vesicles. The optic stalks, however, and later the optic nerves following the stalks as paths always lead back to the point of their median origin and the optic cross or chiasma is in the median plane, below and outside the brain tissue. The attainment of this position of the optic cross would seem mechanically impossible if the eyes arose from lateral medullary tissues since the optic fibers following the stalks would enter the brain laterally and would necessarily cross within the brain tissue, not below and outside as the nerves actually do.

There is no medullary tissue other than future eye tissue between the eye anlagen, therefore, Spemann and others are incorrect in assuming that cyclopia is due to a failure to develop of tissues between the eyes thus permitting the eye anlagen to slump towards the median plane and fuse. The defect is due to a failure or arrest in development of the eye material itself.

102 (798)

The occurrence of betaine in the muscles of invertebrates.

By D. WRIGHT WILSON.

[*From the Sheffield Laboratory of Physiological Chemistry, Yale University.*]

Betaine, or trimethylglycocoll, was isolated from the muscle tissue of two varieties of mollusc, *Pecten irradians*, the common scallop, and *Sycotypus canaliculatus*, the periwinkle.

The tissues used were the adductor muscle of the *Pecten* and the large pedal muscle of the *Sycotypus*. The manner of treatment was the same in both cases. The muscles were finely ground, extracted with several changes of water and the concentrated extract freed of colloidal material by precipitation with alcohol and by the regular Kutscher manipulation with tannin. The portion precipitated by phosphotungstic acid was fractioned by precipitation with silver nitrate and barium hydroxide and from the resulting filtrate, betaine was crystallized as the free base and hydrochloride. In both cases, the compound was identified by the melting points of the hydrochloride, picrate and chloroplatinate and by the analyses of the hydrochloride and chloroplatinate.