

TABLE I.

	Osmotic Pressure in Mm. Hg.		
	12 to 49	53 to 151	666 to 915
Total No. of Media .....	18	12	16
No. showing growth .....	16	6	7
Per cent showing growth .....	89	50	48

TABLE II.

	Osmotic Pressure in Mm. Hg.				
	12-40	40-49	53-151	666-813	817-915
Total No. of Media .....	10	8	12	8	8
No. showing growth .....	9	7	6	4	3
Per cent showing growth .....	90	87.5	50	50	37.5

In all, 46 media were used in this study. When they are divided arbitrarily into three groups on the basis of osmotic pressure, 89% of those with osmotic pressure below 50 mm. Hg. permit viability for shorter or longer periods. Fifty per cent permit viability when pressures are below 151 and above 53 mm. Hg., and 44% of those having osmotic pressures between 666 and 915 mm. Hg. permit viability. (Table I.) Similar gradations appear again when the media are divided into 5 groups. Ninety per cent of the media with pressures below 40 mm. Hg. showed growth, 88% of those having osmotic pressures between 40 and 49 mm. Hg., 50% of those having osmotic pressures above 666 and below 813 mm. Hg. and 38% of the media with osmotic pressures between 817 mm. and 915 mm. Hg. (Table 2.)

Therefore, the number of media which permitted growth increases as the osmotic pressure decreases.

<sup>1</sup> Frankel, F. H., Barber, H., Pyle, E., *J. Infect. Dis.*, 1919, xxiv, 9.

<sup>2</sup> Falk, I. S., *Bacteriological Abstracts*, 1923, vii, 49.

<sup>3</sup> Krasnow, F., Rivkin, H., and Rosenberg, M. L., *J. Bact.*, 1926, xii, 385.

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### Comparative Studies on Autoplastic Lymph Node and Thymus Transplants.

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(Introduced by David Marine.)

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Studies by numerous investigators on the histogenesis of the thymus gland have failed to clear up the origin and biological significance of the small thymic cell. In order to secure additional data

concerning the origin of these cells, the method of autoplasmic thymus transplantation with careful histological studies of the daily regenerative changes which take place in the growing transplants was utilized.<sup>1</sup> It was concluded from these experiments that the small thymic cell in the rat arises from the reticular epithelium.

In an effort to gather further evidence on this much mooted question, the regeneration of a series of lymph node transplants has been studied and compared with transplants of the thymus in rats of the same age, sex and strain. To our knowledge no detailed nor extensive studies are available concerning successful transplantation of lymph nodes. In our studies, young albino rats were used. Pieces of inguinal lymph nodes, approximately 8 mm. in diameter were planted into prepared pockets in the abdominal wall. The presence of infection in these nodes in young rats is infrequent.

At the end of the first 24 hours the lymph node transplants show almost complete destruction of both reticular and lymphocytic elements except for a small zone of well preserved lymphocytes at the periphery, with invasion by polymorphonuclear leucocytes, rapid phagocytosis and marked congestion of the surrounding blood vessels. At 48 hours there is striking evidence of proliferation of the reticular cells from the outer zones, with extension of these elements in finger-like processes toward the center of the transplant. In the outer zone of regenerated reticulum are seen many newly formed lymphocytes. During the third day mitotic figures are numerous. Small lymphocytes which are present as early as 24 hours increase in the outer zone of the transplant. Transitional forms between fully developed lymphocytes and large oval reticular cells can be distinguished. During the following days, regeneration of both lymphocytes and reticular elements continues and the small focus of degeneration which is still present in the center of the plant becomes progressively smaller. About the 6th day, giant cells appear about the center of necrosis within the center of the plant. These giant cells appear to be formed by the fusion of reticular cells. By the 8th day regeneration of the node is almost complete, masses of lymphocytes obscure the underlying reticulum, and in places have formed spherical accumulations resembling the follicles of the normal gland, with beginning formation of germinal centers.

Similar studies on thymus transplants were made. In comparing the regeneration of the thymus to that of the lymph node it is noted that: (1) lymph node transplants regenerate more rapidly than thymus transplants of approximately the same size. (2) In the thymus the entire plant is almost completely replaced by reticulum before any small cells appear; these later occur in scattered

islands throughout. In the lymph node, however, lymphocytes are always present in the peripheral zone and both the lymphocyte and the reticulum regeneration parallel each other. (3) In both types of transplants, the reticulum arising from surviving reticular elements extends in finger-like projections from the periphery of the transplant; the small cell appears to arise from the reticular cells; giant cells appear by fusion of reticular cells about the central area of necrosis in the course of the regeneration.\*

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\* In similar studies on the thyroid and spleen transplants, no giant cell reaction appeared about the central area of necrosis in the regeneration of the transplants.<sup>2-7</sup>

<sup>1</sup> Gottesman, J. Marmorston, and Gottesman, J., *PROC. SOC. EXP. BIOL. AND MED.*, 1926, xxiv, 45.

<sup>2</sup> Gottesman, J. Marmorston, and Gottesman, J., unpublished studies.

<sup>3</sup> Manley, O. T., and Marine, David, *PROC. SOC. EXP. BIOL. AND MED.*, 1914, xii, 202.

<sup>4</sup> Manley, O. T., and Marine, David, *J. Am. Med. Assoc.*, 1916, lxxvii, 260.

<sup>5</sup> Manley, O. T., and Marine, David, *J. Exp. Med.*, 1917, xxv, 619.

<sup>6</sup> Marine, David, and Manley, O. T., *PROC. SOC. EXP. BIOL. AND MED.*, 1916, xiv, 123.

<sup>7</sup> Marine, David, and Manley, O. T., *J. Exp. Med.*, 1920, xxxii, 113.

### 3915

#### Mechanism of Gastric Secretion. The Nature of Gastric Juice of Constant Maximum Acidity.

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In a recent paper,<sup>1</sup> it was reported that, by a modification of the usual technic for collecting gastric juice from a dog's auxiliary stomach pouch, a fluid of constant acidity was obtained. Independently of whether the secretory stimulus was food or histamine, the pH of the pouch juice had a constant value of  $0.90 \pm 0.01$ . The difference (a decrease of 0.02 pH) between this and the value originally reported may be due to individual variation as well as to improved technic. With further modifications in the latter, the maximum acidity may be found to be even slightly higher.

Subsequent to the above report, the acid values of some representative samples were determined by titration. The micro-method employed involved titration to a definite end point with the aid of

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