vous system is responsible for the delaminations occurring in the meninges. We may accept that as an established fact. But that fact does not preclude the possibility that the material which delaminates as a result of the activities of the cerebrospinal fluid is derived from other sources than mesenchyme. On the contrary, the experiments we have presented indicate that the neural crest and the mesenchyme aided by the presence of the cerebrospinal fluid form the investing membranes of the central nervous system.

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Action of Ilex Opaca on the Heart.

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Ilex opaca or American holly is an evergreen tree growing throughout the Atlantic section of the United States. The leaves and fruit are the parts of the plant that have been used in medicine; in domestic practice alterative properties have been assigned to it and by eclectic practitioners it has been used as an anti-intermittent, febrifuge, tonic and diaphoretic. The "Black Drink" by which the Indians "cleansed" themselves by drinking sufficient to cause vomiting was an aqueous extract prepared from the leaves of the holly. The dried leaves of certain species of ilex are used by the inhabitants of Paraguay to prepare a stimulating beverage.

The present experiments were undertaken to determine the effects of extracts of the above fruit on the amphibian heart. Male frogs *(Rana pipiens)* were used. A cannula was tied in the inferior vena cava and the heart arranged for perfusion by the Symes' method, with Ringer's solution in one bottle and Ringer's solution plus the drug in the other. The movements of the lever were recorded on a smoked drum. The extract was prepared by macerating the dried fruit in number 20 powder with 70% alcohol for 4 days and filtering. When required for use the alcohol was evaporated off and the thick syrupy remains added to frog Ringer's solution.

Perfusion in a proportion of one part of the crude drug in 750 parts of Ringer's solution resulted in an increase in the amplitude of the beat. Although the diastole of the heart was increased to some extent the main effect was a more complete shortening of the

muscle. After allowing the heart to return to normal by perfusing with Ringer's solution only, the above effects of the drug could be demonstrated as often as desired. This increase in amplitude was accompanied by either a slight decrease or no change in the rate. When the concentration of the drug was increased to one in 300 there was a marked decrease in the relaxation of the ventricle and in a short time the heart was arrested in systole; there was also a decrease in the number of impulses sent out by the sinus so that the heart was slowed.

Pancoast[1] found the fruit of *Ilex opaca* to contain tannin, pectin, albumin and 2 crystalline principles and organic salts of potassium calcium and magnesium. Venable[2] extracted from the leaves of the Yopon *(Ilex cassene,* Linn.) a white crystalline substance which he believed to be caffeine. In some respects the tracings made in this work resemble those obtained by Heathcote[3] and by Roth[4] on perfusion of the frog's heart with the zanthine compounds. However, on close examination there are certain features such as the systolic standstill which suggest a digitalis-like action.

An attempt to isolate the principle responsible for the characteristic effects and a more extensive investigation of the pharmacological action of the drug is now being carried out.

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Effect of Corpus Luteum Extracts in Suppressing Ovarian Activity in the Rat.

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(Introduced by H. B. Lewis.)

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Recent studies in this laboratory have confirmed the results of Payne, Peenan and Cortland,[1] Haterius and Pfiffner,[2] and Macht, Stickels and co-workers[3] on the inhibition of normal ovarian activity by preparations of the corpus luteum.

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