fied as suggested by Evans[2] was used in the determination of glycogen. The Friedeman, Cotonio, and Shaffer[3] method was used in the determination of lactic acid.

We have not been able to duplicate the findings of Olmsted and Coulthard. The area of the fatigue curve, at constant kymograph speed, seems to bear a direct relationship to the lactic acid produced regardless of the influence of insulin (see Fig. 1). Also, the disappearance of glycogen is closely balanced by the increase in lactic acid. In a number of cases no glycogen could be detected in the resting muscle.

In each of these cases the increase in lactic acid was sufficiently slight to have come from a resting level of glycogen below the threshold of the method used in its determination.

4824

Source of the Pigmentary Hormone of Amphibian Hypophysis.

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There has been some confusion as to the rôle of the different lobes of the hypophysis in the secretion of the hormone that causes the well known pigmentary effects in tadpoles consisting of a darkening in the presence of an excess of the hormone and the assumption of a very pale color in its absence. The various methods of experimentation have been largely responsible for this diversity of view. P. E. and I. B. Smith[1] caused these pigment changes by making repeated intraperitoneal injections of saline extracts of crushed beef glands, securing positive results with *pars anterior, pars nervosa* and *pars intermedia,* the last named being the most pronounced. This method would not preclude the possibility of the fainter color changes caused by *pars anterior* and *pars nervosa* material being due to the presence of secretion diffused from the *pars intermedia.*

In the work of the writer[2] for several years the method of transplantation has been used. Care is taken to use only unmixed material

[2] Evans, J. L., *Physiol. Rev.*, 1926, vi, 367.

[3] Friedeman, T. E., Cotonio, M., and Shaffer, P. A., *J. Biol. Chem.*, 1927, lxxiii, 335.

[1] Smith, P. E. and I. B., *Endocrinol.*, 1923, vii, 579.

[2] Allen, B. M., *Science*, N. S., 1920, lii, 274-276.

of the *pars intermedia* sliced off at some distance from its surface of intimate union with the *pars nervosa.* Transplants of the latter never cause pigmentary effects when taken with similar precautions against contamination with *pars intermedia* substance. In all cases the region of junction between these two portions is discarded. While there is a slight transitory pigmentary effect produced by *pars anterior* or *pars nervosa* transplantation, they do not persist, while on the other hand *pars intermedia* of an adult frog transplanted into normal or hypophysectomized tadpoles becomes functional and causes most intense expansion of the superficial melanophores with deposition of pigment granules in the epidermal cells. This forms a dense mass closely applied to the side of the nucleus directed toward the surface of the body. These changes were followed in a series of photographs of a selected group of cells in the tail of a living tadpole into which a transplant had been made. These cells followed through the course of 10 days showed a very great increase in the number and degree of expansion of the superficial melanophores while the deeper xantho-leucophores had become contracted to points and had not increased in number.

The conclusion from work of this kind repeated through several years is that the pigmentary hormone is produced only by the *pars intermedia.*

4825

Molecular Structure of Valonia Cellulose Membrane.

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The arrangement of β d-glucose anhydrous residues in the cellulose framework of the cell-wall membrane of *Valonia* was determined by x-ray crystal structure methods. The chain molecule with the residues as units of structure is the same as that in plant fibers.[1] In the latter, the arrangement of molecules laterally with reference to the surface of the fiber is not experimentally demonstrable. In *Valonia,* however, it was readily demonstrated that the 6.10 A. u. planes of the lattice[2] are parallel to the surface of the spherical wall

[1] Sponsler and Dore, *Colloid Symposium Monograph IV,* 1926, 174-202; Mark and Meyer, *Ber. d. d. Chem. Gesells,* 1928, lxi, 593, and *Z. f. physikalische Chem.,* 1929, ii, 115.

[2] Sponsler, O. L., *J. Gen. Physiol.,* 1925, ix, 221, and 1926, 677-695.