of standing seawater in the laboratory ranged from 10.2 to 14.2°C. during the earlier part of this period, from 15.5 to 19.0°C. during the week preceding the moult to the Stage II phyllosoma.

Stage II Phyllosoma

This is shown in dorsal view in Figure 3, drawn to the same scale as Figure 2. It will be described only in so far as it differs from the Stage I phyllosoma.

It is appreciably larger, the body length of each of five live specimens measured being 2.7mm. The overall width is 9.5mm.

The inner ramus of the second antenna is now about twice the length of the outer ramus, and shows a more conspicuous joint than in the Stage I phyllosoma. The eye stalks are more slender, and show a joint. The compound eyes are slightly curved forwards. The exopodites of legs 1 and 2 show usually seven and sometimes eight pairs of plumose setae, as compared with (5–)6 pairs in Stage I. The exopodites of leg 3 are more than 0.5mm long, and show 2–4 terminal setae (Fig. 5, ex). The fourth leg rudiments are now noticeable at a glance, being 0.3mm long and biramous (Fig. 5, p4). In addition to the chromatophores recorded in Stage I phyllosomas, a pair has now appeared on the mouthpart protrusion, and in at any rate some instances there are now three chromatophores clustered near the dactyl of the second leg endopodite.

Testing Foods: I first offered some young *J. edwardsii* phyllosomas *Obelia* medusae, and some Anthomedusae that were rather larger. The phyllosomas swimming close to these and touching them gave no response to them. If I pipetted them on to their trophi, between their maxillipeds, the medusae were swept away by currents set up by leg exopodites. As there seemed no suggestion of a feeding response to the medusae, I then tested various other animals available at the time in the plankton. Animals offered at least twice to each of three phyllosomas included calanoid copepods, small crab zoeas, trochophores, a veliger larva and an ascidian tadpole. These were all swept away by exopodite currents, or, if I persisted, were pushed away with the endopodites of the walking legs. Unicellular algae cultures were not available for testing, but movements of incidental particles in the water suggested that what currents the phyllosoma set up with its exopodites carried possible food away from it, rather than towards its mouthparts.

A few hours later I noticed two phyllosomas clutching and possibly eating a very dead piece of polychaet that had come through the seawater circulation; recognisable only by its bristles. In case this had significance as food, I next presented to phyllosomas some pieces of a slender Capitellid polychaet, *Heteromastus filiformis* (Claparède, 1864), that is abundant in sand near the marine station. Phyllosomas tackled these pieces with apparent purposefulness, soon pulling portions off with their mouthparts. S. Austin tested phyllosomas on small pieces of muscle of the yellow-eyed mullet, and found they likewise ate these. I tested them on pieces of *Mytilus* muscle, but this was not eaten, perhaps being unsuited owing to its slimy surface or its firmer texture.

As Saisho (1962) had succeeded in rearing *Panulirus japonicus* through many of its phyllosoma stages on brine shrimp larvae, I offered some newly hatched brine shrimps to five *J. edwardsii* phyllosomas. The brine shrimp larvae swam freely amongst their legs and maxillipeds, but produced no reaction from the phyllosomas. I then offered these five phyllosomas a piece of Capitellid. Two