## Function of Egg White in Embryonic Development. (17474)

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In an attempt to decide whether or not the yolk or the egg white is the carrier of a growth factor transmitted through the egg from the hen's feed to the chick, the experimental technic described here was devised. In the past it has been assumed that egg white has a purely nutritional function in the growth and development of the chick embryo, but no experimental evidence exists to support this supposition.

The yolk also furnishes food, but in addition the yolk-sac serves as an organ for the digestion and assimilation of food by the chick embryo. This function of the yolk-sac indicates a structural relationship between the embryo and the yolk.

In this experiment fertile hen's eggs from crosses of Rhode Island Reds and White Leghorns were used. A circular window approximately ¼ inch in diameter was bored in the small end of each egg and the egg-white was removed into a glass ground-joint wash bottle by suction. To combat bacterial infection 0.1 cc of an aqueous solution containing 3000 I.U. of penicillin and 3.3 mg of streptomycin was injected into each of the eggs so treated. The egg white from another fertile egg was then transferred by air pressure from the wash bottle into the egg from which the egg white had previously been removed. When one egg white was not sufficient to completely refill the shell, that from another fertile egg was added. Thus, at times egg white from more than 1 egg was used for replacement in a single egg.

After the egg was completely filled with egg white, the window in the shell was closed with a strip of scotch tape and the egg placed into an incubator for 3 weeks. At intervals of 7 days, the condition and development of the chick embryo was observed by candling the eggs.

In the first successful series, 12 such eggs were prepared; of these 3 chicks hatched which were normal in every respect. Of the rest of the embryos, two lived 2 days, one 4, two 6, one 7, one 13, one 15 and one 21 days.

These are probably the first live chicks produced after such drastic treatment. This experiment demonstrates that the chief function of the white of the hen egg is mainly to furnish food for the developing embryo.

It has been previously held that the two chalazae serve to orient the embryo in a proper position for hatching by keeping the yolk more or less fixed. In these experiments, however, the two chalazae were removed with the egg white and thus the position of the developing embryo depended upon gravity. Further work is in progress on the nutrition of the chick embryo employing this technic.

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## Distribution of Vitamin $B_{12}$ in Natural Materials.* (17475)

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The increasing use of vitamin $B_{12}$ in the treatment of human macrocytic anemias and in certain natural rations for farm animals makes the knowledge of the distribution of this vitamin in biological materials of real importance. A rat assay for vitamin $B_{12}$, based on the fact that thyroid active materials increase the requirements for this factor, has been used with considerable success in our laboratory.[1,2] With the availability of pure vita-