leaving both hands free, in place of the usual rubber bulb or Politzer bag as the source of pressure.

The greatest difficulty is the satisfactory palpation of the small pulse in the foot. In certain dogs it is impossible, and animals must be selected that possess a reasonably large and superficial artery. It is impossible to appreciate the return of the pulse after obliteration, but with practice, if the animal can be kept quiet, the obliteration of the pulse can be appreciated within perhaps 10 or 15 mm. limits of error, always on the side of under-estimation. When the foot is cold, it should be wrapped in warm cloths to dilate the vessels, before taking readings.

A number of experiments, in which I have followed the pressure changes during an operation coincidently with a direct carotid tracing, show that one can follow fairly rapid and marked fluctuations of blood-pressure in this way, with reasonable certainty. The results have no absolute, but, I am convinced, a real relative value. For the solution of such problems as the one studied by Pässler and Heineke, and which Carrel and I are engaged in, I believe that frequent approximate blood-pressure observations are of more significance than a few isolated, though accurate, measurements.

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Note on the blood-pressure changes following reduction of the renal arterial circulation.

By **THEODORE C. JANEWAY.**

[*From the Rockefeller Institute for Medical Research.*]

Of the various workers who have studied the effects of reduction of kidney substance, only Pässler and Heineke record systematic blood-pressure observations. They were able to make direct measurements in the femoral on five dogs before and after operation, and reported a rise in pressure in all, the smallest increase being 15 mm., the greatest 29 mm., and the average 21.5 mm. These figures are based on the comparison of single readings before operation with one or more after operation, and are open to the objections I have previously urged. Because of the small number of reported observations in this field, I hope to be pardoned for presenting my still very incomplete studies at this time, in order

that I may demonstrate one of the animals now living with reduced kidney substance and hypertension.

I have made blood-pressure readings, by the rough method previously described, on twenty-three dogs, over a period of fifteen months. As a guide to normal readings in the dog I have figures from twelve dogs that were in good health, several of these being finally checked by direct carotid tracings. In these twelve dogs the average pressure, calculated from a number of readings on each, lay between 91 and 119 mm., the highest individual reading being 130 mm., and the lowest 85 mm. A number of observations made before operation on the ten nephrectomized dogs showed an average blood-pressure between 90 and 117 mm.; highest reading was 135 mm., lowest 80 mm. These readings average lower than those obtained in man, but the method as applied to the dogs is more comparable to the results of Gärtner in man, since the artery used is more peripheral, and the pressure within it more subject to fluctuations due to variations in local vasomotor tone. As I have already said, however, the errors are all on the side of too low readings; therefore, with a sufficient number of pre-operative readings to give a fair average, the finding of a marked rise in blood-pressure subsequently cannot be attributed to errors inherent in the method.

The dogs studied were operated on by Dr. Carrel as already described, with the exception of one after the method used by Bradford, Pässler, and Pearce. Four died from too extreme reduction of the arterial blood supply of inanition, and one of an abscess unrelated to the operation. All showed a slight rise in pressure in the first three to seven days, with subsequent fall, except one dog that died of extensive resection in four days. The most striking of the fatal cases showed the following:

	Blood-pressure, mm. Hg.		
Dog 19.	Maximum.	Minimum.	Average.
Before operation, 15 days	110	100	106
After operation, 21 days	135	120	127
Terminal period, 14 days	110	70	83

Five dogs are still living, one having been operated on 105 days ago, the others a shorter time. This dog, No. 12, shows the following clear result:

	Blood-pressure, mm. Maximum.	Minimum.	Hg. Average.
Before operation, 45 days	110	80	90
After " first period, 43 days	120	100	111
" " second period, 26 days	140	110	121
" " third period, 31 days	150	110	125
" " whole period			120

He has gained from 12,770 grm. to 16,250 grm. and his urine has been free from albumin for three weeks, but is increased in quantity. A still more marked hypertension has been obtained in Dog 20, as the following table shows:

	Blood-pressure, mm. Maximum.	Minimum.	Hg. Average.
Before operation, 23 days	135	95	117
After " 35 "	175	130	150

This dog is excitable and single readings are liable to vary somewhat on this account, but the comparison of the averages, based on eleven observations before and twenty-one after operation, or of either the highest or lowest readings, all show a true hypertension as a result of the reduction of functioning kidney substancs by this method. This dog has a persistent albuminuria, with casts and red blood cells, and a daily urine quantity of about 500 c.c. The three remaining dogs have not been under observation long enough, or have not had sufficient reduction of circulation, to give definite results as yet.

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The effect of experimental acute insufficiency of the right heart upon the volume of the organs.

By **H. C. THACHER, M.D.**

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If a small balloon be introduced into the right auricle or ventricle, its inflation interferes with the action of the right heart and renders the heart insufficient to perform its normal work. The effect of this upon the systemic circulation should be nearly similar to that caused by acute cardiac insufficiency in general. The changes in the volumes of the brain, liver, spleen, kidney, and extremity resulting from such cardiac obstructions were registered by oncometry in rabbits, cats and dogs.

The carotid blood-pressure, which was always registered as an