As the result of a chemical and physical study of mercuric-chloride solutions it was decided to determine the effect of acidity upon their killing properties. Preliminary experiments gave such promising results that a wide series was planned. In the next experiment (No. 21) strengths of mercuric-chloride solutions were used as follows: 1–1,000, 1–1,500, 1–2,000, 1–2,500, 1–3,000, 1–3,500, 1–4,000, 1–5,000, 1–6,000, 1–7,500, 1–10,000. Each solution was made up in seven vessels, and to each was added hydrochloric acid (commercial concentrated, 31·5 per cent.) at the following percentage strengths: None, 0·1 per cent., 0·25 per cent., 0·5 per cent., 1·0 per cent., 1·5 per cent., 2·5 per cent.

Concurrently with this was run another experiment (No. 20) to determine the effect of hydrochloric acid alone on the growth of sclerotia. Tubers, in lots of three, were immersed for two hours in vessels containing water to which the following percentages of acid had been added:—

HCl—*a*, none; *b*, 0·1; *c*, 0·25; *d*, 0·5; *e*, 1·0; *f*, 1·5; *g*, 2·5.

When the cultures were examined twenty-four hours later it was seen that all sclerotia from tubers immersed in solutions *a* to *e* respectively were alive, while ten (out of fifteen) in *f*, and none in *g*, had germinated. In forty-eight hours all the sclerotia in *f* and *g* had germinated. Thus even a 2·5 per cent. solution of hydrochloric acid has little effect upon sclerotia other than to retard their germination for twenty-four hours. Therefore it may be asserted that the acid alone has no effect upon the germination of sclerotia.

In Graph 6 are given the results of Experiment 21. Here it will be noted that although unacidified solutions do not kill at any of the strengths used, when as little as 0·1 per cent. of hydrochloric acid is added killing is obtained even at a strength of 1–3,000. It will be noted that there is a definite relationship between the amount of acid added and the killing of sclerotia.

Further experiments have been carried out with regard to this work. These will appear in a subsequent paper, in which also will be given the cheapest and most economic method of control of corticium-disease.

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(To be continued.)