VII.—*Note on the Preparation of Urea.*

By JOHN WILLIAMS.

HAVING had occasion to prepare rather large quantities of urea, I found that the result constantly fell considerably short of what I considered a satisfactory one. This led me to consider if the ordinary mode of preparation could not be improved upon.

The result of my experiments is, that cyanate of lead is

better adapted for the purpose than the mixture of salts generally present in solution, when the usual process is adopted. I proceed in the following manner:—

I prepare the cyanate of lead by fusing cyanide of potassium, of the best commercial quality (containing about 90 per cent. of real cyanide), at a very low red heat, in a shallow iron vessel; red lead is added in the usual manner, by small quantities at a time, with constant stirring, so as to prevent the temperature rising too much during the operation. I prefer cyanide of potassium to ferrocyanide for many reasons, but mainly because the temperature can be kept down to the lowest point.

The cooled and finely powdered product is exhausted with successive portions of *cold* water, the liquid filtered, and nitrate of barium added. Carbonate of barium is thus precipitated. The mother-liquid, treated with nitrate of lead, yields pure cyanate of lead; this can be washed thoroughly, and dried at a gentle heat, and preserved for use. Unlike cyanate of potassium it is a permanent salt, and could be produced as a commercial product at a moderate price, if required.

To prepare urea, it is simply necessary to digest with sufficient water, at a gentle heat, equivalent quantities of cyanate of lead and sulphate of ammonium, filter and evaporate. I have found the result most satisfactory.

The compound ureas may in like manner be produced by substituting the sulphates of the compound ammonias for the ordinary sulphate of ammonium; the experiment has been tried and found successful.