ABSTRACTS OF CARDIOLOGY

Edited by J. L. Lovibond, in collaboration with Abstracts of World Medicine

Cardiac Aneurysms: Clinicopathologic Studies. W. S. PHARES, J. E. EDWARDS, and H. B. BURCHELL. *Proc. Mayo Clin.*, 28, 264-271, May 6, 1953.

Out of 40 specimens of ventricular aneurysm in the pathology registry of the Mayo Clinic for the years 1916-51, 31 were located anteriorly, involving the apex, anterior wall, and the septum, and the remainder were posterior. Two only were calcified. Endocardial thrombi and pericardial adhesions were present in two-thirds of the specimens. The ages of the patients varied from 37 to 85 years. In one-quarter only had adequate rest been enjoined after infarction, while in half the cases there was no clinical history of infarction and presumably the patient had not rested at all. In the electrocardiogram in all the cases of anterior aneurysm in which precordial leads had been taken, QS waves and raised S-T segments were present.

The causes of death in the 40 cases were: congestive heart failure (16); acute coronary disease, often with recurrent infarction (15); and peripheral emboli (2). Causes not related to the cardiovascular system, such as carcinoma, accounted for 7 deaths. In no instance did the aneurysm rupture.

C. W. C. Bain

A Critical Analysis of the Clinical Value of Angiocardiography in Congenital Heart Disease. J. F. GOODWIN, R. E. STEINER, J. P. D. MOUNSEY, A. G. MACGREGOR, and E. J. WAYNE. *Brit. J. Radiol.*, 26, 161-184, April, 1953.

The authors describe their views based on 118 patients with some form of congenital heart disease investigated by angiocardiography at the Hammersmith Hospital, London, and the Royal Infirmary, Sheffield, from June, 1948, to June, 1952. The diagnoses were as follows: tetralogy of Fallot, 43 cases; pulmonary hypertension with central cyanosis, 12; atrio-septal defect with right-to-left shunt, 3; transposition of the great vessels, 2; pure pulmonary stenosis, 5; pure pulmonary stenosis with interatrial communication, 9; "pulmonary atresia", 7; tricuspid atresia, 3; Ebstein's anomaly, 2; coarctation of the aorta, 15; uncomplicated atrio-septal defect, 2; patent ductus arteriosus, 12; miscellaneous, 3. The features of these various anomalies are described, together with a discussion of the appearances which led to the diagnosis of each condition.

The cases have all been studied by the conventional method of injection into the antecubital vein, or by polyethylene tube passed into the subclavian vein or superior vena cava. Two types of apparatus were used, both hand-operated and giving a maximum of 2 exposures per second. The authors suggest that, while for most purposes this type of apparatus is satisfactory, in certain instances a more rapid method of examination in two

planes simultaneously would have been of great value in the illustration of multiple and uncommon anomalies. They used the venous angiocardiography method for investigation of most of the cases of coarctation, and found that the retrograde method of aortography is superior to the venous method, which they find accords with the experience of most investigators.

The first paragraph of their summary may well be quoted: "Angiocardiography is not a routine diagnostic method for indiscriminate use in all cases of congenital heart disease. Its value in different lesions varies widely. Full clinical assessment is therefore essential to decide whether angiocardiography is likely to help."

R. A. Kemp Harper

Studies Utilizing the Portable Electromagnetic Ballistocardiograph. IV. The Clinical Significance of Serial Ballistocardiograms following Acute Myocardial Infarction. H. MANDELBAUM and R. A. MANDELBAUM. *Circulation (N.Y.)*, 7, 910-915, June, 1953.

Serial ballistocardiograms were recorded in 100 patients surviving their first attack of myocardial infarction, the degree of abnormality shown in the recordings being graded as minimal (I), moderate (II), or marked (III). In 41 cases a ballistocardiogram was recorded during the first week of the attack, and in 40 of these was classified as Grade II or worse. Of 65 patients with ballistocardiographic improvement to Grade II or better, 55 were able to return to employment or household duties, one died of a second infarct, one showed deterioration to Grade-III abnormality after recovering from a second myocardial infarction, and the other 8 were disabled by recurrent attacks of congestive heart failure or severe angina. Only 5 of the 35 patients with marked abnormalities in the ballistocardiogram (Grade III) were able to return to their former duties, while of the 30 remaining, 11 died and 19 were cardiac invalids. In the authors' opinion "the degree of ballistocardiographic recovery which each patient attains has proved to be a reliable yardstick upon which to venture a prognosis".

William A. R. Thomson

The Bronchoscopic Measurement of Left Auricular Pressure. P. R. ALLISON and R. J. LINDEN. *Circulation (N.Y.)*, 7, 669-673, May, 1953.

A simple description is given of the technique of recording left auricular pressure by direct puncture of the auricle at bronchoscopy. A recording manometer is connected by fluid-filled polythene tubing to a 50-cm. metal bronchial-suction tube (internal bore 2 mm.), to the far end of which is welded a needle 6 cm. long, with an internal bore of 0.3 mm. The right main bronchus

is punctured antero-medially just beyond the carina. The needle is advanced some 4 cm. and then enters the left auricle. This approach is preferred to the oesophageal as, in the absence of obvious signs of infection, the bronchial wall has always been found to be sterile. No complications have occurred.

No detailed analysis of results is presented, but tracings are reproduced which show good correlation between those obtained in this way and those obtained later at thoracotomy from the same patient. Comparison is also made between simultaneous records of left auricular pressure obtained bronchoscopically and the pulmonary "capillary" pressure; the latter is thought to be a relatively unreliable way of obtaining left auricular pressure tracings.

J. A. Cosh

Experimental and Clinical Attempts at Correction of Interventricular Septal Defects. C. P. BAILEY, M. H. LACY, W. B. NEPTUNE, R. WELLER, C. S. ARVANITIS, and J. KARASIC. *Ann. Surg.*, 136, 919-936, Dec., 1952.

The authors first discuss the anatomy, embryology, and physiology of interventricular septal defects. In attempts to correct experimentally produced septal defects in dogs the authors have used two types of procedure: (1) for small defects a tapering pedicled tube of pericardium has been passed through the septal defect so as to occlude it completely; (2) for larger defects a flap of pericardium has been placed across the septum on the side of the greater intraventricular pressure. On subsequent examination after periods up to one year it was found that the pedicled tubes of pericardium retained a good blood supply for at least three months, whereas in the flat pericardial grafts degenerative changes occurred after one month, followed by almost complete hyalinization of the fibrous tissue and obliteration of the arterioles, with consequent atrophy and shrinkage of the graft, which showed no tendency to adhere to the septal wall. In view of these findings, the latter technique is considered unsatisfactory. The use of pedicled tubes of pericardium is necessarily limited to defects of less than 15 mm. in diameter, but it has been estimated that 85% of ventricular septal defects in man are of this size.

R. L. Hurt

Idiopathic Dilatation of the Pulmonary Artery. R. H. GOETZ and M. NELLEN. *S. Afr. med. J.*, 27, 360-367, May 2, 1953.

The authors review reported cases of idiopathic dilatation of the pulmonary artery and describe 4 cases of their own. The physical signs included a systolic murmur, varying in intensity, in the pulmonary area (in one case a diastolic murmur was also present) and a normal or accentuated pulmonary element of the second heart sound. In one case the second sound was duplicated in the pulmonary area. Cyanosis and clubbing were absent in every case. Fluoroscopy revealed enlargement of the main pulmonary artery and some enlargement of the right ventricle. Electrocardiograms were normal and cardiac catheterization did not demonstrate any left-to-right shunt, while the pressure in the right ventricle and pulmonary artery was normal. Angiocardiography, which was performed in 3 cases, confirmed

the enlargement of the main pulmonary artery, but the result was otherwise normal.

J. F. Goodwin

Idiopathic Congenital Dilatation of the Pulmonary Artery.

B. M. KAPLAN, J. G. SCHLICHTER, G. GRAHAM, and G. MILLER. *J. Lab. clin. Med.*, 41, 697-707, May, 1953.

The clinical diagnosis of idiopathic congenital dilatation of the pulmonary artery has until recently been difficult to establish. Little is known of its pathology, prognosis, or treatment. The authors present 6 fully investigated cases and discuss the differential diagnosis.

Symptoms were remarkably absent, the patients being referred for investigation because murmurs had been heard. In no case was there cyanosis, clubbing, chest deformity, habitus gracilis, or heart failure. The second pulmonary sound was always accentuated. In each case there was a basal systolic murmur, sometimes accompanied by a thrill. The remarkable feature of the murmur was its inconstancy, all the classifying features tending to change from time to time in a given patient. In 3 patients a short, inconstant, diastolic murmur was heard. Radiological examination showed the pulmonary artery to be enlarged and dynamic in all cases, but the "hilar dance" was not noted. The peripheral vascular markings were all normal. There was no abnormality of any chamber of the heart or of the aortic knob. Electrocardiograms were normal and there was no evidence of any general arterial disease.

Cardiac catheterization and blood oxygen studies showed that no shunt existed in either direction and that all pressures were normal.

H. David Friedberg

Traité des Cardiopathies Congénitales sous la direction de

E. Donzelot et F. D'Allaines. Par R. HEIM DE BALSAC, C. MÉTIANU, M. DURAND, CH. DUBOST, et M. ALLARY, N. DU BOUCHET, A. M. EMAM-AADÉ, J. E. ESCALLE, B. LATSCHA, J. LE BRIGAND et N. OECONOMOS. Masson et Cie, Paris, 1954. Pp. 1118 with 1155 figures. 14,650 francs.

This monumental work from the Hôpital de Broussais covers the whole field of congenital heart disease. In a subject that is advancing so rapidly it is difficult to write a book and the authors are to be congratulated on their labours which have produced a work that is so complete and up to date. It is based on the very wide experience of the authors during the last ten years and on a very complete review of the world literature. It will serve as a work of reference for a long time, for the groups are clearly arranged and extensive lists of references to papers on that subject follow each chapter.

The book starts with a description of the methods of examination and investigation, including excellent sections on angiocardiology and cardiac catheterization. It then deals with the congenital heart conditions without a shunt, secondly with those with an arterio-venous shunt, and then the longest section on those with a veno-arterial shunt. The writer has looked up many points in which he has been specially interested and has always found a good discussion of the point in question.

In general, where there are differences of opinion, the different views are given fairly with the author's preferences and although inevitably in such a large work there are many authors, the whole seems well coordinated. There are good illustrations both of radiology and electrocardiography, but perhaps the pathological anatomy is not treated as fully as the clinical picture. Great pains have been taken to see that all the figures are accompanied by good descriptive legends, which adds greatly to the book. The findings of cardiac catheterization and angiocardiology in the different groups are well described and illustrated.

As a minor criticism it seems a pity that the authors continue the French custom of speaking of Fallot's triologie. This separates pulmonary valvular stenosis with an inter-atrial shunt from pure pulmonary valvular stenosis with which it has such close connections. The only drawback to the book is the inevitable high cost of such work.

Maurice Campbell

Etudes Electrocardiographiques. JEAN LAHAM. Vol. 1. Librairie Maloine, Paris, 1954. Pp. 288. 1600 francs.

This volume covers, in a most complete way, the electrocardiography of cardiac infarction, coronary insufficiency, and pericarditis. It is, therefore, more a reference book for those working at the subject than a textbook for the student. The ground is covered most thoroughly with short accounts of the history and of the experimental work as well as of the main subject—the clinical importance of electrocardiography.

After a general introduction, chapters are devoted to anterior, posterior, and lateral infarcts, and those of the septum and apex. Special difficulties that arise with bundle branch block are discussed at some length and a chapter deals with aneurysms of the ventricle and other complications. This forms the bulk of the book and coronary insufficiency is, perhaps, covered less completely.

To show the value of the book to the advanced student, there are nearly a thousand references on the subject of pericarditis chosen from the world literature and not only from the French. Where opinion is still unsettled the author gives the views fairly and clearly and the book seems well balanced.

It is strange to see this book without an electrocardiogram. Probably it was felt that this would make the length too great: full illustration might be impossible, but the author would have added to our indebtedness if he had chosen a relatively small number of cardiograms that he thought specially characteristic of the subjects discussed.

Maurice Campbell

Circulatory Dynamics. CARL J. WIGGERS, M.D., Sc.D., F.A.C.P., Professor of Physiology, Western Reserve University. New York: Grune and Stratton, 1952. Pp. 107, Figs. 44. \$4.

In these days of extensive physiological research in cardiology a clear and comprehensive account of clinical applications of the experimental aspects of circulatory dynamics is a welcome contribution. This work deals with the practical information which can be gained from

arterial pressure readings and pulse records, applying it to the dynamics of hypertension. The physiological adaptability of the ventricles to altered circulatory states, and the interpretation of ventricular pressure curves in relation to myocardial disease are fully discussed and well illustrated by tracings and figures. The author's work in this field is widely known, and he has succeeded in providing in this monograph an excellent summary of the subject which will be helpful to all clinical investigators.

J. L. Lovibond

Hormonal and Neurogenic Cardiovascular Disorders.

WILHELM RAAB, M.D., F.A.C.P., F.A.C.C., F.C.C.P. Professor of experimental medicine and head of cardiovascular research unit, University of Vermont. London: Baillière, Tindall & Cox, 1953. Pp. 722. 114s.

As the role of the hormones grows more familiar some of our traditional concepts in cardiology become less tenable, particularly when based on mechanistic rather than biochemical principles. Much of the contemplative but highly stimulating material in this book is founded on problematical speculation, yet it manages to display considerable flexibility of thought and argument. The author has provided a work of great interest to cardiologists, one likely to furnish many fresh ideas for future research. The first section is devoted to the experimental effects of individual hormones on the cardiovascular system. In the second the author describes the cardiac features of different endocrine disorders; and in the third he surveys the influence of hormones and endocrine effects on cardiac syndromes. He has studied especially the action of the adrenal gland and discusses how oxygen economy of heart muscle is governed by a complex interplay of adrenalin secretion and vagal tone. Of the many clinical problems considered angina, hypertension, and syncope are three in which hormonal influences play a part worthy of more critical study. The book, which is illustrated, contains no less than 3726 references.

J. L. Lovibond

The Pathogenesis and Treatment of Thrombosis. IRVING S. WRIGHT, M.D., Professor of Clinical Medicine, Cornell University. New York: Grune & Stratton, 1952. Pp. 78, Figs. 27. \$3.

Clinical pathologists and physicians alike will profit from the author's presentation of his ideas on the action and dosage of a variety of anticoagulant drugs. This modest work includes an impartial discussion of the present-day views about the complicated reaction of blood coagulation, with a wry comment that as yet no test for clotting factors is entirely adequate. It contains some interesting remarks on the relationship of thrombophlebitis to malignant disease, familial and individual thrombosing tendencies, cold hæmagglutination, and ACTH therapy. The increased sensitivity to dicoumarol caused by starvation, alcoholism, and certain antibiotics is also discussed. It concludes with a useful appendix of practical notes on the relevant laboratory techniques employed in anticoagulant therapy.

J. L. Lovibond

Physiologic Therapy for Obstructive Vascular Disease.

ISAAC STARR, M.D., Hartzell Research Professor of Therapeutics, School of Medicine, University of Pennsylvania, Philadelphia. New York: Grune & Stratton. Pp. 38. \$2.

Written in reminiscent vein and presented with a strongly personal flavour this is an essentially readable paper. Its material comes from the George E. Brown Memorial Lecture given before the American Heart Association in 1952. Although it contains no fresh researches it provides an admirable summary of earlier work in this field, and pays healthy tribute to Lewis's influence on the physiology of cutaneous blood vessels. *J. L. Lovibond*

Correlative Cardiology: An Integration of Cardiac Function and the Management of Cardiac Disease.

CARL F. SCHAFER, M.D., F.A.C.P., and DAN. W. CHAPMAN, M.D., F.A.C.P. Philadelphia and London: W. B. Saunders Company, 1952. Pp. 525. £2 7s. 6d.

Where it is illustrated by diagrams, of which many are original, this book becomes a dramatised version of the "synopsis" variety of textbook. Elsewhere its tabulated pages do not make for clear correlation of cardiac problems nor indeed for easy reading. With its summary lists of dogmatic statements it is little more than an ambitious, if inaccurate, *aide-memoire* which can have no practical place as a reference book, but may be more popular with students whose examinations are imminent and, to a lesser extent, with teachers whose clinical approach is more didactic than critical.

J. L. Lovibond

A Comparison of Direct and Indirect Blood-pressure Determinations. L. N. ROBERTS, J. R. SMILEY, and G. W. MANNING. *Circulation (N.Y.)*, 8, 232-242, Aug., 1953.

Should the diastolic blood-pressure reading be made at the moment of disappearance or of muffling of the arterial sounds? In an attempt to answer this question the authors compared the blood-pressure readings obtained on 50 patients by the ordinary sphygmomanometer method with the direct intra-arterial pressure as recorded by an electromanometer and a strain-gauge manometer. In measuring the blood pressure by the cuff-and-stethoscope method, the manometer reading was observed at two different moments, one at the muffling of the sounds (Korotkow's 4th phase), the other at their disappearance (5th phase). In the direct method a needle was introduced into the brachial artery and connected through a three-way tap to each of the two manometers in turn.

The highest systolic readings were recorded by the electromanometer, these being 12 mm. Hg higher than the sphygmomanometer readings and 8 mm. higher than those on the strain-gauge manometer. The diastolic readings by both direct methods were almost identical and were 3 mm. Hg lower than the sphygmomanometer readings taken at the 4th phase and 7 mm. Hg higher than those taken at the 5th phase.

In a further study the blood pressure of 15 healthy

young nurses was measured before and after exercise, each observation being made by 3 different physicians. It was found that the reading made at the 4th phase (muffling) fluctuated much less after exercise than that at the 5th phase (disappearance). It is concluded that measurements recorded at the moment of muffling of the Korotkow sounds is a more accurate index of the diastolic pressure than those made at their disappearance.

C. W. C. Bain

Headache and Hypertension. I. McD. G. STEWART. *Lancet*, 1, 1261-1266, 1953.

The clinical significance of symptomatic headache in hypertension was studied in 200 consecutive patients with a diastolic blood pressure of 120 mm. Hg or higher. In most patients the headaches were considered to be the result of anxiety. No fewer than 104 were unaware that they had a raised blood pressure, and only 17 of these would admit to having headaches. A characteristic pattern of organic hypertensive headache could be defined only with difficulty. Although this type of headache was not common it had certain distinguishing features: it was severe, resembling migraine, with onset soon after the blood pressure began to rise; it was of short duration, though perhaps recurrent, and was not related to the rise in diastolic blood pressure or to the left ventricular state. Organic headache was noted relatively often within the syndrome of malignant hypertension and also in women at the menopause. The author draws attention to the fallacy of "acclaiming any treatment of hypertension in virtue of its alleged cure of headache." This symptom can seldom be regarded as a reliable diagnostic or prognostic aid in hypertension.

J. L. Lovibond

Combined Adrenalectomy-Sympathectomy in the Treatment of Patients with Essential Hypertension. H. A. ZINTEL, J. A. MACKIE, W. A. JEFFERS, C. C. WOLFERTH, A. G. HILLS, A. M. SELLERS, and J. H. HAFKENSCHIEL. *Surgery*, 34, 438-444, Sept., 1953.

Experience at the Hospital of the University of Pennsylvania has led the authors to believe that the combination of adrenalectomy and sympathectomy is a satisfactory form of treatment for severe essential hypertension. During the last 3 years 69 patients have been treated in this way. When classified by Smithwick's method, half these patients were placed in Group 4 and the remainder equally distributed between Groups 2 and 3.

The operation most often performed consisted in the subtotal (approximately 95%) removal of one adrenal gland and a modified Adson type of sympathectomy on the same side, followed a week later by total adrenalectomy and a similar sympathectomy on the other side.

There were 2 operative deaths, giving an operative mortality of 3%, and 9 deaths occurred 1 to 35 months after operation, the total mortality thus being 16%. The blood pressure was satisfactorily reduced (diastolic 100 mm. Hg or less on standing) in 49% of cases after operation, while in another 40% the symptoms and signs were improved, the blood pressure remaining elevated. A fall in blood pressure was less often achieved in

Group-4 cases than in the others, but it is considered that the majority of the 33 patients in this group benefited from the operation. Most patients with impending or frank heart failure improved, but those with impaired renal function did not, and most of the deaths occurred in patients with severe renal damage. In such cases, therefore, adrenalectomy is considered to be inadvisable.

Although it was hoped that by leaving a small amount of adrenal tissue the necessity for replacement therapy might be avoided, it was found that whenever a favourable blood-pressure response was obtained, small daily doses of cortisone, with or without deoxycortone and sodium chloride, were usually required. Such patients must always remain in the hands of physicians versed in the problems of maintenance therapy. *C. J. Longland*

Splanchnicectomy for Essential Hypertension. Results in 1266 Cases. R. H. SMITHWICK and J. E. THOMPSON. *J. Amer. med. Ass.*, 152, 1501-1504, Aug. 15, 1953.

In this report the authors compare the survival and mortality rates among 1266 patients with hypertension who were treated at the Massachusetts Memorial Hospitals by thoraco-lumbar sympathectomy with those among 467 patients equally suitable for operation, but who refused it for reasons unconnected with the severity of their disease. Both series were divided into 4 groups according to the level of blood pressure and the degree of cardiovascular disease present (assessed on a points basis from a number of factors). The operative mortality ranged from *nil* in Group 1 (the mildest cases) to 11% in Group 4 (the most severe cases).

At the end of 5 years the mortality in each of the groups was considerably lower in the operated series than in the series refusing operation. [It is not stated whether or not operative deaths are included in this comparison.] This difference in mortality between the two series was highly significant ($p < 0.001$) in all groups, but was most marked in Group 2 (13% in operated cases, 38% in non-operated cases) and Group 3 (20% and 71% respectively). These two groups may be described approximately as including patients with evidence of hypertensive changes in the eyes, heart, brain, or kidneys, not amounting to gross failure.

In view of these findings the authors consider that sympathectomy is the treatment of choice for hypertension in cases falling into Groups 2 and 3, though some of these patients may need treatment by diet or drugs in addition. They also regard sympathectomy as worth while in Group-4 cases when the general condition is satisfactory, and in certain Group-1 cases, such as those in which intractable symptoms are present.

C. J. Longland

Preliminary Observations of "Rauwiloid"—Hexamethonium Combined Therapy of Hypertension. R. V. FORD and J. H. MOYER. *Amer. Heart J.*, 46, 754-763, Nov., 1953.

The authors treated 19 out-patients suffering from hypertension with hexamethonium by mouth, starting with 250 mg. 4 times daily and gradually increasing the dose until the optimum response was obtained. After at least

6 months "rauwiloid", an extract of *Rauwolfia serpentina*, was also given orally, in an initial dose of 2 mg. 4 times daily, gradually increasing to 32 mg. daily. (It is stated, however, that experience has since shown that 8 to 12 mg. a day is adequate.) In another series of 6 patients the process was reversed, rauwiloid being given initially for 3 months and then supplemented with hexamethonium. In the first group the administration of hexamethonium alone caused a reduction in the average mean blood pressure (diastolic pressure plus one-third of the pulse pressure) from 150 (199/125) to 104 (136/88) mm. Hg, and there was a further fall to 97 (127/83) mm. Hg when rauwiloid was added. There was also a decrease in the average pulse rate after adding rauwiloid. In the second group rauwiloid alone caused a decrease in average mean blood pressure from 159 (208/134) to 137 (183/113) mm. Hg, and after hexamethonium was added there was a further fall to 104 (147/83) mm. Hg. In all 25 patients the mean blood pressure fell by at least 20 mm. Hg. When hexamethonium was given alone the average daily dose necessary to produce an optimal reduction in blood pressure was 2.6 g.; this could be reduced to 1.7 g. when the hexamethonium was supplemented with rauwiloid. Rauwiloid gave rise to no unpleasant side-effects.

The authors regard rauwiloid, given alone, as the drug of choice for the initial treatment of mild, labile hypertensive disease, but suggest that if in such a case there is no response after 6 to 8 weeks, "apresoline" (hydralazine) or "veriloid" should be given in addition. Rauwiloid should also be given initially in cases of severe but not rapidly progressive hypertensive disease, to be supplemented with hexamethonium if no satisfactory response is obtained after 6 to 8 weeks. On the other hand in severe and rapidly progressive hypertensive disease (without renal failure) hexamethonium is, in the authors' opinion, the drug of choice, to be supplemented with rauwiloid if necessary, while in the severe malignant type of hypertension and in hypertensive emergencies treatment with hexamethonium given intramuscularly, or with veriloid by continuous intravenous infusion or intramuscularly, is to be preferred.

William A. R. Thomson

Hypertension and Coronary Occlusion. A. M. MASTER. *Circulation (N.Y.)*, 8, 170-177, Aug., 1953.

The author has re-examined the relationship between hypertension and coronary occlusion. Previously he had shown that hypertension was a significant factor in the development of coronary occlusion in both men and women if a blood pressure of 150/90 mm. Hg was accepted as the lower limit of hypertension; in fact, it was found that hypertension preceded coronary occlusion in 56% of men and 80% of women. Subsequently new criteria for the definition of hypertension were determined by examining 74,000 working men and women between the ages of 16 and 65. The lower limit of hypertension was found to vary in men from 145/90 mm. Hg at the age of 16 to 190/110 mm. Hg at the age of 60 to 64. In women the corresponding figures were 140/90 mm. Hg and 190/110 mm. Hg.

Adopting these new criteria the author examined

the records of 500 men and 100 women, all private patients under the age of 65, who had had coronary occlusion. In 478 of the 600 blood pressure had been determined before the occlusion occurred; in the remainder clinical judgment was the guide to previous blood pressure. It was found that hypertension had been present in 130 (27%) of the men and in 71 of the women before coronary occlusion developed. It is concluded that hypertension is not nearly so important a factor in the aetiology of coronary occlusion in men as it is in women.

Keith Ball

Coronary Heart-disease and Physical Activity of Work.

I. Coronary Heart-disease in Different Occupations.

II. Statement and Testing of Provisional Hypothesis.

J. N. MORRIS, J. A. HEADY, P. A. B. RAFFLE, C. G. ROBERTS, and J. W. PARKS. *Lancet*, 2, 1053-1057 and 1111-1120, 1954.

Statistical analysis of the incidence of coronary heart disease among certain employees of London Transport Executive during 1949 and 1950 showed that angina pectoris or angina of effort was commoner among the conductors of buses and trams than among the drivers, whose work is physically lighter, whereas coronary thrombosis causing "immediate" death was more often encountered among the latter. Moreover, the total incidence of coronary disease was higher among the drivers and the immediate mortality more than double that among the conductors in all age groups. In a similar study undertaken among postal workers and civil servants, especially men in the age group 35-59 years, the total incidence and case-fatality of coronary heart disease were again found to be lower, and the incidence of angina pectoris higher, among the more physically active (postmen) than among the more sedentary grades, such as telephonists, executives, and clerks.

On the basis of these findings the authors adopted a provisional hypothesis, which is summarized as follows. "Men in physically active jobs have a lower incidence of coronary heart-disease in middle age than have men in physically inactive jobs. More important, the disease is not so severe in physically active workers, tending to present first in them as angina pectoris and other relatively benign forms, and to have a smaller early case-fatality and a lower early mortality-rate." This hypothesis was then tested in three ways. (1) The observations on transport and postal workers were repeated during 1951 and 1952, and again showed lower early mortality rates from coronary disease among the more active workers (conductors and postmen) than the less active workers (drivers and telephonists). (2) A study was made of the mortality from coronary heart disease in various occupations as given in the Registrar General's figures for 1930-32, the results again supporting the hypothesis that mortality from coronary disease as a whole during middle age is lower among heavy than among light workers. (3) The death certificates of all men aged 45-74 dying from coronary heart disease in London and the Home Counties in the first week of March, 1952, and a one-in-three sample of those dying in the second week were studied. Analysis showed that

among the men whose occupation was classifiable as "heavy" the proportion who died in a first attack of the disease was considerably less than among those classified as "light" workers, suggesting that coronary heart disease occurs in a more benign and chronic form among the former than among the latter.

A. I. Suchett-Kaye

Transient Cardiac Arrhythmia Induced by Non-penetrating Trauma to the Chest. H. B. TAYLOR. *Amer. Heart J.*, 46, 557-564, Oct., 1953.

The author has analysed the 349 reported cases of heart disease secondary to non-penetrating trauma and describes 3 others.

He points out that in two-thirds of the recorded cases in which there was a resultant arrhythmia other evidence was found of permanent cardiac lesions, and some of these patients died. Transient arrhythmia appears to be uncommon as a result of trauma, although it occurred in his own 3 cases, in which there was no evidence of permanent cardiac damage. He suggests that arrhythmia, if it occurs in this type of case, is due to contusion of the right auricle at the angle between the heart and the liver near the entry of the inferior vena cava, with consequent damage to the conducting system.

G. S. Crockett

Nature of Spontaneous Auricular Flutter in Man. Report of a Case Observed Directly during Cardiac Surgery.

M. PRINZMETAL, A. GOLDMAN, E. GERLACH, and R. KENNAMER. *J. Amer. med. Ass.*, 153, 553-555, Oct. 10, 1953.

Although the circus-movement theory of Lewis may explain auricular flutter caused by certain types of experimental injury to the heart, evidence is accumulating that the mechanism of spontaneous auricular flutter in man is of a different nature. Careful analysis of the electrocardiogram shows that an isoelectric interval commonly follows the auricular complex in this disorder, suggesting that auricular diastole occurs between successive contractions; this would hardly be expected if flutter is due to a self-perpetuating circus rhythm. Moreover, tracings from intra-oesophageal leads in cases of flutter show that an impulse spreads from a caudally placed ectopic focus to the cephalic extremity of the auricle and does not return to its site of origin.

The authors now report the study by cinematography of a case of naturally occurring auricular flutter in a 49-year-old woman undergoing valvotomy for mitral stenosis. Projection of the film at the normal speed (thus showing the action of the heart in slow motion) showed contractions beginning simultaneously from a caudal focus and spreading synchronously through both auricles in a cephalic direction. Each contraction (systole) was followed by a period of relaxation (diastole), which was approximately twice as long as systole. Direct evidence is thus presented which is incompatible with Lewis's theory, and confirms the electrocardiographic evidence that about 95% of cases of auricular flutter in man are due to an ectopic focus in the caudal region of the auricle.

A. Paton

A Study of the Distribution of Water in 26 Cases of Severe Heart Failure. R. TRICOT, P. VERNANT, P. MEUDIC, and R. PROST. *Arch. Mal. Cœur*, 46, 710-727, Aug., 1953.

The authors have studied 26 cases of cardiac failure of varied aetiology at the Hôpital Lariboisière, Paris, in an attempt to elucidate anomalies in fluid distribution and in the response to treatment in such cases. No correlation was found between clinical oedema and blood volume, venous pressure, extracellular fluid volume, or osmotic pressure, the best guide to the volume of oedematous fluid being the patient's weight. The osmotic pressure of the extracellular fluid (estimated by the cryoscopic method) was normal in about half the cases and grossly raised or lowered in the others. In most of the cases the blood volume and electrolyte levels approximated to normal values. The chief electrolyte values in the oedema fluid varied little from those in the blood.

Several clinical types of heart failure were differentiated, as follows. (1) The common form, with oedema, effusions, and no dehydration responded well to digitalis, salt restriction, and the administration of diuretics unless there was gross myocardial damage or an endocrine cause for water imbalance. (2) Forms with cellular hyperhydration were seen after prolonged water- and salt-depletion therapy. In such cases diuresis diminishes, oedema increases, and anorexia, nausea, vomiting, cramps, headaches, behaviour changes, convulsions, hypothermia, papilloedema, and disturbances in the electrocardiogram may occur. Out of 3 such patients seen, one died in coma but the 2 others improved after administration of salt and the intravenous injection of hypertonic glucose respectively. (3) Forms with cellular dehydration. These are commonly the result of water restriction without salt restriction. There is intolerable thirst, dryness of the skin and mucous membranes, cramps, Cheyne-Stokes respiration, and eventually a picture of uræmic coma. These patients were treated by being given water to drink or by the intravenous infusion of hypotonic glucose. The majority of patients with cardiac failure have a raised blood volume. In this series, however, 2 patients who had had prolonged severe depletive therapy had a lowered blood volume; both had cellular hyperhydration. One was treated by plasma transfusion and made a rapid recovery.

[It is interesting to compare this paper with the three papers on the same subject by Elkinton *et al.* (*Circulation* 1951, 4, 679, 697, and 868; *Abstracts of World Medicine*, 1952, 11, 159, 160, and 263).]

D. Goldman

Thromboembolic Complications during Intensive Treatment of Cardiac Decompensation. J. GORMSEN. *Ugeskr. Læg.*, 115, 1395-1401, Sept. 17, 1953.

The author has analysed the case records of patients with heart failure under treatment in two different Danish hospitals to discover whether more intensive cardiac therapy was associated with a higher incidence of thrombo-embolic catastrophes. The series from one hospital consisted of 116 patients who were given strophanthin-G (ouabain) and mercurial diuretics, and the series from the other of 99 patients who were treated

conservatively, 75 of them by the oral administration of digitalis and the remainder by intravenous injection of diuretics. The groups were considered to be comparable, although the first contained a higher proportion of elderly patients.

In the first group of 116 cases, thrombo-embolic episodes occurred in 47 cases, causing 21 deaths; in the second group of 99, there were 7 such episodes, all of which were fatal. The over-all mortality was 31% in the first group and 24% in the second. The author suggests that intensive therapy in heart failure may increase the danger of thrombosis and embolism, pointing out that it has been shown that rapid diuresis raises blood viscosity, and that digitalis and mercurial diuretics are known to shorten the clotting time of the blood.

B. Nordin

Commissurotomy in 100 Cases of Mitral Stenosis. F. D'ALLAINES, C. DUBOST, and —. BLONDEAU. *Mém. Acad. Chir. (Paris)*, 79, 572-581, 1953.

The authors discuss their experience of commissurotomy in the treatment of mitral stenosis, and analyse the results in the first 100 cases out of a total of 130 treated at the Hôpital Broussais, Paris, since February, 1951. They accept as particularly suitable for operation the classic type of case of pure mitral stenosis with a predominantly respiratory symptomatology, and firmly reject those cases with active rheumatism, multiple valve lesions, and an advanced degree of failure. Between these obvious extremes lie many types of case the suitability of which for operation they discuss in some detail. (1) Those cases with unfavourable features, such as disturbances of rhythm, valvular calcification, previous history of embolism, and Osler's nodes, which, however, do not exclude operation. (2) Patients with a persistent fever in the absence of active rheumatism are not uncommon, are not necessarily associated with auricular clot, and cause no particular difficulty at operation. (3) Patients with right heart failure without gross peripheral signs, some of whom have been subjected to operation as being their only chance of improvement. Among 21 such cases, there were 3 deaths, while 7 of the survivors were slightly improved and 11 considerably improved. In the more severe cases of this type the authors perform a preliminary ligation of the inferior vena cava, followed by valvotomy 6 to 24 months later. Among 4 such cases the result in 1 was "excellent", in 2 "good", and in 1 "poor". (4) The presence and degree of mitral regurgitation may be difficult to assess clinically and radiologically, which sometimes leads to the finding of unsuspected mitral incompetence at operation. Good results have been achieved in some such cases with minor degrees of reflux, and therefore operation should not be denied to patients in this category.

In the selection of cases the authors rely mainly on clinical assessment, deriving little help from radiology, electrocardiography, or cardiac catheterization.

There were 7 deaths, 6 of which occurred from a variety of causes in the first 11 days after operation, while the seventh was that of a patient who underwent a satisfactory valvotomy, but showed no clinical improvement and died 30 days later, when it was found that the

cusps had re-fused; this must be a very unusual complication.

Of 61 cases followed up for 6 or more months, in 38 (70%) the result was "excellent", in 11 (20%) it was "good", in 3 (5%) the condition was unchanged, and in 3 (5%) it was worse.

A. M. Macarthur

Tomographic Studies of the Pulmonary Veins in Mitral Stenosis. J. MONIZ DE BETTENCOURT, A. SALDANHA, and J. C. BARRETO FRAGOSO. *J. belge Radiol.*, 36, 263-275, 1953.

The authors stress that there is difficulty in demonstrating the pulmonary veins on the plain radiograph, and that tomography is the method of choice. Their tomographic technique consists in taking 8-mm. cuts with a displacement angle of 30 degrees, the factors being 100 mA and 65 kV at 110 cm. focus-film distance. In this report they present their results in 50 cases of mitral disease, in 30 of which pulmonary arterial and "capillary" pressures were obtained by cardiac catheterization. The pulmonary veins seen on tomography were classified according to three main groups, small, medium, and large.

Their findings showed that, contrary to the classic conception, mitral lesions do not necessarily cause enlargement of the pulmonary veins. Large-calibre veins were found in patients with sinus rhythm, practically no enlargement of the left auricle, and a normal or slight rise in pulmonary capillary pressure. Small-calibre veins were found mostly in patients with auricular fibrillation, a large left auricle, and a great increase in pulmonary capillary pressure, although in a few cases of oedematous mitral stenosis with high pulmonary pressure large veins were seen. Enlargement of the left auricle causes displacement of the pulmonary veins, so that in cases of gross enlargement of the auricle the veins cannot be visualized by tomography. The authors believe that their findings confirm what they have long suspected—the existence of a barrier in the pulmonary arterioles, although the exact role of this barrier as a protection against pulmonary oedema still requires elucidation. In discussing the radiological finding of pulmonary veins of normal calibre in cases with high pulmonary capillary pressure, the authors suggest that increased venous tone is the most likely explanation.

B. Green

Antibiotic Therapy of Bacterial Endocarditis. IV. Successful Short-term (Two Weeks) Combined Penicillin-Dihydrostreptomycin Therapy in Subacute Bacterial Endocarditis Caused by Penicillin-sensitive Streptococci. J. E. GERACI and W. J. MARTIN. *Circulation (N.Y.)*, 8, 494-509, 1953.

In view of the finding that the action of penicillin on penicillin-sensitive streptococci is increased by the addition of streptomycin, 23 consecutive patients with penicillin-sensitive streptococcal endocarditis were given a combination of aqueous procaine benzyl penicillin and dihydrostreptomycin. In 20 of these cases *Streptococcus mitis* had been isolated, and in 2 *Str. salivarius*; in the remaining case the organism was unidentified.

Details of the daily dosage of the two drugs, which were given in various combinations for a period of two weeks, are given.

Mild sensitivity reactions appeared in only 3 cases; in no case was the eighth nerve damaged. Five patients died: one of cardiac infarction, one of cerebral embolism, and 3 of congestive heart failure. In the one instance in which a post-mortem culture of the valves was obtained it was sterile. The remaining 18 patients have been followed up for 3 to 26 months. All except one, in whom there was a recurrence of infection after one year, have remained well.

The authors consider that the 2-week course as outlined above is sufficient to cure infective endocarditis due to penicillin-sensitive streptococci; they suggest that a shorter course might be equally effective.

Arthur Willcox

Atrio-septo-pxy for Interatrial Septal Defects. C. P. BAILEY, H. E. BOLTON, W. L. JAMISON, and W. B. NEPTUNE. *J. thorac. Surg.*, 26, 184-219, Aug., 1953.

The authors describe and illustrate the various types of interatrial septal deficiency and the various methods which have been introduced for closing such defects surgically, discussing the merits and demerits of each. The frequent occurrence in such cases of anomalous pulmonary venous drainage and of mitral stenosis (Lutembacher's syndrome) is emphasized, and it is pointed out that such coexisting anomalies should be dealt with at the time of closure of the atrial defect.

The results in the 21 cases in which this technique has been used at the Hahnemann Hospital, Philadelphia, are presented and the essential details given in tabular form. There were 14 cases of defect of the septum secundum (2 with coexisting mitral stenosis and 5 with anomalous pulmonary veins), with 2 operative deaths, and 7 cases of persistent ostium primum, with 3 deaths which were not directly due to the operative technique. Clinical improvement was notable in all the survivors.

[This article deals very extensively with many aspects of the subject and is impossible to abstract satisfactorily; it is comprehensive and well illustrated and should be carefully studied by all interested in the treatment of this condition.]

W. P. Cleland

Clinical Progress in Cardiovascular Disease. Editor: HERMAN L. BLUMGART, physician in chief, Beth Israel Hospital, Boston. New York: Grune & Stratton, 1952. Pp. 143. \$4.50.

The essays which comprise this small book are drawn from monthly sections in *Circulation* on "Clinical Progress." A symposium on atherosclerosis, occupying half the book, reviews the latest ideas of cholesterol metabolism. This is followed by useful chapters on cardiac emergencies, surgery in mitral stenosis, management of cardiac patients undergoing surgery, and the circulatory effects of emotion. Much ground is covered in these papers, and they provide an excellent and up-to-date survey of these clinical problems. The monograph succeeds in its attempt to review the more recent advances in medical progress and is well referenced and indexed.

J. L. Lovibond