

ON ENTOMOSTRACA COLLECTED IN THE SOLWAY DISTRICT AND AT SEATON SLUICE,
NORTHUMBERLAND, DURING THE SUMMER OF 1894.

by G.S.Brady

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WILSON
COLLECTION

(23) Amongst the Copepoda found in the Seaton Sluice pools was one, *Nannopus palustris*, which I was unable from want of sufficient material to describe or figure very fully. This species does not seem to have been noticed by any other British naturalist except by Mr. T. Scott, who took it in 1891 "at the mouth of the Cocklemill Burn near Largo, Firth of Forth", but M. Eugène Canu has recently found it in the Estuary of Wimereux, Pas de Calais, and in his admirable memoir on the Copepoda of that region, has given a completely illustrated account of it. M. Canu states that the animal was found where the common green seaweed, *Enteromorpha intestinalis*, was growing abundantly, and that in company with it were *Gobius minutus* and the two shrimp-like crustacea, *Palaeomonetes varians* and *Mysis vulgaris*. These are strictly brackish- (24) water species, but with the exception of *Tachidius brevicornis* and *T. littoralis* M. Canu does not mention any of the species associated with *Nannopus* at Seaton Sluice.

Perhaps even more interesting than the mud-inhabiting species, are those found in the littoral sub-brackish pools already referred to. In these pools there was an abundant and varied vegetation, the precise constituents of which I did not take accurate note of, not being aware in fact that I had anything in my net more than the usual inhabitants of such localities. All that I can now say is that among the vegetable contents of the pools were green algae, probably *Enteromorpha*, and many of the ordinary amphibious plants and grasses. Amongst the microzoa were several species of *Cyclops*, some of the commoner *Cyprididae*, numerous *Notonectae* and *Collembolae*. The most interesting copepoda were those now described, *Itunella subsalsa* and *Canthocamptus subsalsus*.

Genus *ITUNELLA*, nov. gen.

Body subcylindrical, straight or only very slightly sigmoid, scarcely at all tapered backwards, no constriction or distinct demarkation between thorax and abdomen; antennae and limbs extremely short in proportion to the size of the animal. Antennules 7-jointed; secondary branch of antennae small, consisting of one joint only. Outer branches of the swimming feet 3-jointed; inner branch of the first foot 2-jointed, of the second, third, and fourth one-jointed. Posterior footjaw forming a prehensile unguiculate hand. The mandibles and mouth organs generally are so extremely small that I have not been able to observe them satisfactorily, nor have I been able to detect any eyes.

Itunella subsalsa n. sp. Pl. I.

Female. Antennule very short, scarcely more than half as long as the first cephalo-thoracic segment, 7-jointed, rather (25) stout in proportion to the length, only slightly tapered, joints nearly equal in length throughout; each joint bears one or more short and rather stout setae, but there is no special sensory seta. Antennae 2-jointed; secondary branch consisting of one small joint only, with 3 or 4 small terminal setae. Outer branch of the first pair of swimming feet 3-jointed, the last joint very small and ending in 3 slender setae, two of which are extremely long, the third and outermost being half as long as the rest, which are about thrice the length of the entire limb, including the protopodite; the first and second joints have each a long, stout spine and several small hairs on their outer margin; the second has also a single

short seta on its inner margin; inner branch 2-jointed, only a little shorter than the outer branch, its first joint bearing only a few short hairs on the outer margin, second joint equal in length to the first, but more slender bearing at the apex two long and two very short setae, and on the inner margin a single short seta; the second joint of the protopodite carries at the inner distal angle a stout curved spine which reaches as far as the middle of the second joint; and on its outer margin one much shorter spine. The second, third and fourth swimming feet are alike, having the inner branch of one, the outer of three joints; the first and second joints of the outer branch bear each a long and rather stout apical spine and a fringe of shorter spine-like hairs on the outer margin; the last joint has 3 apical setae decreasing progressively in length from the innermost, which is longer than the entire limb; each of the 3 joints has also a minute seta at the internal apex; the inner branch is shorter than the first joint of the outer one and has 3 terminal setae, the central one about twice as long as the other two, which are subequal; it has also a few small marginal cilia externally. The fifth foot is almost rudimentary, the basal portion very short but wide, its internal portion fringed with 4 nearly equal ciliated setae, its outer portion giving attachment at the outer angle to a long seta and to a single laminar joint, from which spring 4 unequal ciliated setae. The head is coalescent with the first thoracic segment, the united lengths of the two being equal to about one-fifth of (26) the length of the entire body; there are altogether 9 segts, exclusive of the caudal laminae, but the 6th (1st abdominal) segt has an imperfect transverse division; the posterior margins of the somites are finely pectinated. Caudal laminae short, subquadrangular, not much longer than broad, about half as long as the last abdominal somite; apex bearing 1 long seta, about one-fourth the length of the body, and 2 minute setae; outer margin with 2 setae, about equal in length to the 2 smaller apical ones, and numerous minute cilia, internal margin smooth; no distinct anal operculum. Length, exclusive of tail setae 0.85 mm.

Male. Like the female in size and general appearance, except that the abdomen consists of 5 somites and that the margins of thoracic somites are less distinctly pectinated. Antennules geniculated, the first 3 segts nearly equal in length but successively decreasing in width, 4th very much enlarged and semicircular, the remaining 3 much smaller. First pair of swimming feet like those of the female; second pair similar excepting that the principal apical setae are much larger; inner branch of 3rd. foot somewhat conical in shape, with a dilated base, which is separated from the apical portion by a rather deep constriction, the apex furcate so as to form two lash-like processes; inner branch of the fourth foot very short, with two minute setae on the inner margin, and at the apex two setae, the outermost of which is simple, the other rather shorter and stouter, and having its inner margin produced into 3 small nodular or monilliform prominences. Fifth foot obsolete, consisting of only a few setae.

Habitat. Taken in June, 1894 in a small pool a little above high water mark near Rockcliffe, Kirkcudbrightshire, on the eastern side of the estuary of the Urr, between the village and the Castle Point. The pool contained freshwater vegetation but would be subject to influx of sea-water at times of unusually high tide; doubtless it would also be rendered slightly saline by spray during storms. Amongst other microzoa taken in the same pool were a Collemboiid (*Isotoma aquatilis*, Müller), one Amphipod (*Gammarus* (27) *locusta*), one Isopod (*Arcturus longicornis*), some Ostracoda, numerous larvae of insects, and various copepods, chiefly of the genus *Cyclops* and *Canthocamptus*. This species might, with some little modification of the generic characters, have been included under the genus *Cletodes*; it is also nearly allied to *Enhydrosoma* and *Normannella*, differing from these chiefly in the build of the swimming feet. A still nearer relative is perhaps *Ophiocamptus*, Mrázek, but in that genus the inner branches of the swimming feet are uniformly 2-jointed.

Female. Animal slender, limbs comparatively short, ovisacs reaching, when the ova are mature, as far or farther than the base of the tail setae. The somitic angles are more or less profusely pectinated with spine-like cilia, the amount of armature varying in different specimens. The last abdominal segt contains a pair of pyriform sacs which appear to communicate by ducts with the larger marginal setae of the caudal laminae. Caudal laminae short, subquadrate, about as long as broad, bearing a few short, slender marginal setae, and at the apex 3 setae, the central seta about as long as the abdomen of the animal, the outer half as long, and the innermost not much longer than the caudal lamina itself; the two larger setae are sparingly plumose.

Antennules slender, the last four joints nearly equal and somewhat narrower than the first four, sparingly provided with setae, all of which are short. Antennae having a secondary branch composed of one joint only, with 2 slender apical setae. Mandibular palp small, 1-jointed and bearing 4 (?) setae. Penultimate joint of the posterior footjaw armed at the apex of the inner margin with a short spine, last joint ovate, its inner margin fringed with a series of delicate, short cilia, and bearing a slender terminal unguis. Inner branch of the first swimming foot 3-jointed, first joint somewhat (28) dilated, and more than equal in length to the two following joints, bearing 1 long seta near the middle of its inner margin, and several short ones on its basal half; second joint rather shorter than the third and provided with a small seta on the inner margin, third joint bearing 3 apical setae, the innermost being the shortest; outer margin of all the joints fringed with minute setae; outer branch composed of 3 nearly equal joints, which united equal in length the first joint of the inner branch; each joint is ciliated externally and also bears a spine-like apical seta, in addition to which the last joint has 3 apical setae which are progressively longer from without inwards; the second pair of feet have the outer branch similar to that of the first foot but larger, and its second and third joints have each a seta on the inner margin; inner branch 2-jointed, short; second joint twice as long as the first, bearing two marginal and three apical setae and ciliated, as also is the first joint on the outer margin. The third and fourth pairs do not differ materially from the second. Fifth pair foliaceous; the basal joint produced internally and reaching at least as far as the apex of the second joint, fringed with 6 principal ciliated setae and a few more minute ones; the second joint which is subquadrate also, bears 6 setae, one much larger than the rest, some of which are shortly plumose. Length 1.30 mm.

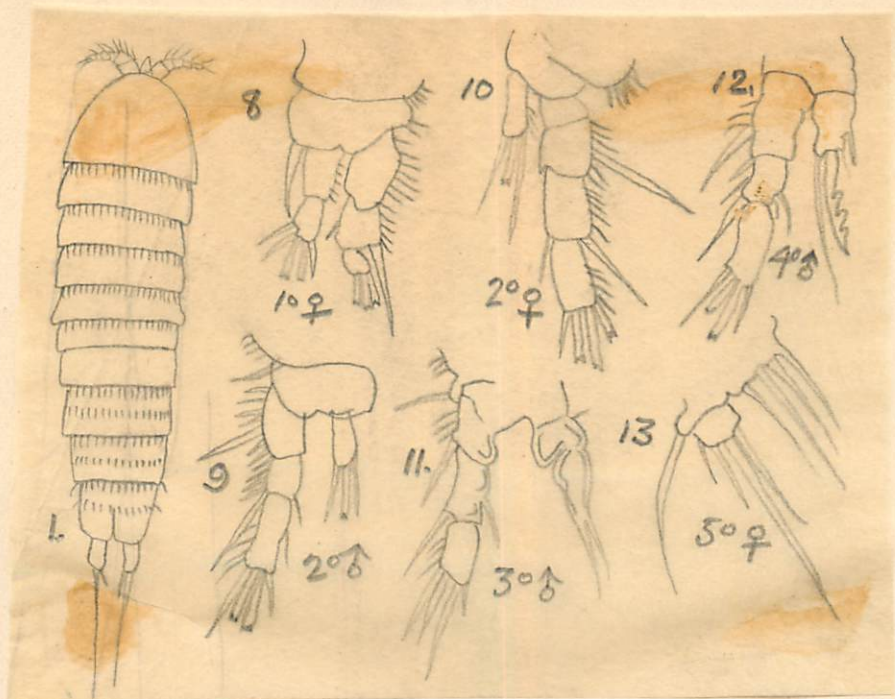
Male. The antennule of the male is swollen, geniculated, and falcate at the apex; the third swimming foot has the outer branch very stout and geniculated at the distal joint so that the extremity can be bent inwards; the last joint bears 4 stout marginal spines, the first and second joints each one strong spine and several smaller ones; inner branch 3-jointed, short; first and second joints furnished with one, the third with two short setae; fifth foot small, the basal joint bearing 3 short, stout, spine-like setae on its inner segt, and two setae externally, apical joint small and bearing 4 small unequal setae.

Habitat. In a small pool above high water mark at Rockcliffe, Kirkcudbrightshire; specimens numerous.

Platyhelipus littoralis G. S. Brady, p. 29, Pl. III, figs. 1--14.

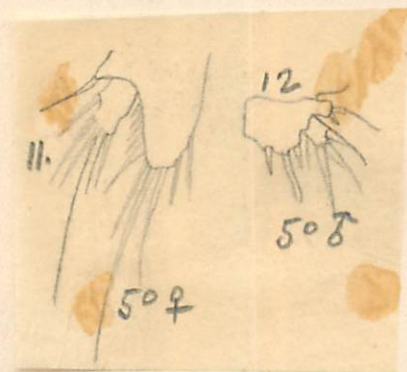
Tachidius littoralis, Poppe, p. 31, pl. II, figs. 14--17.

Plate I



Itonella subsalsa -

Plate II



Canthocamptus subsalsus