These conditions are:—(*a*) The quantity of water must be large in comparison with that of the second and of the third component; (*b*) The fourth component must remain in the solution and not enter into the composition of the precipitate; (*c*) In each member of a series of experiments there must be a constant ratio between the amounts of the fourth component and of the water in the system.

If the water is present in large excess, (condition *a*) the mass of the solution will be much greater than that of the precipitate, and no reaction occurring in the system can have more than a very slight effect on the total mass of the water contained in the solution. In reactions of the first type (during which the composition of the solution remains unaltered), the quantities of the other components entering or leaving the solution must be still smaller than that of the water; so that reactions of this type leave the total mass of the solution (practically) unaltered.

If now a fourth component be added, the total amount of which in the solution is unaffected by the reaction (condition *b*), this slight variation in the quantities of the other components in the solution will cause such a very slight change in the composition of the latter that the effect of the change in checking the progress of the reaction may safely be neglected; so that the presence of the fourth component, under these conditions, will not interfere with the efficiency of reactions of the first type in keeping down the number of phases to three.

Reactions of the second type (involving changes in the composition of the solution) are of course just as possible when the solution contains a fourth component as when it does not. In order, however, that the solutions over a given pair of basic salts should reach exactly the same composition in different experiments, it is obviously necessary that the concentration of the fourth component in the solution should be the same from case to case. This is provided for by condition *c*. In experiments on the action of caustic potash on solutions of bichloride of copper, for example, H_2O, CuO, and $CuCl_2$ may be selected as components, with KCl as the "fourth component" of the preceding paragraphs; and condition *c* requires that if the quantity of potash added to a given volume of the copper solution should vary from case to case, enough KCl must be added to keep the total amount of potassium per cubic centimetre of water the same in each experiment.