With cultures Nos. 4 and 5, the machine was used; with the others the "biological lift," giving a much heavier infection. Culture No. 9 had been grown on agar for 47 hours; all the others in this paper for 24 hours only.

Experiments were then made to find the range of phenol concentrations within which poisoning takes place at a convenient rate; next the effect of sodium chloride, without phenol, was tested, and then comparison was made of the toxicity of 0.8, 0.7 and 0.6 percent phenol solutions with their chemical equivalents, viz., solutions containing 2.0 percent salt and 0.72, 0.63 and 0.54 percent phenol, respectively.

It soon became evident that experiments carried out under what were intended to be identical conditions, gave very different results. One cause of variation lay in the fact that equal volumes removed from the same suspension contain varying numbers of cocci - for instance, three plates prepared at the same time each from 10 cc of the same agar, infected in each case with the same volume of suspension (one loop taken with the machine), gave 5335, 5791, 6173 colonies, respectively, being a variation of 16 percent from the highest to the lowest. The principal cause, however, obviously lies in the variability of the staphylococcus itself, with culture No. 29 for instance, the time required for complete sterilization by 0.6 percent phenol was nearly twice as long as with culture No. 22, although in the first case the temperature was, if anything, a little higher.

In order to compare the toxicity of different solutions, therefore, it was necessary in every case to carry out simultaneous experiments with the same suspension; and as but little guidance could be obtained from previous experiments with the same poison but a different culture, a great many plates were poured which, on incubation, turned out to be sterile. All this added greatly to the amount of work and time required to obtain results; and if work of this kind is to be undertaken on any considerable scale, it will be necessary first to find some criterion of death which involves less delay than the plating method, and second to find conditions under which the