J. A.: Functional Distribution of Right and Left Stellate Innervation to the Ventricles, Circulation Res. 28: 416 (April) 1966.)

HEART RATE Cardiovascular dynamics were studied in 10 healthy humans during controlled heart rates up to 160 beats per minute. Measurements were made at rest and at exercise with each patient serving as his own control. In both states, the cardiac index, left ventricular work, and peripheral resistance were not significantly altered by changes in heart rate while stroke index and mean systolic ejection rate decreased linearly with heart rate. During exercise (as compared to rest at comparable heart rates), cardiac index, tension time index, left ventricular work, stroke index and mean systolic ejection rate all increased while peripheral resistance decreased. Myocardial oxygen consumption increased with heart rate in both rest and exercise states. *(Stein, E.: The Relation of Heart Rate to Cardiovascular Dynamics, Circulation 33: 925 (June) 1966.)*

BETA-ADRENERGIC BLOCK Beta-adrenergic blockade with propranolol in six normal subjects caused (a) a mean decrease in resting heart rate; (b) a mean decrease in resting supine cardiac output; (c) a mean reduction in exercise cardiac output and exercise pulse rate; (d) a decrease in the elevation of arterial systolic pressure produced by exercise; (e) an increase in exercise end-diastolic pressures in the left ventricle and in exercise pulmonary artery pressures; and (f) more rapid recovery of circulatory function after exercise. There was no consistent change in pulmonary vascular resistance during rest or exercise. Even though normal cardiac response to exercise seems to be dependent on intact beta-adrenergic receptors, the exercise loads chosen were completed just as easily after the blockade as before. *(Cumming, G. R., and Carr, W.: Hemodynamic Response to Exercise After Propranolol in Normal Subjects, Canad. J. Physiol. 44: 465 (May) 1966.)*

BETA ADRENERGIC BLOCKADE Inderal (propranolol) is the second compound which specifically antagonizes the effects of catecholamines on the beta adrenergic receptors of the heart. Pharmacologically, it is similar to pronethalol but is devoid of the latter drug's carcinogenic action in experimental animals. Inderal prevents the sinus and ventricular tachycardias associated with cyclopropane or halothane anesthesia in atropinized patients. It also prevents ventricular arrhythmias caused by the intravenous infusion of catecholamines into atropinized patients anesthetized with halothane. It blocks the vasomotor response to surgical stimuli in lightly anesthetized patients and may therefore be used to facilitate hemostasis by controlled hypotension in anesthetized patients. It may be dangerous to use Inderal in conjunction with ether or chloroform anesthesia. Metabolic acidosis, bronchial asthma and toxemic states are contraindications to its use in anesthetized patients. Administration of Inderal to non-atropinized patients anesthetized with halothane may cause vagal arrest of the heart. *(Johnstone, M.: Beta Adrenergic Blockade with Inderal (Propranolol) during Anesthesia, Der Anaesthesist (German) 15: 96 (March) 1966.)*

BETA BLOCKERS The effects of propranolol, a beta-adrenergic blocking agent, on the A-V node and its antagonism of the action of adrenalin and isoproterenol on the A-V node were studied in dogs. Vagal and sinoatrial effects were eliminated by vagotomy and by crushing the S-A node. Propranolol itself depressed the automatism of the A-V node by 10–40 per cent. It also antagonized the positive chronotropic actions of adrenalin and isoproterenol on the node. This effect was dose related and thought to be due to competitive inhibitation. Propranolol also antagonized the shortening of the refractory period produced by these catecholamines. Other effects of beta-adrenergic blockade, such as blocking the vasodilating effects of adrenalin and isoproterenol, were also noted. *(Kabela, E., and Mendez, R.: Action of Propranolol on the Atrio-Ventricular Node and on its Response to Adrenalin and Isoprenalin, Brit. J. Pharmacol. 26: 473 (Feb.) 1966.)*

BETA BLOCKADE Propranolol, when given intravenously to dogs anesthetized with pentobarbital, reduced myocardial blood flow

by 34 per cent as measured by the heated thermocouple technique. This change in blood flow was not accompanied by any significant change in arterial blood pressure. The reduction results from a greatly increased resistance to flow that may be due to an abolition of sympathetic vasodilator tone and an unmasking of the vasocontrictor action of epinephrine on the alpha receptors. After treatment with propranolol, hemorrhagic hypotension resulted in striking increases in the resistance to flow within the myocardium. This was in marked contrast to healthy dogs, in which myocardial blood flow was maintained between blood pressure levels of 120 and 40 mm. of mercury. It is suggested that the use of beta adrenergic receptor blocking drugs in clinical practice may result in a reduced myocardial irritation especially under conditions where the activity of sympathetic nerves is increased. (*Parratt, J. R., and Grayson, J.: Myocardial Vascular Reactivity After Beta-Adrenergic Blockade, Lancet 1: 338 (Feb.) 1966.*)

CORONARY BLOOD FLOW Coronary blood flow (CBF) utilizing radioactive ^{86}Rb was 80.3 ml./min./100 g. tissue in normals and 56.8 ml. min. 100 g. tissue in patients with hypertensive heart disease. The results agreed well with those utilizing the nitrous oxide technique. CBF was found to equal about 6 per cent of cardiac output in normal patients. Advantages of the ^{86}Rb technique were: (a) avoidance of coronary sinus catheterization; (b) average flow of entire myocardial mass is obtained; and (c) independence from prolonged steady state conditions. The main drawback relates to the radioactivity of ^{86}Rb which limits the maximum number of determinations in any one patient to two. (*Donato, L.: Measurement of Coronary Blood Flow by External Counting with Radioactive Rubidium, Circulation 33: 708 (May) 1966.*)

CORONARY BLOOD FLOW Diethyl ether exhibited little or no depressant action on coronary circulation in dogs at a light or moderate depth of anesthesia. Cyclopropane reduced cardiac output and left coronary blood flow in slight or moderate degree depending on the concentration inhaled, while the mean arterial pressure was relatively well maintained during anesthesia, mainly because of slight or moderate increase in total peripheral resistance. Halothane and methoxyflurane exerted a profound depressant effect on the cardiovascular system. The higher the concentrations at which these two drugs were administered, the greater was the observed reduction in mean arterial pressure, pulse amplitude, heart rate, left coronary blood flow, cardiac output, stroke volume and left ventricular work. Protracted recovery of circulatory parameters from the profound depression following cessation of anesthesia was observed quite frequently in methoxyflurane anesthesia in contrast with halothane anesthesia. Statistically highly significant positive correlations were observed between left coronary blood flow and left ventricular work with all anesthetics and at all concentrations inhaled, while the left coronary blood flow showed less significant correlations with mean arterial pressure and cardiac output. (*Saito, T., and others: Coronary Circulation During Inhalation Anesthesia in Dogs (Japanese), Jap. J. Anesth. 14: 815, 1965.*)

ANGINA PECTORIS Iproveratril, a new coronary vasodilator was administered to a group of 30 aged patients (average age 80.4 years) suffering from angina pectoris. Its effect upon decreasing the number of nitroglycerin tablets required by each patient per week was compared to that of a placebo, using a double blind crossover technique. This vasodilator significantly decreased the number of nitroglycerin tablets required to relieve angina, with no appreciable changes in pulse rate, blood pressure or ECG. The actions of Iproveratril are similar to those of known beta-receptor blockers, however, it dilates the coronary bed at smaller doses than those required to obtain other sympathetic effects. (*Neumann, M., and others: Double Blind Evaluation of Orally Administered Iproveratril in Patients with Angina Pectoris, Amer. J. Med. Sci. 251: 552 (May) 1966.*)

CARDIAC RESUSCITATION The clinical and biochemical aspects of cardiac resuscitation were studied in 57 episodes of cardiac