recorded by Hubbs and Hubbs, refuse to conform to anything that the geneticist seems able to explain in the light of his studies with fruit-flies, birds or mammals.

For years the writer has bred tropical fish as a hobby and now has aquaria and indoor heated pools totaling 2,500 gallons capacity, with a number of sorts of hybrids under observation. Some of the facts connected therewith are worth recording.

First it should be stated that the commonest cross attempted in domestication is that of a male platy (*Platypoecilus*) of one or another of the developed color phases, with a female swordtail (*Xiphophorus helleri*). In the absence of live food, at least, the young hybrids are not produced as freely as those of pure lineage, but the former are all different from either parent, with size of mother and with color approaching or surpassing that of the father. These hybrids are known as "black helleris," "red helleris" or similarly according to color. At least when a female black helleri is mated to a pure male swordtail, approximately three quarters of the resultant young will be colorless like the father and one quarter black like the hybrid mother. The genetics of some of these various hybrids are extremely difficult to investigate, for many of them are sterile, and it is even claimed that males of some of the crosses are always so.

Hubbs and Hubbs found that when males of either *Mollienisia latipinna* or *M. sphenops* are mated with females of a hybrid between the two, which is a form currently known as *M. formosa,* all the offspring are always *formosa* in type. In other words, the hybrid characters are inherited by the young from the mother in a block, without respect to dissimilar paternity. And the offspring are invariably female. In this connection, however, the authors state that "the consistent and abundant production of purely matroclinous and constantly female offspring by this hybrid form of fish finds its most plausible explanation as parthenogenesis. It is apparently not a spontaneous parthenogenesis, since many controls, unmated, have shown no indication of becoming pregnant. We provisionally assume that we are probably dealing with a case of gynogenesis . . . a condition recorded as naturally occurring among certain invertebrates." Comment upon the above may be divided into three headings as follows:

(a) It is unwise to intrude the suggestion of parthenogenesis, even of a modified sort, into vertebrate literature. The phenomenon is so at variance with what is known and believed about vertebrate development that I am sure no vertebrate morphologist would admit for a moment that the natural development from egg to sexual maturity of an individual vertebrate without direct inclusion of the male element is within the realms of probability. Certainly extremely convincing cytological evidence would be necessary and the experiments verified several times.

(b) The fact that all the hybrids of *Mollienisia* produced were female appears to be ascribable in this instance, perhaps, to a sex-linked lethal factor acting on male eggs, or possibly to some type of nondisjunction. In this connection it may be mentioned that a yellow (mutant ?) strain of *Xiphophorus,* developed in domestication and known as the golden swordtail, consistently produces two or three times as many females as males, and the case of the *Mollienisia* may be an instance of this factor carried to an extreme.

(c) The matroclinous character of the offspring can involve no argument in favor of parthenogenesis, for I can cite reverse evidence, of a patroclinous nature, as follows: I have a strain of hybrids produced by crossing a male black platy (*Platypoecilus*) with a female of the golden swordtail strain of *Xiphophorus,* which are large, spectacular fish, mostly black but with many spots and blotches of green and orange. Apparently all individuals of this hybrid or at least a large proportion of them, are fertile, and when bred to one another they behave as a true species. In other words all the young of the second generation resemble their parents rather than either of the grandparents. So far so good, with nothing very remarkable. But when a male of this hybrid strain is mated with a female of pure strain green swordtail (*Xiphophorus helleri*), none of the young will be of dull color like the mother but all blackish like the hybrid father. This patroclinous inheritance has been tested in a number of individuals and litters. I have no doubt that it will hold throughout successive generations, but for proof or disproof of this assumption sufficient time has not yet elapsed.

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NOTE ON THE LIFE-CYCLE OF ECTOCARPUS SILICULOSUS DILLW.

THE generally accepted view that the plurilocular sporangia of *Ectocarpus siliculosus* produce gametes is based primarily on the classical work of Berthold[1] at Naples. His results have been confirmed by Oltmanns, Hartman, and, more recently, by Knight.[2] Knight demonstrated also that all the plants of this species that she found at Naples had a haploid soma.

[1] G. Berthold, "Die geschlechtliche Fortpflanzung der eigentlichen Phaeosporen," *Mitt. a. d. Zool. Stat. z. Neapel,* II. 1881.

[2] M. Knight, "Studies in the Ectocarpaceae. II. The Life-History and Cytology of Ectocarpus siliculosus, Dillw." *Trans. of the Royal Society of Edinburgh,* Vol. LVI. 1929.

Knight, on the other hand, found that all the plants of *E. siliculosus* studied by her at the Port Erin Biological Station have a diploid soma and bear both plurilocular and unilocular sporangia on the same plant. The plurilocular sporangia in this locality produce diploid zoospores. In the unilocular sporangium, however, the first nuclear division is a reduction division, and the haploid zoids from this structure are gametes which fuse in pairs. At Port Erin, she states, no alternation of generations occurs, and the diploid phase is the only one in the life-cycle.

The fact that zoids from plurilocular sporangia may at times act like zoospores has long been known; and the work of Knight suggests that in such cases they came from diploid plants. The zoids from unilocular sporangia have always been regarded as zoospores; and Knight is the only author who has found them sometimes behaving like gametes.

From aquarium cultures made at Naples, Berthold obtained plantlets that bore both plurilocular and unilocular sporangia on the same plant. The precise origin of the young plants in question was not determined. Berthold suggested that they may have come from zygotes. Since, however, unfertilized gametes, which he had already found to be capable of parthenogenetic development, were present in these aquaria we must keep in mind also the possibility that these in reality may have given rise to the small plants. Berthold also did not learn the function of the zoids from these cultured plants. Although he raised plants with unilocular sporangia in culture, he makes no mention in the text of finding these in the sea at Naples. (The plant shown in his Fig. 8 is referred to as having been found in the open). Knight states positively that she was unable to find unilocular sporangia there after careful search. The part that is played by unilocular sporangia in the normal life-history of this species at Naples therefore remained quite problematical.

It was apparent that further research on Ectocarpus was very essential. The facts that were known suggested the occurrence of an alternation of generations in this plant, but the evidence was far from adequate to substantiate this. It was also important to know whether the plants whose unilocular sporangia produce zoospores were diploid or whether unilocular sporangia may sometimes arise on haploid plants and give rise to zoospores which serve to multiply this generation.

This paper is a preliminary report of the results of an attempt to determine the course of the life-cycle of *Ectocarpus siliculosus* on the Atlantic coast of North America. The aim was to learn whether both haploid and diploid plants occur here and, if so, the rôle played by each in the life-cycle.

The material for this study was collected about Woods Hole, Massachusetts, during the summers of 1931 and 1932. All plants at Woods Hole itself were like those studied by Knight at Port Erin, since they were diploid and bore both kinds of sporangia. It was found, however, that the presumably haploid zoids of the unilocular sporangia as well as the diploid zoids of the plurilocular sporangia invariably germinate directly. That is, the zoids of the unilocular sporangia of these plants do not act like gametes, as Knight reported for the plants at Port Erin. Sexual plants as well as the asexual ones were found at Penikese, an island twenty miles from Woods Hole. The sexual plants are haploid and bear only plurilocular sporangia; their zoids serve as gametes, and they are distinctly dioecious. These sexual plants are therefore like those found at Naples. Parthenogenetic development of both male and female gametes occurs.

The cytological studies thus far made indicate that the number of chromosomes in asexual plants, with both kinds of sporangia, is twice as large as that found in the sexual plants, which bear plurilocular sporangia only.

The life-cycle of *E. siliculosus* near Woods Hole therefore exhibits a definite alternation of generations. Diploid asexual plants with both unilocular and plurilocular sporangia produce, in the plurilocular sporangia, diploid zoids which develop directly into other diploid plants. The first division of the nucleus in the unilocular sporangium is presumably a reduction division such as Knight found. The haploid zoids produced in this structure germinate to form haploid sexual plants. The haploid sexual plants are dioecious and produce gametes in plurilocular sporangia. After the fusion of these gametes in pairs the zygotes develop into diploid asexual plants and thus complete the cycle. The haploid sexual generation propagates itself by the parthenogenetic development of unfertilized gametes.

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ON THE SCIENTIFIC NAME OF THE WEBBING CLOTHES MOTH

THE webbing or common clothes moth, *Tineola bisselliella,* was first described by Hummel in 1823 (Essais Entomologiques 3: 13). In spite of the fact that the specific name was spelled with two s's in the original description, only one s is used by most writers at the present time. This is true of authors in Europe as well as of those in this country. Dyar[1] and Walsingham,[2] however, both spell the name with two s's.

The mistake in spelling is probably due to the fact that few writers have had an opportunity to see Hum-

[1] *U. S. Nat. Mus. Bul.,* 52: 570, 1902.
[2] *Zool. Soc. London, Proc.,* 1907, p. 1026, 1908.