Toxicity and Chemical Potential

ascribed to toxicity of the salt itself, and one (viz., acetic acid and phenol) that needs further study. In dilute solutions, osmotic pressure less than 1.75 atmos., it was shown that staphylococci were killed by plasmolysis, without regard to the toxicity of the solutions employed; and that the resistance of the cocci to this attack is variable, and depends on their previous history.

The experience gained in this work brought out the weak points in the technique employed; apart from the difficulty of infecting the solutions with a constant number of cells a minor matter—the trouble lies in the variability of the microbes employed as test objects. It proved quite useless to compare the death-rate of a given culture in a phenol solution with that of another culture in the equivalent phenolsalt solution; comparisons could be made only between two solutions infected at the same time from the same suspension. It was, therefore, impossible to cut down the work by determining once for all the toxicity of a set of phenol solutions and using the results as a standard.

This same variability of the microbes was the cause of another and even greater loss of time in the laboratory. It was never safe to assume, from the result of previous experiments, that the cells would all be killed after the poison had acted for a certain number of minutes, or that action of the poison for less than another (shorter) time would have a negligible effect: so in order to guard against the danger of having to repeat the whole series, it was always necessary to prepare and incubate many more plates than in the end proved useful, and each wasted plate took just as much time to prepare, and occupied just as much space in the incubator, as one that in the end proved worth while.

Experiments with Saccharomyces: a Convenient Criterion of Death

In view of the necessarily slow progress of the work under such circumstances, a search was made for some criterion of death that could be applied quickly and that would obviate

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