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.

covering of the plant; and that the 5.33 A. u. planes are radial to the sphere, that is, at right angles to the 6.10 planes. It was also readily demonstrated that the 3.93 A. u. planes are diagonals to the two just mentioned. The cellulose framework of the membrane, then, when viewed along a normal to the surface would appear as a lattice, the surface layer of which has its glucose units spaced regularly 5.33 x 5.15 A. u. and the layers parallel to the surface layer spaced 6.10 A. u.; the included angles are within 2° or 3° of right angles.

4826

Inhibition of Water Diuresis by Amytal.

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Recently Fee[1] has shown that the water diuresis, established in decerebrate dogs by administration of water through the stomach tube, is checked by the administration of chloroform, ether, chloralose, or morphine in the doses commonly employed to produce anesthesia or analgesia. The inhibition lasts, roughly speaking, for the same length of time as the narcotic effect.

The technique given in the paper referred to, has been followed exactly in the 6 experiments reported here with the exception that intraperitoneal amytal was used instead of the drugs previously employed.

In all cases the full dose (0.05 gm. per kilo) produced an immediate and lasting inhibition, complete as regards the excess water elimination. In the only two cases where measurements were made at minute intervals, the diminution in urine flow began during the second and third minutes respectively, following the injection of amytal. In one experiment the excretion was followed for over 10 hours and no recovery was observed.

The following are the records of 2 typical experiments, the measurements being expressed graphically:

I. Dog, male, 7.0 kilos. Anesthetized with chloroform and ether 50/50.
9:40 a. m. Decerebration complete.
10:15 " Cannulation complete.

[1] Fee, *J. Physiol.*, 1929, lxviii, 39.