Conclusions. It is concluded that in the *Bartonella-free* albino rat: 1. Splenectomy induces greater neutrophilic leucocytosis than does a comparable surgical trauma, due to the consequent absence of an inhibitory influence on leucocyte production. 2. The normal spleen, as one of its functions, exerts an inhibitory influence on the leucopoietic centers, thus balancing the activity of leucopoietic-stimulating centers. 3. Spleen transplants function similarly to normal spleen tissue in controlling leucocyte production or release. 4. This inhibitory influence of the spleen on leucocyte formation or release may be considered as possibly an endocrine activity.

9331 P

Mechanism of Cellular Death by High Pressure, Compression of Yeast in Sodium Chloride Solutions.

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In a previous work[1] it has been shown that yeast cells suspended in tap water are killed in various lengths of time by pressures extending from 4000 to 7000 atmospheres. The present investigation was undertaken to determine the effect, if any, of the kinetic conditions resulting when high pressure is exerted on salt solutions of various concentrations.

The yeast, *Saccharomyces cerevisiae,* strain "Levure Royale", was obtained from the Anheuser-Busch Brewing Co. of St. Louis, in starch-free cakes. Two percent suspensions of the yeast in distilled water solutions of NaCl, varying in concentration from .005M to .4M, were put into glass vials of about one cc. capacity, stoppered with rubber corks. The pressure chamber consisted of a cylindrical cavity, 1.2 inch in diameter, bored in a steel block, and fitted with a hardened steel plunger. A rubber disc served as packing for the plunger. Four vials containing yeast in solutions of different concentrations could be compressed in the chamber at the same time. Care was taken to exclude air from the solutions in the vials and from the water which filled the chamber. A motor-driven hydraulic press supplied the pressure. From the readings of a previously tested gauge, mounted on the press, we calculated the effective pressures inside the chamber. After a 2-minute compression and a

[1] Luyet, B., *Comptes Rendus de l'Ac. des Sc.,* 1937, **204**, 1506.

sudden decompression the yeast cells were stained with methylene blue and the number of dead (stained) cells was counted. The temperature of the room varied from 18° to 22°C.

The results are plotted in the accompanying graph. Each point represents the percentage obtained in a count on 800 cells.

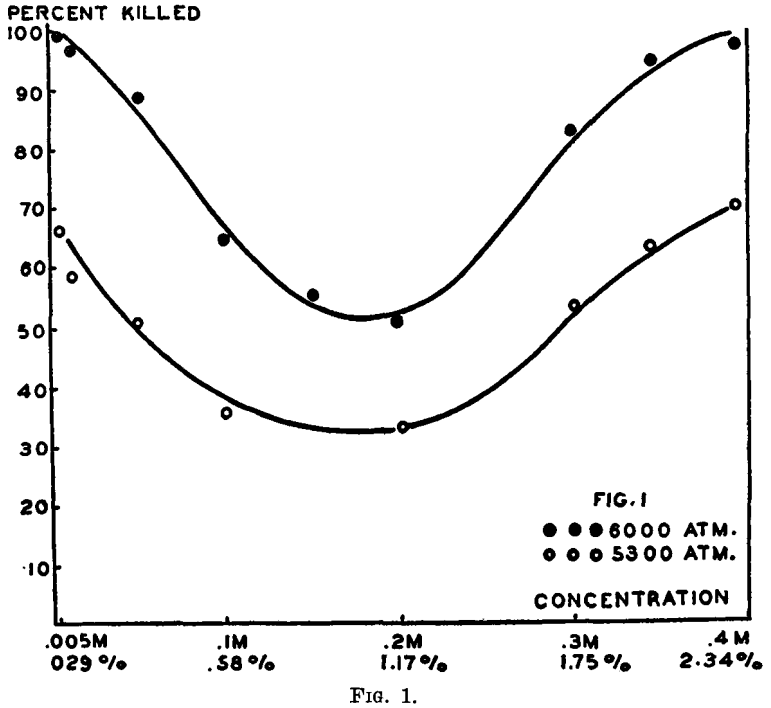

FIG. 1.

Number of cells killed at pressures of 5300 and 6000 atmospheres, in terms of the NaCl concentration.

In a previous investigation we found that pressures of 5300 and 6000 atmospheres applied to a tap water suspension of yeast, kills in 2 minutes respectively 48 and 76% of the cells. (Luyet, *op. cit.*). The addition of 3% NaCl to tap water increases the percentage killed at the same pressures to 69 and 94%. There is, therefore, a combined action of pressure and salt concentration. In the experiments with distilled water solutions reported in this paper, a similar combined action is shown at salt concentrations increasing from 0.2M to 0.4M (right hand side of the graph). But this combined action is not the sum of the injurious effects of each one of the 2 factors acting separately, for no yeast cell is killed by NaCl alone at the concentrations used. The kinetic conditions created by the reduction of the volume of the solution under pressure (about 13%

for water at 5000 atmospheres[2]) might explain the combined action of the 2 factors.

But the left hand side of the curves presents a different course and cannot be explained in the same manner. Here a decrease in the salt concentration increases the lethal action of pressure. The second of the 2 factors involved in the combined action appears to be the proportion of distilled water. We found that distilled water kills 50% of the cells in 90 minutes and that the addition of increasing quantities of NaCl makes it less and less injurious. So, taken separately, each one of the 2 factors is injurious and their combined action is more than the action of each factor alone. Whether or not it is equal to the sum of the 2 injurious influences cannot be decided at present and depends on the results of experiments now in progress in which the yeast is left in distilled water or in dilute solutions for various lengths of time before being pressed so that the degree of injury can be determined.

9332 P

Relation of Inclusion Blennorrhea to Swimming-Bath Conjunctivitis as Determined by an Accidental Transmission.*†

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That the conjunctivitis of infants designated as inclusion blennorrhea is transmissible to the adult was first demonstrated by Wolfrum[1] when he inoculated successfully 2 volunteers inducing what he considered to be trachoma. The diagnosis, however, based partially on the presence of inclusion bodies in the experimental disease and partially on his conviction of their specificity in trachoma, was not justified by the clinical manifestations. Gebb,[2] on the other hand, also reporting successful transmission, concluded the condition resulting from the inoculation was not trachoma. There

[2] Bridgman, P. W., *The Physics of High Pressure*, London, 1931, p. 130.

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† This report is part of a more extensive study on the etiology of inclusion blennorrhea to be published later in the *American Journal of Ophthalmology* in collaboration with Drs. R. W. Harrison and A. C. Lange.

[1] Wolfrum, M., *Klin. monatsbl. Augenheilk.*, 1910, **48**, 154.

[2] Gebb, H., *Z. Augenheilk.*, 1914, **31**, 475.