dorsoventral or horizontal movements of the cheliped the "normal" tendency was to engage all teeth in a single movement, and precise positioning was required to effect the separate engagements. It is almost certain that movements by the animal would produce many practically simultaneous engagements by dorsoventral movements and sequential ones by horizontal movements. This would greatly reduce the number of effective engagements, and would mean that many of the noises which are indistinguishable on an auditory basis, do in fact, merge during their production. In a living animal one could expect fewer, louder, more prolonged and acoustically more complex sounds than those produced by the single engagements. (See Pl. 2.) There still remain an embarrassingly large number of sound producing methods.

A minority of these involve structures which show obvious modifications and these modifications are different in each of the subgroups. Thus in the *O. punctatus* subgroup in both sexes there are rasps composed of striae on the under surface of the palm of the cheliped, while in males the only obvious plectra are modifications of the dactyl and merus of the first walking leg. In *O. georgei* there is a granulated ridge on the dorsal surface of the carapace and a cornified carina on the carpus of the swimming leg. The dactyl of the first leg is modified as in the *O. punctatus* subgroup, but there is not a correspondingly modified rasp. In the *O. iridescens* subgroup the striated pterygostomial region is engaged by an ischial peg, while in the *O. ocellatus* subgroup pterygostomial striae are engaged by short striae on the upper borders of the arms. It is evident that the occurrence of structures modified for sound production is a generic feature, but this is difficult to reconcile with the fact that the structures showing modifications are so different. Previously (Stephenson and Rees, 1968) it was suggested that the genus had evolved from a form with an inherent tendency to stridulate.

The present results offer an alternative explanation. Several of the engagements are common to all species of the genus, and also to both sexes (where these were available for study). The precise number depends upon whether two adjacent areas —under the palm and under the immoveable finger—are considered separate (as they are in the *O. punctatus* subgroup) or a unit. If the latter, there are 14 common engagements as follows:

(a) Rasps of granules or striae under the palm and immoveable finger engaged by plectra on the four most distal joints of the walking legs, and particularly those of the first leg. These engagements have been tabulated as 1 (including *1*), 2, 4, 5, 6, 7, and 9.

(b) Suborbital and first anterolateral teeth engaged by the inner surfaces of the fingers during dorsoventral movement of the chelipeds. These engagements tabulated as 30 (including *30a*), 31 and 32, would normally be combined almost simultaneously.

(c) First to third anterolateral teeth engaged by a boss on the inner side of the palm during dorsoventral movement of the chelipeds. Engagements 48, 49, and 50 are involved; again these would be combined simultaneously.

(d) Fifth anterolateral tooth engaged by horizontal movement of the upper surface of the arm—engagement 69.

It is now postulated that the ancestral *Ovalipes* possessed the above methods of potential sound production, and that many of them were actually employed.

In the *O. punctatus* subgroup some of these ancestral methods have become augmented by special morphological developments. Thus in males engagements 1 and 9 involve both modified rasps and modified plectra, while further engagements which produce noises involve modified rasps but relatively unmodified plectra (engagements 2, 4, 5, 6, 7, 10 and 11) or, modified plectra but relatively unmodified rasps (engagements 12, 19, 20, 26, and 27). Several of the sounds which are produced when only a single modified structure is involved are apparently as loud as