proceſs of condenſation might be completed. The ſame method was followed in the mixtures where the water was predominant.

When the ingredients of theſe mixtures were judged to have completely incorporated, their ſpecific gravity was examined by weighing with the moſt ſcrupulous preciſion the contents of a veſſel which held 2925 troy grains of water, of the temperature 60⁰. The balance was ſo exceedingly ſenſible, that the 50th part of a grain greatly deranged its poſition when loaded with the ſcales and their contents. It was constructed by Mr Ramſden, and ſome account of its exquisite ſenſibility may be ſeen in the *Journal de Physique,* vol. xxxiii. This quantity of materials was therefore thought abun­dantly sufficient for aſcertaining the denſity of the li­quor. It is needleſs to detail the precautions which were taken for having the contents of the weighing bottle brought to the preciſe temperature proper for the experiment. They were ſuch as every perſon converſant with ſuch things is accuſtomed to take—The bottle had a ſlender neck, and being put on a lathe, a mark was made round it with a diamond. The bot­tle was filled till the bottom of the hollow ſurface of the fluid was in the plane of this mark ; and to judge of the accuracy attainable in filling the bottle, the ope­ration was ſeveral times repeated and the contents weigh­ed, without the difference of 1/50th of a grain in 2925. The only ſource of error which was to be guarded againſt was air-bubbles adhering to the inside of the bottle, or moiſture condensing (in the experiments with low temperatures) on the outside. Both of theſe were attended to as much as poſſible.

This method of determining the ſpecific gravity was preferred to the uſual method, obſerving the weight lost by a lump of glaſs when ſuſpended in water ; for Mr Gilpin had been enabled, by means of this nice ba­lance, to diſcover, even in pure water and in alcohol, a want of perfect fluidity. Something like viſcidity rendered the motion of a lump of glaſs through the liquor ſensibly ſluggiſh, ſo that when the balance was brought to a level, there was not a perfect equilibrium of weights: (See what we have ſaid of this matter in Specific Gravity). Mr Gilpin alſo tried the ingenious instrument propoſed for ſuch experiments by Mr Ramſden, and deſcribed by him in a pamphlet on this very ſubject ; and he found the anomalies of experiment much greater than in this method by weighing.— Indeed the regular progreſſion of weights to be ſeen in the annexed tables is an unqueſtionable proof of the ſufficiency of the method ; and it has the evident advantage of all other methods in point of ſimplicity and practicability without any uncommon ap­paratus. Any perſon poſſeſſed of a good ordinary ba­lance and a ſet of exact weights may examine all queſtions of this kind, by weighing pure water and the li­quor which he may have occasion to examine in a com­mon 6 or 8 ounce phial. For this reaſon, it is recom­mended (in preference to all hydrometers) to the board of exciſe to provide this simple apparatus in every prin­cipal office.

Every experiment was made at leaſt three times ; and the mean result which never differed one grain from the extreme) was taken.

From theſe experiments the annexed tables were constructed. The firſt is the simple abſtract of the ex­periments, containing the weights of the contents of the bottle of every mixture. The second contains the ſpecific gravities deduced from them.

We have ſaid that the experiments appear ſurprisingly accurate. This we ſay on the authority of the re­gular progreſſion of the ſpecific gravity in any of the horizontal rows. In the ſeries, for instance, for the temperature 60⁰, the greateſt anomaly is in the mixture of 50 parts of ſpirit with 100 of water. The ſpecific gravity is 95804, wanting 3 or 4 of the regular pro­greſſion. This does not amount to 1 in 18000.