meeting its opponent; and the grinding portion the molar process, on account of its chewing function. At the base of this process, where it is connected with the psalistoma, there originates a small articulated appendage, which I have designated the synaphipod, because I believe it to be formed of those joints that morphologically represent the distal continuation of the crustacean limb. This part is frequently known as the palpus of the mandible, a term that implies an unknown portion of the appendage. This term is also frequently applied to that part which I describe as the ecphysis, a branch of the basis or second joint of the crustacean leg, and it is clear that they cannot be either homotypical or homological parts, since they proceed, one from the coxa, the other from the basis of the typical leg. Furthermore, this appendage, like all true or permanent parts, is not developed in the early or immature stages; whereas the basecphyses or appendages of the second joint are always developed first, and in many families, particularly among the Trichobranchiata, they only exist as deciduous organs, being thrown off in the later moults of the mature animal.

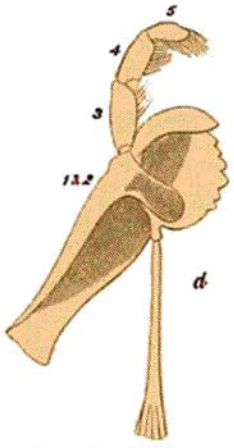

FIG. XI.—Mandible.

In some species of the higher forms of the Entomostraca, such as *Pontella*, *Notodelphys*, and *Doropyges*, the two appendages are both present in the same animal, but this may also be observed in an immature condition in some species of the higher groups. It is not developed at all until the animal approaches its adult state, and in some genera it never makes its appearance, while in others it is only in an enfeebled and rudimentary condition. When in its most characteristic form, it lies, when at rest, folded within the hollow formed by the closing of the two scissor-like blades of the mandibles, and when in action it is apparently used as a means of assisting to carry the food into its position between the molar processes, and perhaps also, particularly in those species in which they are thickly covered with hair, of being used for the purpose of keeping the parts within its reach clear, or free from undesirable material.

This part of the mandible varies in the number of its joints; there are never more than three, frequently less, and sometimes, as has been said, it is absent altogether.

Throughout the Astacidea the synaphipod is almost invariably composed of three joints, the exceptions being the genus *Arctus* and the Eryonidæ, in the former of which it has only one, and in the latter two joints.

In the Dendrobranchiata it is generally very long and well developed, but consists, I believe invariably, of two joints only; and in those species in this division in which, in this Report, the mandible is figured without a synaphipod, it is probably because the specimen is an immature animal.

In the Phyllobranchiata there is a greater degree of variation, and this appears to lie, so far as my observation goes, in the presence of a three-, two-, or one-jointed synaphipod,