ABSTRACTS
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CORONARY ARTERY DISEASE
Ten personal observations of recent and old myocardial infarction involving the auricles (3.12 per cent of the entire examined autopsy material) are reported and the literature on the subject is reviewed. In seven cases this was associated with posterior wall infarction, in one with anterior wall infarction, and in two with infarction of both ventricular walls. In all instances the right auricle was involved (eight times its anterior and two times its posterior wall), and in five instances the left auricle also (three times the posterior and two times the anterior wall).
The electrocardiographic alterations which can be attributed to auricular infarction are discussed. In the present series electrocardiograms were available in eight instances. In six cases there was a disturbance of rhythm (A-V block, auricular flutter and fibrillation, and premature beats), and in two cases a displacement of the P-Q segment. In two cases with conduction disturbance the diagnosis was suspected during life. The author thinks, that auricular infarction is more common than would appear from the scanty reports in the literature. One of the reasons for the paucity of reported cases is probably the fact that insufficient attention is paid by the pathologist to infarcted areas in the auricles.

Pick

Cortisone was employed in the treatment of 17 patients with shoulder-hand syndrome which developed as a complication of acute myocardial infarction. In all these patients previous treatment with physical therapy, manipulative therapy, or local and stellate ganglion blocks was without significant effect. Cortisone produced complete relief of signs and symptoms in five patients, marked improvement in eight, moderate improvement in three, and no significant response in one. The striking feature of the treatment was its dramatic effect in the relief of pain, often within 24 to 48 hours. In addition, there was concomitant but often less marked improvement in the range of motion at affected joints. Vasomotor disturbances were also rapidly influenced with decrease or disappearance of edema and improvement in temperature, color, and sudomotor activity of the hand. In patients responding favorably there was no recurrence of symptoms after discontinuance of treatment. No thromboembolic complications were encountered in this series. These and previous observations fail to confirm the serious risk of vascular complications which is claimed to result from the use of this drug.

Bernstein

ELECTROCARDIOGRAPHY, VECTOR-CARDIOGRAPHY, AND BALLISTOCARDIOGRAPHY

The authors classify paroxysmal ventricular tachycardia as follows. (1) A terminal prefibrillatory type that indicates the preterminal decline of an exhausted myocardium; it is characterized by electrical polymorphism and frequently associated with digitalis medication. (2) A type associated with
mature permanent monomorphic prognostic significance. however, ventricular septum. due to infarction or, rarely, syphilis of the ventricular septum. (4) A persistent and prolonged type that occurs in sound hearts usually in young people: this type differs from type 2 in the absence of isolated ventricular premature beats and is similar to supraventricular tachycardia in its abrupt onset and offset, however, the duration of the attack is longer, lasting for several days to a week. The rate is high (159 to 243). Postparoxysmal electrical changes may persist for as long as two months but have no prognostic significance.

**SOLOFF**


The author studied in serial sections the histology of the A-V conduction system in two cases with a typical pattern of left bundle branch block, in one case with right bundle branch block, and in one case with intermittent (left) bundle branch block. In none of them was an anatomic lesion of the bundle branches or the common bundle found. Conversely, of two other cases who had definite destructive lesions in one or in both bundle branches, one had a nonspecific abnormal electrocardiographic pattern and the other, complete A-V dissociation; the QRS duration was normal in both.

These findings suggest that the electrocardiographic pattern of bundle branch block is not necessarily due to a localized anatomic interruption of the conduction pathways in the ventricles. It may apparently be caused by more widespread alterations which cannot be demonstrated morphologically. Therefore, according to the author, the classic concepts of bundle branch block need some revision.

**PICK**


A method is described for wireless recording of electrocardiograms of pilots during flight. The transmission is achieved by means of a frequency modulating device connected to the standard aircraft radio transmitter. With this arrangement electrocardiograms can be recorded on the ground in one or in several leads without artefacts or atmospheric distortions. Several such tracings of pilots flying a “De Havilland Vampire” are reproduced. The described method is appropriate for cardiologic-physiologic control of persons flying in high altitudes.

**SOLOFF**


Several unusual electrocardiograms are reported. In one, gradual transition from normal to bundle-branch block complexes occurs over a six-cycle interval; in another, from a patient with auricular tachycardia, the pattern of acute myocardial infarction concealed by left bundle-branch block becomes unmasked coincident with the development of a 2 to 1 auriculoventricular block. The importance of the critical heart rate with respect to intraventricular conduction is emphasized, and its significance is discussed. It is suggested that the determination of the critical rate is a convenient method of following the progress of a case of intermittent bundle-branch block. From this and other studies, it appears that intermittent bundle-branch block is usually an expression of underlying myocardial disease and probably represents a transitional stage before permanent bundle-branch block supervenes.

**BERNSTEIN**


In 32 cases with gall bladder disease a frequent finding was lowering of the T waves (in 48 per cent) and inversion of the T waves in lead III (in 49.5 per cent). These alterations disappeared with contraction of the gall bladder, following duodenal lavage, or after intravenous injection of ergotamine. The authors believe that these electrocardiographic alterations are caused by sympathetic stimulation subsequent to distension of the gall bladder, and may be of value in the diagnosis of gall bladder disease.

**PICK**

Scarborough, W. R., Davis, F. W. Jr., Baker, B. M. Jr., Mason, R. E., Singewald, M. L.,

Ballistocardiographic records taken on a Starr-type high frequency bed together with electrocardiographic studies were made on 369 clinically normal persons—261 men and 108 women, ranging in age from 20 to 84 years. There were no abnormal ballistocardiograms in individuals under the age of 40, but from the fifth decade to the eighth, the incidence of abnormal ballistocardiograms rose step-wise from 10 per cent to 91.7 per cent. For the same decades, the incidence of abnormal electrocardiograms rose from 2.6 per cent to only 8.3 per cent. In the entire group of 369 individuals the ballistocardiograms were normal in 55.8 per cent, borderline in 9 per cent, and abnormal in 25.2 per cent; the corresponding figures for the electrocardiograms were 90.5 per cent, 6.8 per cent and 2.7 per cent.

A detailed quantitative analysis was made of approximately sixty variables from 275 normal and borderline ballistocardiograms. These include time interval measurements of the waves, and their relationship to age, sex, pulse rate and body size. A further study was made of some of the factors influencing the amplitude and duration of the ballistocardiographic, respiratory variation, cardiac output, cardiological "vector" distribution, and other ballistocardiographic variables.

Based on this data, preliminary, empiric criteria for the normal ballistocardiogram were determined. The authors state that at present the attitude towards the ballistocardiogram should be as follows: if the ballistocardiographic interpretation coincides with the other clinical and laboratory data, it may be given weight, but, if on the other hand, the ballistocardiogram is abnormal in the absence of any other confirmatory findings, then one should reserve opinion on its clinical significance.

Rinzler


The usual determination of the ventricular gradient is made in the frontal plane. The authors describe a method for determination of its spatial position using a certain arrangement of electrodes corresponding to three perpendicular transthoracic leads. With this method it can be shown that under normal conditions, the vector representing the ventricular gradient is directed downwards, to the left, and posteriorly. Thus, it is located in the left posterior lower quadrant of a three dimensional system of coordinates.

Pick


The authors report vectorcardiographic studies of cases who in the conventional electrocardiogram showed patterns of incomplete intraventricular blocks. A right sided conduction defect of this type is suggested by a slurred S wave in leads I and II and a notching of QRS in the right precordial leads, in the absence of abnormal QRS prolongation. Such patterns occur in normals, for example in asthenic types, as well as under pathologic conditions, for example in right ventricular hypertrophy. A vectorcardiogram in the horizontal plane permits, according to the authors, a distinction between the two possibilities. In normal persons it will show a single smooth QRS loop; in the presence of an abnormal conduction delay, a double QRS loop, with the first portion pointing to the left and the second, terminal one, pointing to the right and anteriorly.

The diagnosis of a left sided complete or incomplete intraventricular block is suggested by reversal of the direction of the development of the QRS loop in the horizontal vectorcardiogram, so that it takes place in a clockwise direction instead of the normal counter clockwise manner, as is seen in left ventricular hypertrophy without abnormal delay of left ventricular activation.

Pick


Serial electrocardiograms were taken before and after treatment with the methonium compounds in 75 patients with arterial hypertension. Sixty had essential and 15 malignant hypertension. The majority of the patients were treated with subcutaneous injections of hexamethonium bromide; a few received oral hexamethonium bitartrate and a few, subcutaneous injections of M. & B. 1863. These patients were treated for at least three months. In no patient was digitalis administered.

Electrocardiograms from 54 patients with S-T or T-wave abnormalities showed a return to normal in 26 patients and a return toward normality in 20. Electrocardiograms from 50 patients with abnormally high QRS voltage showed a return to normal in 32 and a return in the direction of normal in 6. Such improvements in the electrocardiogram appeared to be directly related to the degree of control of blood pressure achieved.

Rinzler

Schaffer, A. I., Bergmann, P. G., Boyd, L. J., Mirkinson, A., and Beinfield, W. H.: Eccentricity as a Cause for the Difference Between the Vectorcardiograms Registered by the Cube and

This report attempts to show how the eccentric position of the heart in the trunk is the cause for much of the observed difference between the vectorcardiograms registered by the cube system and those registered by the tetrahedral system. The authors make a distinction between the anatomic and effective axis of the lead and have set up a diagram and table which correlate the deviations of the effective axis of homologous leads with the differences in the manifestations of the two systems. To test the validity of the diagram and table, a group of newborn infants were examined by the cube and tetrahedral systems and the manifest vectors showed certain differences which agreed very well with the expected differences as set forth in the diagram and table. The authors conclude that eccentricity is significant not only in the newborn but also in the adult and suggest that these methods for treating the eccentricity factor could be applied (a) in choosing a lead system for vectorcardiography, (b) in interpreting the shift of the manifest vector due to changes in body position, and (c) in explaining the posterior orientation of the cube loops in marked right ventricular preponderance.

Rinzler


In order to define criteria for precise measurements of the width of electrocardiographic deflections at intervals, the authors studied the effects of alteration of the amplitude of a deflection upon its apparent duration in artificial electrocardiograms. They arrived at the following conclusions:

A wave of high amplitude appears to have a longer duration than an identical wave of low amplitude. The beginning and the end of a wave may appear isoelectric in one of the limb leads, or, rarely in all three of them, but it cannot be of zero potential in two limb leads only. Therefore the longest P, QRS, QT or T in any lead is the correct one. If the P-R interval varies in duration, neither the longest nor the shortest is the correct one, but rather a P-R of intermediate duration. The correct P-R will also be found in the greatest number of leads. To determine which one of the three limb leads shows the correct beginning and end of a particular wave, and to include in the measurement misleading isoelectric portions in some of the leads, the following rules were developed: if the initial (or terminal) part of a deflection has the same direction in I and III, then lead II is correct; if the direction is opposite in I and III, the lead is correct which is in the same direction as lead II. For “unipolar” limb leads that lead is correct in which the deflection is opposite to the other two.

Pick


The deep K stroke type of the abnormal ballistocardiogram has been observed in normal individuals under the pharmacologic conditions that increase cardiac work. When patients with hypertensive disease and deep K stroke ballistocardiograms are temporarily made normotensive without significant change in the cardiac-work, the deep K stroke pattern persists. This is interpreted to mean that the deep K stroke pattern may be an expression of increased cardiac work, and not a specific pattern of a specific disease.

Bernstein


During operation of mitral commissurotomy, electrograms were taken from the outer surfaces of the right and left atria in 29 instances. For comparison, similar investigations were made in 11 with congenital heart disease and in 8 with carcinoma of the esophagus.

Compared with the controls, the voltage was increased in the left atrial tracings in mitral stenosis and in the right atrial tracings in congenital heart disease. Asynchronism of the P waves was present in all tracings, and greatest in those with mitral stenosis. The first peak is derived from the right atrium.

Soloff


In order to test the clinical importance of determinations of the ventricular gradient, the authors defined the QRS and T areas in 120 electrocardiograms, showing in the standard leads some degree of right axis deviation, and then constructed the ventricular gradient. In 15 cases the results were correlated with autopsy findings.

In healthy individuals AQRS ranged between 13 and 69 mv seconds, and G between 34 and 120 mv seconds. G was invariably located to the left of AQRS, maximal at an angle of 30 degrees. Similar data were obtained in pulmonary emphysema without evidence of right heart pathology. In mitral lesions with right heart failure the gradient was usually small and deviated to the left. In chronic cor pulmonale and in kyphoscoliotic heart disease, abnormalities of the ventricular gradient were in no relation to the degree of right heart involvement found at necropsy, but a good correlation was found.
in three cases of congenital heart disease. In myocardial infarction the direction of the abnormal vector component compared well with the site of infarction found at autopsy, except in cases who had more than a single infarct.

The ventricular gradient represents the frontal projection of electromotive forces resulting from inhomogenous regression of ventricular activation and is, under normal conditions, dependent upon forces developed in the left ventricle. If more than a single lesion is present, for instance, bilateral ventricular hypertrophy or severe damage to the myocardium of both ventricles, the conditions determining the direction and magnitude of this vector become very complex. In such cases the empiric morphologic evaluation of a multiple lead electrocardiogram is superior to the determination of the ventricular gradient.

**Pick**

**ENDOCRINE EFFECTS ON CIRCULATION**


Patients undergoing therapy with corticotropin (ACTH) and cortisone may have changes in personality, mood, or may develop frankly psychotic episodes. To investigate the cerebral, hemodynamic, and metabolic effects of these hormones, the authors studied 12 patients receiving corticotropin and nine patients receiving cortisone, and, in addition, two patients with Cushing’s syndrome. Observations were made before, during, and after treatment. In both the cortisone- and corticotropin-treated patients there were parallel increases in the mean arterial blood pressure and cerebral vascular resistance, although the mean cerebral blood flow remained unchanged. These results suggest that the cerebral circulation shares in the increased general peripheral vascular resistance, but that there was no specific or localized effect on the cerebral blood vessels. Similar changes were found in two subjects with Cushing’s syndrome. These studies then do not explain the mental changes that occurred during administration of the hormones.

**Waife**

**HYPERTENSION**


A large number of patients, including those with hypertension, diabetes, and coronary artery disease, as well as control subjects were studied with respect to total serum cholesterol, S1 12-20 lipoprotein concentration and cholesterol-lipid phosphorus ratio. The results were tabulated separately for sexes and for each individual group. There were no significant differences in the mean total cholesterol values among any of these groups. The S1 12-20 data did not reveal significant differences among the male groups, but the mean values for the female patient groups were significantly higher than for the female controls. However, the wide range of values obtained limits the clinical usefulness of this procedure. The cholesterol-lipid phosphorus ratios were lower in diabetic males than in other groups, but again, there was considerable overlapping of values. The authors conclude that the wide range of values obtained by each of these methods in normal subjects and in patients with hypertension, diabetes, and coronary artery disease indicates that the findings in individual cases must be interpreted cautiously until more information concerning their significance in the pathogenesis of vascular disease is available.

**Shuman**


From a study of five patients in whom a thiophanum derivative (a ganglionic blocking agent) was administered to anesthetized patients by intravenous drip, the authors observed (1) that the degree of hypotension was directly related to the amount of the agent given, without development of increasing resistance, and (2) that recovery was rapid after the agent was discontinued.

**McKusick**


The author could demonstrate no significant long-term reduction in blood pressure in 12 hypertensive patients to whom 1-Hydrazinophthalazine in daily dosage up to 1200 mg, was administered. He could demonstrate no potentiation of the effect of hexamethonium. Unpleasant side-effects were almost universal and persistent.

**McKusick**


The results of observations of the effect of Rauwolfia serpentina (ophioxylon serpentimum) in over 100 patients studied for periods of one month to one year are reported in this communication. The oral dose of one to three tablets daily was well tolerated with no serious side effects. The action was slow to appear and disappear. The drug promoted a moderate hypotension, particularly in labile patients with hypertension and tachycardia. It caused sedation, bradycardia, nasal congestion, some gain in
weight, and tended to change the bowel habit to slightly increased frequency. It did not seem to cause tolerance nor did it appear habit forming. It seemed most useful as an adjunct to more powerful hydantoin derivatives such as Veratramine viride or hydrasfanophthalazine. Serpina alone appeared to be of modest potency as a hypotensive agent and reduced the pressure to normal only when it was moderately elevated. In 18 patients who failed to respond to a combination of Serpina and Veratramine viride or hydrasphanophthalazine, all three drugs were used together, often with a further reduction in the blood pressure. The bradycardia produced by the drug is not abolished by intravenous injection of atropine, an observation which suggests that this effect is not due to vagal hyperactivity. Symptomatic improvement was often quite striking in patients receiving this drug.

Rosenbaum


Reporting three cases of pheochromocytoma, one associated with multiple neurofibromatosis and two with von Hippel-Lindau disease, the authors postulate that a pheochromocytoma is related not only to multiple neurofibromatosis, but also to von Hippel-Lindau disease and perhaps to other neurocutaneous syndromes such as tuberous sclerosis and Sturge-Weber syndrome (encephalotrigeminal angiomatosis). Eighteen cases of multiple neurofibromatosis associated with pheochromocytoma have been found in the literature. The authors suggest that in operations for pheochromocytoma upon patients with neurofibromatosis or von Hippel-Lindau disease the left adrenal region should be explored first. The incidence of neurocutaneous syndromes among patients with pheochromocytoma is estimated to be at least 10 per cent. Stigmas of neurocutaneous disease or any developmental anomaly in a hypertensive patient should arouse suspicion of pheochromocytoma. The long-term prognosis for patients from whom a pheochromocytoma has been removed may not be as good as is generally believed.

Harris


The general features of the 104 patients with malignant hypertension in this study were as follows: (1) the average age was 42 years; (2) the ratio of men to women was 3 to 2; (3) a family history was found in half the patients; (4) knowledge of pre-existing hypertension was present in 71 per cent of the group; and (5) significant past illnesses (scarlet fever or frequent sore throats, glomerulonephritis, pyelonephritis, and toxemia of pregnancy) had occurred in 56 per cent of the patients. Impairment of vision was considered to have marked the onset of the malignant state in 78 cases, gross hematuria in five and severe headaches alone in six. The average estimated duration of the malignant phase was 8.7 months, with a range of two weeks to six and one-half years. The average survival after the discovery of papilledema was 8.4 months, with a range of one day to seven years. In three instances, a spontaneous remission occurred. The more sudden and severe the onset with headaches, congestive failure, gastrointestinal complaints, and the "fatigue complex," the more likely was a rapid progression to the malignant phase.

The effects of malignant hypertension on various organ systems were analyzed. Ninety per cent had impairment of vision during their illness, with papilledema, vascular changes, and exudates present in all at some time during the course, and hemorrhages in all but eight patients. Three-fourths of the patients had symptoms of cardiac failure, while half had signs confirming its presence. Seventy-five per cent had enlarged hearts on x-ray examination; 90 per cent of the electrocardiograms were abnormal. The blood pressure levels ranged from 300-160/180-100 mm. Hg to 265-90/150-60 mm. Hg. Cerebrovascular disturbances were manifested in 44 patients and consisted of "strokes" and convulsions. Eighty-four per cent had symptoms relating to the kidney and all patients had some abnormality demonstrable by one or more laborotory tests. The basic renal lesions found at post mortem were nephrosclerosis in 14 cases, glomerulonephritis in 7, and pyelonephritis in 12. A bleeding tendency occurred in 57 per cent of the patients; uremia was twice as common in this group as in the remaining patients. A moderate or severe anemia was present in half of the group when papilledema was discovered.

Rinzler


This agent proved five times more effective than hexamethonium and had a more prolonged action. There were fewer side effects than with previous agents in this group. Only partial cross-tolerance developed between it and hexamethonium. As with hexamethonium, perfectly quiet standing for 60 seconds or until faintness developed proved one of the best methods by which the patient could regulate his own dosage. As with C4 further drop in blood pressure occurred if a meal was eaten after a dose of the agent, due presumably to inability of
reflex compensation for splanchnic vasodilatation. Experience with both oral and subcutaneous administration is described.

**McKUSICK**


A group of dogs were rendered hypertensive by application of a ligature to one kidney and removal of another. Both mannitol and radioactive sulfate were used to determine the extracellular volume. Similar studies were performed in 12 normotensive and 14 hypertensive patients.

The authors observed an increase in the extracellular volume in hypertension. There was no correlation between the extracellular fluid volume and the level of the blood pressure. The conclusions assume that the mannitol and radioactive spaces represent extracellular fluid volume both in the normal as well as in the hypertensive subject.

**WAIFE**


1-Hydrazinophthalazine (Apresoline) and 1, 4-dihydrazinophthalazine (Nepresol) were tested in a number of cases with essential and renal hypertension. Both drugs have a pressure reducing effect. With continued medication the blood pressure can be lowered, but not normalized in about 50 per cent of the cases. Better response was observed in essential hypertension than in the nephrogenic type. Side effects are common and unpleasant, always reversible, but may interfere with continuation of therapy. Nepresol appears somewhat superior to Apresoline as regards tolerance and activity, but both agents require more clinical testing.

**PICK**


The author collected from various hospitals in Switzerland 10 case histories of thrombophlebitis in whom fatal pulmonary emboli occurred during treatment with anticoagulants. In retrospect, in all instances the cause could be traced to either inadequate dosage or to early interruption of the therapy. The former occurs especially during the transition from Heparin to other anticoagulants. The author recommends the maintenance of patients with thrombophlebitis on Heparin treatment, and the use of at least 40 000 IE-24 daily for at least three weeks.

**PICK**


The acute (three months) and long term (one to two years) therapeutic results in 54 hypertensive patients treated with hydralazine (1-hydrazinophthalazine, Apresoline) as the only form of hypotensive therapy are presented. Evaluation after three months of therapy indicates that 35 per cent of the patients obtained a significant reduction (more than 20 mm. mean blood pressure) in blood pressure. After one to two years of therapy only 9 per cent of the patients continued to obtain adequate blood pressure regulation. Treatment with hexamethonium alone resulted in therapeutic failure in 20 patients, and treatment with hydralazine alone failed in 32. These patients were then given combined hexamethonium and hydralazine therapy. With this regimen 75 per cent of the patients for whom therapy had previously failed obtained a significant reduction in blood pressure or the blood pressure was better stabilized.

Some of the pharmacodynamics of hydralazine are presented. The drug apparently reduces the blood pressure through a central vasodepressor action. At the same time it stimulates (centrally) the sympathetic nerves to the heart, causing tachycardia and increased cardiac output. During continued oral therapy the cardiac stimulant effect is blocked off if hexamethonium has previously been given in amounts adequate to produce ganglionic blockade (partial). Hydralazine reinforces the hypotensive effect of hexamethonium when the former drug is given after the latter. This form of combined therapy may produce a dramatic and sudden reduction in blood pressure, which in the presence of severe renal damage may be associated with a significant reduction in glomerular filtration rate and renal excretory function. Therefore, careful evaluation of changes in renal excretory function by repeated blood urea nitrogen determinations is necessary when treating hypertensive patients with associated renal damage of an advanced degree.

**BERNSTEIN**

PATHOLOGIC PHYSIOLOGY


The effect of carbon dioxide mixtures on the contractile force of right ventricular segments was measured. Both the heart contractile force and the amplitude of systolic excursion decreased and were associated with pronounced dilation. The concentration of carbon dioxide in the inspired gas mixture was approximately proportional to the amount and speed of the changes produced. The heart sometimes recovered its force although exposure to carbon dioxide continued. This is different from the
effect of the other common cardiac depressants. On some occasions when the administration of carbon dioxide was terminated a "rebound" effect was seen.

**Oppenheimer**


In these experiments one kidney was perfused with venous blood from the right ventricle. Hypoxia of the kidney was obtained while the rest of the animal was disturbed hardly at all. Oxygen of venous perfusion medium had an average of 10.7 volumes per cent. Para-aminobipiperate clearance increased 22 per cent indicating a hyperemia. Renal vascular resistance was decreased. The filtration fraction was lessened. There was usually an increase in the excretion of sodium, potassium, and water. The author has concluded that these last results are due to a small reduction in the tubular reabsorption of these substances.

**Oppenheimer**


The authors studied pulmonary capillary pressure in 134 cases which included normals, various types of heart disease, chronic pulmonary disease, and combinations of the latter.

In the normal, the pulmonary capillary pressure is 3 to 10 cm. H2O and is closely related to the pressure in the pulmonary veins and in the left auricle. This value does not significantly change on exercise or emotion. The pulmonary capillary venous pressure is elevated in all conditions with some resistance to the emptying of the pulmonary veins. This refers to mitral stenosis as well as to left ventricular failure of aortic or arterial (hypertensive) origin, and to chronic constrictive pericarditis. In all these conditions additional pressure elevation occurs under stress. The highest values of pulmonary capillary pressure are reached during attacks of pulmonary edema where the tension exceeds 47 cm. H2O and thus, by far, the oncocotic pressure. Hence, acute pulmonary capillary hypertension is probably the dominant factor in the events leading to transudation of edema fluid into the pulmonary alveoli. The pulmonary capillary pressure is normal in congenital heart disease with chronic right heart strain, in chronic cor pulmonale, and in other conditions associated with pulmonary hypertension.

The authors conclude that determinations of the pulmonary capillary pressure are not of great practical importance but may contribute to differentiate between left heart failure and chronic constrictive pericarditis, or mitral disease and certain types of chronic pulmonary disease. Furthermore, they are necessary for the calculation of pulmonary vascular resistance.

**Pick**


The cerebral blood flow was determined in 11 patients with hyperthyroidism. It was found that the same oxygen consumption, both before and after effective therapy, as well as the lack of a significant difference between this oxygen consumption and that of a normal group of comparable age, suggests that cerebral metabolism is unaltered in hyperthyroidism. It would appear that the gross energy metabolism of the brain, as reflected by the oxygen utilization, may be independent of the action of the thyroid hormone.

**Waife**


In certain abnormalities of the electrolyte balance and in intoxication, a syndrome occurs which is described by Heglin under the term "energetic dynamic cardiac insufficiency." The primary disturbance is a reduction in the force of contraction which results from the metabolic disorder recognized by the prolongation of the Q-T interval in the presence of a prematurity of the second heart sound. Under the assumption that this disorder might be related to some alteration of adenosine triphosphate (ATP), and/or an enzyme acting on it (adenosinetriphosphatase, ATPase), the effect of a number of electrolytes and drugs on the activity of ATPase was investigated, using a method described by Dubois and Potter.

Data are presented indicating that the action of adenosinetriphosphatase is enhanced by the chlorides of potassium, sodium, calcium and magnesium, and by cardiac glycosides like Strophosid and Digilan; it is inhibited by veratrine, urethane, fluoride, oxalate, chloralhydrate, and copper sulfate. Acetylcholine, adrenaline, pilocarpine, desoxy cortisolosterone potassium cyanide, morphine hydrochloride, veronal sodium, sodium arsenate, sodium salicylate, and picrotoxine have but little effect on adenosinetriphosphatase activity.

The results of this investigation are discussed in terms of the relationship between the activity of adenosinetriphosphatase and the electrocardiographic manifestations of energetic dynamic cardiac insufficiency. Both prolongation and shortening of the Q-T interval seem to be caused by a disorder.
in the function of this enzyme, the former by depression, and the latter, by enhancement of its activity in the myocardium.

**Pick**


Pressures were measured in the pulmonary veins of dogs under pentobarbital anesthesia. Pressures were increased by either inspiratory or expiratory airway resistance breathing or by increased intracranial pressure. In these experiments pulmonary vascular pressure gradients decreased. Nevertheless blood flow was essentially unchanged. Pulmonary vascular resistance decreased as pulmonary vein pressure was increased. It is pointed out that the absolute level of intraluminal pressure over external pressure plays a large role in determining the pulmonary vessel diameter. This in turn determines the resistance.

**Oppenheimer**


A review of 973 cases in which cardiac catheterization was performed revealed that unimportant complications occurred in 264 instances (27.2% per cent), serious accidents in 30 cases (3 per cent), and fatalities in 7 (0.7 per cent). Only in two of the latter could death be attributed to the direct action of the cardiac catheter. In one, a subendocardial hematoma was found near the orifice of the coronary sinus; in the other, a hemopericardium (without other evidence of trauma to the heart or the big vessels).

Acute accidents, apart from the development of arrhythmias, consisted in shock and vasomotor collapse subsequent to febrile reactions in 221 cases (with fatal outcome in two) and acute pulmonary edema in 14 cases (with one death). Late accidents included 47 cases with local infection at the area of insertion of the catheter, 18 cases of thromboembolism, and 13 with pulmonary embolization of which 3 were fatal.

**Pick**


Oxygen saturations of arterial and venous blood and calculations of the cardiac index were correlated with clinical findings in 240 subjects, 12 of which had no evidence of heart disease.

In the normal, the values vary within a wide range especially the cardiac index (2.52 to 4 liters) and are under the influence of a number of factors, particularly emotional ones, which cannot readily be eliminated in the calculations. In heart disease, especially when well tolerated, the values frequently are close to normal. Pure left heart failure does not significantly change the arterial oxygen saturation even in the presence of marked pulmonary congestion. Combined right and left heart failure leads to venous desaturation and increase of the A-V difference (peripheral desaturation). Heart failure in chronic pulmonary disease is followed by a fall of arterial saturation (pulmonary desaturation) and sometimes by a decrease of the A-V difference.

The cardiac index is definitely low (1.21 to 2.63 liters) in untreated cases of severe combined heart failure. In other and less pronounced types of heart failure, the values are very variable and usually around the lower limits of normal. Hence calculations of the cardiac index, per se, are of no great value in the evaluation of the functional capacity of the heart. However, important information is obtained by correlating cardiac index with auricular pressures, especially in the differential diagnosis of right and left ventricular failure. Conforming with Starling’s law, aggravation of heart failure is indicated by divergent alterations of these two values, namely, diminution of cardiac index with increasing pressure in the auricles. Finally the effect of exercise upon the cardiac index should be taken into consideration. The latter will rise in the absence of, and remain unchanged or even drop in the presence of heart failure.

**Pick**


The different theories of the mechanism of flutter and fibrillation are discussed. Recent conducted experiments are described, which are based on the aconitine method. They demonstrate that these arrhythmias arise from circumscribed tachysystolic centers. The circus-movement theory in any of its forms is unable to account for the findings. A theory of fibrillation is proposed whereby the state of fibrillation is characterized by the presence of innumerable tachysystolic centers of both large and small degree. The theory is based on the presence of minute electrical oscillations in fibrillating muscle. They are small, rapid, and ubiquitous and therefore not manifestations of conducted impulses. They must arise in situ, and they thus constitute tachysystolic foci. Thus there are tachysystolic foci of all sizes throughout the fibrillating myocardium; some are propagated, others remain local. These tachysystolic centers die out, for the most part, when the sustaining centers are inhibited. The latter are also tachysystolic centers, but they have the ability to maintain themselves for prolonged periods. Fibrillation can be classified accord-
ABSTRACTS

Bernstein


The case of a woman aged 51 years with syncopal attacks followed by convulsions is described. Electrocardiographic observations made during one of the seizures indicated that the attack was due to ventricular fibrillation. The records during normal rhythm showed evidence of prolongation of the P-R and Q-T intervals. These changes and the paroxysmal arrhythmia may all have been due to quinidine sulfate which the patient had been receiving for two days prior to the first seizure. The importance of determining the cardiac mechanism in each case of Adams-Stokes Syndrome before instituting treatment is emphasized.

Rosenbaum

PATHOLOGY


The clinical characteristics of 60 individuals with gross calcification of the mitral valve were compared with 120 with mitral valvular disease without gross calcification. Gross calcification is defined as calcification sufficient to be seen by fluoroscopy or the presence of craggy masses of calcareous material at necropsy or mitral valvulotomy. Of the 60 with gross calcification, 48 were recognized radiologically.

The difference was insufficient to be of diagnostic value except that significant mitral incompetence was twice as common in those with gross calcification as in those without it.

Sloff


The author describes a possibly unique case of a 20 year old Hindu who had mammoth calcified superficial venous varices in the arms and legs with a similar abnormality in the head, neck, and renal veins. Renal stone was a concomitant feature difficult to relate to the abnormality of the veins. The possibility of parathyroid dysfunction was eliminated by chemical studies and by surgical exploration of the glands. A congenital basis was suggested by the fact that dilated veins had been noted in the arms and legs soon after birth.

McKusick

PHARMACOLOGY


The author studied in dogs the acute effect of intravenous digoxin and strophanthin K (1/2 to 1/4 mg.) on both the coronary blood flow and on systemic and venous pressure. Rein's "Thermostromuhr" was used as flow meter, and in addition, the arteriovenous oxygen difference of the coronary system was continuously recorded.

In the fully efficient heart of the dog, coronary blood flow remains constant following the injection, but the venous pressure is reduced despite the absence of heart failure. When heart failure was produced by ligation of branches of a coronary artery and the glycosides were injected, the coronary blood flow, cardiac output, and systemic blood pressure increased. These alterations of cardio-dynamics were succeeded by augmentation of the oxygen concentration in the coronary venous blood resulting in reduction of the coronary A-V difference. With toxic doses of digitalis, however, both coronary flow and A-V difference became greater. Some possibilities of interrelationship of digitalis effect and cardiac metabolism are discussed.

Pick


Three patients who were subject to recurrent attacks of transient ventricular fibrillation during established atrioventricular dissociation form the basis of this study. The effects of three graded doses of oral quinidine sulfate were studied: (1) 0.9 Gm. given at hourly intervals; (2) 0.4 Gm. given as a single dose; and (3) 0.67 Gm. given as a single dose. Alterations in the cardiac mechanism of the same type occurred in two patients after the use of two hourly doses of 0.2 Gm., and after four hourly doses in the third patient. The drug produced premature beats of the ventricle, periods of asystole following the premature beats, and a pre fibrillatory mechanism consisting of short runs of fractionated extrasystoles of the ventricles.

After a single dose of 0.4 Gm., bigeminal rhythm appeared with deformed ventricular complexes in which increasingly negative large T waves were interrupted on their ascending limbs by portions of ventricular premature beats. This was followed by a pre fibrillatory mechanism and then, runs of ventricular fibrillation alternating with a pre fibrillatory mecha-
ABSTRACTS

nism. These lasted for three and a half hours. The oral administration of a single dose of 0.67 Gm. of quinidine sulfate caused a preterminal period within nine and a half minutes, followed by ventricular fibrillation, loss of consciousness and convulsive movements. The mode of recovery was through the appearance of alternate periods of slowing and acceleration of the ventricle.

To sum up, quinidine sulfate depressed ventricular conduction, depressed rhythmicity and irritability, increased the refractory period, and caused recurrent periods of transient ventricular fibrillation that persisted for hours once the mechanism set in following its use. The authors concluded that quinidine sulfate is contraindicated in patients with transient ventricular fibrillation during established atrioventricular dissociation.

RINZLER


Eleven patients with paroxysmal ventricular tachycardia received 32 intravenous injections of quinidine for 28 attacks. Twenty-four attacks were terminated abruptly, during, or a few minutes after the injection. In two attacks normal sinus rhythm was not restored for several hours. In two instances there was failure to terminate attacks. One patient died during the injection, but death was not necessarily from quinidine toxicity. It is concluded that under controlled conditions the intravenous use of quinidine is a safe and highly effective means for terminating paroxysms of ventricular tachycardia. It is indicated for the prompt control of ventricular tachycardia in patients who are seriously ill and in patients who cannot tolerate the drug orally.

BERNSTEIN


The number of cases of myocardial infarction complicated by prolonged and intractable ventricular tachycardia in which the patient survived is almost nil. This case demonstrates the length of time the heart is capable of running a “marathon,” so to speak, in spite of massive myocardial infarction.

In case of ventricular tachycardia, certainly, multiple methods of therapy lend themselves to use. Quinidine seems to be the drug of choice, for it is this drug that is of foremost importance in the treatment of ventricular tachycardia in the course of coronary occlusion.

In this case many of the cardiac depressants were used, namely, quinidine, digitalis, procaine amide hydrochloride, and magnesium sulfate. None apparently had any effect on the cardiac rhythm. The heart was almost completely ischemic, highly irritable, necrotic, and incapable of responding to drug therapy simply because its muscular and nervous mechanism was destroyed. Indeed, the heart was actually beating because of its own inherent mechanism and was not controlled by any part of the conduction system.

BERNSTEIN


Ventricular arrhythmias were induced by the intravenous injection of calcium chloride solutions. Rats rendered hypothyroid with methyliodurea were more resistant to calcium injections. These last animals showed a decreased incidence of ventricular tachycardia and fibrillation.

OPPENHEIMER


The results obtained in the treatment of tuberculous pericarditis with antimicrobial therapy in 14 patients were compared with those of a control group of 20 untreated patients. The diagnosis was based on the finding of the acid-fast organism in proven cases and on evidence of pericardial involvement obtained by roentgen and electrocardiographic examinations and physical findings. All the treated patients received streptomycin; eight were given PAS and two Isoniazid, in addition. It was found that drug therapy reduced the mortality rate by 50 per cent. Gradual improvement in the roentgen appearance and the electrocardiogram of the treated group was noted; a reduction of fever occurred also in the treated groups. Factors which affected the prognosis unfavorably in both groups were other tuberulous complications, proof of the diagnosis of tuberculosis, and the gradual onset of symptoms. Because of the limited number of cases the authors were unable to outline an optimum therapeutic regimen or to evaluate the longterm result of treatment in tuberculous pericarditis.

SHUMAN


The lobeline circulation time was determined in 87 cases of subacute bacterial endocarditis with and without evidence of heart failure, and before and after successful treatment.

In cases with heart failure the average value was 19.8 second which is far below the average values (30.2 second) found in other ordinary cases of heart failure. In the absence of heart failure the average circulation time was 9.5 second which in turn is
significantly lower than the normal average values (13.4 second) of the lobeline method reported by others. In a number of cases with healed subacute bacterial endocarditis the average circulation time (30.2 second) corresponded closely to mean values which can be obtained in a series of various types of heart disease.

From this data it seems evident that during the active stage of subacute bacterial endocarditis there is a definite acceleration of the circulation, probably due to alterations of various blood constituents, especially a decrease of the number of red cells and of hemoglobin, and the characteristic alterations of the blood proteins. This deviation from the ordinarily expected circulation time may be of practical importance in the differential diagnosis of bacterial infection of the heart from other types of evolution in chronic valvular diseases.

PICK


In anesthetized dogs, hepatic blood flow as determined by the bromsulphonphthalein technic, was 29.5 ml. per kilogram per minute (540 ml. per minute). The following parameters were measured after a narcotizing dose of grain alcohol by stomach tube: cardiac output, oxygen consumption, renal blood flow, hepatic blood flow, hepatic bromsulphonphthalein extraction, mean arterial blood pressure, and total hepatic and renal vascular resistance. None of these showed any statistically significant changes after alcohol.

OFFENHEIMER


An example is presented of a type of chaotic heart rhythm occurring paroxysmally in a young adult. The electrocardiogram, which reveals an unusual pattern of arrhythmias characteristic of a chaotic rhythm, is reproduced and discussed. The electrocardiographic tracing presented no apparent evidence of organic heart disease, and was remarkable in that the runs of fibrillation and flutter were stopped by carotid pressure. Release of the pressure permitted the reestablishment of the abnormal rhythm. This phenomenon is an exception to the accepted rule that only the ventricular complexes of auricular fibrillation and flutter are slowed by carotid sinus stimulation. Hence it tends to indicate that there may be several physiologic mechanisms producing paroxysmal flutter and fibrillation. From the tracing it seems that one of these mechanisms may be similar to that of paroxysmal tachycardia.

BERNSTEIN


Six cases of supraventricular tachycardia in infants aged 4 weeks to 2 years are described. The common clinical picture was that of acute congestive heart failure with an extremely rapid heart rate (200 to 350 beats per minute). The first case responded promptly to nestigmine, 0.125 mg., given intramuscularly, but Digoxin was employed with success in the other cases and is the drug of choice in the writer's opinion. Doses of 0.125 mg. several times daily (by mouth) was well tolerated and seemed to be necessary for recovery. Few of these cases show evidence of congenital heart disease.

McKUSICK


The absorption of cholesterol from the intestinal tract requires the presence of bile. Ferric chloride can precipitate bile salts in vitro, and this report shows that the rise in plasma cholesterol, as well as the associated atheromatous resulting from cholesterol feeding, can be prevented to a large degree by the feeding of ferric chloride.

It was demonstrated that the feeding of iron, even in the presence of bile, held plaque formation to a degree approximately one-fifth that observed in birds fed cholesterol alone. It was also noted that the feeding of ox bile along with cholesterol results in a greater degree of atherosclerosis and hypercholesterolemia than feeding cholesterol alone. Thus, the enteral administration of ferric chloride reduces the degree of rise of plasma cholesterol in birds fed cholesterol and in those fed cholesterol plus bile. It is probable that iron acts by precipitating bile salts in the intestinal tract.

WAIFE


A unique mercurial compound, forming a chemical combination with procaine base, is Merethoxyline; the new preparation is known as Dicurin Procaine. The diuretic action of this mercurial by subcutaneous administration was compared with that of mercaptomerin sodium (Thiomerin). The effectiveness of these two compounds in promoting diuresis was similar. Some 540 subcutaneous injections were given
to 69 patients with local reactions, including pain, nodule formation, or ecchymosis occurring in 20.3 per cent of the patients following 8.15 per cent of the injections. These reactions were not severe and compared favorably with the incidence of reactions reported elsewhere to Thiomerin. Ecchymosis appeared only in females over 64 years of age and was thought to be due to a local action of the mercury ion since no changes were observed in the blood studies done on these patients. It was concluded that Dierin Procaine was a satisfactory mercurial compound for subcutaneous use.

SHUMAN


Priscoline hydrochloride administered intravenously in doses varying from 50 to 100 mg. over a 15 or 20 minute interval resulted in variable effects on cerebral metabolic functions. There was no evidence that Priscoline produces cerebral vasodilatation. Actually a mild cerebral vasocstriction and slight hypoxia seemed to occur. The apparent clinical effects of Priscoline, attributed to its action on cerebral circulation or metabolism, are difficult to explain on the basis of the results obtained from this study.

WAIFE


The least amount of epinephrine necessary to induce ventricular tachycardia in anesthetized dogs was determined with each of a number of anesthetic agents. The average amount of epinephrine required to produce ventricular tachycardia was 8 mg. per kilogram of body weight with trichloroethylene, 9.7 mg. per kilogram of body weight with cyclopropane, and 8.5 mg. per kilogram of body weight with ethyl chloride. During chloroform anesthesia ventricular tachycardia was not produced by epinephrine injections up to 50 mg. per kilogram of body weight.

SAGALL


The operative course of 17 patients who were digitalized was studied. Fifteen patients received Cefilanid during the operative procedure. In 14 patients the operation was performed upon either the cardiac or pulmonary systems. The author believes that 12 patients were improved during the operative procedure. In three, no change was noted, and in two, he was not able to evaluate the results of digitalization. The advantages of intravenous digitalization outweigh the disadvantages.

SAGALL


Studies of normal healthy males revealed that l-nor-epinephrine increases mean arterial blood pressure and reduces cerebral blood flow by virtue of a potent constricting effect on cerebral blood vessels. The cerebral oxygen utilization was not changed. On the other hand, epinephrine administered intramuscularly in doses of from 600 mcg. to 1400 mcg. lowers the mean arterial pressure slightly. It does not affect cerebral blood flow, vascular resistance, or oxygen utilization. The effect on the cerebrovascular metabolism of U.S.P. epinephrine and synthetic l-epinephrine is identical.

WAIFE


A new purified glycoside of digitalis lanata, acetyl-digitoxin, was tested in 112 patients with heart failure of various etiologies. The following properties of the preparation were studied in comparison with other digitalis preparations: its pharmacologic and toxic effects, and its effects on clinical manifestations of congestion and on the electrocardiogram.

The new glycoside is generally well tolerated, readily absorbed from the gastrointestinal tract, and acts rapidly. It has a marked slowing effect on the heart rate, a good diuretic effect, and a wide therapeutic range. It can be given orally as well as intravenously with good results even in cases with severe heart failure. It is particularly suitable for rapid digitalization in heart failure with tachycardia due to auricular fibrillation, flutter or paroxysmal auricular tachycardia. Because of its rapid action, it is in these cases even more effective than strophanthin. Signs of overdosage are similar to those caused by other glycosides, and usually disappear from one to three days after discontinuing therapy.

Acetyl-digitoxin has a marked tendency to fixation and is therefore, also suitable for maintenance therapy. Since its effect is more easily reversible, therapy can be better controlled than with digitoxin.

Acetyl-digitoxin-α, a chemically defined pure glycoside obtained from lanatoside A, was tested on cats. In chronic subcutaneous and oral medication the effect is protracted but shorter than that of digitoxin. Otherwise the two preparations are very similar in their rapid and intensive action on intravenous application, and in their excellent absorption from the gastrointestinal tract. Overdosage of acetyl-digitoxin produces less vomiting, only minor arrhythmias, and less significant morphologic alterations of the myocardium and the conduction system. Good tolerance, faster disappearing effects and less tendency to cumulation and toxicity are the causes of its wider therapeutic range as compared with digitoxin. Among the typical therapeutic effects the negative chronotropic one is most marked, so that heart failure with rapid heart action seems to be the main indication for the use of the new glycoside.

PICK


The case of a 63 year old male with a history of hypertension, angina pectoris, and old myocardial infarction is described. A dose of 35 mg. of Priscoline (2-benzyl-4,5-imidazoline hydrochloride) was injected into the femoral artery for treatment of advanced peripheral arteriosclerosis in the corresponding limb. Five minutes after the injection evidence of myocardial ischemia appeared. Electrocardiographic changes appeared and persisted for three weeks. It is assumed that some myocardial necrosis occurred. It is felt that the myocardial damage resulted either from a direct effect of the drug or indirectly as a result of the excessive myocardial demand due to tachycardia, peripheral vasodilatation, or emotion due to the systemic reaction to the drug. The opinion is expressed that since the benefits of intra-arterial administration of Priscoline are uncertain and are outweighed by the potential dangers, this type of therapy should be avoided in patients with known coronary-artery disease. Because coronary atherosclerosis is so common in the older age groups, this form of therapy also is felt to be inadvisable in elderly patients. In the patient described in this report a bilateral common-femoral-vein ligation was done two weeks after the intra-arterial injection. There was evidence of arterial thrombosis at the injection site, a change which also was considered attributable to the intra-arterial therapy.

ROSENBAUM


The case of a 68 year old woman with mild hypertensive cardiac failure is described. The patient was given Apresoline (1-hydrazinophthalazine hydrochloride) by mouth in doses of 25 mg. every six hours. About 36 hours after the drug was started the patient lost her ability to micturate voluntarily and she did not regain it until 24 hours after the drug was withdrawn, a total of nearly four days. The drug was not withdrawn at once because it was hoped the toxic effects would pass off. Bladder sensation was unaffected. The patient had constipation, nausea, vomiting and her first anginal attack during the period of treatment. Subsequent trials of the medication on two occasions resulted in side effects, including headache, malaise, weakness, nausea and vomiting, such that the drug had to be abandoned. No difficulty with micturition occurred during these two later trials. The mechanism by which Apresoline is capable of producing bladder paralysis is unknown since the drug is not considered to be a ganglion-blocking agent. Reference is made to one previous report of bladder paralysis due to this drug.

ROSENBAUM


Various abnormalities as shown by liver function tests existed in 45 patients who had received bishydroxycoumarin (Dicumarol) for two days to 56 months and in 12 persons who had received no bishydroxycoumarin. A comprehensive evaluation failed to disclose marked alteration involving any one specific laboratory procedure, or decided abnormalities, throughout the test of one particular person, to be produced by carefully controlled long-term bishydroxycoumarin therapy. Additional data demonstrated that severe prothrombin deficiency induced by overdosage of bishydroxycoumarin produces toxic liver damage. This damage, evidenced by abnormal findings in the liver function studies, is only temporary and is completely reversible.

BERNSTEIN


Pharmacologic studies are reported concerning the effects of Hydrazinophthalazine (Apresoline) and Dihydrazinophthalazine (Nepresol). Both compounds produce in various animal species a protracted fall in blood pressure, associated with increases of the heart and respiratory rates. A persistent increase of blood flow in the visceral organs,
especially in the mesenteric and renal arteries, supports the view that the drop in blood pressure is due to a decrease of the total peripheral resistance. However, no definite effect on cardiac output could be found in the experiments. Both drugs have a partial sympatholytic effect which, however, is not the principal factor in the lowering of the blood pressure. Hypertension produced by pitressin or renin is not relieved in contrast to that produced by serotonin. Apresoline increases the sensitivity to veratrin; it weakens the carotid sinus reflex, and lowers hypertension due to anoxia. The usual hypotension subsequent to electric stimulation of the afferent stump of the vagal or ischiadic nerve does not occur following Apresoline medication.

The authors conclude that the hypotensive action of Hydrazinophthalazine is due to a complex mechanism, effected partly by a direct action on peripheral vasomotors and partly initiated by central nervous regulations.

**Physiology**


A method is described for continuous observation of the mean arterial blood pressure. The apparatus employs an aneroid manometer attached by means of a short rubber bushing and a 2 cc. syringe barrel to a three-way stopcock. A 5 or 10 cc. syringe filled with sodium citrate or heparinized saline serves as a reservoir. An indwelling arterial needle is attached to the stopcock outlet. The pressure chamber is filled from the reservoir until the manometer registers a level higher than the anticipated mean arterial blood pressure. When arterial puncture is made, the compressed air in the manometer and pressure chamber forces fluid into the tubing and into the artery until pressure equilibrium is reached. The apparatus is said to make continuous observation of the blood pressure simple and automatic. It requires little attention; it is simply contrived, easily maintained and sterilized, and not subject to breakage. Arterial puncture is required and occlusion or dislodgement of the needle may interrupt its continued use.

Rosenbaum


The authors describe an improved method of photographing fluoroscopic images on 16 mm. film and discuss the application of this method as a diagnostic tool. It is possible to visualize angiographic densities within the heart shadow. The maximal exposure to the patient is limited to 20 roentgens, an exposure time roughly equivalent to one minute of fluoroscopy.

Schwede


Of 96 individuals subjected to mitral commissurotomy, 61 were regarded by the surgeon as having pure mitral stenosis, 26 mitral stenosis and regurgitation, and 9 predominant mitral regurgitation.

No significant difference could be detected in the first and third group by clinical, radiologic, or electrophysiologic studies or by the results of cardiac catheterization. A snappy first sound and a tapping cardiac impulse is more common in stenosis and an absent tapping impulse more common in regurgitation, but even here overlapping is present.

If the clinical situation favors surgery, surgical exploration of the valve is indicated where the condition of the valve is uncertain.

Soloff


All 16 children with protracted rheumatic carditis showed clinical improvement while they received cortisone or corticotropin (ACTH). When this therapy was discontinued, they again demonstrated clinical and laboratory evidence of rheumatic carditis. None of the patients showed regression in clinical evidence of endocarditis or cardiac hypertrophy. Cortisone and corticotropin seem to "damp" the symptomatology in protracted carditis only during the period when the hormone is administered. Many of the patients exhibited some untoward effects. Whether this form of therapy significantly affects the course of rheumatic disease in cases of long standing remains to be proven.

Harris


The authors studied the respiratory dynamics in 20 cases of mitral stenosis and were able to distinguish three groups. The first consisted of patients with good compensation in which there was a reduction of the total lung capacity, affecting equally the vital capacity and the residual air. In cases with congestive heart failure, which formed a second group, there was no apparent disturbance of the total lung capacity since a reduction of vital capacity was associated with some increase of the residual air. Less consistent findings were present in
a third group. However, a frequent finding here was a decrease of the index of Tiffeneau relating ventilation on exercise to lung volume. In association with a marked increase of the residual air this suggests secondary bronchial disease developing subsequent to the disturbance of cardiodynamics by mitral stenosis.

PICK


The authors report the case of a 29 year old woman who underwent mitral finger fracture valvulotomy for severe mitral stenosis with progressive course and heart failure. Following considerable initial clinical improvement, a typical diastolic rumble reappeared at the apex on the fifteenth postoperative day, and concomitantly increasing dyspnea and signs of right heart failure—all suggesting a recurrence of the mitral stenosis. The patient died after a rapid downhill course, one month after surgery. Autopsy revealed an adhesive pericarditis in organization, and an auricular thrombus adherent to the area of the fractured mitral valve at the lateral commissure. Here, the mitral leaflets were sealed together by a recently developed valvular scar. The auricular wall and the mitral leaflets showed histologic evidence of recent and old inflammation. The localization of the auricular thrombus in the area of fracture suggests that the process of organization of this thrombus involved the mitral opening resulting in its reclosure. This probably occurs to some extent commonly following mitral surgery, especially in the presence of active endocarditis, but the remaining aperture of the ostium usually is sufficient to maintain the improvement achieved by the operation.

PICK


The author discusses alterations of pulmonary hemodynamics in mitral stenosis. An important factor appears to be vascular tone which is variable from patient to patient. Increased vascular tone may compensate for the lesion, first by elevation of pulmonary venous pressure and later by the development of pulmonary arterial hypertension. Both alterations tend to maintain a sufficient pressure gradient between different portions of the pulmonary circulation, which is necessary to overcome the obstacle at the valve. An insight into the complexity of these conditions can be gained with the help of cardiac catheterization, and tomographic visualisation of the pulmonary veins following an artificial pneumomediastinum.

Variations of these pressure relationships can explain the individual variations of symptoms and signs in mitral stenosis, for instance the tendency to acute pulmonary edema and/or hemoptysis in some patients, and the development of morphologic vascular changes, or anginal pain in others. The distinction of organic from functional alterations of the pulmonary circulation based on the evaluation of these clinical manifestations of the lesion is of value in the selection of cases suitable for surgery.

PICK


The authors report their experience in the visualization of normal and pathologic coronary arteries with the help of retrograde arteriography. In preliminary experiments on dogs a catheter was introduced through one of the carotid arteries into the aorta, and following injection of the dye both coronaries were clearly delineated with their ramifications. The experiments were repeated after production of myocardial infarction by ligation of the anterior branch of the left coronary. The coronary angiogram showed a distinct stop at the point of the lesion.

The method was then successfully, and without accident, used in a number of patients. The catheter was introduced through the radial artery and advanced to the level of the coronary ostia. The best results were obtained with injection of 50 to 60 cc. of 20 per cent Diodrast within four to five seconds, with manual compression of the carotid arteries at the moment of injection. The coronary arteries were seen in their entire course and both anomalies of their branching and pathologic alterations in their lumen and walls could be visualized. Representative illustrations are shown and the value of the method in the diagnosis of coronary artery disease is pointed out.

PICK


Further data on the mode of action of the autonomic nervous system on the Valsalva maneuver was sought by observing the changes in venous pressure simultaneously with those of arterial pressure and heart rate in normal individuals, and by noting the alterations in response after atropinization and tetraethylammonium chloride. Tetraethylammonium chloride prevents the usual overshoot and bradycardia by blocking vasopressor reflexes during and immediately after sustained straining. Atropine blocks the parasympathetic nervous system and the overshot is exaggerated and prolonged while the bradycardia is abolished. Venous pressure rises in a similar manner during straining, even after
the administration of tetraethylammonium chloride or atropine.

RINZLER


Intravenous radioisotope \( ^{38} \) was found to be a satisfactory and convenient measure of the "functional extracellular fluid volume" in normal man and dogs. A diffusion equilibrium after a single injection was achieved in from 15 to 20 minutes in man. Only 4 to 8 per cent of the dose is excreted during this time. Cellular penetration was slight and half the dose was excreted within four to nine hours. Repeated determinations in a single individual differ by an average of only 0.16 to 0.30 liters. In relation to the simultaneously measured intrulin space the ratio of radioisotope was found to be 0.95 ± 0.11. In 28 normal men and women the radioisotope space averaged 15.1 per cent of the body weight.

WAIFE

RHEUMATIC FEVER


The clinical pictures of five patients with rheumatic heart disease and chronic constrictive pericarditis are presented in detail. These cases were gathered from a total of 18 cases of constrictive pericarditis, all proved by operation or autopsy. The authors point out, on the basis of this experience, that cardiac enlargement, normal intensity of heart sounds, and normal cardiac pulsations are not rare in patients with constrictive pericarditis, and that this diagnosis should be suspected in patients with heart disease who have an atypical course.

RINZLER


The study was based upon 537 patients with a variety of infectious diseases, technical methods being given in detail. Positive precipitin reactions against the group specific carbohydrate, or C substance, were obtained in one third of the cases of scarlet fever and one fourth of the cases of acute rheumatic fever. Most striking was the finding that not all of the patients with proved streptococcal infection developed a precipitating antibody for the carbohydrate. This may be a consequence of the relatively poor antigenicity of the polysaccharide. Furthermore, a relatively high incidence of anti-C antibody was found in a number of infectious diseases unrelated to streptococcus, including chicken pox, scabies, and syphilis. It is therefore stressed that absence of anti-C antibody does not exclude active streptococcal disease or rheumatic fever, nor does the presence of the antibody prove the existence of streptococcal infection. The findings also tend to minimize the role of sensitization to group-specific streptococcal polysaccharide as a mechanism in the development of the rheumatic state.

ENSELBERG

SURGERY IN HEART AND VASCULAR SYSTEM


Hypotension occurring during anesthesia should be recognized promptly and therapy instituted to prevent serious and disastrous sequelae. Logical therapy requires the proper assessment and alleviation of the etiologic factors. A variety of mechanisms may produce hypotension during anesthesia. These include the development of myocardial infarction, hemorrhage, drugs used in premedication, anoxia, the rapid introduction of anesthetic drugs into the blood stream, the rapid induction of ether or cyclopropane anesthesia, spinal anesthesia, celiac plexus reflex stimulation, excessive vagal stimulation, traction on various abdominal organs, injection of dye into the carotid artery, and surgical repair of arteriovenous fistulas. The authors present cases illustrating the above factors and discuss the management in each case.

SAGALL


Patients were selected for operation on the basis of absence of demonstrable valves in the deep veins of the leg on venography. Popliteal ligation was performed in order to interrupt the unsupported column of blood from heart to feet. Complete relief of symptoms—ulceration, aching, edema—was achieved in 18 of 23 legs so treated.

MCKUSICK


Following a review of methods used in cardiac surgery for anesthesia of the heart and the pericardium, and their various physiologic and pharmacologic effects upon the circulation, the author presents the result of his own animal experiments with various compounds, related to p-Aminosalicylic acid and having local anesthetic effects. In cats a number of such drugs were applied directly to the heart, or injected intravenously either in a single
dose or in protracted form as infusion. Action potential of afferent cardiac fibers of the vagus were recorded together with the electrocardiogram and the pneumogram. A decrease in the number of "pain impulses" in the vagus nerve was used as a measure of the efficiency of an anesthetic.

A single intravenous injection of an anesthetic is less effective than a protracted intravenous infusion in suppressing afferent cardiac impulses, however, toxic effect upon the myocardium occurs with both as is evident from contour changes in the electrocardiogram. Direct infiltration of the heart is as equally effective as intravenous application. Instillation into the pericardial cavity produces only partial anesthesia of limited duration, not sufficient for completion of an operation. Oxycain gave better results on local application than procaín. Rheonocain proved most powerful for intravenous anesthesia but was two to four times more toxic than the other compounds. The usefulness of these experimental results in clinical instances remains to be tested.

Pick


The authors studied venous blood pressure in 60 patients subjected to major operative procedures, in order to determine whether the readings were more sensitive than arterial blood pressure in detecting impending shock. The usual type of apparatus was used.

In all cases blood loss was associated with a significant fall in venous pressure. This change preceded the reduction in arterial pressure and the increase in pulse rate. It was therefore concluded that venous pressure readings were more sensitive than the other two measurements in evaluating operative blood loss and the degree of surgical shock when this state was in evolution.

Abramson


Using dogs the authors studied the changes produced in aortic segments obtained from donors and placed in recipients. The arterial grafts were first either lyophilized or preserved in Tyrode's solution for varying periods of time.

The patency rate of such arterial grafts was found to be high, the period of observation being six months. Histologically the segments showed replacement by the host tissues. Rapidly frozen lyophilized grafts were considered to be superior to the slowly frozen segments, since no disruption of cells due to the formation of macrocrystals was noted in the former.

It was concluded that lyophilization of blood vessels could solve the problem of maturing, which is the greatest single deterrent in present-day methods of vascular graft preservation and banking.

Abramson


The combination of either suction to the legs or posture with hexamethonium decreased the amount of drug necessary and the duration of postoperative hypotension. Blood pressure could be controlled at will by varying suction pressure. The decrease of bleeding and reduction of intracranial tension permits a higher standard of neurosurgery with reduced mortality, transfusions, and duration of anesthesia. Complete removal of vascular masses was facilitated. Pressures of 55 to 65 mm. Hg were employed to reduce bleeding. Although no untoward effects on the coronary circulation were observed in 150 operations, electrocardiographic observations during operation are recommended in doubtful cases.

Pick


Acute simultaneous ligation of one to three pulmonary veins of one lung, with the pulmonary artery and the main bronchus left intact, produced in dogs sudden pressure elevation in the pulmonary artery of the same as well as the contralateral lung. On one occasion this was followed by the development of pulmonary edema. Upon relief of the venous constriction the pulmonary arterial pressure returned to normal levels.

These experimental findings are discussed with respect to pulmonary hypertension found in mitral stenosis. Labile hypertension can be caused by a reflex constriction of pulmonary arterioles subsequent to distension of the entire, or parts of, the pulmonary venous bed. This hypertension may be considered a protective mechanism which prevents instantaneous disturbances of the pulmonary circulation by regulation of blood flow to the involved areas. The present observations provide experimental proof for this mechanism hypothesized previously by others on the basis of clinical observations in mitral disease. This mechanism however cannot account for persistent pulmonary hypertension, in which, probably, some additional pressure-maintaining factors may come into action.

The authors studied the effect of various degrees of hepatic arterial deprivation on mechanically induced ascites in 41 dogs. In 10 control animals partial constriction of the inferior vena cava in the thorax was produced using an aluminum band; while in 13, this procedure was combined with limited hepatic arterial ligation. In the remaining 18 dogs, massive arterial deprivation of the liver was carried out in conjunction with the thoracic caval obstruction.

The results indicated that ascites accumulation could not be prevented when only the hepatic artery was ligated. On the other hand, when the main arterial supply was severed, ascites did not form. The evidence, therefore, suggested that within certain limits, the more extreme the arterial deprivation of the liver, the better was the protection against the formation or reformation of ascites. However, the greater the arterial deprivation, the higher was the mortality.

Abramson

THROMBOEMBOLIC PHENOMENA


This consists of a report of a dyspneic and cyanotic male in whom the following characteristics of pulmonary artery embolism occurred without subsequent pulmonary infarction: abrupt termination of a major arterial branch at the site of the embolus; increased radiolucency and absence of the fine reticular vascular pattern in the lung roentgenogram; and dilatation of the pulmonary artery proximal to the embolus. The source of the emboli was in a popliteal vein, where old as well as recent thrombosis had occurred. The right heart chambers were hypertrophied and dilated; clinically he was in right heart failure.

Schwedel


The left lateral position has been recommended by the authors as a means of treating venous air embolism because of the location of the obstructing air trap located in the right ventricular outflow tract with the patient on his back or right side. In the left lateral position the air trap is displaced into the right auricle or ventricle as the right ventricular outflow tract is located inferiorly. This thesis was studied in a series of venous air embolism animal experiments. With doses of injected air of 7.5 cc. per kilogram the chances of survival of the animals were doubled with the animal in the left-side-down position compared to the supine or right-side-down position. Turning the animal to the favorable position within one minute after injection was equally good.

Immediately following air injection, there was an abrupt rise in pulmonary arterial pressure and a fall in systemic pressure. There was an associated bradycardia due to abortive beats which failed to open the aortic valve. The pulmonary venous pressure was elevated in many of the experiments. The respiratory pattern was that of hyperpnea followed by apnea and then polypnea for a longer period. It is suggested that the changes observed depend on reflexes from the heart and pulmonary vessels and on mechanical factors.

Shuman


A series of 109 patients suffering from moderate or serious injuries was studied to determine the incidence of fat embolism. Of the group, 52 per cent were found to be suffering from this condition. Pulmonary and cerebral symptoms were common, these being considered to be due to the existing condition.

On the basis of their findings, it was the authors’ opinion that fat embolism is a disorder of great importance and of relatively frequent occurrence. The diagnosis should be suspected in every patient who has been injured and who exhibits characteristic clinical manifestations for which no other cause can be demonstrated. The presence of fat globules in the urine and the sputum is of importance in determining the presence of the condition. The pathogenesis of fat embolism is not clear.

Abramson


The author calls attention to the fact that there is no unanimity regarding the criteria necessary to differentiate thromboangiitis obliterans from arteriosclerosis obliterans. Because of this, he reviews the case histories of 85 patients with a clinical diagnosis of thromboangiitis obliterans. Only one was of Jewish extraction. Superficial migratory thrombophlebitis occurred in 32 per cent of the cases, while in 29 per cent there was clinical evidence of involvement of the arteries of the upper limbs. The patients were divided into several categories. In the “acute” group, the disease began suddenly or
insidiously and progressed rapidly, gangrene forming within a year of onset. In the “episodic” group, there was a history of a series of episodes of thrombosis, either arterial or venous, with quiescent periods intervening. In the “slowly progressive” category, intermittent claudication was the chief complaint, while trophic changes were late manifestations. In the “acute aricular occlusion” group, the onset was sudden, indicating that thrombosis of either the femoral or popliteal artery had occurred.

With the possible exception of superficial migratory thrombophlebitis, none of the clinical features of thromboangitis obliterans was considered to be pathognomonic. According to the author, the diagnosis was often dependent upon the natural history of the patient’s illness. Two findings which were believed to be of value as differential points were the constant association of the disease with tobacco smoking and its predilection for the male sex.

**ABRAMSON**


Heparin, Dicumarol, Tromexan, and Phenylindaneidione did not prevent but actually enhanced, the formation of platelet plugs at the site of hemorrhages produced at the tip of a stimulating micro-electrode in contact with the walls of small blood vessels in the hamster cheek pouch. Furthermore, these anticoagulants, per se, produced an increased adhesiveness of platelets and leukocytes to the endothelium of small venules. The significance of increased platelet agglutinability during the hypocoagulable state induced by anticoagulants, and the need for a critical distinction between agglutinability of the formed elements and coagulation involving fibrin are discussed.

An increase in the fragility of the walls of venules followed the administration of heparin, Dicumarol, Tromexan, and Phenylindaneidione. A brief series of relatively weak faradic shocks from a micro-electrode produced a hemorrhage. Shocks of much greater strength applied to venules of normal untreated hamsters produced no visible effect. This method is proposed as a new semiquantitative procedure for investigation of vascular fragility in accessible membrane preparations. It may possibly distinguish between fragility in the sense of rhexis or breaking of the wall, and petechial formation such as that produced by the application of negative pressure and perhaps erroneously referred to in the literature as “fragility.”

**BERNSTEIN**


The author presented a study of 22 clinical cases in which acute pulmonary thromboembolism took place within 48 hours following surgical operation, accidental injury, or hemorrhage. Most of the patients were 50 years of age or more. In each instance death occurred and the diagnosis was confirmed by postmortem examination. The majority of the emboli arose from the veins of the lower extremities. There was a high incidence of antecedent shock and hypotension in the series. No relationship could be established between the extent of trauma and the acute rapidly developing form of pulmonary thromboembolism.

On the basis of the data obtained from the study, it was concluded that antecedent shock appeared to be a significant etiologic factor in this disease.

**ABRAMSON**


The patient reported was 1 of 10 infants in a nursery for the newborn who were afflicted simulaneously with severe diarrhea. Some evidence of renal involvement in addition to the usual signs and symptoms of epidemic diarrhea was noted in each case. The patient reported developed diarrhea due to *Escherichia coli* Type 0 111, B4 at three days. On the fifteenth day of life a mass appeared in the left flank. Left nephrectomy was carried out successfully on the nineteenth day of life with subsequent normal progress.

It is pointed out that renal thrombosis is only one of the severe intravascular complications frequently seen in infants. However, renal thrombosis occurs rarely in infants except as a complication of epidemic diarrhea of the newborn. Although the cause of such intravascular coagulation is unknown, stasis of blood due to decreased blood volume, hemoconcentration, and arteriolar constriction probably play roles. Gross hematuria is less often present than not in these patients. The appearance of a mass in the region of one or both kidneys should suggest the diagnosis, and intravenous pyelography is often very helpful in the differential diagnosis. Results of removal of the involved kidney when infarction is unilateral are usually very satisfactory.

**ROSENBAUM**

**VASCULAR DISEASE**


An anatomic and histologic study of bones affected by Paget’s disease revealed vascular altera-
tions, consisting in proliferation of the media and intima of bone arteries, and causing a diminished arterial flow. However, no direct communication between an artery and vein could by demonstrated. It is therefore concluded that, “if the arterIALIZATION of venous blood in an extremity of a patient with Paget’s disease is considered evidence of an arterio-
venous shunt, the morphologic evidence is lacking that this shunt occurs within the affected bone.”

PICK

The authors presented three typical cases of rupture of blood vessels due to severe physical exertion and reviewed the literature on this subject. It was their belief that pre-existing disease of the involved structure was not a necessary prerequisite for the production of this abnormality. The most common example of such a response was found to be rupture of the epigastric vessels, usually with physical strain, in women who were or had been pregnant. In the case of the extremities, the characteristic changes were a hard tender swelling, followed by the appearance of hemorrhagic discoloration in the distal portion of the limb several days later.

ABRAMSON

The patient, a 58 year old man, had multiple telangectasia with an arteriovenous fistula of the right middle lobe and developed a clinical picture consistent with infection of the fistula by Staphylo-
coccus pyogenes, which was cultured from the blood. Cure was effected with penicillin and aureomycin.

MCKUSICK

The authors summarize the syndrome of temporal arteritis and report three new cases, one of which was fatal. They recommend that the term, temporal arteritis, should be restricted to instances in which the affected vessel has undergone the characteristic granulomatous changes associated with foreign body giant cells. They prefer the use of the pathologic term, granulomatous arteritis. This syndrome is characterized by severe headaches, pain in the temporal region, and the presence of inflamed, thickened, and tortuous temporal arteries. Constitutional symptoms of a generalized infection are also present. The characteristic pathologic lesion consists of proliferation of inflamed fibrous tissue of all layers of the affected vessel, together with focal necrosis and granulomatous lesions associated with foreign body giant cell formation in the media. Good therapeutic results are obtained by procaine injection, surgical excision of a portion of the diseased vessel and, in at least one instance, antihistamine therapy. The disorder is usually self-limited and non-fatal. Although this condition is generally a localized vascular disease of the temporal arteries, other cranial arteries, as well as arteries in other parts of the body, may show the same type of lesion.

HARRIS

Two patients are described who presented tender, irreducible swelling in the inguinal area. In each case incarcerated hernia with strangulation was the tentative diagnosis. In each case operation and necropsy revealed large arterioslerotic aneurysms of the aortic bifurcation area with rupture into the retroperitoneal area.

MCKUSICK

A new method of venography is described for visualization of the large veins of the lower extremity. The contrast material is buffered with 70 per cent Urokon sodium which has a relatively high specific gravity, as compared to whole blood. This physical property causes the dye to gravitate into the dependent venous system to the level of competent valves.

In the male the material is injected into the superficial dorsal median vein of the penis. If immediate x-ray exposure fails to show filling of the iliofemoral systems on both sides, a second exposure is made following another injection of the contrast medium into the superficial lateral vein of the penis, on the side which failed to be visualized. In the female the material is injected into the superficial circumflex iliac or any other superficial vein which empties into the saphenous or deep femoral vein in the thigh. In order to obtain bilateral filling, vessels on both sides have to be injected. The advantage of the proximal injection technic is its simplicity. Furthermore, it requires no special equipment, local anesthesia, or physical exertion on the part of the patient. With this method, the main trunk of the profunda femoris vein will be visualized, a feat which cannot be consistently duplicated by any procedure involving distal injection.

ABRAMSON

The author reports the results of surgical treatment of eight patients with saccular aneurysms in different portions of the aorta and reviews the literature on this subject. In six of his cases excision of the sac and suture of the aorta were successfully carried out. It is his belief that resection of saccular aneurysm with preservation of aortic continuity is feasible in all regions of the aorta.

**ABRAMSON**

**OTHER SUBJECTS**


A study was made on 80 patients with severe primary or secondary kidney disease in regard to the tolerance to a rigid restriction of sodium chloride intake, as in the rice diet. The degree of impairment of kidney function was characterized by an average initial blood nonprotein nitrogen of 77 mg. per 100 cc. and an average phenolsulfonphthalein excretion of 22 per cent. The period of time on strict rice diet until major electrolyte disturbances developed was used as a criterion for the tolerance to the rigid restriction of sodium chloride intake. It was found that in this series of patients 45 per cent did not show major electrolyte disturbance after three months on strict diet, 7.5 per cent showed it after three months, 18.8 per cent after two months, 17.5 per cent after one month, and 7.5 per cent after half a month; 3.7 per cent were in major electrolyte imbalance before the diet (in modified form) was started.

There was no distinct correlation of these findings with the nature of the processes which led to the renal insufficiency. The deficiency in renal electrolyte conservation could be compensated for by astonishingly small additions of sodium chloride if these were given early enough, so that even with the modifications, the diet could be kept well within the range of a very low sodium diet. Acidosis did not occur, although the general clinical state of many of these patients would have led one to expect its presence. The composition of the rice diet helps to reduce the production of acid radicals and favors the formation of bicarbonate reserve.

**BERNSTEIN**


An electric device is described for direct recording of the instantaneous or average heart rate. The R waves of the electrocardiogram are amplified and changed to signal waves, which are counted by a system of condensators and recorded on paper moving under visual control. All other deflections, including artefacts, regardless of their size, are eliminated so that the apparatus can be used with the patient moving around.

**PICK**


Studies were carried out on two women who had gradually developed severe potassium deficiency as a result of chronic diarrhea induced by overuse of laxatives. There were no neuromuscular symptoms and signs, but there were T-wave changes suggestive of hypokalemia on routine electrocardiograms. The renal excretion of potassium was very low. The serum showed no other significant disturbance except for a slight elevation of plasma bicarbonate in one of the two patients. The sodium, potassium, and phosphorus concentrations of the red cells were normal. The ability to concentrate urine was impaired prior to treatment but was restored to normal by correction of the potassium deficit. It is believed that the very slow rate of potassium loss was responsible for the absence of significant signs and symptoms.

There was also found to be a very close correlation between total exchangeable potassium and the potassium balance. This observation implies that exchangeable potassium measures the metabolically active pool of potassium in the body whether or not it measures total body potassium.

**WAIFE**


Because opening or closing an arteriovenous fistula causes an immediate and marked change in peripheral resistance and numerous compensatory adjustments, it was of interest to study renal physiology in 17 male casualties of the war with large arteriovenous fistulas. It was found that occlusion of an established fistula results in an increased excretion of sodium by the kidney. This is accompanied by the well-known rise in diastolic pressure and bradycardia, although there was no change in glomerular filtration rate, renal blood flow, or renal venous pressure. Changes in sodium excretion in different patients could not be correlated with the magnitude of blood pressure response, and the data suggest that renal excretion of sodium may be conditioned by the degree of filling of some portion of the arterial tree.

**WAIFE**


Studies in 21 patients permitted description of three distinct changes: (1) primary water retention in the first 24 hours, (2) early sodium retention in the first 24 hours and (3) late sodium retention beginning 24 to 48 hours after operation and sometimes lasting several days. Potassium deficiency accen-
tuated the third phase. From collateral data the authors suggest that the first phase is due to release of antidiuretic hormones as a result of emotion, trauma and drugs; that adrenocortical release plays a major role in the second and third phases; and that renal hemodynamic changes may contribute to the early water and sodium retention.

McKusick

The author reviews the virtues of intra-arterial transfusion. Furthermore, he recommends direct intra-aortic transfusion by a left paraspinal approach at the level of the third lumbar vertebra. Experience in 20 cases is described. Spasm, thrombosis, and other complications to which peripheral arteries are prone when used for this purpose are avoided.

McKusick

It has been known for some time that there is an unpredictable variability in the occurrence of acute glomerulonephritis. A review of the literature demonstrates that the attack rate of acute nephritis following streptococcal infection varies from year to year and epidemics of nephritis are observed in family units or other population groups. It appears that the variations in the attack rates are due to varying nephritogenic capacities of the infecting organism. Observations during four years on a group of patients with acute nephritis in various cities show that type 12 streptococci were associated with 26 attacks. Four attacks were due to streptococcus type 4 and one to type 25. On the other hand, type 18 streptococci were isolated from two patients with nephritis in Hawaii. The data demonstrate that infection with type 12 and possibly type 4 streptococci is especially likely to be followed by an attack of acute glomerulonephritis, however, the data do not indicate the magnitude of the attack rate.

Because of the existence of nephritogenic strains of streptococci, the family or other group from which a patient comes should be observed for evidence of other apparent and nonapparent cases of the disease. If immunity to streptococcal infections in man is type-specific, the chances of developing a second attack of acute nephritis should be exceedingly small, since the number of streptococcal types responsible for nephritis is few.

Waife