BRIEFS FROM THE LITERATURE

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Briefs were submitted by Drs. C. M. Ballinger, Lee S. Binder, John P. Bunker, M. T. Clarke, Martin Helrick, J. R. Householder, S. J. Martin, R. E. Ponath, R. W. Ridley and H. S. Rottenstein. Briefs appearing elsewhere in this issue are a part of this column.

VASCULAR CONTROL Autonomic control of vascular beds appears to be mediated through three receptors: (1) alpha (constrictor) receptors which respond to adrenergic pressor agents such as arterenol; (2) beta (dilator) receptors which respond to adrenergic depressor agents such as isoproterenol, and (3) gamma (dilator) receptors which respond to cholinergic substances such as acetylcholine. Epinephrine stimulates both alpha and beta receptors. However, small doses of epinephrine produce a systemic vasodilatation whereas large doses cause vasoconstriction. One explanation is that alpha receptors have a higher threshold but a steeper dose-response curve for epinephrine than beta receptors. Adrenergic blocking agents readily block alpha receptors but have almost no blocking effect on beta receptors. The strong reversal of epinephrine constrictor responses and the weak reversal of arterenol responses by adrenergic blocking agents is due to their blockade of alpha constrictor responses, thus unmasking latent beta dilator responses which are stimulated more strongly by epinephrine than by arterenol. Gamma receptors are blocked by atropine and weakly by large doses of adrenergic blocking agents. The distribution of various receptors, their innervation, and the organ's intrinsic vasomotor tone conditions the response of various organ systems to changing hemodynamic conditions. These organ systems are discussed in great detail and the data presented support the generally accepted concept that homeostatic regulation of arterial pressure by control of peripheral resistance is mediated principally by the arterenol-sympathetic system. The regulation serves primarily to maintain an adequate head of pressure for the brain and heart for these organs are essentially unresponsive to the constrictor mechanism. With a generalized arterenol-sympathetic discharge, more blood would be shunted away from the kidney than from any other organ. Skin and the mesenteric bed are next most active; and skeletal muscle, if at rest, can apparently also shunt blood to the heart and brain, both because of its reactivity and because of the considerable proportion of the cardiac output which it receives at rest. The hepatic bed appears to be the least important in this regard. (*Green, H. D., and Kepchar, J. H.: Control of Peripheral Resistance in Major Systemic Vascular Beds, Physiol. Rev. 39: 617 (July) 1959.*)

BLOOD PRESSURE MONITORING A transducer system for recording the direct arterial blood pressure makes it possible to display continuously known pressures and the arterial pulse curve on a Cathode-ray oscilloscope and to record the curves. The basic element of the pressure scanner is the high precision valve that opens in sequence between the transducer and four pressure sources. The timing is so arranged that the previously sampled pressure is completely turned off an instant before the succeeding pressure to be sampled is turned on. Each sampling of pressure in its proper turn actuates the ceramic piezoelectric transducer. In actual operation, as the scanning valves open and close, the pressure in the transducer chamber is changed and precisely measured in less than one thousandth of a second, forty such changes occurring each second. This system, which can be sterilized by autoclaving or with chemicals, eliminates the need for direct-current amplifiers and centering controls. (*Dobosy, J. F., and Proudfit, W. L.: A Self-Calibrating Blood-Pressure Monitoring System, Cleveland Clinic Quart. 26: 135 (July) 1959.*)