When extracardial pressures equal to those previously existing in the closed thorax are applied, however, the records so far obtained show no alteration in the steepness of the curve, nor is any difference discernible when the cardiometer is left open to the air or in communication with a tambour within which a pressure equal to 15 mm. of water develops during systole. Furthermore, the records taken from naturally breathing animals *by a sound correctly placed within the ventricular cavity* also show no decreased incline of the isometric rise; in fact, some records reveal a slightly steeper curve during inspiration.

These results indicate that such negative pressures as are normally developed within the chest during cardiac systole or the acts of respiration are without direct effect on intraventricular pressure and hence cannot be responsible for the fall of arterial pressures during *inspiration.*

32 (849)

The effect of gentian violet on enzymes, toxines and ultra-microscopic infections.

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Since the observations reported by me, two years ago, on the effect of gentian violet on bacteria, studies have been carried on to extend these observations into the field of enzymes, toxines and ultra-microscopic infections. The original purpose of these experiments was to offer a new method of studying ultra-microscopic infections and to see if it might not be possible, by adding a dye to an infectious agent, to stain and thus to kill organisms too small to be seen. Experiments of a similar nature are now under way in this laboratory with inoculable tumors.

The following groups of active agents have thus far been studied:

1. Organized ferments (yeast). Yeast cells when stained with gentian violet lose entirely their power of fermenting sugar.

2. Unorganized ferments. (*a*) Ptyalin (salivary diastase). This ferment when stained with gentian violet is quite as active as

the unstained controls. (*b*) Pepsin. The activity of this enzyme was estimated by its action on wedges of egg albumen. It was found to be unaffected by the dye. (*c*) Trypsin. The dye was also without effect on this enzyme. (*d*) Rennin. The power of the enzyme to clot milk was entirely uninfluenced, even by prolonged and deep staining with gentian violet. (*e*) Thrombin. With this enzyme (kindly furnished by Prof. Howell) the results though not quite so convincing as with (*a*), (*b*), (*c*) and (*d*), were in general similar. Gentian violet staining does not destroy the power of the enzyme to clot blood plasma, though if present in large quantities the dye may *hinder* clotting somewhat.

In a word the organized ferment (yeast) is "killed" by staining with gentian violet; the unorganized ferments are unaffected.

3. Toxines. The toxines of tetanus and diphtheria were studied. With the former, the results were definite and constant; staining of the diphtheria toxine in no way impairs its toxicity. With the latter, the results were less constant; possibly some delay in the death of the experimental animals is produced by previously staining the tetanus toxine with gentian violet.

4. Ultra-microscopic infections. (*a*) Vaccinia. Rabbits were vaccinated on the back with stained and unstained vaccine. The potency of the vaccinia was unimpaired by staining, for equally good takes were obtained with both specimens. (*b*) Rabies. Experiments with this agent were kindly done for me by Dr. Williams at the N. Y. Board of Health Laboratory. Only a few experiments were done, but the dye was apparently without effect on the virus. (*c*) Anterior poliomyelitis. Seventeen *Macacus rhesus* monkeys have received injections of the virus into the sciatic nerve. The early experiments suggested very strongly that the virus of this disease was weakened or even entirely robbed of its virulence by staining with gentian violet. In one series, for example, the control animal died of typical anterior poliomyelitis in 7 days; the animal which received stained virus is still alive and well, 8 months after injection. In the later experiments inconstancy of the controls made positive deductions impossible; and some of the animals which received the stained virus developed the disease.