

strengths of Ringer's solutions. After taking the average for the different groups of experiments, curves were plotted, showing the relationship between the weight alteration and the changes in muscular efficiency. It was found that muscle tissue was able to increase between seven and eight per cent in weight before efficiency fell below that of normal, whereas if a decrease in weight was present, efficiency was noted to fall below normal almost immediately.

This is a preliminary report.

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Effect of Unilateral Nephrectomy Upon Number of Renal Corpuscles in Young Albino Rats.

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When one kidney is absent, the other undergoes the well-known compensatory hypertrophy. Most investigators agree that in cases of congenital defect the renal corpuscles (glomeruli) of the enlarged kidney appear to be increased in number (hyperplasia). In cases of postnatal, acquired renal defect, however, at least in adults, the renal corpuscles appear to be merely increased in size (hypertrophy) without increase in number. Even in young animals, the recent investigations of Arataki¹ (albino rat at 20 days) indicate no increase in the number of renal corpuscles after unilateral nephrectomy.

But these experiments were performed upon animals in which the normal formation of new renal corpuscles had almost or entirely ceased. Kittelson² has shown that in the rat the corpuscles have nearly reached the adult maximum number at three weeks of age. It seems possible that the removal of one kidney in the rat shortly after birth, when the new formation of corpuscles is still active, might produce a corpuscular hyperplasia, comparable to that found in cases of congenital absence of one kidney.

In order to test this possibility, the present study was undertaken. In a female albino rat one week old, body weight 9.09 gm., the right kidney was removed. It weighed 0.049 gm. Two weeks later the rat was killed at 21 days of age, body weight 24.4 gm. The left kidney weighed 0.214 gm., which is about 34 per cent above Donaldson's³ norm for kidney weight (female) at corresponding body weight.

Both kidneys were cut in serial sections and the total number of renal corpuscles in each kidney was counted by Kittelson's method. In the right kidney, originally removed by operation, 8453 fully formed corpuscles were counted. There were also many (un-counted) corpuscles observed in various stages of formation in the peripheral, nephrogenic zone of the renal cortex. In the hypertrophied left kidney, removed later at autopsy, 26,779 corpuscles were counted. This is but slightly above the number in the normal rat of this age and body weight as found by Kittelson (25,930) and by Arataki (female, 24,435).

This difference is so small that it probably represents insignificant individual variation, rather than an actual increase in the number of corpuscles. We may, therefore, conclude that there is apparently no hyperplasia of the renal corpuscles in the albino rat, even when unilateral nephrectomy is performed at a very early age, during the period when the new formation of corpuscles is still actively in progress.

Whatever may be the factor or factors which determine the number of renal corpuscles (and tubules) formed in the nephrogenic blastema, it is evident that this phase of the developmental process is not influenced by the functional changes resulting from unilateral nephrectomy.

¹ Arataki, M., *Am. J. Anat.*, 1926, xxxvi, 437.

² Kittelson, J. A., *Anat. Rec.*, 1917, xiii, 385.

³ Donaldson, H. H. *The rat. Reference tables and data.* 2nd ed. Wistar Institute of Anatomy. Phila. 1924.

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Study of Reversible Oxidation of Adrenaline and Its Derivatives.

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Ephedrine, adrenalone, methylacetopyrocatechol, dimethylacetopyrocatechol, adrenaline, the ethyl and methyl ethers and the anhydride of adrenaline were investigated to see whether (a) they would be oxidized by dibromophenolindophenol, naphtholidichloroindophenol, methylene blue and indigo carmine; (b) whether the oxidized forms would act as oxidizing agents with reduced indigo; (c) whether they formed reversible oxidation-reduction systems; (d)