

Jeude's Museum in Holland, and therefore probably from the Dutch colonial possessions, are all of a much smaller size, not half the size of those from South Africa (see figure of *Felis pardus sumatranus*, Blainv. Ostéogr. *Felis*, t. viii.), which seems to represent a small specimen of this latter variety. Blainville represents a smaller skull, still under the name of *Felis pardus barbarus*, from Barbary, North Africa (t. viii.).

The leopards have a narrow opening at the back of the palate, and a tooth-like prominence on the front edge. This character seems common to all the leopards, but is more marked in some than in others.

They seem to vary in the width of the opening to the posterior nostrils. In some it is very narrow, and in others broader; this is, perhaps, a sexual character.

The puma, the skull of which very much resembles that of the leopards, differs from the leopard in having the front edge of the hinder opening of the nostrils simply rounded.

On the Ethology of Sacculina carcini. By M. A. GIARD.

Cancer mænas, like all those animals which are very common and capable of suiting themselves to very varied conditions of existence, is subject to the attacks of a multitude of parasites and commensals belonging to the most various groups of the animal kingdom. Among these parasites one of the most interesting is unquestionably *Sacculina carcini*, the curious metamorphoses of which we have recently studied.

The *Sacculina* is very common at many points of the coasts of Brittany; it becomes rare on the shores of the Boulonnais and of Flanders, from Cape Gris-Nez to Dunkirk. On the other hand, it is excessively abundant at Ostend, where it was long ago noticed by M. P. van Beneden, and where I have myself found it by hundreds this summer.

As the *Sacculina* inevitably causes the sterility of the crab which bears it, at first mechanically and afterwards histologically, *Cancer mænas*, notwithstanding its prodigious fecundity, would soon become rare upon the shores on which an equally fertile parasite swarms, if many causes did not cooperate to limit the excessive multiplication of this curious Rhizocephalon.

At Ostend we often find under the tails of crabs which bear *Sacculina* small tufts of Bryozoa and strings of young mussels, which appear to hamper considerably the development of the parasite under consideration. At Wimereux, where the edible mussel is also very common, the same fact is frequently observed; but as the mussel can rupture its byssus and quit its place at pleasure, when it finds itself inconveniently confined, it does not constitute a great danger for its neighbour the *Sacculina*.

This, however, is not the case with *Molgula socialis*, the active larvæ of which often take up their abode under the tail of *C. mænas* when this is raised by the *Sacculina*. These Ascidia, as they are developed, gradually compress the body of the *Sacculina* and finally cause it to perish, after hindering its multiplication for some time.

For one crab bearing a *Sacculina* in good health, we find four or five loaded with a bundle of agglutinated mussels and *Molgulæ*. On removing these foreign bodies we constantly find either the flabby and half-destroyed skin of the *Sacculina*, or merely a chitinous ring, the last vestige of the presence of the parasite.

Molgula socialis is rendered the more formidable because it retains among its aggregations the mussels, calcareous sponges (*Sycortis quadrangulata*), Bryozoa, &c. fixed under the tail of the crustacean.

From these facts we may deduce:—1, the existence of a urodelous larva in *Molgula socialis*, which is verified by experimental embryogeny; 2, the presence of *Cancer mænas* in the laminarian zone, which the ascidian in question inhabits; 3, the possible co-existence of the *Molgula* and *Cancer mænas*, and even a sort of mutual dependence of these animals upon each other; and, 4, the incorrectness of the opinion of those zoologists who have supposed that the absence of a certain species of *Molgula* in the zone of *C. mænas* was due to the presence of that crustacean.

On the shores of Brittany, where it has not to dread the presence of *Molgula socialis*, the *Sacculina* is very common, and the numerous companions that it may have do not seem to incommode it much. We find, in fact, under the tails of the Crabs infested by it:—1. Synascidia (*Botryllus violaceus*, *Polyclinum sabulosum*); 2. Bryozoa (*Pedicellina*, *Tubulipora serpens*, *Cellepora pumicosa*); 3. Annelides (*Spirorbis*); 4. Calcispongiæ (*Sycandra coronata* and *ciliata*); and, 5. Vorticellæ and numerous and varied Infusoria.

In the interior of the mantle we frequently meet with Copepod Crustacea, nearly allied to those which frequent the branchia of the Ascidia, and especially a species related to *Lichomolgus*, and remarkable for the dilatation of the prehensile antennæ of the male.

But the most interesting parasite of the *Sacculina* is an Isopod Crustacean of the family Bopyridæ, and of the genus *Cryptoniscus*, F. Müller. Two species of this genus are already known, viz. *Cryptoniscus pygmæus* (*Liriope pygmæa*), Rathke, parasitic on *Peltogaster paguri* (in the European seas), and *Cryptoniscus planarioides*, F. Müller, parasitic on *Peltogaster purpureus* (in the seas of America). The *Cryptoniscus* of *Sacculina*, which I propose to call *C. larvæformis*, differs greatly from the preceding in external form, at least as regards the female sex. The male, which is met with in the ovigerous cavity of the *Sacculina*, closely resembles those of the other *Cryptonisci*. The female is fixed to the base of the peduncle of the *Sacculina*. Externally it presents the appearance of the hinder part of the body of the larvæ of the Lamellicorn Coleoptera. It is more than 1 centimetre in length; its colour is whitish; the integument is slightly diaphanous, and shows in its interior a yellowish red mass. This reddish mass is regarded by F. Müller as a liver in *Cryptoniscus planarioides*; but as it is greatly developed before oviposition, and much reduced, on the contrary, when the ovigerous sac is full, it appears to me to have some relation to the generative functions, and may perhaps act the part of a vitelligene, or accessory gland of the ovary.

The ventral lobes are concealed by a lamella, which does not seem to exist in *Cryptoniscus planarioïdes*. These lobes are the homologues of the respiratory plates of the pleon of the Bopyridæ, and especially of *Phryxus*. It is, moreover, with these animals that *Cryptoniscus* presents the closest affinities; and I cannot accept the opinion of Spence Bate, who proposes the union of the genus *Cryptoniscus* with *Cryptothiria*, which includes animals parasitic upon *Balani*. The presence in the latter of a by no means degraded cephalic part, the arrangement of the ovaries and oviducts, and the absence of respiratory plates upon the pleon appear to militate against this combination.

The passage from the *Cryptonisci* to the other Bopyridæ is effected by the *Phryxi*, and especially by *Phryxus* (*Bopyrus*) *resupinatus*, F. Müller, which lives parasitically upon *Peltogaster purpureus*. The most nearly allied type in the European seas is *Phryxus phyllodes*, which lives upon the *Pagurus Prideauxii* of the shores of the English Channel.—*Comptes Rendus*, July 27, 1874, pp. 241–243.

A Record of Geological Literature.

A work has been undertaken by some of the most zealous of our younger geologists, the satisfactory execution of which will be of great importance to many of our readers. This is a 'Record of Geological Literature,' intended to be a classified general index to the contents of the multitudinous books and memoirs published on Geology properly so called, Mineralogy, and Palæontology during each year, somewhat after the model of the 'Record of Zoological Literature.'

That the work will be one of great labour and difficulty no one at all acquainted with the subjects to be thus treated can doubt; and we can only wish the editor, Mr. Whitaker, of the Geological Survey, and his able staff of assistants, good speed in their arduous undertaking. At the same time we hope that they may meet with a higher degree of success than has hitherto attended the efforts of their fellow-labourers of the 'Zoological Record;' and we think that this happy consummation may be attained, for two reasons: in the first place, they have not to contend against a long-established rival like the "Berichte" in Wiegmann's 'Archiv,' seeing that the notices in the 'Jahrbuch für Geologie' &c. can by no means pretend to give a complete abstract of geological literature; and, secondly, a great number of people in this and other countries have a *professional* interest in keeping up with the progress of geology, and it may be expected that a fair proportion of these, at any rate, will purchase the new 'Record.'

The 'Geological Record,' if well executed, which, from the names of the contributors, there is every reason to expect, will prove of the greatest value to all geologists and palæontologists; and the low price at which it is proposed to publish it ought to ensure it a wide circulation. The 'Record' of geological doings in 1874 is now in course of preparation, and will be issued about the middle of next year. The editor will be happy to receive the names of intending subscribers.



Giard, Alfred. 1874. "On the ethology of *Sacculina carcini*." *The Annals and magazine of natural history; zoology, botany, and geology* 14, 386–388.

<https://doi.org/10.1080/00222937408680999>.

View This Item Online: <https://www.biodiversitylibrary.org/item/63340>

DOI: <https://doi.org/10.1080/00222937408680999>

Permalink: <https://www.biodiversitylibrary.org/partpdf/58774>

Holding Institution

University of Toronto - Gerstein Science Information Centre

Sponsored by

University of Toronto

Copyright & Reuse

Copyright Status: NOT_IN_COPYRIGHT

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.