The above facts reveal a striking difference between the oestrus and corpus luteum hormones. It may be explained in 2 ways. Either the corpus luteum hormone is secreted in a greater surplus than oestrin, or it may be absorbed more slowly, which would allow for a more nearly even distribution between both members of a pair.

Furthermore, the hormones transferred during pregnancy from the pregnant member stimulate partial hypertrophy of the mammary glands of the non-pregnant co-twin.

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Soil Aeration as a Factor in Growth and Root Development of Plants.

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The soil in which certain aquatic and terrestial angiosperms were growing was slowly aerated daily for a period of one-half to 5 hours by means of compressed air supplied through perforated coils imbedded 8 inches below the surface. *Helianthus annuus, Triticum vulgare, Glycine soja, Linum usitatissimum* and cuttings of *Vitis vulpina* were grown in sand and in loam. At the age of 2 months conspicuous differences were apparent in aerated and unaerated plants on the same soil as well as between plants similarly treated but in different soils. As might be anticipated aeration did not produce the same effects in plants grown in loam and in sandy soil. Structural differences occurred in both tops and root systems, but especially the latter.

In general, roots in the aerated soils were distinctly fibrous in character, more numerous and longer, forming branches of secondary and tertiary rank. Total surface in aerated roots was twice or more that of control roots, but the root hair zone was smaller. Fewer hairs developed and these in turn were not as long-lived in aerated plants as in the controls due to the more rapid elongation of the aerated roots. Vascular elements a few inches above the root hair zone were less developed in aerated roots.

The striking effect of aeration on tops was acceleration of growth in early stages, attributable to increased length of basal internodes rather than to an increase in the number. Contrast in internodal distance diminished noticeably, however, above the median nodes

and there was little or no difference in size of internodes near the tips. Elongation continued in controls after aerated plants had started to flower. This response tended to reduce size differences when mature plants of both groups were compared. The physiological effect of aeration on tops appeared to be acceleration in development with earlier maturation rather than prolonged development and increase in bulk. Percentage dry weight of top was the same in tops of aerated and unaerated plants.

B. E. Dean, working in this laboratory under the author's direction, has found that root systems of submerged aquatics, such as Typha, Sagittaria, and Hibiscus increase greatly in size in aerated sand, clay and muck. Roots in aerated soils were longer, more highly differentiated as shown by marked lignification of the new primary roots in many cases. In the main, unaerated roots were fibrous but less numerous than the corresponding fibrous elements of aerated root systems. Submerged (but not subterranean) water roots in Typha and Sagittaria were more numerous and profusely branched in unaerated soils. In every case larger tops were associated with more extensive root systems.

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Exchange of Hypophysis Hormones in Parabiotic Amphibians.*

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Experiments of Burns[1] and the author[2] on gonad development in parabiotic amphibians gave evidence of interesting variations in the mode of hormonic response in heterosexual combinations, which partly, are due to different hormone concentrations. Unfortunately the development of these reactions can not be followed satisfactorily in live pairs. In this respect conditions are much more favorable in the study of the exchange of hormones of the hypophysis, because of the marked external effects which they produce as controllers of metamorphosis and chromatophore reaction.

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[1] Burns, R. K., *J. Exp. Zool.*, 1930, **55**, 123.

[2] Witschi, E., PROC. SOC. EXP. BIOL. AND MED., 1930, **27**, 763; *J. Exp. Zool.*, 1931, **58**, 113; Witschi and McCurdy, PROC. SOC. EXP. BIOL. AND MED., 1929, **26**, 655.