

PHYSIOLOGY

# Vitamin A Found to Aid in Formation of Visual Purple

## Linking of Vision With Fat-Soluble Vitamin Found in Milk Is First Evidence of Such Direct Action

**F**IRST definite evidence of a vitamin participating directly in a physiological process has been found by Dr. George Wald, of the Harvard University Biological Laboratories, who has conclusively proved that the fat-soluble vitamin A found in milk and fish liver oils is present in the retina of the eye and is active in vision.

In the course of this research Dr. Wald also discovered a heretofore unknown yellow pigment which he has named retinene. Like vitamin A, this substance is related to the carotenoids, the coloring matters of many plant and animal tissues. Retinene, he found, is liberated by the action of light on the eye.

For some time science has known that insufficient vitamin A in the diet results in so-called "night blindness," a lowered ability to see in dim light. Since the retinal rods are used principally in dim vision, it has been believed that the vitamin must be associated in some way with these organs.

The discovery of free vitamin A in the retina tended to substantiate this theory. Dr. Wald has now found that the vitamin participates directly in the formation of visual purple, a pigment contained in the retinal rods. The bleaching of this pigment by light is the initial step in the visual process.

When the visual purple is thus bleached an orange material called visual yellow is formed. This process is accompanied by the liberation of a large amount of retinene, to which the color of visual yellow is due. Following bleaching, the orange color slowly fades, the retina finally becoming colorless. At this point it is found that the retinene has disappeared, having been transformed entirely into vitamin A.

In the living animal the vitamin is re-synthesized to visual purple, completing the cycle. This cycle is not a perfect one, however, since some vitamin A is apparently lost in the process. This appears to be one reason why it is necessary to provide the animal with a continuous supply of new vitamin.

In the original experiments with frogs,

Dr. Wald reported observations made principally with a pocket spectroscope. Recently he has been able to obtain objective records of each detail of these results by the use of a recording spectrophotometer, designed by Prof. Arthur C. Hardy of the Massachusetts Institute of Technology.

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## Feeble-Minded Girl Paints "Stone Age Art"

**A** FEEBLE-minded girl, who paints pictures like the famous cave man's art, has attracted interest of German archaeologists.

It is believed that this girl with ill-developed brain offers an unusual glimpse into the lost world of the Old Stone Age 25,000 years ago, when cave men adorned walls of European caverns with scenes of hunting and magic rites.

The feeble-minded girl, like the cave artists, displays no interest in structure or composition, and is inventive only in use of color. This is the verdict of G. A. S. Snijder, who has studied the pictures. The girl is also what psychologists call "eidetic," meaning that she retains in her mind so vivid a picture of what she sees that she can paint it weeks later as if it stood before her. This

may have been one of the Stone Age artists' traits, and would partly account for their lively and accurate paintings of bison, wild horses, and other animals of the chase. Mentality of the cave dwellers, it is pointed out, was not high, judging by their skulls.

The girl's paintings also show resemblances to the painting style of the civilization of ancient Crete, it is maintained.

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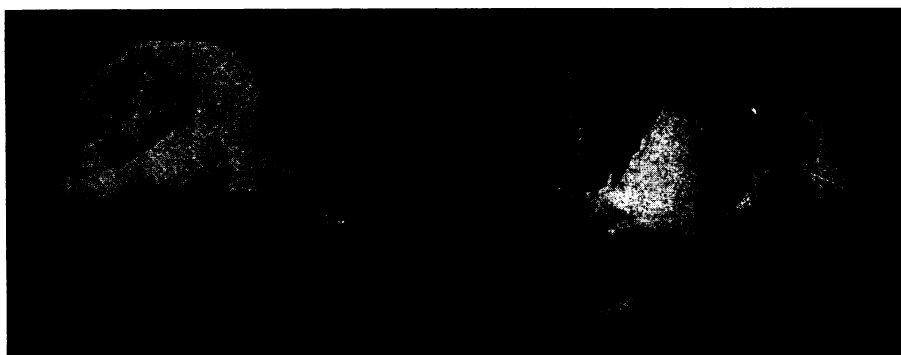
## Pituitary Gland Makes Skin Grow to Fit Body

**T**HE PITUITARY, tiny and powerful gland in the head, not only makes the body grow but makes all the parts of the body grow the right size in relation to each other, Dr. C. R. Stockard of Cornell University Medical College told members of the National Academy of Sciences.

Dogs with skin so much too big for their bodies that it fell into loose, flabby wrinkles were described by Dr. Stockard. These dogs had other symptoms that showed the pituitary was not functioning properly, although the gland was not causing over-growth of the bones or gigantism.

Examination of the pituitary gland in these dogs showed very abnormal arrangements and proportions of the cells within the gland. The condition was not one of overactivity of the gland, Dr. Stockard pointed out, but of another kind of abnormal activity.

From his own observations and those of other investigators, Dr. Stockard has concluded that the growth-controlling hormone made by the pituitary not only stimulates growth but also controls growth by a checking process. It is this



### HIS SKIN DOESN'T FIT

Ever notice how "loose-skinned" a bulldog is? These two museum specimens demonstrate it most vividly. The skins were from dogs of the same litter, bred by Dr. C. R. Stockard of Cornell University. One was filled up until all folds and wrinkles were stretched out; the other mounted in normal condition.