THE CHANGES IN THE ARTERIAL PRESSURE WHICH ARSE DURING STIMULATION OF NUMEROUS INTEROCEPTIVE ZONES ARE DUE, AS WE KNOW, TO A REFLEX ALTERATION IN THE LUMEN OF THE BLOOD VESSELS UNDER THE CONTROL OF VASOMOTOR FIBERS. THESE REFLEXES MAY BE CALLED SYSTEMIC, SINCE THEY AFFECT THE CIRCULATORY SYSTEM AS A WHOLE. THE SYSTEMIC REFLEXES ARE AN INTEGRAL REACTION CAUSED BY AGGREGATION OF REGIONAL VASOMOTOR REFLEXES TAKING PLACE IN SEVERAL DIFFERENT VASCULAR REGIONS.

A NUMBER OF RESULTS OBTAINED IN PREVIOUS INVESTIGATIONS [4-6] LED US TO THE VIEW THAT BEHIND THE OUTWARDLY STANDARD CHARACTER OF THE SYSTEMIC REFLEXES THERE ARE HIDDEN VARIOUS COMPLEXES OF REGIONAL VASOMOTOR REFLEXES WHOSE SPECIFIC FEATURES ARE DETERMINED BY THE APPEARANCE LOCALLY OF AFFERENT SIGNALS. DURING PROLONGED STIMULATION OF AN INTEROCEPTIVE ZONE THE AFFERENT IMPULSES GRADUALLY LOSE THEIR EFFECTIVENESS IN CONSEQUENCE OF THE APPEARANCE OF INHIBITION IN THE CENTRAL LINK IN THE REFLEX ARC; THIS INHIBITION IS, HOWEVER, LOCALIZED TO THIS PARTICULAR ARC AND DOES NOT PREVENT THE APPEARANCE OF SYSTEMIC REFLEXES FROM OTHER ZONES. THIS PHENOMENON PERMITS SPECULATION ON THE PRESENCE OF DEFINITE "PROJECTIONS" OF THE INTEROCEPTIVE ZONES IN THE VASOMOTOR REGULATORY CENTERS AND SUGGESTS THAT THERE ARE DIFFERENCES IN THE EFERENT STRUCTURE OF THE SYSTEMIC REFLEXES ARISING FROM DIFFERENT ZONES.


EXPERIMENTAL METHOD

A QUANTITATIVE ESTIMATION OF REGIONAL VASOMOTOR ACTIVITY IS USUALLY MADE WITH THE AID OF MEASUREMENT OF THE BLOOD FLOW IN THE VASCULAR REGION UNDER INVESTIGATION. HOWEVER IN A SIMULTANEOUS INVESTIGATION OF THE CHANGES IN THE ARTERIAL PRESSURE (SYSTEMIC REFLEX) AND IN THE LUMEN OF THE VESSELS IN INDIVIDUAL ORGANS (REGIONAL REFLEXES),
registration of the rate of the blood flow leads to indeterminate results, demanding further interpretation of the values of hemodynamic and vasomotor factors in the blood supply of the organ.

Considerations such as these led us to the necessity of using a method which would enable the quantitative estimation of the regional vasomotor activity from the resistance shown by the vessels to the flow of blood [7]. The principle of this method, which we called the method of "resistography," consists of stabilization of the rate of the blood flow in the organ under study by means of a special perfusion pump [8].

![Fig. 1. Systemic and regional reflexes (a — on the walls of the branches of the superior mesenteric artery, b — on the renal vessels) during stimulation of mechanoreceptors: 1) of the carotid sinus; 2) of the large intestine (distension with air at a pressure of 100 mm mercury); 3) of the tibial nerve (intensity: a = 6V; b = 4V); 4) of the mechanoreceptors of the urinary bladder (pressure 60 mm mercury). Significance of the curves (from above downwards): a) perfusion pressure; its zero line, general arterial pressure (mercury manometer), its zero line, respiration, stimulation marker, time marker (80 seconds); b) general arterial pressure, perfusion pressure, zero lines (remainder as in tracing a), time marker (15 seconds).]

By drawing blood from the proximal end of the artery supplying the organ and injecting it into the distal end of the artery, i.e. by carrying out autoperfusion, the pump maintains the minute volume of blood flow at a constant level. The perfusion pressure, recorded by a mercury manometer in the outlet of the pump, is in this case a function of the resistance of the vascular system of the organ, which is mainly determined by the size of the lumen of the arterioles, and consequently by the degree of vasomotor activity. Thanks to the constancy of the blood flow, a diminution in the lumen of the arterioles (increase in the resistance of the vessels) leads to a rise in the perfusion pressure, and dilatation of the arterioles (diminution of resistance) is accompanied by a fall in the perfusion pressure.

*We propose this term by analogy with the terms "plethysmography" and "rheography."