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A NEW PARASITIC COPEPOD CRUSTACEAN.—During the summer of 1880 and 1881 I received alcoholic specimens of a Caligus or fish-louse, gathered from the skin of the "salmon"¹ inhabiting Puget sound, Washington Territory.

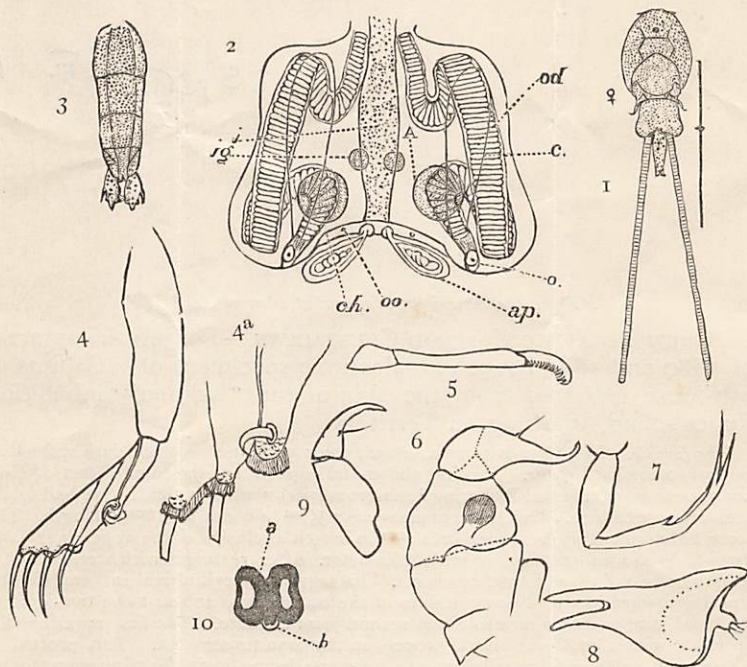
The female.—The form is convex, ovoid, color on dorsal surface dark rufous, on ventral somewhat lighter. The first abdominal segment has the form of that of *Caligus americanus* Dana and Pickering,² numerous specimens of which I have had lately occasion to examine. This segment measures $2\frac{1}{2}$ mm in width by $2\frac{2}{3}$ mm in length. The second abdominal segment measures 2 mm in length exclusive of the appendages, and three-fifths of a millimeter at its widest diameter. After treating it with acetic acid it is seen to consist of four distinct segments. This segment is cylindrical in form, slightly tapering toward its tip. The mandibles of the buccal mass appear to be two-jointed, the basal joint probably movable, the second joint connate. The first maxilliped is provided with a knob-like lateral process on the penultimate joint. This process is transversely ruled with parallel rugose lines, rendering it fit for trituration. The large hooked spine, the outer branch of the first maxilliped, is present and is of the same form as in *Caligus americanus*. The second rudimentary maxilliped, which has the shape of a short, thick, hexapodous mandible, is deeply cleft at its middle. The first pair of maxillipeds is two-jointed; instead of an ensiform extension it is furnished with a sharp tooth at the inner side near the middle of the second joint. This second joint terminates with a longer and a shorter blade-like flat bristle edged with a delicate pectinate membrane. The fourth pair of maxillipeds has a very stout terminal claw beset with one or two bristles at its middle. The inner side is notched near the base of the first joint, apparently for the insertion of the terminal joint, the claw. The second pair of natatory legs has its second joint continuous with the superior or outer branch. The interior or inner branch is not connate with the second, but with the first joint of the superior branch. The inferior branch has eight long pinnulæ, the superior branch has four long and three shorter pinnulæ and several larger spines. Not too much stress should be put on such inferior characters, as I have met with two female specimens of *C. americanus* having also eight pinnulæ on the inferior branch of the same leg.

¹ Probably the "blue-back salmon." See AMER. NATURALIST, 1881, p. 177, "Observations on the salmon of the Pacific," by D. S. Jordan and Ch. H. Gilbert.

² Amer. Jour. Sci. and Arts, 1838.

Length of female $9\frac{1}{2}$ mm, exclusive of the egg-tubes; width across the widest part of thorax about $4\frac{1}{2}$ mm. Length of the egg-tubes 15mm, their diameter $\frac{2}{3}$ mm. Twenty-three female specimens.

Caligus pacificus, as we may call it, appears to be closely allied to *C. productus* Dana. No male specimens observed. The size of the specimens were remarkably uniform, only a trifling difference could be noticed. The shape of the foliaceous abdominal appendages as well as the arrangement of their setæ are better understood by an illustration than by a description. The visual



Caligus pacificus, female.

FIG. 1.—*Caligus pacificus*, dorsal view of female, twice enlarged. FIG. 2.—First abdominal segment, about thirteen times enlarged, ventral view; *i*, intestine; *od*, oviduct; *A*, large yellow (cement?) gland; *o*, orifice on a minute lappet, with which the external egg-tube connects, exit of oviduct; *ap*, spermatophores; *oo*, true female orifice (?); *ig*, gland; *c*, "false ovaries;" *ch*, chitinous bead. FIG. 3.—Second abdominal segment with appendages. FIG. 4.—Fifth leg of posterior thoracic segment; *4a*, margin enlarged showing a hyaline fringe. FIG. 5.—Left mandible. FIG. 6.—Left first maxilliped. FIG. 7.—Right third maxilliped. FIG. 8.—Right second maxilliped, inner view. FIG. 9.—Fourth maxilliped. FIG. 10.—Eye; *a*, anterior; *b*, posterior side.

organ consists of two large lateral and two minute posterior masses of pigment. A semilunar larger refractive body encircles the posterior median mass of pigment. Two very small cylindrical vesicles are invariably seen juxtaposed on the ventral surface and in the median line of the posterior terminus of the first

abdominal segment. They are of a dark yellow color and are composed of two layers of coatings, an outer very thick and an inner very thin one. The outer is tough and elastic. The intima is a viscid glue-like mass. These organs, which I take for spermatophores, are fastened by their narrow tubular end to a chitinous transverse piece of integument. A little more laterally and on the same chitinous piece are two very minute circles, which may be the true sexual orifices. The oviduct and the so-called "false ovaries" do not differ from the description and illustration given by Dana and Pickering (*C. americanus*). A pair of smaller roundish "glands" occurs a little behind the middle of the intestinal tract. Another pair of larger roundish masses, of a yellow color, occurs more laterally and more posteriorly than the preceding. They may secrete the material for the egg-tubes.—*Carl F. Gissler.*



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