one to four onces daily. Half an ounce daily is frequently found in cases of diabetes when there is no evidence of coma.

Recently it is suggested that a determination of the amount of aumonia in the urine may be used as affording an estimate of the quantity of oxybutyric acid present, since this acid constantly appears in the urine in combination with ammonia. Testing for excess of ammonia is simpler than testing for the acid. We have seen no precise manner of testing suggested, but it is well known that adding K O H solution and boiling will set free the combined ammonia in any mixture. The escaping gas may be dried, collected and measured in several different ways.

Indeed the steps which led up to this discovery of oxybutyric acid in the urine began with the fact that ammonia was found to be in excess in diabetic urine. Ordinarily in health the combined ammonia secreted by the kidneys in twenty-four hours is 12 to 15 grains or about eight-tenths of a gram. It was first noted that in diabetes the amount of ammonia in the urine was considerably increased. As this ammonia was combined, the necessary inference was that there was an increase in some acid excreted by the kidneys. This was then shown to be an organic acid, and, at the same time, the similarity between acid poisoning in rabbits and the coma of diabetes was pointed out. Upon this evidence was instituted the alkali treatment of diabetic coma. This organic acid was finally shown to be oxybutyric acid; and it was further shown that decomposition of this acid gives rise to acetone and diacetic acid, substances which had already been observed in urine.

Large doses of some alkali, as for instance two or three drams of sod bicarb., may be given thrice daily to combat the condition of threatening coma. Alkaline solutions, isotonic with the blood, may be used subcutaneously when a fatal issue is impending.

The question of diet has also received a ray of light from these discoveries. The profession has been suspecting that too exclusive a diet does more harm than good in diabetes. Now it has been observed that acetone appeared in the urine of a healthy person when deprived of food for a period of time. The same thing was found to be true in most diseases in which nutrition falls much below par. And recent experiments have shown that when a healthy person is kept for some time upon a diet very poor in carbohydrates, oxybutyric appears in the urine. Add to these observations the clinical fact that some diabetes, when put upon too rigid diet promptly die of coma, and the conclusion follows that a

444