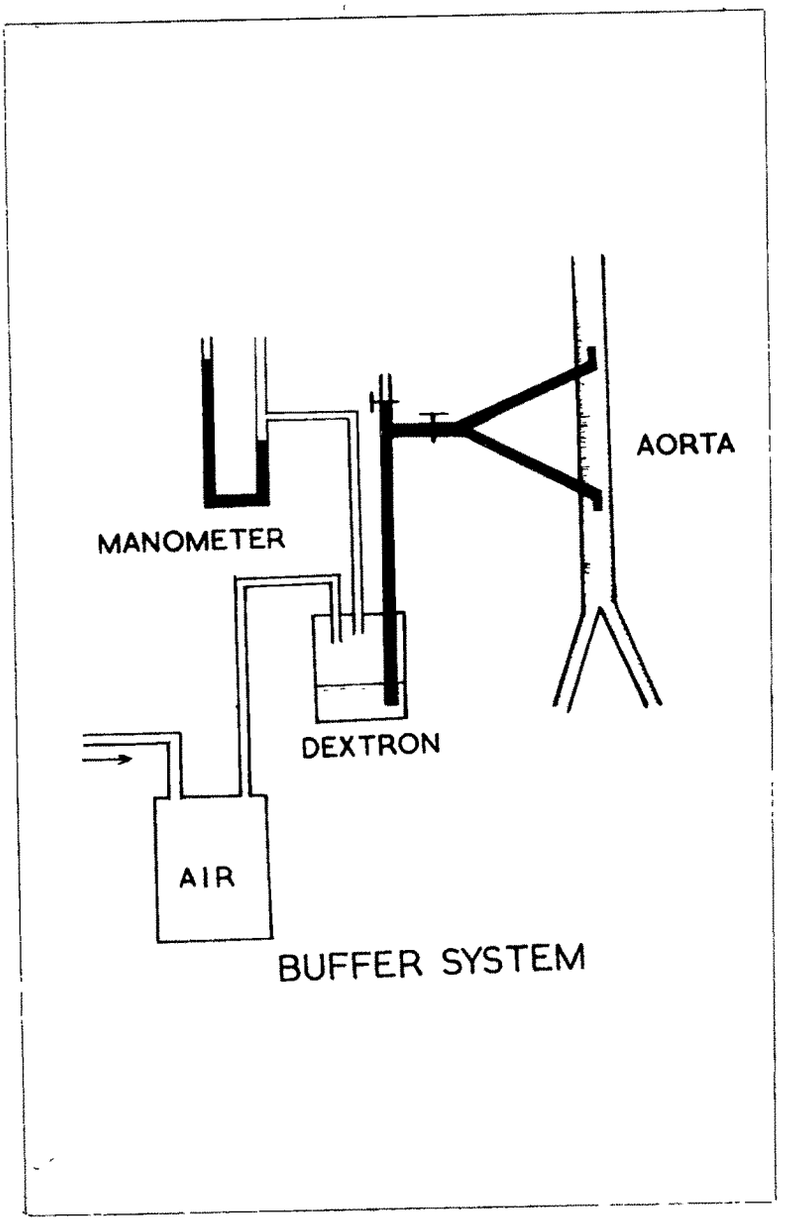
METHODS

In the present study male and female dogs weighing 15 - 20 kg. were used. They were premedicated with morphine (3 mg /kg) and anaesthetized with chloralose (90 mg /kg). The concentration of the chloralose solution was 5 mg /ml of 0.9% NaCl solution. In one case ether was administered to obtain the desired amount of relaxation of the abdominal musculature.

The abdomen was opened through a midline incision. Then the abdominal aorta was exposed and the branches were tied off along a segment approximately 1½ inches in length. Two cannulas were passed in this segment, one toward the heart and the other toward the periphery. The rubber tubing from the two cannulas led to a Y tube, which was connected by a T tube to the "buffer system".

The buffer system consisted of a bottle containing 0.6% dextran solution connected to a reservoir containing approximately 40 L. of air. A mercury manometer connected to the solution bottle indicated the pressure. The pressure in the buffer system could thus be set at any desired level (Gen. Fig. 3).

Initially the buffer system was filled with air to produce a pressure similar to that in the carotid



Gen. Fig. 3 : Buffer System

artery, and then the tube connecting the aortic cannula with the system was opened. Any tendency for a change in arterial blood pressure would be prevented by flow of blood into or out of the solution bottle. It was necessary to record simultaneously the blood pressures from the aorta and the carotid artery in order to determine if the aortic cannulas were patent and permitting rapid equilibrium of the arterial pressure with the pressure in the regulator. When the aortic cannulas became blocked or were too small the carotid blood pressure did not correspond with the pressure in the buffer system. The two pressures were recorded by the use of pressure transducers and multichannel Sanborn recorder.

In some of the experiments the carotid sinuses (and bodies) were inactivated on both sides as follows. The common carotid artery was ligated approximately 2 cm below the bifurcation, and the internal and external carotid arteries were ligated separately approximately 1 cm above the bifurcation. Then an incision was made into one of the vessels to make sure that the blood supply to the sinus had been excluded. Sometimes a small branch was observed arising from the area of the carotid sinus. This was ligated.

The aortic pressoreceptors and bodies on both sides were denervated by sectioning both vagosympathetic trunks high in the cervical region.

Heart rate was determined from electrocardiograms (lead II). The number of cardiac cycles was counted for 10 sec. periods and expressed as rate/min. The blood pressure tracing and electrocardiographic records were taken simultaneously by a Sanborn recorder.

The angiotensin (Ciba) being used was injected intravenously in the foreleg vein. In most of the injections 2 ml of solution, containing 10 μg of synthetic angiotensin, was given intravenously at one time. Each ml contained 5 μg weight or 40 units of angiotensin. In some experiments where angiotensin was to be given slowly, 20 μg were dissolved in 40 ml of 0.9% NaCl solution. This was administered intravenously at the desired rate for a specific time by means of an injection machine. Twenty units of Pitressin was dissolved in 20 ml of 0.9% NaCl solution. The usual dose of Pitressin was 0.1 unit/kg of body weight, intravenously.

The transverse section of the spinal cord was performed at the level of C_6 or C_7. The two cut ends

were separated by cotton pluggings soaked in warm isotonic saline.

Pentolinium 'ansolysen' (May and Baker) in the dosage of 5 mg/kg of body-weight was injected for producing the ganglion blocking effect. This was given intravenously. The blocking effect was tested by the stimulation of cut peripheral end of either vagus and by carotid sinus reflex. It was observed that blocking effect was not completely present after this dosage. The similar dosage was repeated upto four times. However, complete blocking effect could not be demonstrated.

To observe the effect of sympatholysis, Bretylium Tosylate (Burroughs Wellcome) prepared in 0.9 per cent sodium chloride was injected intravenously at the dose level of 10 mg/kg of body-weight, In separate experiments, serpacil (CIBA), also a sympatholytic drug, was injected by similar route in the dosage of 2 - 3 mg/kg of body-weight.

In some experiments the adrenal veins were tied on either side to put adrenal glands off the circulation.

Inderal (ICI) was given I.V. in the dosage of 2.5 mg/kg to 5 mg/kg to block the β recepters of sinoatrial node.

The blocking of β receptors and sympatholysis were tested by carotid sinus reflex, when incomplete, the doses were repeated. Angiotensin was injected when these effects were at their maximum.