

is, a good excretion of test substances usually means good function. One can readily see the many difficulties that may be encountered, because in a number of cases there may be an inhibition of real function from (1) a toxic condition, (2) reflex, or (3) both, hence Rountree and Geraghty of Baltimore have emphasized the importance of repeated tests. Then again, long continued back pressure may produce permanent destruction of the secreting parenchyma with a fairly good urea equilibrium, and with probably few clinical evidences of oncoming uraemia. Such a case even for a slight operation under general anaesthesia is a bad surgical risk. How then can we estimate renal efficiency? By estimating, if possible, the amount of retention in the blood of the substances that should be excreted by the kidneys, or by measuring the excreting power, and we may do so in three ways:

1. Discover, if possible, any evidences of disease, by a careful clinical history. How frequently, if one does that, certain indefinite symptoms can be elicited that have existed perhaps, for some time, e.g., night thirst, dry skin, frontal headache, and perhaps a history of repeated infections of various kinds.

2. By a study of the physical and physicochemical properties of the urine, which is excreted from one or both kidneys. The specific gravity of the urine is a valuable aid in estimating function, and is often more important to know than the presence of albumen and sugar in urine. As a rule a lowering of the specific gravity usually runs approximately parallel with phenolsulphonephthalein output. Generally speaking, also a continual specific gravity below 1010 means impaired function, when amount of urine secretion is about normal. An estimation also of the total urea output as well as the incoagulable nitrogen is useful, but the total must be for twenty-four hours, and can be varied more or less by the intake. If there is decided lessening of urea excretion a blood urea retention test should be done. Other methods could be mentioned such as cryoscopy estimating the freezing point of urine, but the variation differs so, even in normal individuals as not to give accurate data.

3. The use of chemical tests. Many different chemical substances and dyes have been used, chief of which are: methylene blue, indigo carmine, phenolsulphonephthalein, and phloridzin, the last being used to produce a temporary glycosuria. Of these tests phenolsulphonephthalein undoubtedly supports the claims of Rountree and Geraghty of Baltimore as being the most easily accomplished and giving the most accurate knowledge of renal efficiency when corroborated by other findings.

Technic. The test is done by injecting into the muscles or a vein 1 c.c. of a solution containing .6 mg. of the dye, then estimating the time