mouth and nose. In the second method a short tracheal cannula was tightly ligated into the upper part of the trachea and a narrow tube was introduced through a small slit in the lower part of the trachea into the right bronchus. The air entered through the tracheal cannula and had to reach the lower end of the glass tube before it could make its exit. Finally in a third method a long O'Dwyer tube bent at right angles was introduced into the larynx, the pharynx and mouth were packed with gauze, and a long soft rubber catheter was introduced through the O'Dwyer tube deep into the trachea so that its lower end reached the bifurcation. By means of a T-tube the air entered through the O'Dwyer tube into the trachea and had no other escape than through the side openings at the lower end of the catheter (the air passed through an ether bottle; the animals also received morphin). By any of these methods the animals (dogs and rabbits) continued to live for a long time after their muscular action was completely eliminated by curare. The thorax was wide open in most of the experiments and the widely distended lungs showed only the vibrations due to the heart beats. In many cases the lungs lost their pink color. Opening the ether bottle for a second or two permitted a momentary collapse of the lungs and in an instant they again looked pink.

Besides the principle which is demonstrated by this new observation and the possibility of its practical application, it offers a very convenient method for the study of the heart movements without any interference from the respiratory movements.

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Note on the production of kidney insufficiency by reduction of the arterial circulation of the kidney.

By **ALEXIS CARREL.**

[*From the Laboratories of the Rockefeller Institute for Medical Research, New York.*]

In order to obtain an insufficiency of the renal functions, I attempted to find a method simpler and more practical than the reduction of renal substance used by Tuffier, Bradford, Pearce and others. This new method consists of reducing the renal circula-

tion by ligature or stenosis of the branches of the renal artery. The operation is harmless and very simple. The results obtained by Dr. Janeway show that it is efficient.

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A modification of the Riva-Rocci method of determining blood-pressure for use on the dog.

By **THEODORE C. JANEWAY.**

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Previous studies of the blood-pressure changes in living animals, by repeated direct measurements from the femoral or carotid, while accurate from the standpoint of the blood-pressure at the moment of observation, have been of very limited value. When used as a means of following the changes occurring over long periods of time, as in the study of experimental kidney insufficiency, it is questionable whether a single pre-operative reading, with several post-operative ones, afford in themselves any basis for the conclusions drawn. The figures given by Volkmann for the blood-pressure of different animal species show readings from the dog of 104, 123, 143, 157, 166 and 172 mm., a variation so wide that, in the light of our knowledge of the fluctuations of blood-pressure in man, it suggests strongly the fallacy of any conclusions drawn from a comparison of two or three measurements at long intervals.

To obtain some more definite idea of the changes occurring from day to day in experimental animals, I have endeavored to apply to the dog the commonly employed clinical methods. After various attempts, the most satisfactory method was found to be a modified Riva-Rocci cuff applied to the lower foreleg, the pulse being palpated in the artery at the bend of the ankle or in the plantar aspect of the paw. A rubber bag 7.5 × 15 cm., with a slightly larger outer leather cuff, will fit almost any dog, the foreleg being not less than 8 cm. in length, and from 11 to 14 cm. in circumference in a large number of laboratory dogs examined. For small dogs a cuff 5 × 11 cm. is adequate. Measurements are greatly facilitated by using a pressure bottle connected with the cuff and the manometer through valves operated by foot pedals,