

increase or decrease in the volume of the kidney will show an up and down movement of the style. The pulse tracing obtained shows that the instrument records even small changes in the kidney volume. If the splanchnic nerve is stimulated, with the plethysmograph in place, there is a great decrease in the size of the kidney as shown by the fall in the writing style of the tambour. This is brought about by the great vasoconstriction which accompanies the stimulation of the nerve (see Fig. 26).

### DEMONSTRATION No. 3.

#### Factors which Influence Blood Pressure.

##### A. The Effect of Afferent Stimuli on the Respiration and the Blood Pressure.

The lingual branch of the fifth nerve is exposed on the under surface of the jaw, and electrodes are placed on the central end (the end towards the brain) of the divided nerve. While a normal blood pressure tracing is being taken the nerve is excited by stimulation from an induction coil with tetanizing shocks. A rise in blood pressure and increased respiratory movements are observed with strong currents in most cases. This is due to the afferent stimuli affecting the vasomotor and respiratory centers and reflexly influencing control of the efferent respiratory and vascular nerves.

##### B. The Effect of Stimulation of the Central End of the Cut Vagus Nerve.

The vagus on one side is cut and the central end is stimulated with stimuli of varying strength. With very weak stimuli a fall in blood pressure is usually produced. Stronger stimuli may produce a marked rise in pressure. The effect is due to a reflex stimulation or inhibition of the vagus and vasomotor centers.

##### C. Effect of Hæmorrhage on the Blood Pressure.

A cannula is inserted into the femoral artery, and while a normal blood pressure tracing is being made, the artery is opened. It will be found that when the artery is fully opened, there is an immediate fall in blood pressure, due to lessening of the peripheral resistance. If the artery is only partially opened, considerable bleeding may occur before the blood pressure is affected. The explanation for this lies in the vasomotor center being stimulated by lack of blood and causing a generally increasing vasoconstriction over the body.

##### D. The Effect of Gravity on the Circulation.

Through two staples on the under surface of the dog board and op-