. 33, fig. 2)

Acanthephyra purpurea A.M.E, 1881 (pl. 33, fig. 3)

Stylodactylus serratus A.M.E., 1881 (pl. 36)

Pandalus martius A.M.E. [= *Plesionika martia* (A.M.E., 1883)] (pl. 21, en bas)

Les croquis en couleurs effectués sur "Le Travailleur" n'ont malheureusement pas été conservés, mais ceux du "Talisman" sont déposés dans la section Crustacés du Muséum National d'Histoire Naturelle.

Appendice 2.- Reproduction des dessins originaux des planches gravées 38 et 41 (planches B et C).

Quatre des dessins originaux au crayon sont conservés. Ce sont ceux de *Pontophilus* [=*Metacrangon*] *jacquetii* (pl. 38), de *Richardina spinicincta* (pl. 41) et de *Gnathophausia zoea* (pl. 43 et 44). Les deux premiers sont reproduits ici (pl. B et C).

La comparaison avec les planches 38 et 41 du "Recueil" montre que le graveur n'a pas été scrupuleusement fidèle aux originaux. Ainsi, pour *Richardina spinicincta*, la figure représentant l'animal entier comporte de nombreuses imperfections par rapport à l'excellent original, en particulier dans le contour de la carapace. En ce qui concerne le scaphocérite (sur la vue dorsale de la région antérieure du corps), les trois dents du bord latéral, bien visibles sur l'original, ont disparu sur la gravure, comme l'a constaté S. Kemp (1910: 67, note 1), lequel en a déduit, à tort, que ces dents pouvaient manquer chez certains spécimens !...

Appendice 3.- Maquette de la planche 11 (Munida tenuimana) avant l'arrangement définitif des différents dessins (planche D).

A. Milne-Edwards a écrit en bas et le long du bord droit de la maquette: "II ne faut pas croiser les pattes, il vaut mieux descendre l'animal et mettre la queue au-dessus". On notera les différences avec la gravure, sur laquelle les épines cardiaques ont disparu et les épines supra-oculaires sont raccourcies (voir pp. 23-25)

Appendice 4.- Planche sans légende, primitivement destinée au "Recueil", mais non incluse (planche E).

Vingt exemplaires d'une planche imprimée appartenant à la série des gravures sur cuivre contenues dans le "Recueil" sont conservées dans la section des Crustaces, au

Muséum National d'Histoire Naturelle. Cette planche représente manifestement un *Polycheles typhlops* Heller, 1862, en dépit de certains détails figurés non compatibles avec les caractéristiques spécifiques reconnues, comme l'absence de dent rostrale et, sur le dessin particulier de l'antenne, l'écaille dépassant largement le pédoncule. En fait, ces discordances seraient principalement dues à des erreurs du graveur, car elles n'apparaissent pas sur les dessins au crayon laissés par A. Milne-Edwards.

Il est probable que le spécimen figuré, qui n'a malheureusement pas été retrouvé, a été recueilli au cours de la campagne du "Travailleur" dans le golfe de Gascogne, en 1880, et que c'est celui signalé comme "un *Pentacheles* aveugle" par A. Milne-Edwards (1880a: 356), lequel ne l'a plus mentionné dans ses publications ultérieures. Si la planche a été écartée du "Recueil", c'est sans doute parce qu'il s'agissait d'un individu de petite taille (22 mm de long), probablement en médiocre condition et surtout sans les 1ers péréiopodes. Il est également possible qu'A. Milne-Edwards ait d'abord considéré qu'il appartenait à une espèce nouvelle. L'ayant ensuite identifié à *P. typhlops,* il n'aurait pas jugé utile de publier la planche. Les appendices manquants sont représentés en pointillé et, sur un dessin préparatoire, l'auteur a écrit à leur niveau "Ponctuer [faire en pointillé] ces pattes et ne pas ombrer les pattes de devant que je ne connais pas".

Appendice 5. - Listes des stations du "Travailleur" et du "Blake"

a. "Travailleur" 1880 (p. 121). - Liste extraite de: A. Milne-Edwards, 1882c: 126, 127 (36, 37). Cette liste mentionne (1ère colonne), les numéros de sondages (profondeur et nature du fond) et (2ème colonne), les numéros des dragages (ou chalutages). Ce sont ces derniers numéros qui, lorsqu'ils ont pu être déterminés, figurent dans le Tableau I.

b. "Travailleur" 1881 (pp. 122-123). - Liste extraite de: A. Milne-Edwards, 1882d: 57-59 (61-63). Les stations de dragages (ou chalutages) sont réparties en deux séries (avec une numérotation distincte), la première correspondant aux opérations au cours du trajet de Rochefort à Marseille, en juin, la seconde mentionnant les stations effectuées à partir de Marseille, le 4 juillet, après l'embarquement de la mission scientifique, et jusqu'au retour à Rochefort, le 19 août. Dans le Tableau I, les numéros se rapportant à la première série sont suivis de la lettre A.

Cette même campagne de 1881 a fait l'objet d'une autre liste publiée par A. Milne-Edwards (1882 c), mais séparant les stations de Méditerranée de celles de l'Atlantique.

c. "Travailleur" 1882 (pp. 124-126).- Reproduction du "Tableau des sondages du "Travailleur" effectués en 1882", préparé par A. Milne-Edwards, mais non publié. Comme dans la liste pour la campagne de 1880, les numéros des sondages (première colonne) sont séparés de ceux des dragages ou chalutages (dernière colonne); ce sont ces derniers numéros qui sont mentionnés sur les planches, à côté des figures, et qui sont reportés dans le Tableau I. La deuxième colonne indique la date, la troisième la profondeur (en mètres), la quatrième la nature du fond, la cinquième la position.

Remarque.- Sur les listes relatives aux trois campagnes du "Travailleur" les longitudes sont comptées à partir du méridien de Paris. Pour exprimer ces longitudes à partir du méridien origine international (Greenwich), situé à 2°20'14" à l'ouest de celui de Paris, il faut soustraire cette valeur de "Longitude O" et l'ajouter à "Longitude E".

d. "Blake" 1877, 1878 et 1879 (pp. 127-128).- La liste présentée ici n'inclut que les stations du "Blake" où ont été recueillis des spécimens appartenant à des espèces men-

tionnées dans le "Recueil". Autrement dit, ces stations sont celles dont le numéro figure dans le Tableau I et dans les commentaires sur les planches.

Cette liste est extraite de Sanderson Smith's (1888: 963-970): "List of dredging stations in North American waters from 1867 to 1887". Une autre liste couvrant, entre autres, les campagnes en question, a été publiée par B. Peirce et C.P. Patterson (1879, voir bibliographie). Elle présente quelques différences avec celle de Smith en ce qui concerne certaines profondeurs et, par ailleurs, ne donne pas les coordonnées géographiques des stations.

EXPLANATIONS AND COMMENTS

Appendix 1.- Reproduction of figures of four Caridean shrimps hand-coloured by A. Milne Edwards (pl. A).

During the cruises of the "Travailleur" A. Milne-Edwards recorded the colours of the living Crustacea by making water colour sketches of them. Five of the figures in his personal copy of the "Recueil" were coloured by A. Milne-Edwards after these water colour sketches, namely *Galathodes rosaceus* and four species of Caridean shrimps. Those of the shrimps are reproduced here in colour on Pl.A, representing from high to low:

Acanthephyra debilis var. *europaea* A.M.E.[= *Systellaspis debilis* (A.M.E.,1881)] (pl. 33, fig. 2)

Acanthephyra purpurea A.M.E., 1881 (pl. 33, fig. 3)

Stylodactylus serratus A.M.E.,1881 (pl. 36)

Pandalus martius A.M.E. [= *Plesionika martia* (A.M.E., 1883)] (pl. 21, lower figure).

The colour sketches made by A. Milne-Edwards aboard the "Travailleur" unfortunately have not been preserved, but those that he made during the 1883 "Talisman" cruise are now kept in the section Crustacea of the Muséum National d'Histoire Naturelle in Paris.

Appendix 2.- Reproductions of the original figures of engraved plates 38 and 41 (plates B and C).

Four of the original pencil drawings are preserved. These show *Pontophilus (=Metacrangon) jacquetii* (pl. 38), *Richardina spinicincta* (pl. 41) and *Gnathophausia zoea* (pls. 43 and 44). The first two original drawings are reproduced here, as plates B and C respectively.

A comparison of pls. 38 and 41 of the "Recueil" with the drawings reproduced here on pls. B and C shows that the engraver has not always scrupulously followed the originals. In pl. 41 of *Richardina spinicincta*, the figure representing the whole animal, when compared with the excellent original, shows numerous imperfections, especially in the outline of the carapace. As for the scaphocerite (seen in dorsal view in the figure showing the anterior part of the body), the three teeth of the lateral margin, which are quite distinct in the original figure, have disappeared in the engraving, as already mentioned by Kemp (1910: 67, footnote), who incorrectly concluded that in some specimens of this species these teeth may be absent.

Appendix 3.-Provisional arrangement of plate 11 (Munida tenuimana) before the definite placement of the various figures (plate D).

A. Milne-Edwards wrote along the bottom and right hand margins of this sheet: " The legs should not be crossing, it would be better to place the figure of the animal lower and to situate that of the tail above it". One can clearly see the differences between this drawing and the engraving, in which the cardiac spines are not shown and the supra-ocular spines are shortened (see pp. 49-51).

Appendix 4.- Plate without a legend, originally intended for the "Recueil", but ultimately not included (plate E).

In the Crustacea Section of the Paris Museum there are twenty copies of a printed plate, which clearly forms part of the series of engraved plates of the "Recueil" (four of these copies have the margins cut). This plate without doubt shows a specimen of *Polycheles typhlops* Heller, 1862, even though several of the details figured do not agree with the specific characters of that species, like the absence of the rostral tooth and the shape of the antenna, of which the scale reaches distinctly beyond the peduncle. Actually, these differences are mainly due to errors of the engraver, as they do not appear in the pencil drawings left by A. Milne-Edwards.

It is probable that the figured specimen, which unfortunately can no longer be located, was collected during the 1880 cruise of the "Travailleur" in the Bay of Biscay, and that it is the specimen reported upon by A. Milne-Edwards (1880a: 356) as "a blind *Pentacheles*". This specimen is not mentioned anymore in his later publications. If the plate was rejected for the "Recueil", this was no doubt due to the fact that the specimen is very small (22 mm long), and probably in rather poor condition, and especially as it lacks the first pereiopods. It is also possible that A. Milne-Edwards at first thought it to be a new species, and having it later identified as *Polycheles typhlops,* he may not have considered it useful to publish the plate. In a preliminary drawing of the specimen the missing appendages are indicated with dotted lines, and there is a written note "Use dotted lines for these legs and do not shade the anterior legs, which I have not seen".

Appendix 5. - Lists of the stations of the "Travailleur" and of the "Blake".

a. "Travailleur" 1880 (p.121).- Station list taken from A. Milne-Edwards, 1882c: 126, 127 (36, 37). This list gives in the first column the numbers of the sounding stations, in the second the station numbers for the dredge and trawl hauls. The station numbers mentioned in Table I are those of column 2.

b. "Travailleur" 1881 (pp. 122-123).- Station list taken from: A. Milne-Edwards, 1882d: 57-59 (61-63). The stations (dredge and trawl stations, the soundings have no special station numbers here) are divided in two series (each with a separate numbering). The first series covers the stations made during the stretch Rochefort-Marseilles in June (St.1-13), in the second are listed the stations made after leaving Marseilles on 4 July and until Rochefort was reached on 19 August (Sta. 1-45). In Table I, the numbers of the first series are followed by the letter A.

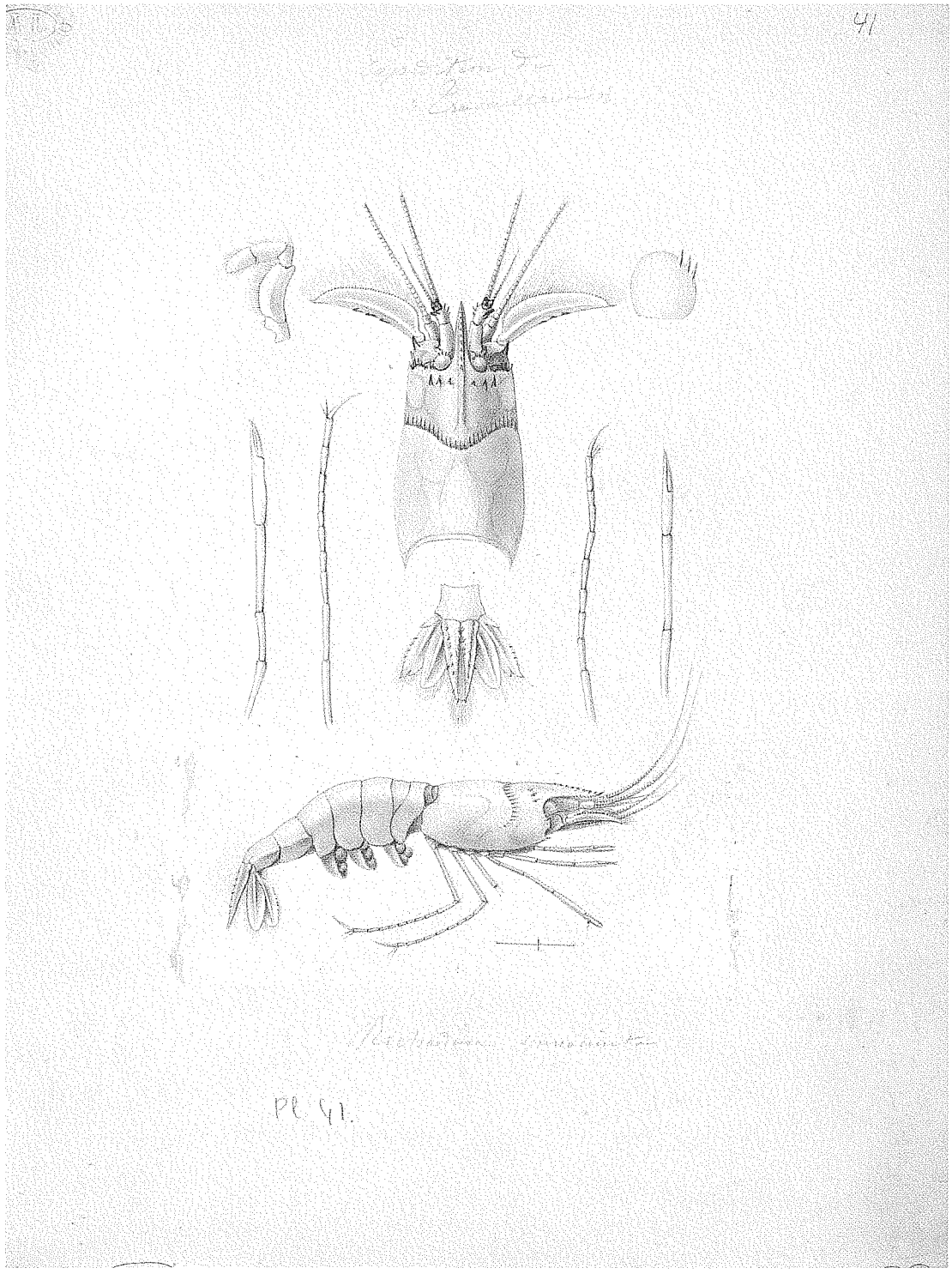
Of this same cruise of 1881 a station list was published by A. Milne-Edwards (1882c) in which the Mediterranean stations of both series are listed together separately from those made in the Atlantic (the series and station numbers being the same as those reproduced here).

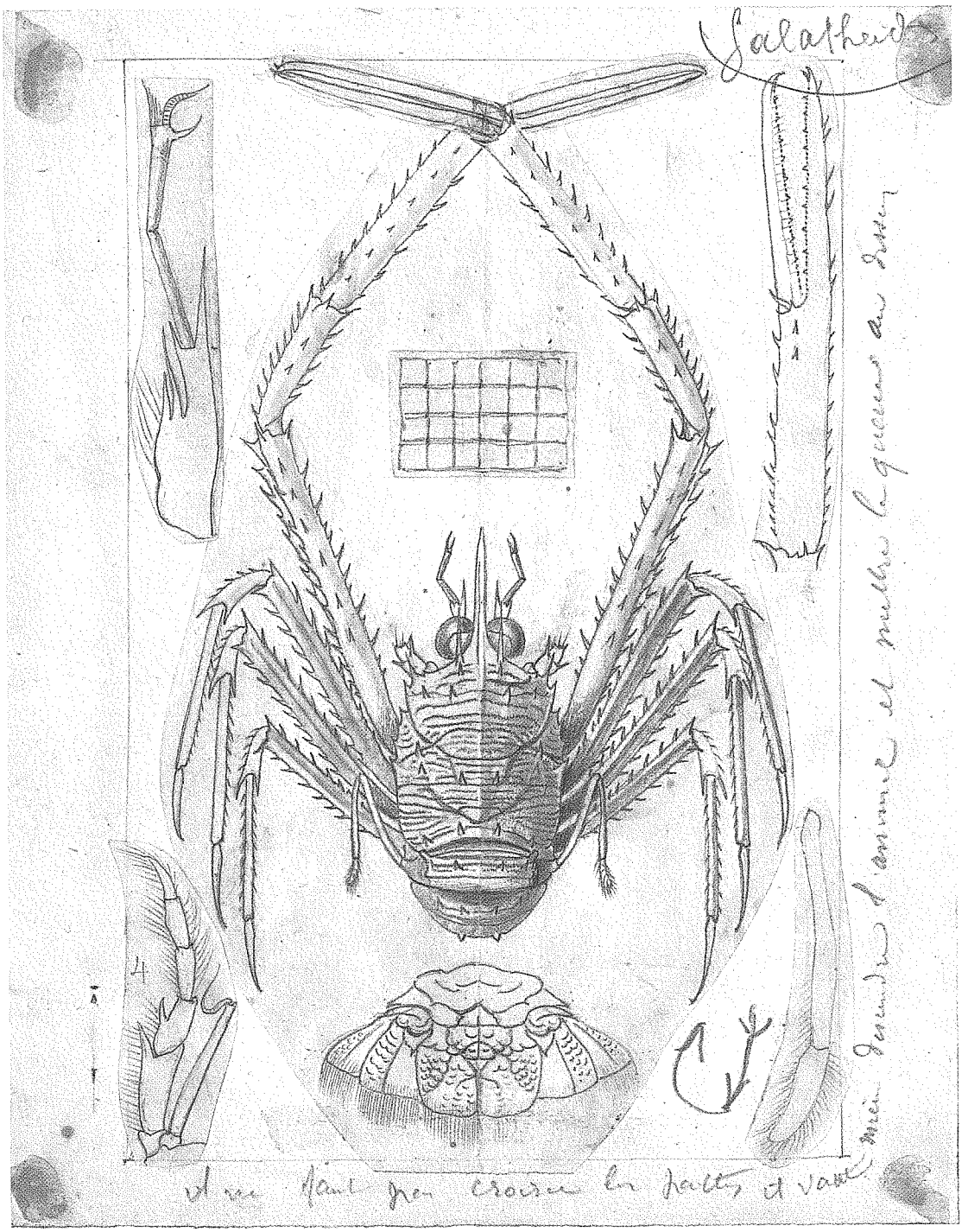
c. "Travailleur" 1882 (pp.124-126).- A "Tableau des sondages du "Travailleur" effectués en 1882" was prepared by A. Milne-Edwards, but was not published by him. This original list is now published here. Like in the station list of 1880, there is a separate numbering for the sounding stations and for the dredging (and trawling) stations. The first column lists the sounding stations, the last column the dredging stations; the latter are mentioned on the plates and in Table I. The second column of A. Milne-Edwards' table has the date, the third column the depth (in meters), the fourth column the character of the bottom, the fifth the position.

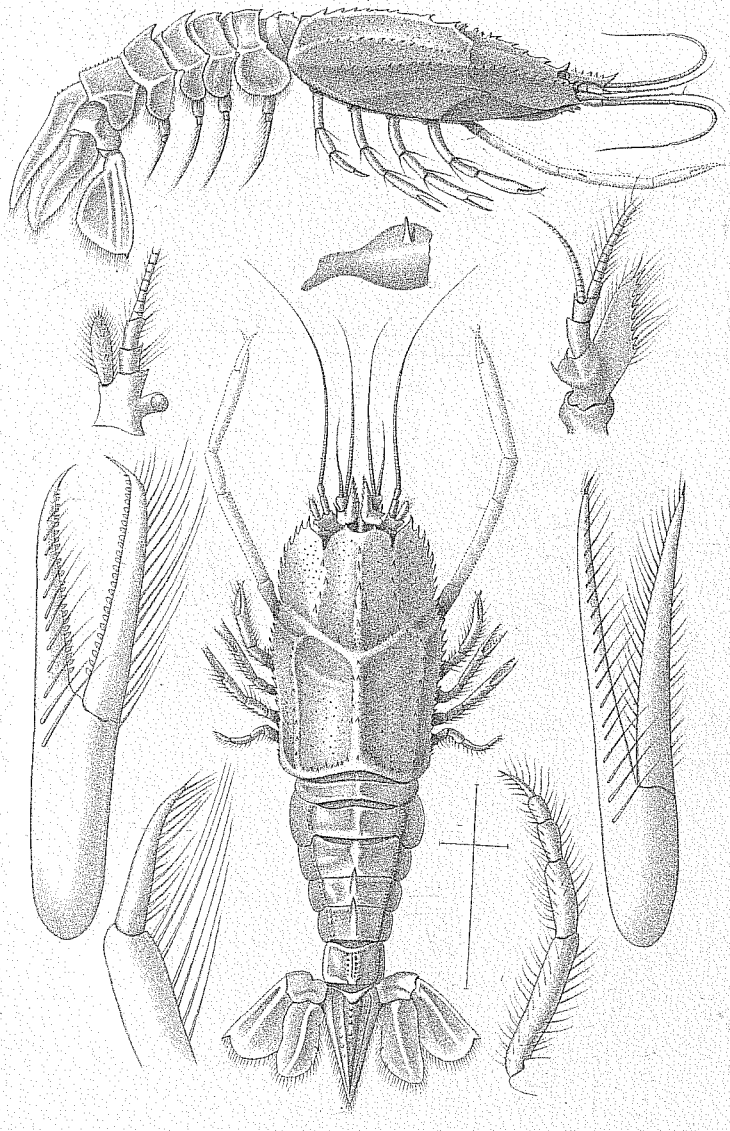
Remark. In the station lists of the three "Travailleur" cruises the longitudes (O= West, E= East) are taken from the meridian of Paris, which lies 2°20'14" East of the Greenwich meridian. Therefore, to obtain the longitudes that at present are internationally accepted as from Greenwich, one has to subtract 2°20'14" from the "Longitude O", and add the same to the "Longitude E".

d."Blake" 1877, 1878 and 1879 (pp. 127-128).- The station list reproduced here enumerates only the "Blake" stations at which specimens were obtained belonging to species mentioned in the "Recueil": the stations thus are only those of which the numbers are mentioned in Table I and in the discussion of the plates.

This list is taken from Sanderson Smith's (1888: 963-970) "Lists of dredging stations in North American waters from 1867 to 1887". A different list which among others also covers the cruises in question was published by B. Peirce and C.P. Patterson (1879, see bibliography); this list differs from the one given by Smith in some of the depths and furthermore does not give the geographical coordinates of the stations.




Galatheidæ
4



SONDAGES ET DRAGAGES DU *Travailleur* DANS LE GOLFE DE GASCOGNE EN 1880.

NUMÉROS DES SONDAGES.	NUMÉROS DES DRAGAGES.	DATES.	POSITION LATITUDE.	POSITION LONGITUDE.	PROFONDEUR.	NATURE du FOND.
			Latit. Nord.	Longit. O.	m.	
1	1	17 juill. 1880	43° 38′ »″	4° 15′ 30″	420	Vase molle grisâtre.
2	2	—	43 36 »	4 15 00	1019	Vase molle jaunâtre.
3		—	43 35 25	4 13 55	666	Vase.
4		19 juill. 1880	43 33 10	4 30 50	331	—
5		—	43 33 30	4 32 00	324	Sable vasard jaunâtre.
6		—	43 36 55	4 33 20	573	Vase grisâtre.
7		—	43 37 55	4 35 00	375	Fond de roches.
8		—	43 38 15	4 35 15	618	Vase grise.
9		—	43 39 55	4 37 00	985	Vase.
10	3	—	43 40 35	4 35 20	946	2 espèces de vase, couche supérieure jaunâtre.
11	3bis	—	43 41 45	4 34 45	1070	Vase molle.
12		—	43 33 30	4 45 15	460	Vase.
13		20 juill. 1880	43 37 05	5 09 25	423	Vase, gravier.
14		—	43 36 45	5 23 05	703	Vase et sable.
15		—	43 41 15	5 23 00	2450	Vase.
16	4	—	43 42 30	5 21 30	2651	—
17		—	43 39 30	5 37 35	984	—
18		22 juill. 1880	43 47 00	6 02 00	1906	Pas de fond.
19		—	43 44 30	5 58 35	2259	Vase mêlée de sable.
20	5	—	43 46 10	5 56 10	2708	Vase.
21		23 juill. 1880	43 38 00	6 29 50	1204	—
22	6	—	43 38 25	6 28 40	1353	—
23	7	—	43 35 30	6 25 00	1107	—
24		—	43 32 40	6 31 00	163	Sable, gravier, coquilles.
25	8	—	43 35 10	6 04 30	312	Sable, coquilles, gravier.
26		—	43 35 30	6 48 50	660	Vase.
27		—	43 37 25	6 52 00	190	Sable piqué de noir.
28		—	43 39 30	6 55 00	201	Sable.
29		—	43 40 15	6 58 05	252	Roches.
30		—	43 39 45	7 06 50	167	Sable noirâtre.
31		—	43 39 45	7 11 10	167	Sable piqué de noir, coquilles.
32		—	43 45 00	7 22 40	167	Sable noirâtre.
33		24 juill. 1880	43 49 30	7 31 55	153	Sable piqué de noir, gravier.
34		—	43 54 30	7 40 50	160	Sable noir, gravier.
35		—	43 57 00	7 47 30	176	— —
36		—	43 58 30	7 41 30	140	Sable noir.
37		—	43 58 30	7 25 20	396	Sable, gravier.
38		—	43 41 30	6 43 00	1495	Sable, 8 couches différentes.
39	9	—	43 36 40	6 22 30	1490	Vase.
40		26 juill. 1880	43 39 50	5 52 30	1910	—
41	10	—	43 39 05	5 48 00	1960	—
42		—	43 36 45	5 50 00	1360	—
43		—	43 35 00	5 47 35	124	Roches, graviers.
44		—	43 34 30	5 43 20	203	Sable vaseux.
45		27 juill. 1880	43 34 05	5 37 00	149	Sable gris vaseux.
46		—	43 33 25	5 31 15	124	Coquilles brisées.

NUMÉROS DES SONDAGES.	NUMÉROS DES DRAGAGES.	DATES.	POSITION LATITUDE.	POSITION LONGITUDE.	PROFONDEUR.	NATURE du FOND.
			Latit. Nord.	Longit. O.	m.	
47		27 juill. 1880	43° 37′ 20″	5° 20′ 30″	1211	Vase.
48		—	43 36 30	5 36 10	630	—
49		—	43 38 00	5 25 10	1100	—
50		—	43 38 00	5 15 10	1083	—
51		—	43 33 20	5 15 15	313	Vase mêlée de sable.
52		—	43 34 15	5 20 15	207	Sable piqué de noir, gravier.
53		—	43 31 10	5 15 55	661	Vase.
54	11	—	43 34 20	5 14 30	335	Sable.
55	12	—	43 35 10	5 06 45	1081	Vase.
56		—	43 36 45	5 05 30	960	—
57	13	—	43 39 25	5 05 25	900	—
58		—	43 40 00	4 59 30	2021	Pas de fond.
59		28 juill. 1880	43 40 35	4 34 50	1200	Vase.
60		—	43 40 55	4 31 50	915	—
61		—	43 41 20	4 22 50	176	Roche.
62		—	43 41 20	4 21 50	211	Vase.
63		—	43 46 00	4 22 00	166	Sable.
64		—	43 45 30	4 27 30	750	Vase.
65	14	—	43 46 00	4 27 00	677	Coquille et corail.
66	15	—	43 46 50	4 26 45	813	Vase molle.
67	16	—	43 38 45	4 28 40	1160	Vase.
68	17	29 juill. 1880	43 32 35	4 29 45	306	—
69	18	—	43 36 20	4 37 15	562	—
70	19	30 juill. 1880	43 37 45	4 50 15	1700	—
71	20	—	43 37 30	4 26 35	1143	—
72		—	43 33 45	4 19 30	700	—
73		—	43 32 40	4 13 05	140	Sable fin.
74		—	43 35 00	4 13 10	176	Sable.
75		—	43 36 30	4 13 50	422	Vase.
76		—	43 37 30	4 14 00	822	—
77	21	—	43 37 50	4 12 10	822	—
78		—	43 38 00	4 07 45	283	—
79		—	43 40 15	4 11 10	140	Sable.
80		—	43 41 25	4 22 25	166	
81		31 juill. 1880	43 42 25	4 13 15	140	Vase.
82		—	43 41 15	4 07 15	142	—
83		—	43 40 30	4 05 30	133	—
84		—	43 39 00	4 05 25	135	—
85		—	43 37 40	4 05 50	373	—
86		—	43 35 40	4 04 10	615	—
87		—	43 33 55	4 04 20	130	—
88		—	43 33 30	4 02 20	120	Sable.
89		—	43 36 00	4 02 20	133	—
90		—	43 37 15	4 02 20	135	Sable vaseux.
91		—	43 38 25	4 02 15	437	Vase molle.
92		—	43 39 20	4 01 55	246	Vase.
93		—	43 40 10	4 01 10	144	Sable vaseux.
94		—	43 39 30	3 58 40	574	—
95		—	43 38 20	3 58 45	135	Vase.
96		—	43 38 15	4 00 20	272	—
97		—	43 39 05	4 00 40	276	Roche.
98		—	43 40 25	4 00 10	144	Sable, roche.
99		—	43 40 30	3 58 45	327	Sable gris, roche.
100	22	—	43 40 35	3 58 25	435	Vase.
101		—	43 40 30	3 55 25	327	Vase molle verte.
102		—	43 36 50	4 18 00	1420	Vase.
103		—	43 35 40	4 15 45	910	—

LISTE DES DRAGAGES FAITS EN 1881

PAR *LE TRAVAILLEUR* [1].

N.os DES DRAGAGES.	DATES.	POSITION. LATITUDE NORD.	POSITION. LONGITUDE OUEST.	PROFONDEUR.	NATURE DU FOND.
		PREMIÈRE SÉRIE.			
1.	13 juin.....	43°00′40″	11°57′40″	2,018m	Roches et sable.
2.	14	41 43 00	11 39 40	1,068	Cailloux, sable, un peu de vase.
3.	15.....	39 47 50	12 12 00	3,307	Vase grisâtre.
4.	16.....	38 08 50	12 03 30	2,505	*Idem.*
5.	16.....	38 05 00	12 02 00	3,165	*Idem.*
6.	17.....	36 55 20	11 42 00	1,865	*Idem.*
7.	18.....	36 38 20	9 23 56	532	Vase molle.
8.	22.....	36 31 45	4 31 50	305	Vase grenue.
9.	22.....	36 31 55	4 28 10	880	Vase jaune et grise.
	22.....	36 31 55	4 27 10	1,010	*Idem.*
10.	23.....	37 27 55	2 33 50	2,546	Vase grenue.
11.	24.....	38 03 00	2 12 30	160	Vase jaunâtre.
12.	25.....	39 34 15	0 40 50	1,525	Vase fine et jaunâtre.
			LONG. EST.		
13.	27.....	42 01 30	2 26 50	2,365	Vase grenue.
		DEUXIÈME SÉRIE.			
1.	4 juillet.....	43°02′57″	2°58′30″	555m	Vase.
2.	4.....	42 57 15	2 58 57	1,060	*Idem.*
3.	5.....	42 52 40	2 58 30	1,160	*Idem.*
4.	5.....	42 50 25	2 57 25	2,020	*Idem.*
	5.....	42 52 33	3 00 30	1,862	*Idem.*
5.	5.....	42 54 04	3 06 12	1,685	*Idem.*
6.	6.....	42 59 20	3 20 50	540	*Idem.*
	6.....	42 59 50	3 21 15	672	*Idem.*
7.	6.....	43 00 20	3 26 12	752	*Idem.*
8.	6.....	43 01 00	3 28 20	307	Vase avec quelques roches.
9.	6.....	43 00 35	3 22 00	445	Vase coralligène.
10.	7.....	43 23 05	4 38 20	600	Vase.
11.	7.....	43 34 34	4 52 23	754	*Idem.*
12.	7.....	43 37 05	4 51 17	865	Vase gluante.

[1] Les sondages ne sont pas indiqués ici.

N^os DES DRAGAGES.	DATES.	POSITION. LATITUDE NORD.	POSITION. LONGITUDE EST.	PROFONDEUR.	NATURE DU FOND.
13.	9 juillet.....	43°40'20"	4°57'06"	680m	Vase.
	9.....	43 41 32	4 56 57	370	*Idem.*
14.	9.....	43 41 38	4 57 36	285	*Idem.*
14a.	9.....	43 41 21	4 58 50	64	*Idem.*
15.	11.....	43 40 36	5 00 03	40	Fond coralligène.
	11.....	43 40 36	5 00 08	100	*Idem.*
15a.	11.....	43 41 16	4 57 34	186	Vase noirâtre.
16.	11.....	43 24 35	5 02 co	2,068	Vase.
17.	12.....	43 15 00	5 01 00	2,660	*Idem.*
	12.....	43 00 15	5 12 30	2,654	*Idem.*
18.	13.....	41 52 40	6 02 40	2,465	Vase à globigerines.
	13.....	41 52 40	6 02 40	1,547	*Idem.*
19.	13.....	41 52 45	6 08 55	540	Fond coralligène.
20.	15.....	41 53 35	6 15 35	26	*Idem.*
	15.....	41 53 50	6 15 40	45	*Idem.*
	15.....	41 52 52	6 11 25	70	*Idem.*
21.	15.....	41 49 52	6 14 20	727	Vase grise et jaune.
22.	15.....	41 49 20	6 14 50	905	*Idem.*
23.	15.....	41 42 35	6 19 10	280	Vase.
24.	16.....	41 22 15	6 47 00	77	Graviers, coraux.
	16.....	41 22 15	6 47 00	55	*Idem.*
	16.....	41 22 15	6 47 00	65	*Idem.*
	16.....	41 22 15	6 47 00	75	*Idem.*
25.	18.....	42 59 45	2 53 40	1,260	Vase.
	18.....	43 01 10	2 53 40	1,015	*Idem.*
	18.....	43 03 50	2 53 40	422	*Idem.*
	18.....	43 02 55	2 53 40	381	*Idem.*
	18.....	43 02 30	2 53 40	647	*Idem.*
			LONG. OUEST.		
26.	25.....	35 45 30	3 21 55	900	Vase molle.
27.	26.....	35 30 00	5 12 00	110	Sable vaseux.
	26.....	35 32 00	5 26 50	435	*Idem.*
27a.	26.....	35 31 45	5 25 10	527	Vase.
28.	27.....	35 21 30	6 42 20	322	*Idem.*
	27.....	35 21 20	6 45 30	370	*Idem.*
	27.....	35 23 00	6 47 45	432	*Idem.*
29.	27.....	35 24 20	6 53 00	420	*Idem.*
30.	31.....	35 24 45	10 19 07	1,205	*Idem.*
31.	31.....	36 27 15	10 32 56	1,383	*Idem.*
	31.....	36 27 15	10 32 56	2,100	*Idem.*
32.	1er août.....	37 15 20	11 45 10	1,130	*Idem.*
	1er.....	37 15 20	11 45 10	1,030	*Idem.*
33.	5.....	38 15 20	11 38 00	1.855	*Idem.*
	5..	38 15 20	11 38 00	1,853	*Idem.*
34.	6.....	38 18 00	11 44 50	1,224	*Idem.*

N^os DES DRAGAGES.	DATES.	POSITION. LATITUDE NORD.	POSITION. LONGITUDE OUEST.	PROFONDEUR.	NATURE DU FOND.
35.	6 août.....	38°18'30"	11°46'40"	1,367m	Vase.
36.	7.....	39 33 00	12 11 30	2,590	*Idem.*
	7.....	39 31 00	12 19 00	2,660	*Idem.*
37.	14.....	44 10 15	10 38 00	400	Sable coquillier et gravier.
38.	14.....	44 11 00	10 34 00	1,916	Vase.
39.	15.....	44 05 00	9 26 40	1,226	Fond coralligène, sable noirâtre.
	15.....	44 05 45	9 23 30	953	*Idem.*
39a.	15..... ..	45 05 00	9 29 30	1,000	Gravier, corail.
39b.	15.....	44 05 45	9 32 30	1,037	Sable noir, corail.
40.	15.....	44 05 00	9 35 00	392	Sable noir.
41.	16.....	44 01 15	9 27 30	1,094	Vase et sable.
42.	16.....	44 01 20	9 25 00	896	Vase et coraux.
43.	16.....	44 00 50	9 18 15	736	Sable vasard.
44.	16.....	44 00 10	9 08 15	1,745	Vase.
45.	17.....	44 48 30	7 00 30	5,100	Vase avec foraminifères.

Tableau des Sondages du "Travailleur" effectués en 1882.

Numéros des Sondages	Dates	Profondeur	Nature du fond	Position		Dragages
				Latitude N.	Longitude O.	
1	Le 5 juillet	112 m.	Sable	43° 47'	8° 7'	
2	"	142 "	Sable vasard	43° 49'	8° 2'	
3	"	176 "	Sable	43° 53'	7° 57'	
4	"	236 "	Sable gris	43° 57' 30"	7° 52' 30"	
5	Le 6 juillet	564 "	Sable coquille	44° 7'	7° 55'	N° 1
6	"	614 "	Sable	44° 4'	7° 51'	" "
7	"	608 "	Sable	44° 5'	7° 56'	" 2
8	"	512 "	Sable	44° 4'	7° 54' 30"	" 3
9	Le 8 juillet	134 "	Corail	43° 59' 30"	8° 13'	" 4
10	"	340 "	Sable gris	43° 58' 30"	8° 10'	" "
11	"	800 "	Vase	44° 7'	8° 7'	" 5
12	Le 9 juillet	170 "	"	43° 59'	8° 59'	" "
13	"	140 "	Gravier	43° 57' 30"	9° 2' 30"	" "
14	"	170 "	Sable gris	43° 55'	9° 22' 30"	" "
15	"	200 "	Sable gravier	43° 58' 30"	9° 23'	" "
16	"	280 "	Sable gravier	44° 1'	9° 23'	" "
17	"	1000 "	Pas de fond	44° 1'	9° 23' 30"	Perdu la sonde
18	Le 12 juillet	183 "	Sable gravier	44° 3' 12"	9° 40' 30"	
19	"	115 "	Sable	44° 4' 30"	9° 25'	
20	"	306 "	Sable	44° 5'	9° 32'	
21	"	754 "	Sable vasard	44° 7'	9° 31' 30"	N° 6
22	"	1600 "	Sable vasard	44° 4' 45"	9° 31' 20"	" 7
23	"	411 "	Sable gravier	44° 4' 30"	9° 27' 30"	" 8
24	"	212 "	Sable	44° 6'	9° 31'	"
25	Le 13 juillet	166 "	Sable	43° 59'	9° 19' 30"	
26	"	156 "	Sable et gravier	44°	9° 17'	N° 8
27	"	764 "	Sable et gravier	44° 2'	9° 17'	" 9
28	"	1420 "	Sable vasard	44° 3'	9° 16'	" 10
29	"	1800 "	Sable vasard	44° 6' 30"	9° 16'	" "
30	"	300 "	Gravier	44° 0' 40"	9° 24' 30"	" "
31	"	704 "	Vase	44° 1' 40"	9° 24' 30"	" 11
32	"	550 "	Roche	44° 6'	9° 29' 30"	" 12
33	Le 14 juillet	Pas de fond 2000 m	Roche	44° 10'	10° 19'	" "
34	"	4600 "	Vase	44° 11'	10° 15'	" "
35	"	3603 "	Vase	44° 9'	10° 15'	" "
36	"	2030 "	Vase	44° 7'	10° 16'	" 13
37	"	2345 "	Vase	44° 9' 30	10°	" "
38	"	Pas de fond 500 m	"	44° 9'	10°	" "
39	"	Pas de fond 500 m	"	44° 7'	10°	" "
40	Le 17 juillet	480 m	Sable, roche	43° 24' 18"	11° 41' 30"	" 14
41	"	400 "	Sable gravier	43° 24'	11° 39' 30"	" 15
42	Le 18 juillet	254 "	Sable vasard	42° 47'	11° 53' 30"	" "
43	"	627 "	Sable gravier	42° 48' 24	11° 57' 30"	" 16
44	"	232 "	Vase grise	42° 44' 50"	11° 54' 30"	" "

2

Numéros des Sondages	Dates	Profondeur	Nature du fond	Position		Dragages
				Latitude N.	Longitude O.	
45	Le 18 juillet	820 m.	Sable	42° 41' 20"	11° 57'	N° 17
46	"	520 "	Sable	42° 42'	11° 56'	" 18
47	Le 19 juillet	"	Perdu le Sondeur	41° 33'	11° 34'	"
48	"	1350 "	Vase	41° 32'	11° 41'	" 19
49	"	2080 "	Vase et gravier	41° 30'	11° 40'	" 20
50	Le 23 juillet	2.000 "	Vase molle	38° 21'	11° 47'	" 23
51	"	1560 "	Vase molle	38° 19'	11° 49'	" 24
52	"	1900 "	Vase	38° 17'	11° 40'	"
53	Le 24 juillet	460 "	Vase	38° 6'	11° 31'	" 25
54	"	370 "	Sable vasard	38° 3'	11° 32'	" 26
55	"	450 "	Sable vasard	38°	11° 34'	" 27
56	"	560 "	Sable vasard	37° 55'	11° 36'	" 28
57	Le 25 juillet	780 "	Vase molle	36° 41'	10° 35' 30"	" 29
58	"	770 "	Vase	36° 40'	10° 31' 30"	" 30
59	"	750 "	Vase	36° 40' 30"	10° 12' 30"	" 31
60	"	440 "	Sable	36° 36'	9° 46'	" 32
61	Le 29 juillet	112 "	Sable gravier	35° 42'	8° 40'	" 34
62	"	136 "	Sable coquille	35° 36'	8° 39'	" 35
63	"	150 "	Sable	35° 35'	8° 42'	" 36
64	"	300 "	Sable vasard	35° 34	8° 45'	" 37
65	Le 30 juillet	636 "	Sable vasard	34° 13' 30"	10° 3'	" 38
66	"	530 "	Sable gravier	34° 11' 30"	9° 59'	" 39
67	Le 31 juillet	1900 "	Vase	33° 9'	11° 58'	" 40
68	"	1340 "	Vase	33° 6'	11° 41' 30"	" 41
69	Le 1er août	2030 "	Vase rougeâtre	31° 54'	12° 45'	" 42
70	Le 2 août	2300 "	Vase rougeâtre	30° 17'	14° 13' 30"	" 43
71	"	2200 "	Vase rougeâtre	30° 14'	14° 14'	" 44
72	Le 3 août	1200 "	Sable, pique de noir	28° 57	15° 37'	" 45
73	Le 4 août	750 "	Roche	28° 29'	18° 27'	" 46
74	"	80 "	Sable roche	28° 28' 30"	18° 32'	" 47
75	"	460 "	Vase	28° 28' 30"	18° 32'	" 48
76	Le 7 août	3700 "	Vase	29°	18° 28'	" 49
77	"	3850 "	Vase	29° 55'	18° 45'	" 50
78	"	4063 "	Vase	30° 15'	18° 49'	" 51
79	Le 9 août	Pas de fond 2000 m.	Perdu le Sondeur	31° 43'	19° 5'	" "
80	"	4512 m.	Perdu le Sondeur	31° 44'	19° 5'	" "
81	"	100 "	Corail, roche, sable	32° 30' à 31°	18° 51'	" 52
82	Le 10 août	100 "	Corail, roche . . .	32° 38' à 32° 47'	18° 55'	" 53
83	"	400 "	Corail, roche, sable	32° 40' 20"	18° 54' 30"	" 54
84	"	370 "	Corail, roche, sable	32° 41' 20"	18° 58'	" 55
84 bis	Le 15 août	800 "	Sable	36° 30'	13° 51'	" "
85	Le 17 août	950 "	Vase	38° 12'	11° 29'	" 56
86	"	2140 "	Perdu le Sondeur	38° 8'	11° 24'	" 57
87	"	1440 "	Sable vasard	38° 6'	11° 27'	" 58
88	Le 21 août	2260 "	Vase molle	40° 36'	11° 46'	" 59
89	"	2140 "	Vase molle	40° 32'	11° 46'	" 60
90	Le 22 août	160 "	Roche	41° 17'	11° 31'	" "

3

Numéros des Sondages	Dates	Profondeur	Nature du fond	Position		Dragages
				Latitude N.	Longitude O.	
91	Le 22 août	1290m	Vase	41° 18'	11° 34'	N° 61
92	"	1156 "	Roche	41° 17'	11° 34'	" "
93	"	1615 "	Vase	41° 17' 30"	11° 36'	" 62
94	"	800 "	Sable	41° 13' 30"	11° 36'	" 63
95	"	625 "	Sable piqué de noir	41° 13'	11° 36'	" "
96	"	550 "	Sable piqué de noir	41° 11'	11° 41'	" 64
97	Le 23 août	325 "	Sable	41° 43'	11° 39'	" "
98	"	1100 "	Vase	41° 43'	11° 39'	" 65
99	Le 24 août	200 "	Sable	44° 2' 30"	9° 24' 30"	" "
100	"	950 "	Vase	44° 4' 30"	9° 17'	" 66
101	"	1360 "	Vase	44° 4'	9° 14'	" 67
102	"	680 "	Vase	44° 2'	9° 7'	" 68
103	Le 28 août	2540 "	Vase	44° 3'	8° 1'	" "
104	"	1300 "	Vase	44° 2'	7° 59'	" 69
105	"	1000 "	Sable	43° 59'	7° 54' 30"	" 70
106	"	1000 "	Sable	43° 58'	7° 58' 30"	" "
107	"	900 "	Sable. Roche	43° 58'	7° 50'	" 71
108	"	860 "	Sable piqué de noir	43° 57' 30"	7° 49' 30"	" "

LISTE DES STATIONS DU "BLAKE" OÙ ONT ÉTÉ RECUEILLIES LES ESPÈCES REPRÉSENTÉES DANS LE *RECUEIL DE FIGURES DE CRUSTACÉS NOUVEAUX OU PEU CONNUS*

LIST OF THE "BLAKE" STATIONS AT WHICH WERE COLLECTED THE SPECIES FIGURED IN THE *RECUEIL DE FIGURES DE CRUSTACÉS NOUVEAUX OU PEU CONNUS*

Station Number	Date	Position N	Position W	Depth fathoms	Locality
2	1877-78	23°14'00"	82°25'00"	805	North of Havana
9	1877-78			111	7 miles S by W from Sand Key
10	1877-78	24°44'00"	83°26'00"	37	West of Tortugas
12	1877-78	24°34'00"	83°16'00"	36	West of Tortugas
29	1877-78	24°36'00"	84°05'00"	955	West of Tortugas
36	1877-78	23°13'00"	89°16'00"	84	North part of Yucatan Bank
41	1877-78	23°42'00"	83°13'00"	860	Northwest of Cuba
70	1877-78			111	Off Sand Key
72	1877-78			50	Off Sand Key
86	1877-78	23°16'00"	89°16'00"	91	North edge of Campeche Bank. Coral, mud and sand
130	4.I.79	17°43'00"	64°55'I0"	451	Off Frederickstadt, Santa Cruz. Gray ooze
147	14.I.79	17°19'27"	62°50'30"	250	Off St. Kitts. Fine gray sand, ooze
148	14.I.79	17°17'12"	62°46'43"	208	Off St.Kitts. Fine gray sand, black specks
151	15.I.79	17°08'21	62°42'00"	356	Off Nevis
162	19.I.79	16°02'40"	61°50'28"	734	Off Guadeloupe. Lava sand
174	22-24.I.79			878	Off Dominica
176	24.I.79	15°32'18"	61°30'55"	391	Off Dominica. Dark-brown ooze,sand
179	25.I.79	15°30'50"	61°32'55"	824	Off Dominica. Sand, brown ooze
181	25/26.I.79			118	Off Dominica.
182	26.1.79	15°26'36"	61°36'45"	1131	Off Dominica. Sand, brown ooze
185	27.I.79	15°24'55	61°27'10"	333	Off Dominica. Fine sand, mud
186	27.I.79	15°21'40"	61°25'20"	98	Off Dominica. Fine sand, mud

190	29.I.79	15°18'12"	61°26'32"	542	Off Dominica. Fine dark sand, black specks
192	30.I.79	15°17'20"	61°24'22"	138	Off Dominica. Fine sand, mud
193	5.II.79	14°43'48"	61°11'25"	169	Off Martinique. Shell, sand, dark mud
200	7.II.79	14°31'55"	61°07'28"	472	Off Martinique. Sand
202	9.II.79	14°29'45"	61°05'56"	190	Off Martinique .Sand,shell
210	12.II.79	14°29'10"	61°05'47"	191	Off Martinique. Rough
211	12.II.79	14°28'40"	61°06'08"	357	Off Martinique. Fine sand
220	16.II.79	13°50'15"	61°03'45"	116	Off St. Lucia. Rock
222	16.II.79	13°58'37"	61°04'45"	422	Off St. Lucia. Sand, ooze
227	19.II.79	13"10'10"	61°18'15"	572	Off St. Vincent. Sand, ooze
241	24.II.79	12°28'22"	61°32'18"	163	Off Grenadines. Sand,coral
249	27.II.79	11°48'15"	61°48'45"	262	Off Grenada. Coarse sand
264	1.III.79	12°03'15"	61°48'30"	416	Off Grenada. Gray ooze
267	2.III.79	12°04'50"	61°51'25"	627	Off Grenada. Gray and brown ooze
274	5.III.79	13°00'50"	59°36'20"	209	Off Barbados. Fine sand
275	5.III.79	12°58'33"	59°36'45"	218	Off Barbados. Fine brown sand
283	7.III.79	13°05'05"	59°40'50"	236	Off Barbados. Hard bottom
285	7.III.79	13°05'12"	59°37'18"	13	Off Barbados. Coral
291	9.III.79	13°12'00"	59°41'00"	210	Off Barbados. Coarse sand
292	9.III.79	13°13'55"	59°38'50"	56	Off Barbados. Coral,sand, broken shell