placed in the flask A and diluted to about 100 c.c. with distilled water, 50 c.c. of the $N/10$ sodium chloride solution is then run into the flask directly, and the whole heated to boiling to coagulate the precipitated silver chloride.

$N/10$ Silver nitrate is then run in directly to the solution and precipitate up to within a few c.c. of the calculated amount necessary. The rubber cork with its attachment is replaced and the three-way tap, H, opened, and air drawn through the solution for a few minutes. This materially assists the settling of the precipitate. The tap is adjusted, and by means of the aspirator, J, some of the liquid and precipitate forced through the layer of sand and glass-wool * into E, which it reaches in a perfectly clear condition, the silver chloride being completely retained by the sand. A drop of $N/10$ silver nitrate is added, when a precipitate is formed, varying in intensity with the excess of salt still present. The liquid and precipitate are then sucked and washed down into A, and, if the thickness of the precipitate justifies it, about 1 c.c. of the silver solution is added *directly* to the contents of the flask. The stopper is again inserted, and the operation of forcing the mixture up into E, titrating, and washing down again, continued until no change is visible in the clear liquid, when a drop of the silver solution is added. The thin walls of E render the faintest opalescence readily observable, more particularly if a corresponding glass tube containing distilled water be used for comparison. The results of the first set of experiments are as follows :

In each case, 50 c.c. of silver nitrate solution were employed ($= 0.5$ gram Ag) and 50 c.c. of a solution of sodium chloride added, each c.c. of which is equivalent to 0.01081 gram Ag. This corresponds with 50.0463 c.c. $N/10$ sodium chloride. On titrating back and calculating the amount of silver equivalent to the nett sodium chloride used by the sample, the errors varied from zero to $+0.54$ per cent. Each titration required twenty minutes.

In order to reduce this error, if possible, samples containing 1 gram of silver were taken, 100 c.c. of sodium chloride added (1 c.c. $=$ 0.01081 gram Ag), and the excess titrated back with $N/100$ silver nitrate solution (table I).

As in analyses of silver alloys by Gay-Lussac's method, the precipitation is effected in the presence of free nitric acid, a series of experiments was carried out to ascertain the effect of varying proportions of acid. The volume of the solution containing 1 gram of silver was 100 c.c. ; the amount of acid varied from 10 c.c. to 50 c.c., and the resulting errors from $+0.094$ to -0.216 per cent., the mean error being -0.0634 per cent., the presence of the nitric acid thus tending to make the precipitation more complete.

* Glass-wool and asbestos were found to be incapable of retaining the precipitate.