

established yabby beds (e.g., S. Dunwich) while others establish new populations. About this time there is a change in the relationships of carapace length to total length which is possibly indicative of the onset of sexual maturity.

A moult in late summer, followed by growth to c. 8 mm. carapace length, precedes further changes in body proportions and development of gonads. This moult is probably of a precopulatory nature because the colour of the ovaries becomes orange soon afterwards and eggs are laid in the major breeding season (autumn) at a minimal carapace length of c. 8-9 mm.

Another moult for both sexes in early winter, after breeding activity, is followed by slight growth (carapace length 9-10 mm.). A third change in body proportions occurs at this stage and is more marked in the male where the increasing size of one cheliped is accompanied by an increase in carapace size.

A minor breeding season occurs in early spring and in late spring another moult is followed by growth (carapace length: males c. 13 mm., females c. 12 mm.).

The next event is the precopulatory moult (late summer) which leads to growth to the maximum size (carapace length: males 15-16 mm., females 14-15 mm.) and is followed by breeding activity in the major breeding season (autumn).

The onset of winter probably results in the death of these larger adults as the largest modes in carapace length now drop from 14 mm. (males) and 12 mm. (females) in autumn, to 12mm. (males) and 10 mm. (females) in winter.

The above then suggests a life span of two years from the time of hatching.

Individuals derived from spring eggs

The minor breeding season in spring gives rise to fewer ovigerous females than that during autumn and is followed by early larval stages in the plankton in summer. A few post-larvae (carapace length c. 3 mm.) occur in the plankton during autumn. Small numbers of juveniles (c. 3-5 mm. carapace length) appear in yabby beds in winter.

Further evidence of the development of these individuals is fragmentary. In the seasonal frequencies of each carapace length there are suggestions of modes in summer and autumn between the major modes. Based on the life cycle of individuals from autumn eggs, these "smaller modes" would certainly fit the expected growth of individuals developing from spring eggs. It is postulated therefore that these individuals undergo roughly the same type of developments as those derived from autumn eggs excepting for the time difference.

The "spring" individuals would attain a carapace length of c. 12 mm. during the autumn in which the second major breeding season of "autumn" individuals occurs. The winter following this autumn was suggested (because of the sudden change of modes) as the time of death of those specimens from autumn eggs. It is possible that some, if not all, of the "spring" individuals survive this winter, as evidenced by the rather large adults (carapace length: males c. 16 mm., females c. 15 mm.) which were collected occasionally.

The original suggestion of a life span of approximately two years is still considered to apply to "spring" individuals for only very rarely have "soft" very large specimens been seen.

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PLATE 1

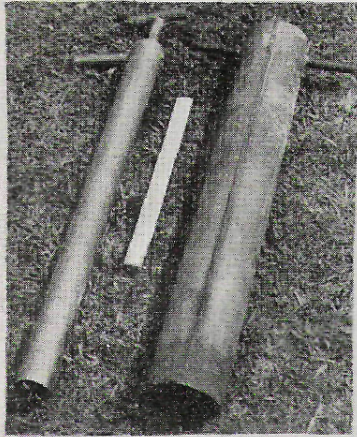


Fig. 1



Fig. 4

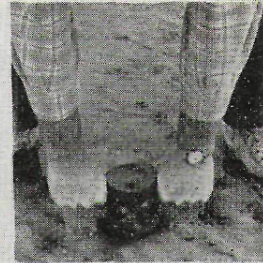


Fig. 2

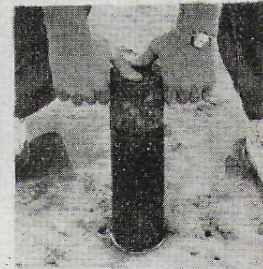


Fig. 3

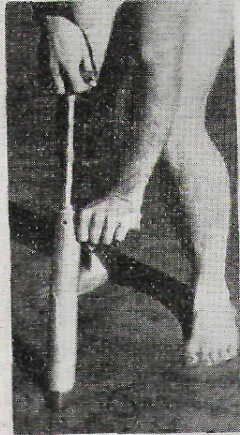


Fig. 5

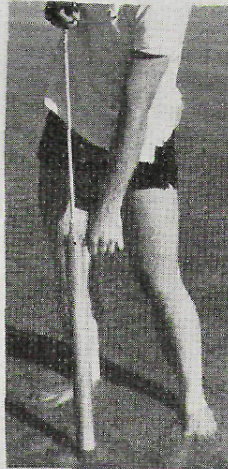


Fig. 6

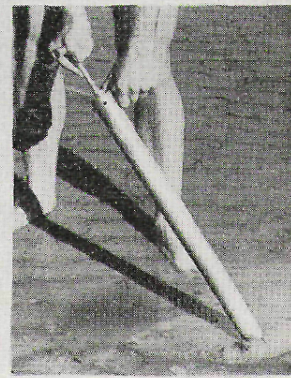


Fig. 7

PLATE 1

- FIG. 1.—The two models of "yabby pumps" sold commercially. Earlier model on right and later model on left. The scale is a one foot rule.
- FIG. 2.—Earlier model "yabby pump" being pushed into substratum with thumb holes uncovered.
- FIG. 3.—Thumb holes covered and pump being extracted.
- FIG. 4.—Pump fully extracted, thumb holes uncovered and core of sand with yabbies to the left. The hole, filled with water, is seen to the right of the pump.
- FIG. 5.—Later model "yabby pump" being pushed into substratum as the plunger is extracted.
- FIG. 6.—Pump being extracted with plunger fully out.
- FIG. 7.—Pump completely removed from hole (lower centre) and core of sand discarded (lower right) by pushing plunger down.

PLATE 2

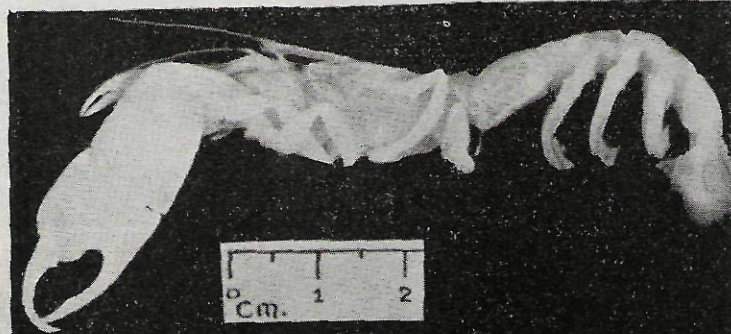


Fig.1



Fig.2

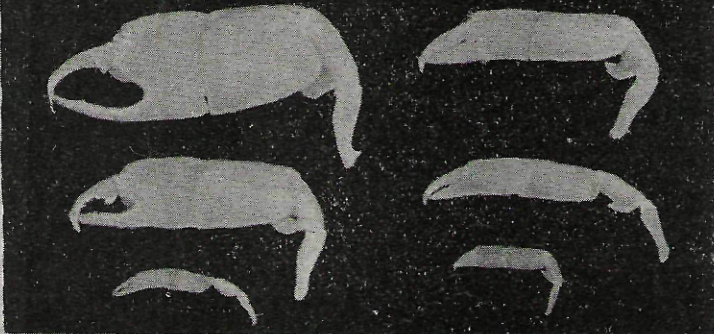


Fig.3

PLATE 2

- FIG. 1.—Adult male *C. australiensis* showing the male features of one enlarged cheliped, unbranched first pleopods and absence of second pair of pleopods.
- FIG. 2.—Adult female *C. australiensis* showing the female features of less enlarged cheliped and biramous, hirsute pleopods of the first and second abdominal segments.
- FIG. 3.—A series of typical larger chelipeds of *C. australiensis*. Those on the left are from males, those on the right from females. The lowermost pair are from immature specimens, the central pair from young adults, and the upper pair from fully mature adults.

PLATE 3

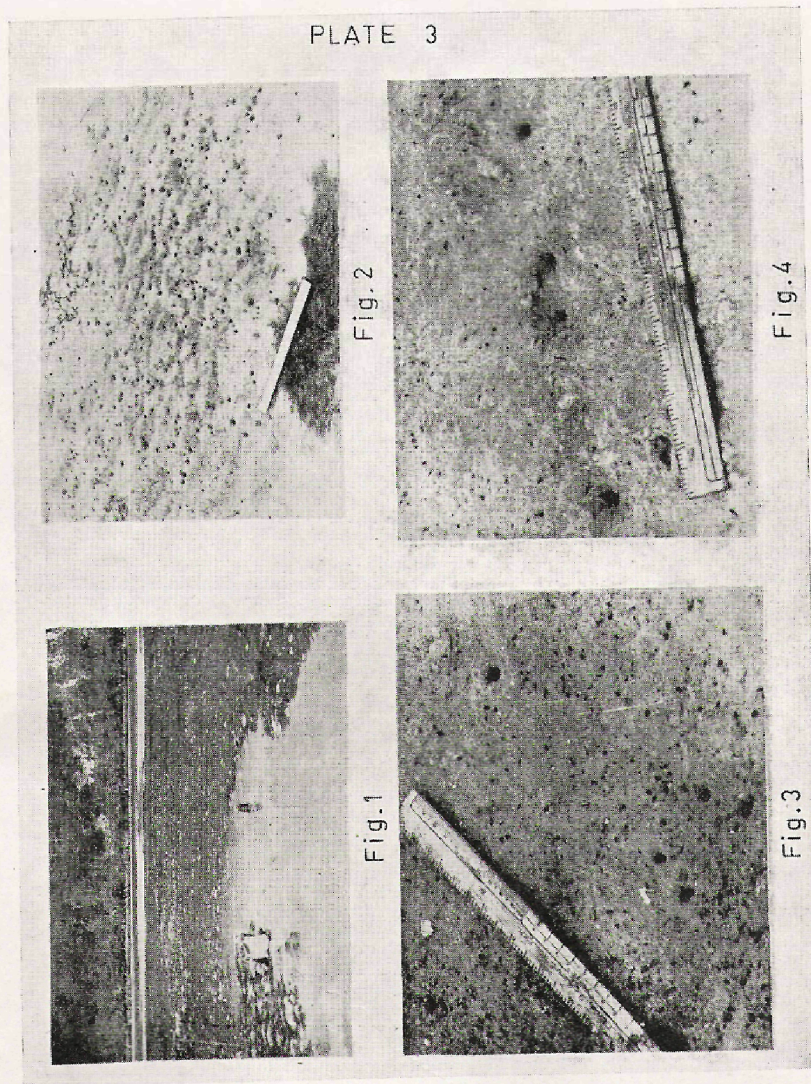


PLATE 3

FIG. 1.—A typical yabby bed at S. Dunwich. The darker area (centre) consists of *Zostera*-covered sand and the larger lighter areas "yabby circles" cleared of *Zostera*. The small light patches amongst the *Zostera* are mounds of sand excavated by yabbies. Mangroves colonise the upper levels of the sand flat (background). (Photograph taken at low tide from approximately mean tide level.)

FIG. 2.—Typical distribution of surface openings to burrows in a densely colonised yabby bed. The scale is a one foot rule in this and the following figures.

FIG. 3.—An isolated group of burrow openings in a sparsely colonised yabby bed.

FIG. 4.—An irregular row of burrow openings in a sparsely colonised yabby bed.