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more than yellow females. According to our assumption this should be the case, since yellow males transmit yellow to all offspring, while yellow females transmit yellow only to their male offspring.

That one factor of the eye color in canaries is allelomorphic to the female sex element is also clearly indicated by Noorduijn's results. He gives only a meager portion of his experimental results on this point, so that the phenomena can not be explained here. There is enough to indicate that the case involves at least three independent Mendelian factors, one of which is correlated with yellow coat color, and hence allelomorphic to the sex element.

W. J. SPILLMAN.

HUMAN ANATOMY

Sexual and Family Variation in Centers of Ossification.—Dr. J. W. Pryor, professor of anatomy and physiology at the State University, Lexington, Kentucky, for several years has been carrying on an investigation of the ossification of the bones of the human carpus, by means of X-ray photographs. He has made a study of over 550 hands, of which 266 were those of girls and 288 those of boys. In numerous instances he has examined the hands of the same individual at different periods, and has also made a study of the ossification of the bones in children of one family compared with those of other families. In a recent article in the *Bulletin of the State University*, Lexington, Kentucky, April, 1908, he has summed up some of the conclusions arrived at in previous publications, and has brought forth new material in confirmation of his more important generalizations. He finds centers of ossification appear earlier and develop faster in the bones of the female than in those of the male, and that this difference is measurable in infancy by days, in early childhood by months, and later by years. The bones of the first child will, as a rule, ossify sooner than those of subsequent children of the same parents. There is considerable difference in the children of different families in the period when centers of ossification appear, but within a given family there is, as a rule, considerable similarity. Variation in the ossification of bones is an heritable trait. The studies of Professor Pryor enable him to give a more accurate table than has hitherto existed of the period when the centers of ossification appear in the carpal bones. The

following table is copied from his last paper (*Bulletin of the State University*, Lexington, Kentucky, April, 1908) to illustrate the rather remarkable difference in the time of the appearance of the centers of ossification in the male and female hand:

TIME OF APPEARANCE OF CENTERS OF OSSIFICATION IN THE BONES
OF THE CARPUS

1. Os Magnum (capitatum)	{	<i>Female</i> : between the third and sixth month. <i>Male</i> : between the fourth and tenth month.
2. Unciform (hamatum)	{	<i>Female</i> : between the fifth and tenth month. <i>Male</i> : between the sixth and twelfth month.
3. Cuneiform (triquetrum)	{	<i>Female</i> : between the second and third year. <i>Male</i> : when about three years of age.
4. Semilunar (lunatum)	{	<i>Female</i> : between the third and fourth year. <i>Male</i> : when about four years of age.
5. Scaphoid (navicular)	{	<i>Female</i> : at four years of age, or early in fifth year. <i>Male</i> : when about five years of age.
6. Trapezoid (multangulum majus)	{	<i>Female</i> : between the fourth and fifth year (preceding trapezium). <i>Male</i> : between fifth and sixth year (preceding trapezium).
7. Trapezium (multangulum minus)	{	<i>Female</i> : between fourth and fifth year (preceded by trapezoid). <i>Male</i> : between fifth and sixth year (preceded by trapezoid).
8. Pisiform	{	<i>Female</i> : between the ninth and tenth year. <i>Male</i> : between the twelfth and thirteenth year.

C. R. B.

PLANT CYTOLOGY

Cytological Studies on Saprolegnia and Vaucheria.—These interesting and important types have been the subject of several investigations dealing with the processes of oogenesis, fertilization, etc., with conclusions at variance in a number of fundamental points. Two papers have recently appeared which should receive careful attention.

Claussen¹ reports upon oogenesis and fertilization of *Saprolegnia monoica*, contributing important evidence on points under dispute through the investigations of Trow and Davis, and pre-

¹ Claussen, P. Ueber Eientwicklung und Befruchtung bei *Saprolegnia monoica*. *Ber. d. Deut. Bot. Gesell.*, XXVI, p. 144, 1908.