

From these it appears, that in moderately dilute solutions the whole of the sulphuric acid is precipitated by the addition of very little more of the barium salt than is theoretically required, but if the dilution be very great then a loss occurs, which, however, is not found if any excess of the precipitant be employed. As we do not generally precipitate from very dilute solutions, and always employ an excess of the precipitant, no danger need be apprehended from the presence of free hydrochloric acid. Mr. Noad points out, however, that fuming nitric acid often contains sulphuric acid, although it does not give any precipitate with a salt of barium when diluted. By driving off the greater part of the acid, and then diluting, the presence of sulphuric acid may be detected.—*Quar. Jour. of Chem. Soc. No. 33.*

Affinity.—Dr. Gladstone has published a lengthy investigation into the “Circumstances modifying the action of chemical affinity,” which does not admit of an abstract.—*Phil. Trans.* 1855, p. 179. *Quar. Jour. of Chem. Soc. No. 33.*

Ammoniums.—T. Weltzien has published a very interesting paper on the “Ammonium Molecules of the Metals,” and proposes an ingenious theory by which the formulæ of the anomalous compounds of ammonia with the haloid and oxy-salts, the ammonia-cobalt salts of Fremy, and the platinum, palladium and iridium combinations, are reduced to very simple and rational expressions. The paper can scarcely be abstracted without occupying more space in the Journal than the chemical department may justly claim.—*Ann. der Ch. u Pharm.* 97, 19. H. C.

ENGINEERING AND ARCHITECTURE.

A NEW STEAM HAMMER.

Mr. Naylor, the Norwich superintendent of the locomotive department of the Eastern Counties Railway, has just succeeded in completing an important invention, in the form of a steam hammer, which he believes to be, in many respects, superior to any other that has yet been constructed. Its peculiar qualities consist in its adaptation to all descriptions of work brought under it. It can deal with a small piece of iron with the greatest precision, be it ever so small, or it can efficiently operate upon a piece of iron six or seven inches thick. Such is the command over it that it can be made to strike a light or heavy blow at will, and, if necessary, the light and heavy blows can be given alternately, while it is dealing 200 blows a minute. The rate of working may, moreover, if desired, be reduced to less than 100 blows per minute. Most power hammers obtain their force by their accelerated velocity in their fall. Consequently when working upon a large piece of iron, the greatest force is necessary; but, as the distance of the fall of the hammer is reduced by the thickness of the iron it is operating upon, the full power of the hammer cannot be exercised. Mr. Naylor has, however, a provision for this difficulty, for, by his peculiar and patented arrangements, he can put any amount of steam power upon the hammer in addition to its own gravity, and it matters not, therefore whether the hammer falls through a space of six inches or six feet, so long as its velocity is the same at the instant of its contact with the iron on the anvil. The steam can be applied above as well as under the piston of the hammer, or, by merely turning a small handle, the steam is prevented entering into the top of the cylinder,