Experiments.

In the spring and summer of 1899 the writers carried out a lengthy series of experiments on the action of potash and ammonia on the chloride of lead. The less basic of the oxychlorides are formed with remarkable slowness ; the reaction between N/3 ammonia and lead chloride not coming to a standstill in ten days shaking at 100°*C*. $PbCl_2 3PbO$, however, was formed in a few hours in the cold.

In the winter of 1900-1901, Mr. Good took up the study of the action of water on antimony tri-chloride, presenting his results as a thesis in competition for the 1851 Exhibition scholarship. His observations may be regarded as confirming the individuality of the oxychloride $2SbCl_3 5Sb_2O_3$ in the powder of Algaroth ; although in this case also equilibrium is often not attained until days after the precipitation.

Mr. F. B. Allan, Lecturer on Chemistry in the University of Toronto, has just completed a series of experiments on the action of water on the nitrate of bismuth,[1] which he has presented as a thesis for the degree of Ph.D. His results, some of which are represented in the curve on page 38, establish the existence of basic nitrates of the formulæ $Bi_2O_3.N_2O_5.2H_2O$, $2Bi_2O_3.N_2O_5.H_2O$, $6Bi_2O_3.5N_2O_5.9H_2O$; while although precipitates were obtained intermediate in composition between the two last named, they were obviously mixtures. Two of these latter have found their way into the literature as "compounds" $5Bi_2O_3.4N_2O_5.9H_2O$, and $11Bi_2O_3.9N_2O_5.21H_2O$.

Mr. Wilson has been engaged during the past Easter term with experiments on the precipitation of cupric chloride by potash. With N/5 solutions at 85°*C*. the precipitate consists altogether of $CuCl_2.3CuO.2H_2O$ until all the copper is removed from the solution; on further addition of potash the precipitate turns black, no potash remaining in the solution until the precipitate is totally converted into the oxide.

[1] Amer. Chem. Jour. 25 307. (1901.)