Before dealing with smut treatment, it may be mentioned that washing grain thoroughly in running water, in order to get rid of the smut spores, is practised with satisfactory results, providing it is done properly and that there is a good water supply available. The grain may be placed in barrels for this purpose and the water allowed to flow in from below; it will soon rise to the top and overflow. By vigorous agitation of the grain with a stick, the smut balls will rise to the top and the spores will be carried away. Seed grain of special value may be treated quite satisfactorily in this manner.

For some years chemical solutions have been used with great success; partly because the water question may be a serious one, partly because the time required is less. Before treating any wheat, it should be remembered that, occasionally, unbroken smut balls may be contained in the grain; these will eventually break, often at the least desirable moment, i.e., after treatment, and of course re-infect the grain with smut spores. No solution has been found to penetrate the unbroken smut balls in the short time during which they are subjected to treatment, hence the spores inside are not killed.

The fanning mill will remove smut balls very completely from the wheat, and owing to the danger pointed out, any wheat containing smut balls should be sent to the mill before treating—if none is available at the farm. Should, however, any smut balls appear on the surface of the solution when grain is being treated, it is necessary to remove them quickly. The smut balls are much lighter than the grain, and will rise to the surface when the latter is vigorously and repeatedly stirred. We have found, however, that the time of treatment given to wheat or other grain is far too short to permit the removal of all smut balls rising to the surface. Even when prepared and working quickly, we have not succeeded in scooping off all smut balls, that came to the top during treatment, under 10–15 minutes. This long exposure of grain will seriously affect the germination.

The chemicals now universally employed for treating grain for smut are sulphate of copper or bluestone and formalin.

Bluestone is sold in the form of crystals or as a powder; the former, while dissolving considerably more slowly, has the advantage of showing plainly any signs of decomposition by a brownish discolouration. The crushed crystals (or bluestone powder) appear generally in the form of a coarse bluish-green salt. The best bluestone to use is in the form of bright blue crystals. Bluestone quickly corrodes iron. For this reason use only wooden pails, barrels or tanks. Note particularly that grain treated with bluestone is highly poisonous to live stock; it should only be used for seed purposes, and any that may be left over should be deeply buried.

Formalin is a solution of formaldehyde gas in water, and when buying it, it should be of not less than 40 per cent strength. This is the usual strength. The stock solution should always be kept in a well-stoppered bottle. Formalin is nowadays preferred, partly because of the greater facility in preparing the proper solution, and partly because grain, treated with formalin, when once thoroughly dry, is not injurious to live stock. Formalin appears to be difficult to obtain at short notice in some localities. The bluestone treatment is referred to here mainly for this reason. Those who intend using formalin would do well to secure their supply in good time from a reliable chemist, so that it may be available when required.

Either of these chemicals, in solution, may be employed for 'steeping' or for 'sprinkling.'

Steeping in sulphate of copper solution.—Secure a wooden barrel of convenient size and dissolve 5 pounds of bluestone in 50 Imperial gallons of water. Bluestone crystals take considerable time to dissolve. The solution is not ready for use until this chemical is entirely dissolved. Time may be saved by tying the 5 pounds of bluestone crystals into a wide-meshed piece of sacking or bag and suspending this over night in the necessary quantity of water. Hot water dissolves the crystals far more readily. For this purpose, the quantity of bluestone may be heated in water