

DECEMBER-HATCHED PHEASANTS LAY IN JULY ON NORMAL DAYLIGHT

RECENTLY we² reported the hatching of three ring-necked pheasant chicks (*Phasianus colchicus torquatus*) on Christmas day. They were from eggs laid, beginning on November 8, by a pair of pheasants hatched on the preceding May 7. The two females that survived grew well in an improvised brooder.

Early in June they were placed with a yearling male in the hope that they might begin to lay some time during the summer. They were not experimentally lighted and their food was similar to that of the other pheasants at the sanctuary.

Two eggs only were laid on July 25 and 27. They were judged to be from the same hen because they were almost identical in size, color and shape. They were infertile; probably because the cock had passed his period of sexual activity and was consequently unable to ejaculate sperm. The first was laid when the hens were 212 days of age. Days had been increasing normally in length and luminous intensity for 178 days to June 21 and decreasing in length, but probably not in luminous intensity, for 34 days thereafter.

The parent of these birds was induced to lay at 185 days of age by an increase of light per day commencing 151 days after hatching and more rapid than the natural spring increase operating in this case. She was not subject to a final period of decreasing days. If these two birds had begun to lay at the same age as she did, the first egg would have been laid on June 28, or seven days after daylength began to recede.

The results of this experiment and the preceding one indicate that chicks of this species would lay several eggs beginning about six and a half months after hatching, but for the decreasing daylength in summer and autumn or but for the lack of increasing daylength to stimulate the hypophysis to induce sexual activity.

It has been shown³ that reduction of daylength in spring retards or inhibits laying in pheasants. So the almost immediate cessation of laying was probably due to the 34 days of falling daylength. We found that a six-hour reduction of daylength, to normal on April 1, resulted in periods of cessation followed by resumption of laying at a slower rate, with birds experimentally brought into early laying in January and February (data to be published elsewhere).

If these two birds had been hatched in November, they would not have come under the influence of the 34 days of diminishing length. They would probably have been well started into laying before becoming

affected by the decreasing light. It becomes evident that artificial lighting is not necessary to induce pheasants hatched at the right time of year to lay within seven months of that time.

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A NEW COLOR REACTION OF VITAMIN B₁ (THIAMIN)

THE reported identifying reactions of Vitamin B₁ (thiamin) are few, consisting of several modifications of diazo reactions,¹ the reaction with p-dimethyl-amino-benzaldehyde,² the reaction with potassium bismuth iodide³ and the thiochrome reaction.⁴

It has now been found that Vitamin B₁ (crystalline synthetic Merck) reacts with 2-6 dibromoquinone-chloro-imide (other chloro-imides should react also) to give orange solutions, color extractable by immiscible solvents (chloroform, *e. g.*).

About one mg of thiamin is dissolved in a few cc of borax of pH approx. 9.6⁵ (saturated borax solution will do for demonstration) and to it is added a drop of alcoholic 2-6 dibromo-quinone-chloro-imide (Eastman). The color develops at once, gradually increasing in intensity.

From tests on *technical* 2-methyl-4-amino-5-ethoxymethyl pyrimidine and 4-methyl-5 (β hydroxy) ethyl thiazole (kindly furnished by Dr. R. T. Major, director of research of Merck and Co.) it appears that only the thiazole portion gives a color (yellow) with the reagent.

Many amines, phenols and derivatives interfere, which will be reported elsewhere in a study of the color reactions of 2-6 dibromo-quinone-chloro-imide.

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A NEW DIETARY WATER SOLUBLE FACTOR REQUIRED BY CHICKS

It has been found that a diet containing 59.5 per cent. polished rice, 24 per cent. water washed fish meal, 5 per cent. rice bran filtrate,¹ 5 per cent. whey adsorbate, 200 micrograms thiamin per 100 grams of diet, 3 per cent. salt mixture, 3 per cent. soybean oil and 0.5 per cent. high potency sardine oil did not support

¹ H. W. Kennerley and R. A. Peters, *Bio. Journ.*, 28: 667-70, 1934; H. J. Prebluda and E. V. MacCollum, *SCIENCE*, 84: 488, 1936; H. A. Willstaedt, *Naturwissenschaften*, 25: 682, 1937.

² H. Tauber, *SCIENCE*, 86: 594, 1937.

³ B. Naiman, *SCIENCE*, 85: 290, 1937.

⁴ "Ergebnisse der Vitamin und Hormonforschung," Ruzicka, Leipzig, 1938.

⁵ "Standard Methods of Water and Sewage Analysis," Am. Pub. Health Assn., 1936.

¹ Supplied by Vitab Products Inc., Emeryville, Calif.

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² T. H. Bissonnette and A. G. Csech, *Am. Nat.*, 71 (5): 525-8, 1937.

³ L. B. Clark, S. L. Leonard and G. Bump, *SCIENCE*, 85: 2205, 339-340, 1937.