

Five similar experiments were performed. In three cases, lesions of one or two anastomoses, and thrombosis of the vessel, occurred two days, ten days and thirty-five days after the operation. However, the wall of the transplanted segment remained apparently normal. In the fourth case, the transplanted segment, extirpated and examined six days after the operation, appeared to be normal and perfectly united to the ends of the aorta. On the fifth animal, a laparotomy was performed forty-eight days after the transplantation. It was found that the pulsations were normal in the abdominal aorta and the segment of carotid. The location of the anastomoses was marked by a slight hardening of the arterial wall. No dilatation of the transplanted segment was observed. The animal was kept alive and is now, seventy-eight days after the operation, in excellent condition. The pulsations of the femoral arteries remained normal.

The experiments show merely that a segment of a dog carotid which had been transplanted in a cat could act as artery for seventy-eight days at least.

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Transplantation of the kidney with implantation of the renal vessels in the aorta and vena cava.

By **ALEXIS CARREL.**

[From the Rockefeller Institute for Medical Research.]

The transplantation of the kidney with implantation of the renal vessels in the aorta and vena cava consists of extirpating from an animal a kidney with its vessels, together with a patch of the aorta and vena cava; also of transplanting the kidney into the abdomen of another animal and suturing the edges of the patches to the edges of suitable openings made in the walls of the aorta and vena cava. By this patching method, the anastomoses are more safely performed than by the other methods of anastomosis. If the patch be large enough, occurrence of gangrene in the transplanted organ is practically impossible. With Guthrie, I used this method mainly on cats and obtained excellent results from the standpoint of restoration of the circulation. In dogs, on account

of the shape of the abdomen, it is difficult to prevent the occurrence of congestion of the kidney. This occurs because of compression of the renal vein between the aorta and the kidney. It could be prevented by putting the new kidney exactly at the place of the extirpated one.

This operation is not dangerous. Of seven animals operated on, six remained in good health. The seventh died of intestinal intussusception four days after the operation.

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Secondary peristalsis of the esophagus — a demonstration on a dog with a permanent esophageal fistula.

By **S. J. MELTZER.**

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

The peristalsis of the esophagus with which every one is familiar is that which follows an act of deglutition. About a year ago I reported to this society that experiments which I had made on rabbits demonstrated that the esophagus is capable of peristaltic movements not initiated by deglutitions. Injections of indifferent solutions or of air directly into the esophagus cause there a regular peristaltic movement. This latter form of peristaltic movement, which for the sake of brevity I shall henceforth term *secondary peristalsis*, differs from the *primary peristalsis*, the one which follows deglutition, essentially through the nervous mechanism by which it is controlled. All the movements of the complicated act of deglutition are managed by a reflex mechanism, with only one sensory stimulus for its initiation and a series of consecutive motor impulses going to every part of the long path of deglutition; it is practically a single reflex. The reflex mechanism of the secondary peristalsis, on the other hand, consists of a chain of reflexes; each part of the esophagus sends up to the center a sensory impulse started by the presence of the bolus in that part and receives in turn a motor impulse. The secondary peristalsis therefore requires the presence of some sort of a bolus within the esophagus and presupposes the integrity of the latter; whereas the primary peristalsis requires neither a bolus nor the integrity of the esophagus;