observations on the urea of human blood, an endeavour was made to determine to what extent chemically pure urea possesses toxic properties. The results of these studies may be briefly stated as follows:

(*a*) In a small proportion of typical cases of uræmia, characterized by the occurrence of convulsions, the urea content of the blood was found to be well within the normal limits, notwithstanding that in these same cases the blood serum was distinctly more toxic than normal. It is plain that in these cases there is no ground for looking with suspicion upon urea as a factor in producing symptoms.

(*b*) In the majority of cases of uræmia, especially in those cases in which the secretion of urine has for a long time been scanty, the urea of the blood was distinctly increased, this increase sometimes reaching to 5 or 10 or even 20 times the normal urea content. It is, however, a very striking fact that many cases of chronic nephritis were found to be characterized by a markedly excessive urea content, even where there were no symptoms that would ordinarily be called uræmic. This is merely a confirmation of an old observation by Bright and Christison which has not received the attention which it deserves. Among the cases in which the urea was increased in the absence of typical uræmic symptoms were 14 cases of acute lobar pneumonia with fatal termination. These cases make it clear that renal inadequacy is a feature of many fatal pneumonias. Whether such inadequacy is to be considered uræmic in the absence of the usual symptoms of uræmia will be considered later.

(*c*) Experimental studies upon dogs and monkeys show that pure urea is toxic when infused intravenously, but only when very large quantities are employed, *i.e.*, quantities equal to many times the daily urea excretion of the animal. The symptoms produced by such infusions are fairly constant in dogs, and consist in initial slower and stronger heart action, copious diuresis, diarrhœa, contraction of the pupils, irregular fibrillary contractions of the muscles, and finally general and severe tonic or clonic spasms and death. If we make the bold assumption that in human nephritis the susceptibility of the nervous system to the influence of urea is similar to that observed in dogs, we would expect convulsive seizures to arise in man when the urea content of the blood reaches about .5 per cent. It was found however, that in many of the cases of human nephritis, in which convulsions occurred, the percentage of urea was considerably below this point, while in a few cases in which this percentage was much exceeded, convulsions were absent.

It is, of course, obvious from the foregoing facts that urea does not play a necessary part in the causation of the symptoms of human