turity occurs in nature only in April, May and very early June.

In a further study,[7] it was found that the degree of effectiveness of the light and the character of its effect depend on the wave-length of the light used, when the luminous intensity is the same in artificial additions to daily sunlight period inside a room behind window glass. Red light, at relatively low intensity of illumination, induces sexual maturity in as short time as 23 days in midwinter, while green at the same intensity does not induce it at all, but inhibits it, in males at least. This occurs in juvenile birds of the previous summer's broods as well as in older birds.

It is known that spring sunshine is relatively rich in long red wave-lengths and poorer in the shorter wave-lengths of light, while summer and autumn sunlight is richer in shorter wave-lengths in comparison. So the same intensity of sunlight in spring is more stimulating to sexual maturity than in autumn or summer, for it contains relatively more of the stimulating red rays.

In view of all the above findings, it is suggested that Riddle's results point to a conditioning of the age at first sexual maturity in doves and pigeons, which have polyoestrous cycles, as well as in juncos, crows and starlings, with single yearly sexual activity, by the action of increasing or decreasing effectiveness of daily light periods. This effectiveness depends on length of period, intensity and wave-length of illumination per day. This may be affected by the above mentioned changes of the relative amounts of longer, stimulating rays and shorter, inhibitory wave-lengths of light incident to the season and height of the sun above the southern horizon. This is probably correlated with the endocrine functions of the thyroid and anterior pituitary glands as Riddle suggests.

The following scheme is suggested to describe the relation of age at first sexual maturity to the endocrine function and to the acceleration or delay of sexual development in birds on the basis of Riddle's, Rowan's and Bissonnette's experiments:

E = basal endocrine stimulus to sexual development of each race, or bird.
$-L$ = action of shortening days with decreasing intensity and less long-wave light.
$+L$ = action of lengthening days with increasing intensity and relatively more long-wave light.
R = Rate of development to sexual maturity in birds nearing the 4–5 month age at any time.
A = Age at first sexual maturity.
For July to January, $R = E - L$.
For February to June, $R = E + L$.

$$A = \frac{K}{R} = \frac{K}{E \pm L}$$

where K is a constant for the breed of bird. Birds mature early if they reach 4 to 5 months of age when $+L$ is effective, in February to June, and late if $-L$ is effective, in July to January.

It would be interesting to test the correctness of this suggestion by treating young doves or pigeons, of known breeding behavior, with various types of daily light period as has been done with the starlings. If it is valid, the age at maturity in these birds can be modified at will, irrespective of season.

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[7] T. H. Bissonnette, "Studies on the Sexual Cycle in Birds. VI. Effects of White, Green and Red Lights of Equal Luminous Intensity on the Testis Activity of the European Starling (*Sturnus vulgaris*)," *Physiol. Zool.*, in press, 1932.

"ENTAMOEBA" PHALLUSIAE

MACKINNON and Rae describe *"Entamoeba" phallusiae* in the June number of the *Journal of the Marine Biological Association* of the United Kingdom. This note is written merely to call attention to the slight doubt whether the form described is an *Entamoeba*. *Entamoeba* has a centronucleus (Boveri's very convenient term) containing a centrosome with a centriole, as have also many small amoebae, *e. g.*, most soil amoebae. From the figures and description of *"Entamoeba" phallusiae* one is in doubt as to the presence of an intranuclear centrosome, Fig. 3, A, B, and C suggesting, but not showing it.

The parasitic habit is not enough to determine that a species is an *Entamoeba* rather than an *Amoeba*, though it makes it probable that it is so. The chief distinction between the two genera is in the presence or absence of a centronucleus. Species of the true genus *Amoeba* have not been found to contain a centrosome, with centriole, in the nucleus. Many minute soil amoebae are morphologically *Entamoebae* and should be so recognized in spite of the absence of the parasitic habit. Habitat is hardly a proper determinative feature for generic diagnosis.

Amoeba, of course, is clearly a valid genus (See Mast and Johnson, Archiv f. Protistenkunde, 75, 1, 1931). Many so-called genera both of *Amoebae* and of forms with centronuclei when treated as subgenera give as good or a better idea of probable relationship.

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NATURALLY DEPOSITED EGGS OF THE MYXINOIDEA (HYPEROTRETIA)

EVER since J. Müller (1843) described the genital system of the myxinoids, many interested zoologists in Europe and America have attempted in vain to find the naturally deposited eggs of these eels. In