

other feathers (Greenwood and Blyth,⁵ Parkes and Selye⁶). These changes, taken in connection with the effects of hyperthyroidism reported here, suggest a relative increase in extent of the ventral field of saddle feathers grown under conditions of hypothyroidism. The appearance in the breast tracts of longer, saddle-like feathers with restricted barbulation following thyroidectomy is in all probability likewise associated (among other germinal changes) with a ventral field of greater or lesser extent. It should be a matter of considerable interest to alter experimentally the balance of other hormones in thyroidectomized birds in order to test the specificity of thyroxin in determining and maintaining the limited ventral triangle of feather germs of different tracts.

9794 P

Evaluation of Germicides by a Manometric Method.*

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The need for a method capable of evaluating germicides for chemotherapeutic use is universally recognized. Obviously, the first requirement is that the method should simulate as nearly as possible the conditions met in the animal body. In addition it should be relatively simple and should yield information regarding the action of the test substance on bacteria, and on animal tissues, in terms which would permit a direct comparison of the respective effects. The method of Lambert,¹ employed more recently by Salle,² does not seem to fulfill these requirements, since the parasitotropic and organotropic properties of the disinfectant are tested under profoundly different conditions. Moreover, it is based on a tissue-culture technic which is time consuming and laborious.

The manometric method proposed here has proved simple, rapid, and remarkably flexible. It permits the conditions of testing to be modified at will, and at the same time allows wide latitude in the

⁵ Greenwood, A. W., and Blyth, J. S. S., *Proc. Roy. Soc. Edinb.*, 1929, **49**, 313.

⁶ Parkes, A. S., and Selye, H., *J. Genetics*, 1937, **34**, 297.

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¹ Lambert, R. A., *J. Exp. Med.*, 1916, **24**, 683.

² Salle, A. J., McOmie, W. A., and Schechmeister, I. L., *J. Bact.*, 1937, **34**, 267.

choice of animal and bacterial test-subjects. Our experience with it has been limited so far to comparison of the effect of certain disinfectants on the adult mouse's liver, and on suspensions of *Bacterium coli* to which comparable amounts of protein in the form of horse serum were added. The depressant effect on the rate of oxygen-consumption in glucose-succinate buffer was taken as a measure of destructive action in either case.

The curves in Fig. 1 show the type of data obtained. These were evaluated by replotting the percentile inhibition of rates of oxygen-uptake attained during the arbitrarily chosen interval between the 15th and 20th minute, against concentration of disinfectant, and reading off the interpolated value for the concentration giving 50%

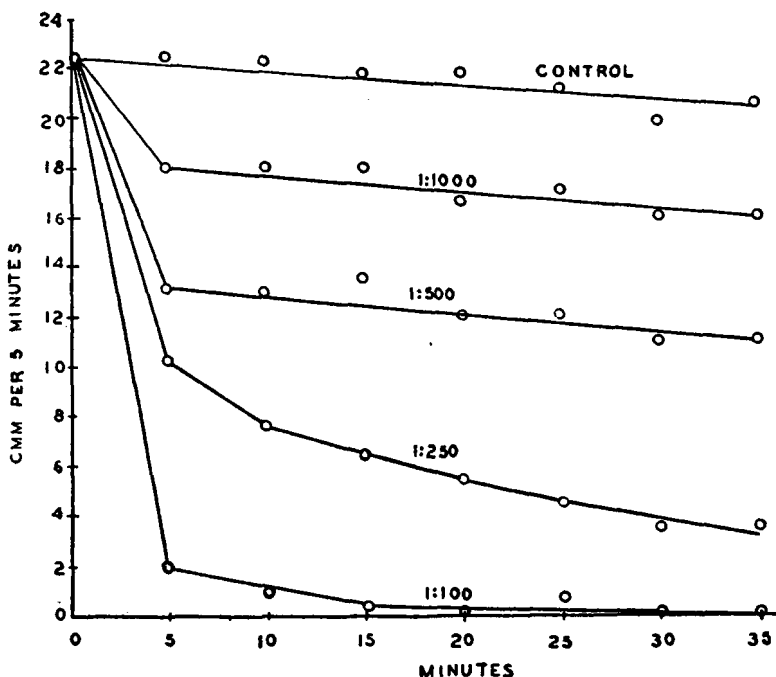


FIG. 1.

The Effect of Phenol on the Rate of O_2 -consumption of Mouse Liver Cells.

The amounts of O_2 consumed in the test-mixtures during successive 5-minute intervals, as measured in the Warburg-Barcroft apparatus, are plotted against time following the addition of disinfectant.

For the test with liver cells, 0.1 gm. minced mouse liver in 2 ml. saline, 1 ml. M/10 phosphate buffer of pH 7.4, and 1 ml. 5% sodium succinate are placed on the floor of the vessel, with 1 ml. of aqueous solution of disinfectant in the side arm.

For the test with bacteria, approximately 3×10^9 organisms from centrifugalized 24-hour cultures of *Bact. coli* in broth, are placed in the vessel with 1.6 ml. saline, 0.4 ml. horse serum, 1 ml. M/10 phosphate buffer of pH 7.4, and 1 ml. 5% glucose, the disinfectant being added as before from the side arm.

In the control mixtures, water is substituted for the disinfectant.

inhibition (C). These concentrations could then be used to calculate the "phenol-coefficient" (C_{phenol}/C_x) for *Bact. coli*, and the "toxicity-index" ($C_{\text{bact.}}/C_{\text{liver}}$) for liver-cells. These values, for our series of disinfectants, are shown in Table I.

TABLE I.
Comparative Values Obtained by the Manometric Method for Representative Disinfectants.

Disinfectant	C_{bact} %	C_{liver} %	Phenol	Toxicity
			Coefficient	Index
			$\frac{C_{\text{phenol}}}{C_x}$	$\frac{C_{\text{bact}}}{C_{\text{liver}}}$
Phenol	.26	.23	1.0	1.1
Iodine (tincture)	.0425	.0165	6.1	2.6
Mercuric chloride	.00085	.004	306	0.21

Further work will correlate these data with those given by the usual methods, and by animal test, for several representative disinfectants.

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Comparison of Vitamin B₁ Content of Raw and Evaporated Milk by the 10-Day Bio-Assay Method.

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The amount of vitamin B₁ destroyed in the process of dehydration and sterilization involved in the production of evaporated milk has been variously reported. Hartwell,¹ by means of lactation tests, found approximately a 50% destruction in some of the milks tested, 33 cc. of fresh cow's milk being almost enough and 50 cc. quite sufficient to meet the needs of the lactating rat and 6 young, when used in conjunction with the basal ration; whereas 75 cc. of evaporated milk was found to be too little. Daniels and Brooks,² and Daniels, Giddings, and Jordan,³ using a similar technique with a slightly modified diet, obtained similar results. Feeding tests with

¹ Hartwell, G. A., *Biochem. J.*, 1925, **19**, 226.

² Daniels, A. L., and Brooks, L., *PROC. SOC. EXP. BIOL. AND MED.*, 1927, **25**, 161.

³ Daniels, A. L., Giddings, M. L., and Jordan, D. P., *J. Nutr.*, 1929, **1**, 455.