PROCEEDINGS OF THE BRITISH CARDIAC SOCIETY

The Forty-first Annual General Meeting of the British Cardiac Society was held in the Arthur Thompson Hall, The Medical School, Birmingham on Thursday, May 3, 1962. The President, EVAN BEDFORD, took the Chair at 9.30 a.m. during Private Business before handing over to the Chairman, O. BRENNER. 126 members and 26 visitors were present.

PRIVATE BUSINESS

1. The Minutes of the Annual General Meeting having been published in the Journal (1962, 24, 115) were taken as read and confirmed.

2. The Treasurer reported that the Society's financial position was still satisfactory. There was an excess of income over expenditure of approximately £200 for the year. This will be used to make a donation of £25 to the Society of Cardiological Technicians and to open a fund for helping to defray expenses of future congresses or for similar purposes. The accounts had been approved and adopted by the Council.

3. Evan Bedford was re-elected President for 1962–63.

4. The following two new Members of the Council were elected in place of Brenner and Holmes Sellors (term of office expired).

   Phillips       D'Abreu

5. The following Honorary Members were elected

   L. Condorelli (Rome)
   William Evans
   J. Lenègre (Paris)

6. The following Extra-Ordinary Member was elected

   W. Lister

7. The following Corresponding Member was elected

   P. M. Mouquin (Paris)

8. The following Ordinary Members were elected

   K. P. Ball            P. Heath
   R. H. R. Belsey       D. G. Melrose
   E. M. M. Besterman    P. G. F. Nixon
   D. C. Deuchar         R. M. Thomson
   Lord Evans            D. Weitzman

9. The following Associate Members were elected

   R. Astley  Birmingham  Celia Oakley  London
   H. H. Bentall (S.M.)  London  S. O'Toole  Galway
   L. Bromley (S.M.)    London  M. Paneth (S.M.)  London
   I. Gabe           London    N. Pattinson  London
   K. Jefferson     London    Jane Somerville  London
   R. S. Jones      Liverpool

10. The Fourth World Congress of Cardiology will be held in Mexico City from October 7 to 13, 1962 under the Chairmanship of Professor Ignacio Chavez.

11. The 1963 Annual General Meeting is to be held in Dundee under the Chairmanship of Ian Hill.

   Demonstrations were held in the Medical School. The Society dined together in the new University Refectory with Brenner in the Chair. Clifford Parsons proposed Brenner's health and Brenner replied shortly. Sir Robert Aitken, Vice-Chancellor of the University of Birmingham, was the guest of honour.

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ACCESSION CUSPS OF THE MITRAL VALVE AS A CAUSE OF MITRAL REGURGITATION

By R. T. Davis (introduced by Donald Heath)

Eight patients were described who died in congestive cardiac failure, the result of mitral regurgitation. Each had an accessory cusp, or cusps, of the mitral valve which had herniated upwards into the atrium. Apparently the chordae tendineae to the accessory cusps had then prevented proper closure of the remaining cusps, so that regurgitation had been produced. A number of other patients known to have had mitral regurgitation, but dying of some other cause, were found to have a similar lesion.

All the patients were middle-aged, and none of them had a history of acute rheumatism or showed evidence of it at autopsy.

RETROGRADE LEFT VENTRICULAR CARDO-ANGIOGRAPHY IN THE DIAGNOSIS OF MITRAL REGURGITATION

By I. R. Gray, C. S. Joshipura (introduced) and J. Mackinnon

Left ventricular cardio-angiography was carried out in 30 patients in whom mitral regurgitation was suspected. The presence of mitral regurgitation could be readily detected and its degree judged from the opacification of the left atrium. The results are compared with findings on clinical examination and right heart catheterization: it is concluded that the latter do not provide an accurate basis for judging the severity of mitral regurgitation. The reliability of assessment by cardio-angiography has been confirmed in 10 patients subsequently operated on.

MYOCARDIAL METABOLISM AT REST AND DURING EXERCISE IN PATIENTS WITH RHEUMATIC HEART DISEASE

By J. Howel Jones, M. Bateman, C. Chlouverakis, J. Gloster (all introduced) and P. Harris

Eight subjects with mitral stenosis were studied by means of coronary sinus catheterization. Arterial samples were obtained from the brachial artery. The myocardial extraction of oxygen, free fatty acids, glucose, lactate, and pyruvate were measured at rest and during a period of exercise in the fasting state. The arteriovenous oxygen equivalent for each metabolite was calculated and related to the oxygen extraction. The main differences that occurred between the resting and exercising state were in the extraction of free fatty acids and lactate.

THE P WAVE OF RIGHT ATRIAL HYPERTROPHY IN ATRIAL SEPTAL DEFECT

By Dennis Deuchar and A. Sánchez-Cascos (introduced)

The concept of two types of P wave occurring in association with right atrial hypertrophy, depending upon whether the latter is the result of systolic or diastolic overloading, is presented. The concept is in accordance with that of the cardiographic patterns of systolic and diastolic overloading of the right ventricle.

The electrocardiograms of 50 patients with atrial septal defects (not of the ostium primum type) for whom venous catheterization data were available have been analysed. The amplitude, duration, and time-to-peak of the P waves in leads II and V I have been measured and correlated with hemodynamic data. There is a statistically significant correlation between the time-to-peak of PII and the magnitude of the left-to-right interatrial shunt. The amplitude of PII and the occurrence of a biphasic P in V I is more related to the height of the right heart pressures.

It is postulated that the wide PII with a long time-to-peak found in atrial septal defect is the cardiographic pattern reflecting diastolic overloading of the right atrium, whereas a tall, narrow PII is the pattern of systolic overloading. Analysis of electrocardiograms obtained after surgical closure of the defect showed evidence of regression of the diastolic overloading pattern.

THE P WAVE AXIS IN PULMONARY DISEASE

By F. I. Caird and D. E. L. Wilcken (introduced by Goodwin)

A simple method of measurement of the mean frontal plane axis of the P wave of electrocardiogram (AP) is described. It normally lies between +30° and +80°. Study of the cardiograms of 137 patients with chronic pulmonary disease showed that the P wave axis tended to be deviated to the right in chronic bronchitis with airways obstruction, but was normal in interstitial disease of the lung (asbestosis, chronic diffuse interstitial fibrosis, and carcinomatous lymphangitis). In the latter the P wave axis thus resembled that seen in congenital heart disease.
It is suggested that the rightward direction of AP in chronic bronchitis is a positional change associated with the increased lung volumes characteristic of airways obstruction. This hypothesis is supported by the finding of reversible rightward deviation of AP in severe asthma, and also by the results of observations in 5 normal subjects, in whom AP deviated to the right by up to 30° as lung volumes were increased by obstruction to expiration.

**RESULTS OF REPAIR OPERATIONS FOR FALLOT'S TETRALOGY**

By L. D. Abrams *(introduced by Brenner)*

The results of a personal series of 45 such operations were compared with those obtained by other methods used at the Children's Hospital, Birmingham.


By Maurice Campbell

*Published in full: Brit. Heart J., 24, 673.*

**CENTRAL CYANOSIS IN PLETHORIC SECONDUM ATRIAL SEPTAL DEFECTS**

By Jane Somerville

Central cyanosis sometimes occurs in patients with atrial septal defect who have plethoric lung fields, low pulmonary vascular resistance, and no pulmonary stenosis. The desaturation of arterial blood due to preferential shunting from the vena cavæ to the left atrium is insufficient to cause cyanosis. The presence of central cyanosis should suggest that additional lesions complicate the atrial septal defect.

The two most important anomalies, correctable by surgery, are cor triatriatum and two atrial septal defects with the inferior vena cava connected to the left atrium. Total anomalous pulmonary venous drainage into the right atrium, which presents in a similar way, is well recognized and will not be further discussed. In cor triatriatum with atrial septal defects, the depth of cyanosis depends on the site of entry of pulmonary veins: when all veins drain into the cephalad left atrial chamber, cyanosis is obvious at rest and the condition physiologically resembles total anomalous venous drainage. Intensity of cyanosis is reciprocally related to the amount of pulmonary venous drainage into the lower left chamber.

With anomalously connected inferior vena cava, cyanosis that is obvious in infancy diminishes with age and the condition may be suspected from the unusual degree of left ventricular enlargement on the electrocardiogram. Selective angiocardiography gives precise diagnosis in both conditions.

**THE EFFECT OF SMOKING ON THE CARDIAC OUTPUT**

By D. W. Irving, T. Yamamoto *(both introduced)* and J. P. Shillingford

A new technique of using serial dye dilution studies has been used to determine the effect of smoking cigarettes on the cardiac output. Hospital patients and normal subjects were studied. All had smoked at least 15 cigarettes daily for five years or more. The subjects were made to "sham smoke" an unlit cigarette, smoke without inhaling, and smoke with inhaling. All subjects showed an increase in the cardiac output only during and for a short time after inhalation of the smoke, while none showed a significant increase during sham smoking or when not inhaling. Much variation in the degree of increased cardiac output was noted among the individuals: the range varied from 3 to 96 per cent.

**VENTRICULAR PRESSURE-FLOW RELATIONSHIPS IN ISOLATED PULMONARY VALVULAR STENOSIS**

By Hamish Watson and K. G. Lowe

*Published in full: Brit. Heart J., 24, 431.*

**THE ASCORBIC ACID INDICATOR-DILUTION TECHNIQUE**

By P. G. F. Nixon, H. M. Snow, F. Hepburn, G. Hay, and R. Addyman *(the last four introduced)*

In 1960 Leland Clark reported his discovery that indicator-dilution curves could be obtained with ascorbic acid and an intravascular platinum electrode. The authors have designed simple apparatus and
found the technique useful in the diagnosis of circulatory disorders. One electrode is introduced into the blood stream, a second is applied to the skin, and a constant potential difference is maintained between them. Injected ascorbic acid reacts with the intravascular electrode to change the current in proportion to its concentration.

Slides were shown (1) to demonstrate the chamber of entry of left-to-right shunts, (2) to substitute for arterial cuvette or ear-piece dye curves, (3) to distinguish between aortic regurgitation and persistent ductus in cases of ventricular septal defect, and (4) to record pulmonary and systemic arterial velocity flow patterns.

The technique sensitively localizes small shunts, and, for qualitative work, has advantage over dye methods. It is cheap and simple, free from complicated amplifying systems, and can be operated by relatively untrained technicians. The curves are recorded from the blood stream without blood sampling and without motor-driven syringe-cuvette-catheter systems. Since the technique does not depend upon colour changes, it may be used in cyanosed cases, and it does not preclude oximetry. In many patients it makes unnecessary the expense and irradiation of angiokardiography.

A Coronary Prognostic Index for Grading the Severity of Cardiac Infarction

By A. A. F. Peel, T. Semple, I. Wang, W. M. Lancaster, and J. L. C. Dall (the last three introduced)

Published in full: Brit. Heart J., 24, 745.

Intracardiac Sounds and Pressures in Atrial Septal Defect

By D. W. Barratt, D. H. Davies, and G. Jacob (introduced)

Over twenty cases of atrial septal defect have been studied with the intracardiac manometer and phonocardiogram. The site of origin of the pulmonary ejection murmur at the pulmonary valve, and of the mid-diastolic murmur in the right heart chambers has been confirmed. The sounds produced by closure of all four heart valves have been recorded in the appropriate chambers and, in some patients, sounds occurring as each valve opens have also been found.

A major element of the first heart sound recorded on the chest wall occurs after closure of both mitral and tricuspid valves and is thought to originate in the great vessels. It may indicate a semilunar valve opening sound.

The onset of rise in pressure and the systolic ejection time has been measured in both ventricles, in both phases of respiration, and related to asynchrony of aortic and pulmonary valve closure sounds and to the width of the QRS complex. In both ventricles, irrespective of the height of systolic pressure, the interval between the onset of contraction and the A-V valve closure sound was 0.03 sec. In the left atrium the onset of fall in pressure from the height of the v wave clearly precedes the mitral opening sound.

A Comparison of Determinations of the Cardiac Output by Dye Dilution and Direct Fick Methods

By S. H. Taylor, B. M. Kennelly (introduced) and K. W. Donald

Contemporary confidence in the precision of the dye dilution method of determining the cardiac output still rests largely on the original work of Hamilton and his colleagues in 1948. Although a considerable degree of agreement was noted between the outputs determined by the two methods, the scatter of values both in this early study and in smaller but more recent series from various groups is quite considerable. Although the majority of workers have demonstrated no systematic difference between the results obtained from the two methods, the statistical proof of the validity of the dye method remains rather arbitrary. Much of the scatter of results observed in earlier series was probably due to technical inadequacy of the dye recording equipment allied to poor experimental design. The study to be described not only utilized a continuous recording photo-electric system for the inscription of dye curves specifically designed to eliminate curve distortion, but was planned to correct the experimental inadequacies of previous series.

A comparison of the dye dilution and direct Fick determinations by this method shows no systematic error and a very small scatter of observations. Repeatability of the dye dilution outputs is extremely good. Attempts to derive an empirical formula from basic measurements of the dye curves were described.
Coronary angiography has been developed at St. George's Hospital during the last three years, at first in dogs (by aortography) and later in human subjects (by aortography and more recently by selective coronary radiography). Objectives have included a search for patients with localized disease suitable for endarterectomy, assistance in the diagnosis of obscure chest pain, and the exclusion of coronary disease in patients with aortic stenosis in whom valvotomy is contemplated.

Retrograde arterial catheterization and injection of contrast medium immediately above the aortic valve in diastole proved safe but, in patients with coronary disease, unreliable, since the arteries were sometimes poorly outlined or not filled at all. We therefore found it necessary to adopt the technique of selective coronary cine-angiography devised by Mason Sones at the Cleveland Clinic. This is technically more difficult than that based on aortography but has the great advantage of better filling of each coronary artery with medium of high contrast. We have now performed selective coronary cine-angiography in 15 patients and a film was shown demonstrating the technique and some of the findings.